THE RELATIONSHIP BETWEEN SOCIAL MEDIA, BODY IMAGE AND EXERCISE MOTIVATION IN PHYSICALLY ACTIVE MEN

A thesis submitted for the degree of Doctor of

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Abstract

Little is known about the relationship between social media, body image and exercise motivation in adult men. Previous research has suggested that social media can have negative implications on some individual's body image, but this has predominantly been investigated in female and undergraduate samples. Social media that claims to provide inspiration and motivation for exercise has also shown limited efficacy in prior studies. This thesis sought to investigate the relationship between social media, body image and exercise motivation in physically active men. This was investigated using a mixed methods approach that comprised of three studies. Study 1 used a cross sectional survey design to explore relationships between social media and body image, and social media and exercise motivation and behaviour using a sample of 224 men (*M* age = 32.76). Study 2 used a qualitative methodology comprising of interviews with 20 men (*M* age = 32.45) about their experiences of social media, body image and exercise. Study 3 used an experimental methodology to investigate the impact of different types of fitness social media imagery (body aesthetic and function focused) on 165 men's (*M* age= 32.69) body image and exercise motivation. Together these studies found that social media was frequently associated with a higher drive for muscularity and increased awareness of appearance in men, with some experiencing body image concerns driven by social media. Social media was not deemed to be motivational by most men, but it was found to be a useful educational tool by many. Men showed evidence of critical thinking and media literacy to combat the negative influence of body image threats. This thesis used a novel methodology to explore a previously understudies population group. These findings have implications for future research, social media policy and interventions seeking to encourage physical activity and improve body image in adult men.

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Chapter 1- Introduction

Introduction

This introductory chapter will provide an overview of the subject area contained within this thesis and a section on why I chose to pursue this for my PhD. It will begin with how my background and interests led me to this research area, followed by an overview of the research problem and finally the research questions that this thesis endeavours to address.

1.1 Personal Motivation and Interest in the Subject Area

I have a personal connection with all of the main areas of this study: social media, body image and exercise motivation. As someone who has been involved in sport and exercise from a young age, in addition to completing a sports degree and working in the health and fitness industry for over a decade, I have always had a keen interest in sport and exercise and why some are active whilst so many are not. Having worked with clients as a personal trainer for over ten years, motivation has always been an integral part of my job, and the opportunity to better understand the complexities of motivation was one factor that drew me strongly into this PhD. Academically prior to this PhD, I looked at links between diet and muscle dysmorphia risk for my master's thesis as part of a Human Nutrition degree.

Body Image is also an area in which I have a strong personal interest. I have been an avid gym user since the age of sixteen, and the primary motivation in my late teens and early twenties was to become more muscular. This took up a lot of time, energy and thought, and whilst I retain a degree of motivation related to my physique, I often reflect on why I was so fixated on achieving a more muscular physique. On reflection I can see that I had some unhealthy exercise attitudes and behaviours (e.g. training multiple times per day, feeling guilty for missing workouts, missing social events to maintain my exercise schedule), and eating behaviours (tracking all of my calories and macronutrients, avoiding certain types of foods, consuming excessive amounts of protein) as a result of this desire to achieve a lean and highly muscular body. I am also aware that in many ways I escaped lightly from my experience, and I have numerous friends and acquaintances that have suffered from more serious consequences of the desire for a lean and muscular physique. These include a range of mental and physical health problems resulting from serious body dissatisfaction, steroid use, depression, anxiety, cardiovascular problems, fertility problems and infections.

Given my age, I have seen social media play an important role in life from my teenage years using MySpace and the beginnings of Facebook, up to the present day where social media has become

ubiquitous, and something I still use daily, along with everyone I know. Combining this with my time in the fitness industry, I have also had a lot of exposure to fitness based social media, being a content creator as well as a consumer in this regard. I believe the sheer volume of idealised bodies and the messaging associated with this on fitness social media have affected me in the past, leaving me less satisfied with my own appearance. In particular, ideas around muscularity that were always portrayed to me as being masculine, desirable, and deserving of respect had a particular influence on me as a teenager and young adult, with social media playing a big role in this. I was therefore intrigued to investigate the impact of this content on both body image and exercise motivation. I believe it is important to outline and acknowledge my personal interest and related experience in the subject area as this provides context for my undertaking this thesis but also because my prior experiences in this subject area will influence my expectations and perceptions of this subject. This will be reflected on in more detail in Chapter 2 – Methodology.

1.2 Research Problem

Social media has become a ubiquitous part of society, and the sheer volume and intensity of usage means it is having a consequential impact on the lives of much of the world's population (Kanchan & Gaidhane. 2023). Concurrent with this, physical activity rates, particularly in higher income countries, are low, contributing to a wide range of health concerns (Ekanayake et al., 2023). Social media provides a space that can be used to promote physical activity, and the fitness industry has a large presence across a range of social media platforms (Torjanac et al., 2024). Fitness social media content often features idealised bodies and places a heavy emphasis on appearance (Dane & Bhatia, 2023). This in turn impacts the ways users feel about their bodies (Rounsefell et al., 2020). Men are becoming increasingly affected by this and are a population who has received less research and attention regarding body image when compared to women (Lonegran et al., 2021). The research available currently has shown that fitness based social media may be associated with body dissatisfaction, Muscle Dysmorphia and associated symptoms, disordered eating behaviours and unhealthy exercise attitudes and behaviours (Fatte et al., 2019; Gultzow et al., 2020; Lonergan et al., 2021). Despite this, social media and fitness social media has also been linked to positive outcomes including increased knowledge about health, fitness and nutrition and enhanced wellbeing through social connection (Vandenbosch et al., 2022; Kross et al., 2021). More research is thus needed to better understand how social media is linked to body image and exercise in men, and how their experiences affect these outcomes.

The overarching aim of this thesis is to investigate the relationship between social media and men's body image and exercise motivations and behaviours. This can be broken into three separate research questions:

RQ1: How is social media related to body image in physically active men?

RQ2: How is social media related to exercise motivation and behaviour in physically active men?

RQ3: What is men's experience of social media in relation to body image and exercise?

This thesis adopted a pragmatist philosophy (for more detail on this see Chapter 3), acknowledging that there are different approaches that can be taken to knowledge that need not be constrained by social constraints (Morgan, 2014). Methodologically, the thesis used a mixed methods approach to address the topic, using quantitative and qualitative methods to answer the three research questions (for more detail on this see Chapter 3). The first two research questions are concerned with relationships between social media and body image (RQ1) and exercise motivation and behaviour (RQ2), and to investigate these relationships, Chapters 4 and 5 used a quantitative approach, using cross sectional, questionnaire data. Chapter 6 used a qualitative, interview design to answer RQ3 by drawing on men's experiences. Chapter 7 used a mixed method approach to investigate RQ1 and 2 by exploring differences in men's body image and exercise motivation before and after viewing fitness social media posts. Chapter 7 also sought to answer RQ3 with qualitative data men contributed about their thoughts and feelings upon viewing social media content.

Format of the Thesis

Following on from this introductory chapter is Chapter 2 of the thesis which contains the literature review. This chapter will introduce the wider literature in the field of men's body image, social media use and Self Determination Theory (SDT) and its application to exercise motivation. It will seek to give an overview of male body image, the typical concerns, the prevalence of body image problems, and how culture and media have had a consequential impact on men's body image. This will be followed by a section about social media containing research on social media and wellbeing, and specifically on body image and men's body image. The review then turns to SDT with an overview of this theory and how it has been applied to exercise motivation and to body image in previous research. Finally, this chapter concludes by reviewing work that has drawn together aspects of men's body image, social media use and exercise motivation.

Chapter 3 will cover the methodology of this thesis including deeper philosophical considerations, specific methodological considerations for the subject matter and studies included in this thesis as

well as reflections on the methodology. The data chapters (4,5,6 and 7) follow a paper structure, each including an introduction, methods, results, discussion and conclusion. Chapters 4 and 5 comprise of two papers that were produced from the first study conducted and thus parts of the method section (participants and procedure) have overlap. As one of these papers has been published and the other is in peer review, they have been included in this format (including with their own abstracts and with only referencing changed to maintain consistency with the rest of the thesis). This also means there is some overlap with themes and content from Chapter 2 (literature review) that are present in the introduction of these chapters. This study used a cross sectional, quantitative methodology, examining associations between men's social media use, body image and exercise motivation. Chapter 4 investigates men's social media use (active and passive use) and body image whilst Chapter 5 looks at the links between men's social media use (fitness social media and specific platform use) and exercise motivation and behaviour.

Chapter 6 comprises of a qualitative interview study which included 20 in depth, semi-structured interviews with men about their body image, exercise motivation and behaviour and social media use and how they experienced them in their lives. Chapter 7 is the final data chapter, which is an experimental, mixed methods study that sought to investigate the effects of body aesthetic focused social media imagery and body functionality focused social media imagery on men's body image and exercise motivation. Chapter 8 is the general discussion which draws together the findings from all of the studies to see how they collectively answered the research questions posed above. This chater also explains how the findings from this thesis can be applied in practical settings, how future research can build on the findings here and draws overall conclusions from the thesis.

Chapter 2 – Literature Review

This section will begin with an overview of the main themes and concepts that underpin this thesis before looking more specifically at male body image, social media and fitness social media, motivation and previous research examining these areas together.

2.1 Overview of the Topic Area

Being physically active has long been known to provide a wealth of health benefits (Warburton et al., 2006) as well as being protective against a wide range of mental and physical health problems including many cancers (Lynch & Leitzmann, 2017), cardiovascular disease (Lippi et al., 2020), diabetes (Eaton & Eaton, 2017), depression and reduced emotional wellbeing (Galper et al., 2006), and all-cause mortality (Saint-Maurice et al., 2018). The conditions under which our (and most) species has evolved is one whereby food was scarce and significant energy expenditure was required to meet our nutritional requirements (Venniyoor, 2020). Thus, our bodies evolved to respond to physical stress through adaptations such as increases in strength, cardiovascular fitness and flexibility (Chergizova et al., 2018). In addition, this harsh, food scarce environment also resulted in the selection of "thrifty genes" whereby we adapted to a low energy availability and higher energy expenditure lifestyle (Wells, 2009).

Beginning with the advent of agriculture and accelerating exponentially after industrialisation, humans have subsequently been able to completely invert this problem and provide ever increasingly abundant sources of energy whilst simultaneously engineering physical activity out of our lives (Lopez & Knudson, 2012). This has been suggested by many as a leading cause of obesity (Pijl, 2011), and a contributor to many of the ailments and illnesses of modern developed countries (Saint-Maurice et al., 2018). Unsurprisingly, physical activity rates are lowest in high income countries, with the trend of ever-increasing physical inactivity growing globally as countries become more economically and technologically developed (WHO, 2021). Further to this, in developed countries such as the UK, there is a clear trend towards less physical in activity in lower socioeconomic groups (NHS, 2020), with over one third of the UK population not currently active enough (at least 150 minutes of moderate physical activity per week (NHS, 2020), and one in six deaths attributable to physical inactivity (Gov UK, 2021).

These issues are growing worldwide (Lung et al., 2020) and have led to a strong drive to encourage the public to be physically active (Howlett et al., 2019; Lee et al., 2020). With most people aware of

the importance of physical activity, but many of them remaining insufficiently active, it has been argued that the most influential factor on exercise participation is motivation (Rodrigues et al., 2020). SDT provides arguably the most complete, comprehensive, and contemporary theory of human motivation (Deci & Ryan, 2017) and has been used extensively in the realm of exercise motivation. This theory will be used in this thesis as a conceptual framework for understanding exercise motivation. A more comprehensive overview of this theory in relation to exercise motivation will follow later in this literature review.

Another consequence of the growing levels of obesity and insufficient physical activity has been the rise of the "health and fitness industry", which includes commercial, community, clinical and corporate services related to health and fitness (Thompson, 2018). This provides for a rapidly growing market that has seen the number of "fitness users" (people accessing fitness industry products and services) in Europe increase by 72% from 2009-2019, with this growth expected to continue in the coming years (Batrakoulis, 2019). Social media has also seen large growth over the past twenty years and is now used by over half of the world's population, with each user spending, on average, over two hours per day using it (Chaffey, 2023). The fitness industry, whilst, in part existing to help combat the issues of obesity, physical inactivity, and their aforementioned related deleterious consequences (A'Naja et al., 2024), also places a high importance on appearance, weight, shape and muscularity (Haakstad, 2021), with weight bias common amongst fitness professionals (Walters & Ede, 2023). In addition to this, obesity rates have continued to rise during the last few decades, despite large increases in the size of the fitness industry (Ahmed & Konje, 2023). There exists ongoing debate about the significance of weight as an independent risk factor of poor health, and some evidence has shown that healthy habits (e.g. exercising regularly and eating a high mount of fruits and vegetables) may be more important than weight itself (Heitmann et al., 2024; Matheson et al., 2012). Despite this, weight and shape are the areas of primary concern for much of the fitness industry and this is evident across fitness social media (Marks et al., 2020). Much work has subsequently being dedicated to the impact of idealised body imagery on Facebook (Tiggemann & Slater, 2013), and in more recent times, Instagram (Prichard et al., 2020) and how this relates to body image. Body image research has existed for many decades but research has grown in the 21st century, in part due to investigations into the impact social media is having on body image (Ryding & Kuss, 2020).

Body image research appeared in the mid twentieth century, originally as part of eating disorder research and remained confined almost exclusively to white female college students in this era (Cash & Smolak, 2011), in part due to the high-profile issues and deaths of celebrities such as Karen Carpenter (McKay, 2018). Body image concerns vary widely but female body image research has

typically been dominated by issues surrounding weight, shape and thinness (Grogan, 2017). Male body image research has also focused on these issues (Tylka, 2011), but in more recent decades, a growing portion of this research has also been dedicated towards muscularity concerns (Daniel & Bridges, 2010; Lennon & Johnson, 2021).

Research examining how men and women feel about their bodies has shown that many individuals have negative feelings about their bodies. A survey conducted by the Women and Equalities committee including 7878 male and female participants in the UK, in 2020, found 61% of adults felt negatively about their body most of the time. In addition to this, social media and wider social pressure were cited as major contributors toward negative feelings about one's body, with 61% of respondents spending more than 2 hours per day on social media whilst 89% of the sample felt social pressure to look a certain way (Women and Equalities Committee, 2021). Delving further into these results, 53% of men reported feeling negatively (or very negatively) about their body most of the time with 14% of men feeling very negatively about their body, a number higher than that for women. The potential consequences of negative feelings towards one's body can be very serious, and it is associated with a range of mental and physical health problems including depression, (Paans et al., 2018) anxiety (Vannucci & Ohannessian, 2020), body dysmorphia (Himanshu, 2020) and disordered eating practices and pathology (Constructed, 2008).

Whilst exercise has an array of benefits, including improved body image, research has shown that appearance focused exercise (often with a focus on changing one's body shape, bodyfat or musculature) either reduces the positive influence of exercise, or may even be harmful for body image (Homan & Tylka, 2014). In addition to this, the type of motivation that is promoted by appearance focused exercise may not be useful in the long term, (Teixeira et al., 2012, Zamarripa et al., 2018) and may even be damaging towards psychological wellbeing (Deci & Ryan, 2017). More research is needed to better understand these concepts, particularly in men.

This review will begin with an overview of male body image, followed by a more detailed overview of fitness social media and research that has investigated its relationship with body image. Finally, it will look at SDT as it relates to exercise motivation, and how it relates to body image, discussing how it may be a crucial theory through which we can begin to understand and make progress on the pressing modern-day issues of body image and physical inactivity.

2.2 Introduction to Body Image – Definitions and Conceptualisations

Body Image has been defined in a variety of ways with one classic definition by Slade (1988 p.20) describing it as "the picture we have in our minds of the size, shape and form of our bodies; and to our feelings concerning the size, shape and form of our bodies, and its constituent parts." This definition has been expanded to multi-dimensional models to include thoughts, feelings perceptions and behaviours pertaining to the experience of living in one's body (Cash & Smolak, 2011). Thompson & Van den Berg (2002) put forward a frequently cited four factor structure for body image. The first is the affective dimension relating to how one feels about their body and the emotions associated with this evaluation (e.g. feeling proud or ashamed of one's body. The second is the cognitive dimension that involves the beliefs one has about their body (e.g. internalisation of the thin ideal). Thirdly, the behavioural dimension pertains to actions one takes that affect their body (e.g. exercising or dieting to change one's appearance) and fourthly, the subjective dimension relates to one's satisfaction with their appearance and body. This dimension conceptualises body image as the perceptions an individual has of their body (Peres et al., 2020). This can be measured by assessing individuals desires to have different body shapes and sizes, and the discrepancy between their actual size and shape and their perceived size and shape (Rajagopalan, 2020). The perceptual dimension of body image is also evident in other ways, including the enhanced appreciation of one's physical body experienced from engaging in exercise regimes regardless of physical body changes (Ginis et al., 2005; Hausenblas & Fallen, 2006). The presence of a subjective component to body image is demonstrated by the misalignment in subjective and objective measures of Body Mass Index (BMI) in disordered eating patients (Wilson et al., 2005), and the inconsistent correlations found between body image satisfaction and BMI in the general population (Wilson et al., 2013).

Whilst the body image literature has been dominated by a focus on appearance and perceived appearance, the concept of body image encapsulates all the experiences associated with having a body (Burychka et al., 2021). One that has received more attention in recent years is that of "body functionality". This comprises of everything the body can do or is capable of doing, which includes internal processes (e.g. digestion), physical capabilities (e.g. walking), bodily senses and sensations (e.g. sight and touch), creative endeavours (e.g. writing), communication with others (e.g. eye contact) and self-care (e.g. sleeping) (Alleva & Tylka, 2021). This construct has been found to be valuable, particularly for positive body image and wellbeing with individuals often framing their body more positively from a functional point of view (compared with aesthetically) (Linardon et al., 2023).

Body dissatisfaction is a term used to encapsulate the negative thoughts and feelings that people may have about their bodies and appearance (Holmqvist & Frisen, 2010) and is thus a part of the affective dimension of body image (Thompson & Van den Berg, 2002). Body dissatisfaction is a broad concept that covers both visible, appearance-based factors and non-visible factors related to one's feelings towards their body (Moss & Roser, 2012) and has thus been assessed with a wide variety of measures in previous literature (Cash, 2004). Body dissatisfaction is an important concept as it has been associated with a range of negative mental and physical health problems including low self-esteem, depressive symptoms, unhealthy diet and exercise behaviours and disordered eating (Van den Berg et al., 2007). Body dissatisfaction can be influenced by several factors including societal and media messaging, personality differences and pressure from family, friends and partners (Dye, 2016). Body dissatisfaction can be difficult to accurately assess given the multiple reasons for which people may be dissatisfied with their bodies (e.g. size, shape, muscularity, body fat, height, specific body parts) (Paterna et al., 2021). The term "body dissatisfaction" is inherently negative, and individual's evaluations of their bodies and appearance exist on a spectrum that can be both positive and negative. One way of evaluating this is through the concept of "Appearance Valence.

Appearance Valence has been defined as "The extent to which individuals evaluate their appearance in a positive/negative way" (Moss & Roser, 2012). This concept looks specifically at the self-conscious emotions around one's appearance specifically and does not look at nonvisible aspects of individuals' bodies and how they may be evaluated (Moss & Roser, 2012). It acts as a spectrum, rather than being inherently negative as in the term "body dissatisfaction" and examines how individuals feel about their appearance both positively and negatively. Another means of examining body image is through the concept of Appearance Salience which is defined as "the extent to which appearance and physical self is brought into conscious awareness." (Moss & Roser, 2012). Whilst Appearance Valence is evaluative and concerns the emotional response to individual's appearance, Appearance Salience is organisational and concerns how salient appearance is to individuals (Moss & Rosser, 2012), (e.g. how important is appearance to someone, or how often do they think about their appearance?). Salience and Valence have been found to be conceptually independent and interdependent constructs (Moss et al., 2014). "Self-Evaluative salience" has often been independently associated with negative wellbeing outcomes, worse body image and higher levels of dysfunction (Jarry et al., 2019). Two measurement tools have been developed to measure these concepts: Centre for Appearance Research Salience scale (CARSAL) and Centre for Appearance Research Valence scale (CARVAL). Despite their relative lack of usage compared with other body image scales, these scales provide, quick, well validated measures that are particularly well suited to a range of body types and those with physical differences (Kling et al., 2019). These two concepts

cover the two main areas of attitudinal body image (as separate from the behavioural component (Cash, 2011), identified by Cash (1994) namely 1. The evaluation/affect of one's appearance often defined by degrees of satisfaction and 2. The salience, investment and importance of appearance as a concept to individuals. One population for which issues surrounding body image have been growing in recent decades is men (Harriger et al., 2023).

2.3 Gender and Body Image

Modern day research has tended to show that a gender discrepancy in body satisfaction still exists, although this is dependent upon the specific ways in which body satisfaction is measured (Quittkat et al., 2019, He et al., 2020), or in other cases that there is relative parity between male and female body dissatisfaction (Fiske et al., 2014, Murray et al., 2013; Women and Equalities Committee, 2021). In addition to this, male body image dissatisfaction rates have been increasing since the end of the 20th century (Adams et al., 2005), for example, according to surveys by Psychology today magazine (Garner, 1997), male body dissatisfaction tripled between the 1970s and late 1990s from 15% in 1972 to 42% by 1997 with further increases observed since (Farquhar et al., 2007; Women and Equalities Committee, 2021). Various studies have estimated the prevalence of body dissatisfaction amongst adult men in the U.S. between 65% and 98% (Galioto & Crowther, 2013) and the rise of social media in recent years has added further social pressure on men's body image (Gültzow et al., 2020). This will be explored in more detail in due course.

Male and female body image concerns show broad differences, and this is often highlighted by the measurement tools used, something illustrated by Quittkat et al. (2019) in a study including 942 women and 385 men examining body image dissatisfaction. Women showed higher rates of body image dissatisfaction as measured by the Appearance Evaluation Scale and the Body Areas Satisfaction Scale, however it must be noted that these scales are more sensitive to the typical causes of female body image issues (drive for thinness) and do not attend to ideals of muscularity which tend to be the primary concern for men. Additionally, there exists a taboo about talking about body image and openly speaking about body image concerns amongst men (Hargreaves & Tiggemann, 2006), which can lead to men being less likely to disclose body image concerns (O'gorman et al., 2020). Furthermore, the authors note that some previous research (Keel et al., 2007) has shown males to be more dissatisfied with their weight than women, possibly indicating that women can be more satisfied with their weight whilst still being unhappy about their appearance. The authors also noted that when viewed on average, both men and women rated their overall body dissatisfaction just above 3 on a 1-5 Likert scale, indicating an attitude that was neither overwhelmingly positive nor negative for either gender. Other research has shown that whilst men

show anti-obesity views at similar rates to women, men are more likely to externalise these views, rather than internalising them (Magallares et al., 2016). These findings would suggest that men and women may shower similar levels of overall satisfaction with their bodies but that differences exist in the elements with which they are satisfied. The key difference seen in prior research between men and women's body image concerns is that women's primary concern is around thinness whereas men's primary concern is around muscularity (Gualdi-Russo et al., 2022; Lennon et al., 2021).

2.4 Men's Body Image Concerns

Male body image has received far less attention than female body image from researchers, and whilst this trend has begun to change in recent years, a large discrepancy remains (Sklar & Rokusek, 2018; Harriger et al., 2023). In part, historically, this came because of lower rates of body dissatisfaction seen amongst men throughout the twentieth century (Tiggemann & Pennington, 1990). This was, in large part due to the flawed application of female centric, body satisfaction questionnaires being used for both genders with a large focus on body size, (the dominant female ideal from the later 20th century onwards). It lacked a focus on muscularity (the dominant male ideal in recent decades) (Brennan et al., 2010), thus giving the appearance that men were more body satisfied because they did not strive for thinness to the extent that women did. Whilst men often strive for lower levels of body fat, this is often in the context of having larger (often muscular) bodies, in contrast to the traditionally female drive to reduce overall body size (Gultzow et al., 2020; Lee, 2022).

The difficulties in assessing body image in different demographic groups, as discussed in the previous section emphasise the need for specific body image research to be focused on male populations to avoid some of the aforementioned pitfalls. Previous research on men's body image indicates that the desire to have more muscle mass and/or less body fat are key factors (Brooks et al., 2020). These concerns have contributed to high levels of body dissatisfaction amongst men, particularly in recent years. A UK survey in 2021, found that 53% of men felt negatively about their bodies (Women and Equalities Committee, 2021), and several US studies have found that almost half of men are dissatisfied with their weight and/or with their levels of muscularity (Frederick & Essayli, 2016). Men have historically shown higher levels of body satisfaction and lower levels of appearance preoccupation when compared to women (Brennan et al., 2010), however men are becoming increasingly aware of their appearance and bodies in a range of settings and situations (Boursier & Gioia, 2022) and are consequently displaying higher levels of body dissatisfaction (Barnes et al., 2020). There are a number of sociocultural reasons for this which will be discussed in more detail in

the next section. Male body image concerns can have serious implications with approximately 0.5% of men having bulimia at some stage in their lives (Vaughn & Lowe, 2020), 0.2% having experienced Anorexia Nervosa (Milano et al., 2020) and 1-2% having Muscle Dysmorphia (Sanchez-Castro et al., 2022; Mitchison et al., 2022).

Male body image appears to be strongly affected by peer comments and teasing as well as the increased frequency of highly muscular male idealised bodies in the media (Leit et al., 2001; Tiggemann & Anderberg, 2020). These threats from peers, family and media have been dubbed the tripartite model (Thompson et al., 1999), which has subsequently been applied to a vast array of body image research (Keery et al., 2004, Tylka, 2011, Schaefer et al., 2021). This model was originally designed around female body image but has been more recently applied to men (Schaefer et al., 2021). Tylka (2011) posited that this could be extended to a quadripartite model including the influence of romantic partners and this was supported in her investigation of 473 men, particularly within the realm of eating behaviours. This is important in the context of the present research that focuses on men, and it is important not to overlook important influences on men's body image.

The complexity of male body image, with muscularity concerns common, alongside slimness and more specifically body fat concerns (Tylka, 2011), has several implications. These two somewhat conflicting goals lead to difficulties in how body satisfaction is assessed, as focusing purely on muscularity or purely on body fat and weight will not capture the full picture. In addition, feelings towards weight can be mixed as larger BMIs may be desirable from a muscularity perspective whilst valued less so from an adiposity perspective (Tylka, 2011).

2.5 Socio-Cultural Influences on Male Body Image

A bias towards more slender body types has been present for several decades, particularly in western society (Polivy et al., 2022), and whilst this has been documented in greater volume and detail for women, this extends to male bodies as well (Puhl, 2020). With the increased availability of calorie dense food, combined with the reduced necessity for physical activity, larger bodies have become more common, and slender bodies have been used to demonstrate ideas such as self-control, asceticism and higher wealth and social status (Oude-Goreniger et al., 2020). Socio-cultural pressures on men also tend towards athletic and muscular physiques that place an emphasis on developing high levels of muscularity alongside limited body fat (Hogans & Seock, 2022).

The growing rates of body dissatisfaction seen amongst men, can in part be explained by a heightened exposure to idealised, and increasingly leaner and more muscular images of male bodies in recent decades (Lennon & Johnson, 2021). These socio-cultural influences come from a range of

sources, including “traditional media” such as film, television and magazines, and in more recent years, social media (Vandenbosch et al., 2022). A review article by Blond (2008) found from the available research at the time, that increased exposure to idealised images of male bodies had a small but statistically significant impact on male body dissatisfaction under experimental conditions. Results also showed that initial body satisfaction was somewhat protective of body image threats from idealised body imagery, suggesting that those with lower levels of body dissatisfaction are less impacted by idealised body content.

In addition to the increasing prevalence of idealised male bodies, there is evidence to suggest that the size and shape of idealised bodies has changed over the past few decades. Leit et al. (2001) examined the change in male centrefold models bodies in “Playgirl” magazine from 1973 to 1997. They found that whilst body fat decreased over time, BMI increased and thus Fat Free Mass Index (FFMI) (a score considering height, weight, and body composition) rose even more sharply over time than BMI indicating levels of muscularity were rising. Eight of the 115 models analysed had a FFMI of over 25 indicating a high likelihood of steroid use. Two of these were from the 1980s and 6 of them were after 1994, indicating a clear trend for more unnaturally muscular physiques becoming more popular and prevalent over time. Whilst limitations existed in the heights and weights presented by the magazine and the visual estimates of bodyfat, these results indicated that the desirable male ideal body had significantly increased in muscularity and decreased in body fat in the later part of the 20th century. These results mirrored the classic work by Pope et al. (1999) finding that action toys became progressively more muscular throughout the late 20th century, often representing sizes in excess of that of professional bodybuilders. This evidence points to both an increasing prevalence of idealised male body imagery as well as increasing muscularity and decreasing bodyfat up to the beginning of the 21st century. The promotion of the muscular ideal has become increasingly prevalent in cinema in recent years, evidenced particularly in the hugely successful marvel series of films (Plotz, 2024). Taken together, these examples point towards men being exposed to increasingly lean and muscular bodies in popular culture over the past few decades. This has a knock-on effect to the general population, with men experiencing increased pressure toward attaining more muscular and leaner physiques (Verrastro et al., 2022).

Research in recent years looking at male body presentations has also shown evidence of this trend on social media which has provided an ample platform for the increased availability and distribution of idealised male body imagery (Gültzow et al., 2020). The relationship between social media and men’s body image will be explored in more detail later in this review. The style of bodies

represented on social media are often described as “Masculine”, (Enguix & Gómez-Narváez, 2018) and this is a concept that has implications both directly and indirectly in the present work.

2.6 Masculinity

Masculinity can be defined as set of attributes, expectations, and behaviours that are associated with being a man or a boy (Kimmel, 2001). The particulars of what these attributes, expectations and behaviours are, have received growing debate in recent decades and masculinity as a concept has changed over time (Christofidou, 2021). “Hegemonic masculinity” is the term used for more traditional conceptions of masculinity that include overt displays of social status, dominance and power over nature, women, other men or oneself (Marshall et al., 2020; Garlick, 2016). The exaggeration of these stereotypically masculine ideas has been termed “hypermasculinity”, and whilst commonly displayed in media and social media, it represents a more problematic and extreme form of masculinity (Potts & Stebleton, 2023). Many of the measures of gender role conformity have defined femininity as the possession of expressive traits (e.g., empathy, nurturance and sensitivity) and masculinity as the possession of instrumental traits (e.g., autonomy, dominance and assertiveness) (Blashill, 2011).

These traditional ideas of masculinity have been challenged and modified and the concept of “inclusive masculinity” has been born from this, noting increased emotional expressiveness, rejecting violence, bullying and homophobia and the inclusion of some ideas previous seen as feminine (including fashion and grooming) (Anderson & McCormak, 2018; Marshall et al., 2020). These varying definitions of masculinity have led to the term “masculinities” often being used in literature to encompass the range of ideas that overlap, but often contradict each other (Bridges & Pascoe, 2014).

The concept of masculinity is intrinsically tied up with the male body, with some even claiming that masculinity as a concept proceeded from ideas around men’s bodies (Rohlinger, 2002). Sporting events and societal ranking of men according to strength and athletic ability shows further evidence and reinforces this link, and it has been argued that masculinity is a matter of the body (most saliently, a muscular body) rather than the mind (Rohlinger, 2002). A muscular body has been described as the embodiment of many of the traditionally masculine traits of power and dominance (Ricciardelli et al., 2010), with more groomed and self-objectified portrayals of men’s bodies, often seen on social media displaying more inclusive ideas alongside traditional hegemonic masculinity (Marshall et al., 2020). Others have stressed that masculinity exists primarily away from the physical, with a greater emphasis on the mental, ideas of winning, dominance, being a provider and being a

rock for others (Pompper, 2010), although even here, certain body types can serve as the physical embodiment and representation of these values.

Many traditional roles, ideas and outlets for masculinity have changed, particularly in the developed world in recent decades, leaving many men in a more precarious position regarding their own masculine identities (Pompper, 2010; Christofidou, 2021). This insecurity in one's masculinity has been dubbed the "threatened masculinity" hypothesis which posits that greater gender equality in recent decades has eroded men's traditional platforms for masculinity and in doing so has led to an increased interest in increasing muscularity as a means of establishing and demonstrating masculinity (Gray & Ginsberg, 2007), an idea that has received empirical support (Mills & D'alfonso, 2007). This hypothesis has received support in experimental conditions (Hunt et al., 2013) as well as the observational finding that men in countries with greater gender equality have been shown to display higher rates of body dissatisfaction and drive for muscularity (Frederick et al., 2007), although it must be noted that other cultural factors have also contributed to these findings.

Hunt et al., (2013) examined threatened masculinity through two studies, shedding light on the complex nature of masculinity's relationship to muscularity. The first study involved asking men to estimate their current body shape and size and how many push ups they could do in either a masculinity threatened or affirmed condition. As hypothesised, they found men in the masculinity threatened condition rated themselves as less muscular and underestimated their physical performance on the push up task. However, during the second study that used a greater number of body image measures under threatened and affirmed masculinity conditions, men who scored higher in masculinity reported a lower desire to be muscular and lower masculinity men reported lower concern with their appearance under the masculinity threatened condition. One explanation for this is the association between caring about one's appearance and femininity, with a move away from this when one's masculinity is threatened (De Visser et al., 2009). This theory is given added support by the finding that higher masculine men were less likely to engage in muscle building activities. This highlights a paradox for men in the modern world who are often caught between wanting to attain a muscular, masculine body. whilst not wanting to be seen as too image conscious and thus feminine (Bottamini & Ste-Marie, 2006). A final note on this study is that (as with the vast majority of research in this area) it was conducted with undergraduate students and it is not possible to extrapolate these findings to populations that are not predominantly white, young and middile class.

2.7 Drive for Muscularity

For men, body image dissatisfaction often centres around a desire for greater muscularity (Bucchianeri et al., 2014; Pope et al., 1997). This led to the development of the "drive for muscularity" concept which was created as a parallel to the previously well established "drive for thinness" concept that has been used predominantly in female samples (Edwards et al., 2016). A measurement scale was developed by McCreary & Sasse (2000) containing two subsections pertaining to drive for muscularity attitude and drive for muscularity behaviour. Drive for muscularity attitude concerns individuals' attitudes towards being more muscular and is measured by items such as "I wish I was more muscular". This attends to the attitudinal, cognitive and subjective dimensions of body image examining individual's beliefs about muscularity, how they feel about their level of muscularity and their satisfaction and emotions associated with their own muscularity. Drive for muscularity behaviour addresses the extent to which individuals engage in behaviours that are designed to make them more muscular, for example "I lift weights to build up muscle". This directly addresses the behavioural dimension of body image. Drive for muscularity, and the scales used to measure it have been validated in a range of demographics and used extensively in research over the past 20 years (Lennon & Johnson, 2021). Despite this, limitations do exist, including the lack of nuance over being driven to be bigger vs specifically more muscular, and the lack of inclusion of body fat and leanness concerns in conjunction with muscularity (Lang, 2021). A high drive for muscularity has been associated with several potentially deleterious consequences including dietary restraint and binge eating practices, depression, anxiety, low self-esteem, perfectionism and emotional dysregulation (Chaba et al., 2019), unhealthy social comparisons (Edwards et al., 2016), as well as steroid use, supplement use, exercise dependency, a preoccupation with body size and symmetry and physique protection which can ultimately lead to Muscle Dysmorphia (Rhea et al., 2004).

2.8 Muscle Dysmorphia

Body Dysmorphia is a psychiatric illness characterised by obsessive thoughts and behaviours toward one's appearance that can occur in any gender (Rodrigues & Rodrigues, 2022). The most common areas of distress in men tend to be levels of body fat and muscularity, and the concept "Muscle Dysmorphia" has emerged under the umbrella term of Body Dysmorphia (Rodrigues & Rodrigues, 2020). Muscle Dysmorphia has been frequently found to be the most common form of body dysmorphia in men (Applewhite et al., 2024). Muscle Dysmorphia has received growing attention over the past twenty years (Mitchell et al., 2016; Tod et al., 2016), having been originally identified and coined "reverse anorexia" by Pope et al. (1997). Muscle Dysmorphia was initially conceptualised

as someone with low body mass perceiving themselves as being overweight in the case of anorexia nervosa (Szmukler, 2013). It is presented by muscular individuals perceiving themselves as small and weak (Pope et al., 1993). Pope and his colleagues further elaborated on this (Pope et al., 1997) by explaining Muscle Dysmorphia as a preoccupation with the body shape and size as a whole, rather than with particular body parts, as is the case in Body Dysmorphia, although this description has come into question more recently (Tod et al., 2016). Those with Muscle Dysmorphia become dangerously concerned that they are not sufficiently large or muscular enough and thus their lives become consumed by their bodybuilding lifestyle of training and dieting (Pope et al., 1997).

Muscle Dysmorphia prevalence rates vary with estimates around 2% in male adolescents (Mitchison et al., 2022), 12% in male entry level military personnel (Campagna & Bowsher, 2016) and numbers ranging from 1-54% according to Tod et al. (2016), depending upon the specific populations used and criteria used to define Muscle Dysmorphia. In addition to this, male body dissatisfaction is a common phenomenon affecting over 50% of men (Women and Equalities Committee, 2021). Men's body dissatisfaction can be driven by several reasons including size and body fat, with muscularity often cited as the primary factor (Griffiths et al., 2015; Heath et al., 2016; Pope et al., 2000). Muscle Dysmorphia has been recently cited as an under recognised aspect of body dissatisfaction in men (Watters & Higgins, 2024) and represents one of the more serious consequences of body dissatisfaction in men.

Since the initial work in Muscle Dysmorphia, further research has shown it to be a complex and multifaceted condition that is difficult to define. One of the difficulties in defining Muscle Dysmorphia is that the behaviours associated with diagnosis are similar to those who are seriously dedicated to weightlifting and/or bodybuilding (Tod et al., 2016), however with a more obsessive and dependent nature (Pope et al., 2005). Tod et al. (2016) conducted a more recent review of Muscle Dysmorphia and noted that the available research displays inconsistent findings regarding the difference between those with Muscle Dysmorphia and those without, largely due to small sample sizes and a limited number of papers on the topic. Despite this, attempts have been made to define Muscle Dysmorphia more clearly such as that by Rhea et al. (2004) who created one of the most widely used questionnaires on Muscle Dysmorphia and identified 6 key components to the condition: 1. Drive for size – 2. Body Dissatisfaction – 3. Pathogenic weight control – 4. Exercise Behaviours – 5. Dietary Behaviour – 6. Physique Concealment. These components focus heavily on the behavioural component of body image whilst also touching on the affective, cognitive and subjective elements. The increasing importance of understanding men's relationship with muscularity within the broader context of physical and mental health has led to further interest in the primary space for muscle building activities, the gym.

2.9 Gym Based Exercise and Male Body Image

Gyms have become the default environment for men to achieve gains in muscularity (Cella et al., 2012; Haakstad et al., 2021). The impact of gym attendance on men's body image has been investigated in a small number of studies, showing mixed results. Exercise is generally associated with improved body satisfaction (LePage & Crowther, 2010), however there is a growing body of evidence suggesting that exercising solely for aesthetic reasons is linked to decreased body satisfaction, higher guilt-fuelled compulsive exercising and a higher risk of engaging in disordered eating habits (Boepple et al., 2016). For example, Stapleton et al. (2016) found that male gym users who were exposed to more idealised bodies and more frequently surrounded by other lean, muscular men (and were thus more preoccupied with their bodies), actually had greater rates of body dissatisfaction than male non-gym users in their sample of 180 men aged between 18 and 65. In contrast, Haakstad et al. (2021) looked at novice gym users' body image at 3, 6 and 12 months after initially joining fitness clubs. They found that amongst those who continued to exercise regularly (>2x per week), overall body image and in particular body area and appearance satisfaction improved throughout the follow up period, supporting the idea that regular exercise can help to improve body image. This effect was contingent on other factors however, including the reasons for exercising, with health-related concerns negatively correlated with body image dissatisfaction whilst aesthetic concerns showed a positive association.

In addition to these findings, it has been shown that gym users and non-gym users respond differently to images of idealised bodies. Halliwell et al. (2007) investigated the effects of idealised muscular bodies on gym going and non-gym going males. They found that gym users reported less body focused negative affect than non-gym users after exposure to these images. The researchers only conduced a post exposure test and thus it is unclear if this result was consistent with their state body image satisfaction or whether this was strongly influenced by the exposure. The finding that gym users experienced less body focused negative affect upon exposure may not be surprising given their pursuit of such bodies being validated by these types of images, and the likelihood of their bodies being more similar to the bodies seen in these images when compared to non-gym users. In addition to this, gym users are far more likely to have been exposed to such images regularly in the gym and through fitness magazines and other media (Brighton et al., 2020), and thus may be somewhat desensitized to such imagery in contrast to the novelty experienced by non-gym users in

this context. Social media has become one of the primary platforms for exposure to such imagery (Fardouly & Vartanian, 2016) and is a subject to which this review will now explore in more detail

2.10 Social Media Introduction

Social media, whilst a ubiquitously used phrase, is not easily defined and several varying definitions have been used by both the popular media and in academia (Carr & Hayes, 2015). This difficulty is furthered by the consistently changing and evolving nature of social media (Aichner et al., 2021). Despite this, it is possible to find a consensus amongst definitions that describe social media as being internet-based channels that allow for self-presentation and interaction with others who derive value from user-generated content (Carr & Hayes, 2015). This definition importantly encapsulates a broad range of platforms, as demonstrated by the four most popular social media platforms (Statista, 2021): Facebook (a social networking platform), YouTube (a video sharing platform), WhatsApp (a messaging platform), and Instagram (an image sharing platform). Social media use has continued to grow in popularity since its inception towards the beginning of the 21st century both in terms of the number of people using these platforms and the time individuals spend on them (Ryding & Kuss, 2019). Some research has suggested that the amount of time spent on social media in developed countries exceeds that of time spent on sport, spending time with friends and almost as much as eating (Verduyn et al., 2017).

2.11 Social Media and Wellbeing

The effects of social media on wellbeing have been the subject of a growing body of research displaying mixed results (Orben, 2020). In a systematic review of the effects of social media on mental health, Keles et al. (2020) noted that the link is not straight forward, with various contributory factors including impaired sleep, sedentary behaviour, online multi-tasking, social support, social comparison and the passive and active use of these platforms. Whilst a broad association was found in studies between social media use and mental health problems, most of these studies were cross sectional and the authors noted that the relationship was far too complex to draw straightforward conclusions from the currently available body of evidence. Erfani & Abedin (2018) noted both positive and negative effects on psychological wellbeing were common in their systematic review of the effects of social network sites on mental health. Positive effects came from social support, social capital, social self-esteem, authentic self-presentation and self-disclosure and social connectedness. Negative wellbeing was also frequently associated with social network usage, particularly when used for less social purposes or when heavily used for para social relationships (one sided relationships, such as those between a fan and a celebrity). This points to a trend

identified in a number of studies (Weinstein, 2017; Rozen et al., 2012; Ryding & Kuss, 2019; Verduyn et al., 2017) that passive social media use (browsing without connecting and interacting with others) can lead to upward social comparison and decreased wellbeing, whereas active social media use (communicating with others through posts, messages etc.) can lead towards enhanced social capital and connectedness and increased wellbeing (Thorisdottir et al, 2019; Escobar-Viera et al, 2018; Erfani & Abedin, 2018). This dichotomy, however, is also complex and other research has shown a lack of consistent differences between active and passive use, with other factors such as the type of content being engaged with more impactful on wellbeing (Valkenburg et al., 2022). Furthermore, some behaviours such as "liking" posts (which involves actively engaging but often without expecting or getting a response) have been categorized by some as passive (Manago et al., 2015) but by others as active (Gersen et al., 2017), highlighting the difficulty of categorising social media usage behaviours dichotomously.

2.12 Social Media and Wellbeing – Psychological Theory

The effects of social media on wellbeing are influenced by several psychological theories and heuristics that help to explain these relationships. Social Comparison Theory was first posited by Festinger (1954) and suggests that social comparisons are made most frequently in situations of uncertainty where one's abilities and opinions cannot be known in isolation. These comparisons may be upward (whereby the individual perceives the other as superior to them regarding the trait in question) or downward (whereby the individual perceives the other as inferior with regard to the trait in question). One key facet of social comparison theory is that the object of the comparison must be sufficiently similar to the one comparing. If they are deemed significantly higher in intelligence for example then their performance can be explained away whilst maintaining one's own sense of competence, a phenomenon dubbed the "genius effect" (Alicke et al., 1997). Upward comparison can produce different responses from different individuals mediated by a range of factors including age, gender, personality traits, self-esteem and values (Buunk et al., 2003). Higher rates of social comparison have shown broadly negative mental health relationships across a variety of populations and contexts, with downward social comparison often being engaged in, to bolster individual's self-esteem (Gerber, 2020). Social comparisons, whilst having evolved as a useful tool for social functioning (Festinger, 1954), can be manipulated by the individual to be self-serving or self-defeating. The aforementioned "genius effect" provides one example of the former, helping to explain away perceived superiority in others, whilst in other cases such as for those with eating disorders or depression, completely unrealistic, self-defeating social comparisons are often made (Gerber, 2020).

Social media provides extremely fertile ground for such social comparisons. Making upward social comparisons with not just "influencers" or celebrities (which may be affected by the "genius effect" (Alicke et al., 1997), but particularly with peers on social media, has been found to negatively impact life satisfaction over time (Frison & Eggermont 2016). Furthermore, upward social comparisons made with idealised bodies have been found to decrease body satisfaction and increase the risk of disordered eating and exercise behaviour (Lewallen & Behm-Morawitz, 2016). In addition to this, it appears upward social comparisons are more commonly made than downward comparisons on social media, something that reduces state self-esteem and leads to poorer relative self-assessments (Vogel et al., 2014; Spitzer et al., 2023). Whilst heavier social media users have been found to be more likely to believe that others are happier and have better lives than their own (Hawi & Samaha, 2017), this is not the case for all social media users, many of whom enjoy broadly positive experiences and enhanced wellbeing from social media use (Best et al., 2014). Users often use upward comparisons to their benefit, deriving learning and inspiration from them, whilst others may have a more envious reaction. The reasons behind these differences are not yet fully understood but may relate to one's self esteem in particular areas of their life, as well as different types of social media content and how it is used (Meier & Johnson, 2022).

Another theory used extensively in body image research, and that is particularly relevant with the added variable of social media is Self-Objectification Theory. Fredrickson & Roberts (1997) first posited "objectification theory" as a framework for understanding the experiential consequences of being a female that lives in a society that sexually objectifies women. They note that the portrayal of women, with a focus on bodies in media and culture, along with the normalisation of gazing (which is strongly skewed towards male to female), have led to internalisation from women of the observer's perspective of the physical self which thus leads to "self-objectification". This can also lead to feelings of shame when not feeling as though one is meeting cultural expectations, a concept touched on by Darwin (1872 p.326), "It is not the simple act of reflecting on our own appearance, but the thinking what others think of us, which excites a blush". Whilst this theory began and continues to focus on women, there is evidence that the objectification of the male body is also common (Rohlinger, 2002) and is a growing phenomenon (Bernard et al., 2018), growing in part because of social media (Boursier et al., 2020). The nature of social media, and particularly image-based platforms such as Instagram creates an environment where those higher in trait self-objectification spend more time (Fox & Rooney, 2015), and where self-objectifying behaviours are often rewarded through features such as "likes" and positive comments (Bell et al., 2018).

Self-Objectified images, along with other, less body focused posts on social media are regularly edited, carefully performed, and often convey what the poster wants to portray themselves as, in a

meticulously calculated way (Tiggemann & Anderberg 2019), even when claiming to appear as "raw" (Reade, 2020). This well-documented, heavily edited, "highlight reel" nature of social media can be problematic in leading viewers to believe that the lives of others are "better" than their own (Weinstein, 2017) in upward social comparisons that extend beyond bodies, to social status (Qi & Cui, 2018) and general wellbeing (Weinstein, 2017). One mechanism this may function through is the "availability heuristic" first posited by Tversky & Kahneman (1973) whereby our perception of something is often disproportionately based on our most available recollection of it. Social media provides easily recalled, positively skewed recollections of people (Weinstein, 2017) thus providing an unrealistic perception of others' lives and bodies. In addition to this, the correspondence bias (Gilbert & Malone, 1995) suggests that we infer stable personality traits from behaviours that are often situation specific. In the case of social media, seeing smiling faces for example, will often be interpreted as someone with a happy life rather than someone having a singular positive experience. Chou & Edge (2012) first postulated the importance of these cognitive biases in an investigation into Facebook use and wellbeing amongst undergraduate students. In support of these theories, they found that those who used Facebook more frequently and for longer durations agreed more that others were happier and had better lives than them and that life was less fair. With these theories and cognitive biases in mind, this review will now turn to the topic of fitness social media.

2.13 Fitness Social Media – Introduction

"Fitness Social Media", much like "Social Media" is not easily defined and whilst also prevalent across a range of platforms, may relate to a diverse range of social media presentations from sports ranging from athletics, swimming, boxing, football, tennis or golf (Tang & Cooper, 2018) to fitness practices from bodybuilding to jogging or yoga (Tiggemann & Zaccardo, 2015). Much work up to this date in this field has used the term "fitspiration" (Deighton-Smith, & Bell, 2018; Raggatt et al., 2018; Tiggemann & Anderberg, 2020). The term is an amalgamation of the words "fitness" and "inspiration" that claims to promote a fit and healthy lifestyle (Boepple & Thompson, 2016) but has increasingly been found to promote several problematic themes. These include self-objectification, idealised bodies, a preference for what fitness looks like rather than what it is and promoting unhealthy and extreme dietary and exercise practices (Yee et al., 2020. Raggatt et al., 2018, Tiggemann & Zaccardo, 2018). This presents several health risks including body image issues, disordered eating, physique related anxiety, self-esteem issues and depressive symptoms (Cataaldo et al., 2021). The effects of fitspiration content on men have been examined specifically, for example, in one study, Yee et al. (2020) looked at the impact of "fitspiration" or "thinspiration" images on men. "Thinspiration" is a movement that encourages weight loss, often in extreme and

disordered ways and has been prohibited by many websites and social media outlets. Findings indicated that whilst fitspiration images increased men's body dissatisfaction, thinspiration imagery decreased men's body dissatisfaction in their sample suggesting that the men in this group idolized the muscular ideal whilst actively shunning the "thin" ideal. This provides just one example amongst many showing the male drive for muscularity predominating a drive for thinness (although thinness and more specifically body fat are also of concern to men (Tylka, 2011)), something that may be exacerbated by "fitspiration" and related content.

2.14 Fitness Social Media and Body Image

The concept of the homogenous; lean, toned and (for males in particular) muscular body being the best representation of "fitness", has been highlighted in several studies. For example, Deighton-Smith & Bell (2018) conducted a content analysis of fitspiration imagery on Instagram and identified the idea that "fit is sexy" and that "a fit physique is the embodiment of a lifestyle and mindset" as two of their 6 key themes. Raggatt et al. (2018) noted in their sample of young adult Australian consumers of "fitspiration" social media content, that around a fifth of them conflated the idea of being healthy with the idea of looking healthy (which was associated with greater body dissatisfaction). Tiggemann & Zaccardo (2018) found homogenous slender toned females and lean muscular males were highly objectified and portrayed as desirable in their content analysis of fitspiration content. Together this research shows how "fitspiration" content places a heavy emphasis on an aesthetic version of fitness rather than the physiological and health components of fitness, and furthermore that this look is specific, consisting of low body fat and visible muscularity. Rounsefell et al. (2020) conducted a systematic review of social media use and body image in young (18-30) adults concluding that increased social media use was usually associated with higher body dissatisfaction. It is telling that of the 30 studies included in the review, 28 had samples that were exclusively or predominantly female, further demonstrating the need for more research examining male body image and social media. Previous research has also highlighted consistent differences in male and female fitness social media content, with depictions of men often being muscular and hyper muscular, whilst depictions of women are more often slender and are more likely to be sexualised (Carrotte et al., 2017).

Whilst the objectification of female bodies has a long history in culture and media (Fredrickson & Roberts, 1997), many of the aforementioned studies note that this is commonplace for males in fitness social media and "fitspiration" content (Tiggemann & Zaccardo, 2018; Yee et al., 2020; Marshall et al., 2020). Fatt et al. (2019) provided further support in their investigation on the exposure of fitspiration imagery on 118 male 17-30 year old Instagram users. A strong emphasis on

what fitness looks like was highlighted, and increased exposure to fitspiration imagery was associated with increased internalisation of the muscular ideal and appearance comparison tendencies and thus lower body satisfaction. Seekis et al (2021) found that objectification theory was a useful model for helping to explain the influence of social media on men's drive for muscularity. This demonstrates that objectification theory can be applied to both women and men, but that differences in how it applies to the genders (e.g. higher drives for muscularity in men) must be considered. The method used to identify user's day-to-day exposure to idealised muscular, male bodies however, highlights a limitation in much of the research on "fitspiration" content. The researchers asked how many times participants saw particular hashtags including "fitspiration" as a proxy method for determining their level of exposure to this type of content in an attempt to conceal the intentions of the study. Whilst hashtags have been identified as an excellent way to understand trends and themes across social media (Highfield & Leaver, 2015), according to Statista (2021), 28.7% of Instagram posts have no hashtags and 64% of posts have three or less hashtags, underlining their limitation when applied to individuals. In addition, whilst browsing social media, it is unclear how often people use hashtag functions or notice them when placed under posts. Further to this, the term "fitspiration" whilst featuring prominently in research is not necessarily an accurate representation of how most people use fitness social media. For example, a search for the hashtag "fitspiration" on Instagram displays 19.4 million posts whilst associated words "fitness" (467 million), "fit" (180 million) or "fitnessmotivation" (111 million posts) show much higher usage.

Moving away from the term "fitspiration" and into experimental research, one method frequently used is to expose a group to idealised body imagery, to ascertain changes in body image and related variables. For example, Paulson (2020) demonstrated a small increase in body dissatisfaction for young males when exposed to idealised muscular bodies on Instagram when compared to a control group viewing neutral images of landscapes and furniture, however in sharp contrast to this Carrillo (2018) found no significant differences between two groups of young males in very similar conditions, casting doubt on the small difference seen by Paulson (2020). Both studies contained convenience samples of undergraduates with Carrillo (2018) using 119 18-29 year old undergraduates and Paulson (2020) using 47 18-23 year old undergraduates. The small sample size of the later study limited the power of the sample and may in part explain these conflicting findings. Additionally, these study designs used acute, contrived settings and this lack of a "real world" environment may also have affected these differing results. Research has also begun to look at the influence of positive body image content on male and female body image, with research up to this point showing that this type of content appears more effective for reducing drives for thinness than muscularity (Fasoli & Constantinou, 2024), and more effective for women than men (Cohen et al.,

2021). This further highlights the need for more research and understanding of men's body image and the role social media may play. Whilst this area of research is growing, there are still several limitations with the current body and a number of areas that require further exploration. Lennon & Johnson (2021) noted that most research in male body image dissatisfaction has involved non-probability sampling due to its high convenience, and there is an overwhelmingly large amount of research done using white male undergraduates (18-25 years old) thus leading to a need for studies on the area involving probability sampling. In addition to this, they also note the lack of qualitative, phenomenological research with the vast majority being quantitative, hypothesis generating studies using questionnaires.

In summary, research investigating links between fitness social media and body image has tended to show that users and participants may experience increased body dissatisfaction in some cases or show no change in body dissatisfaction in others. Fitness social media (often termed "Fitspiration" in academic literature (Tiggemann & Zaccardo, 2018)) also often claims to motivate users to be physically active (Raggatt et al, 2018). Following this section, motivation as a concept will be explored in more detail, followed by an overview of SDT. This review will then return to fitness social media and examine the currently available research on fitness social media and motivation, in addition to body image.

2.15 Motivation – Introduction

The concept of motivation has a long and rich history and is primarily characterised by what moves us into action and what influences and moderates these behaviours (Peters, 2015). This is a concept that has been discussed and written about by scholars for centuries, particularly pertaining to the concept of free will (Harris, 2012). Graham (2020, p.1) defined motivation as "the study of why individuals behave as they do", with Hattie et al. (2020) builds on this definition to include why humans choose to do one thing, rather than another, noting the element of choice in behaviour. The association between motivation and wellbeing dates back at least as far as Aristotle (Aristotle, 2002) who crucially differentiated between Eudaimonic (living towards inner meaning and value) and Hedonsitic (immediate pleasure) wellbeing and motivations (Ameriks & Clarke, 2000), something that is particularly pertinent in the modern word with hedonistic opportunities readily available that often hinder more eudaimonic pursuits (Ryan & Martela, 2016).

One crucial example of this is physical activity, the necessity for which has been engineered almost entirely out of our lives (Katzmarzyk & Mason, 2009). Whilst not always immediately gratifying, physical activity is regularly deemed a meaningful and valuable pursuit, in large part due to its aforementioned physical and mental health benefits (Warburton et al., 2006; Lynch & Leitzmann,

2017; Lippi et al., 2020; Eaton & Eaton, 2017; Galper et al., 2006). In addition to this, it has been posited that motivation is the most important variable contributing to exercise participation and adherence (Rodrigues et al., 2020).

One of the earliest and most widely known theories of motivation is Maslow's Hierarchy of Needs (Maslow, 1943). Maslow argues humans are inherently good and strive for growth and development, with a hierarchy of needs established that must be met before more complex ones can be. Briefly, this order was 1. Physiological 2. Safety 3. Social 4. Esteem 5. Self Actualisation (Acquah et al., 2021). Whilst this theory has received a wide range of criticisms (Kaur, 2013), it has become one of the most influential theories of motivation directly influencing subsequent theories including Alderfer's ERG (Existence, Relatedness, Growth) Theory and McClelland's need for achievement, affiliation and power (Acquah et al., 2021). These theories have subsequently influenced the development of SDT (Gagné & Deci, 2005) which has grown to become one of the leading theories of human motivation and wellbeing in the last 20 years, being used extensively in several fields including education, work, relationships and physical exercise (Ryan & Deci, 2020).

2.16 Self Determination Theory – Motivational Orientations

SDT is an empirically based theory of human motivation, development and wellness (Deci & Ryan 2008). It provides a person-centred approach to motivation drawing on evolutionary psychology, neurology, developmental psychology and psychoanalysis, that ultimately looks at to what degree behaviour is self-determined (Ryan & Deci, 2017). Behaviours and motivations are not simply self-determined or not however, and a spectrum of motivation has emerged as seen in Figure 2.1.

Figure 2.1

The spectrum of motivation according to SDT.

Behaviour	**Not Self Determined ←----------→Most Self Determined**					
Type of Motivation	Amotivation	←----------Extrinsic Motivation ----------→				Intrinsic Motivation
Type of Regulation	No Regulation	External Regulation	Introjected Regulation	Identified Regulation	Integrated Regulation	Intrinsic Regulation
		Controlled self-regulation		**Autonomous self-regulation**		

(Adapted from Ryan and Deci, (2000))

As we move from left to right through this spectrum, motivational styles become more internalised and thus more self-determined. The middle four motivational orientations are grouped as "extrinsic", meaning behaviour is engaged in, in order to achieve another end, whereas intrinsic motivation refers to behaviours that are deemed valuable in and of themselves (Deci & Ryan, 2017). Another important distinction is between controlled and autonomous regulation, with autonomous regulation having an internal locus of causality (hence "self" determined) and controlled regulation having an external locus of causality (Deci & Ryan, 2017). A brief explanation of each style follows:

Amotivation reflects a lack of motivation towards a behaviour or goal. *External Regulation* is the least self-determined of the "extrinsic" motivational styles and pertains to motivation to avoid punishment or seek reward, for example when children perform a task to receive a treat. *Introjected Regulation* is a relatively controlling form of motivation where behaviour is regulated by internal sanctions or reward such as guilt and shame or ego motives, for example when people exercise to avoid feeling guilty. *Identified Regulation* is the first autonomously regulated motivational style where behaviour is identified as being valuable and meaningful to the individual, for example when someone identifies that their work is meaningful. *Integrated Regulation* is the most self-determined style of extrinsic motivation and occurs when an individual has fully integrated a motivation within themselves, for example when somebody exercises regularly because that has become part of who they are. *Intrinsic Motivation* is the most fully self-determined motivational style and refers to behaviours that are engaged in for themselves with no external gain, for example when children play simply because they want to (Deci & Ryan, 2008; Ryan & Deci, 2017).

2.17 Basic Psychological Needs

Another key facet of SDT that bears relevance to the present study is Basic Psychological Needs Theory. It states that there are three concepts essential for optimal psychological wellbeing: Autonomy, competence, and relatedness (Deci & Ryan, 2008). These have been supported by a wealth of empirical evidence, with even day to day transient fulfilments of these criteria found to significantly affect individual's wellbeing (Reis, 2000). These link very closely to the spectrum of motivation detailed above, as for behaviours to be fully internalised, they must adequately satisfy the individual's feelings of autonomy, competence and relatedness (Vansteenkiste et al., 2020). An Overview of the needs is provided in Figure 2.2

Figure 2.2

Basic Psychological Needs

	Autonomy	Competence	Relatedness
Definition	The feeling of authorship and control of one's actions and behaviours.	The ability to be effective in one's pursuits.	Meaningful relationships and a sense of belonging.
Fulfilment	A feeling of endorsement and control over one's life.	Having the necessary resources to attain goals and tangible improvements made.	Having unconditional, meaningful relationships with other people.
Frustration	A feeling of control from other people over one's choices that the individual does not endorse.	Not feeling able to achieve goals or progress.	Feelings of alienation and loneliness.

(Adapted from Deci & Ryan, 2008)

Vansteenkiste et al. (2020) suggested a list of criteria needed to be considered a basic psychological need, that are all fulfilled by the current needs. The need must exist independently of others, and individuals must be affected not only positively by its presence but also negatively by its frustration. These three basic psychological needs have been challenged. and suggestions for additions have been made including meaning, security, and self-esteem (Ryan & Deci, 2017), and more recently novelty (Bagheri & Milyavskaya, 2020), but none have yet stood up to the scrutiny of this inclusion criteria.

SDT takes the view that if these needs are fulfilled, humans will naturally seek growth, learning and connection with others (Ryan & Deci, 2017). This focus on human flourishing has led SDT to be described as a proto typical example of a positive psychology theory (Sheldon & Ryan, 2011). In contrast to this, the frustration of these needs can lead to a variety of potentially damaging compensatory behaviours (Vansteenkiste & Ryan, 2013). One strategy involves rigid behaviour patterns such as engaging in compulsive physical training or working for a predetermined amount of time each day which provides a sense of stability, security and predictability (Deci & Ryan, 2000).

Individual's self-worth can become wrapped up in the enactment of these scripts, and failure to live up to them can elicit feelings of intense guilt and self-criticism, whilst succeeding in doing so results in short term satisfaction and relief (Vansteenkiste et al., 2020). This thus puts such an individual at a high risk of contingent self-worth in so far as they feel they must live up to certain standards or attain particular outcomes (such as an idealised body image (Grossbard et al., 2009) in order to feel worthy (Vansteenkiste et al., 2020). There is evidence to suggest that need thwarting parenting styles and conditional approval throughout upbringing, is strongly related to these behaviours throughout the lifespan (Assor & Tal, 2012). Finally, it is not the absence of these needs that creates such problems, rather it is the frustration of these needs (incompetence rather than not feeling competent, feelings of rejection rather than not feeling related, and oppression rather than not feeling volitional) that predicts individual's ill being (Landry et al., 2016).

SDT represents one of the most comprehensive and thoroughly developed motivational theories available (Deci & Ryan, 2017) and has been used extensively in the field of sport and exercise motivation. A selection of this work will be reviewed, particularly in its relation to exercise motivation, followed by the application of SDT to body image and in particular, body image and social media.

2.18 Motivational Orientations and Exercise Motivation

Intrinsic motivation has been found to be positively associated with exercise participation and, crucially, long term adherence, in a range of studies on the topic, and this has been investigated with a variety of contexts and methods (Hagger & Chatzisarantis, 2007). Ryan et al. (1997) found that those participating in sports activities with a focus on enjoyment and competence showed much greater adherence to exercise than those in aerobics classes, who were primarily motivated by appearance and fitness motives. This is a finding that may bear particular relevance here given the strong emphasis on gym culture (where aerobics classes often take place) and extrinsic motivation in fitness social media (Johnston & Davis, 2019). Regarding how this may change throughout the lifespan, Brunet & Sabiston (2011) noted in their sample of 547 adults across young adulthood and middle age that younger adults displayed higher levels of intrinsic motivation towards exercise, however Dacey et al. (2008) found in a sample of 645 older adults (mean age 63), that exercise enjoyment was the most significant factor with regards to physical activity levels, more so than health and fitness, social/emotional benefits, weight management, stress management and appearance. The benefits of intrinsic motivation to athletic performance have also been demonstrated, for example Murray et al. (2021) found intrinsic motivation to be most strongly

correlated with physical strength in their sample of resistance trained undergraduates. Intrinsic motivation alone does appear to have its limitations however, as Edmunds et al. (2006) noted that whilst intrinsic motivation has frequently been linked to long term exercise adherence, in their study it was not related to strenuous exercise, adding that intrinsic motivation alone may not be enough for many to devote the necessary organisation, time, money and effort to regular exercise. It appears intrinsic motivation is most powerful when bolstered by identified and integrated forms of regulation (Vlachopoulos & Karageorghis, 2005).

Identified and integrated regulation are the most internalised forms of extrinsic motivation and have also been associated with exercise participation and long-term adherence (Standage et al., 2008). Teixeira et al. (2012) performed a meta-analysis of studies looking at Self Determination and exercise motivation and adherence and found a strong dose responsive relationship between the extent to which motivation was internalised and long-term adherence. This received support from Zamarripa et al. (2018) who examined the exercise behaviour of 530 Mexican children and adults using the transtheoretical model of behaviour change. Using the Behavioural Regulation in Exercise Questionnaire-3 (BREQ-3), they found that those in the preparation, action and maintenance phases of behaviour change were far more likely to be motivated by autonomous motivations (identified regulation, integrated regulation and intrinsic regulation), whereas for those at the pre contemplation or contemplation stage there was no such difference. This study also displayed a dose responsive relationship between more internalised forms of motivation and progress through the transtheoretical model. There were much greater differences found between the action and maintenance phases than between preparation and action for intrinsic, integrated and identified regulation (in a positive direction) and for introjected regulation (in a negative direction), implying habit maintenance commonly requires autonomous forms of motivation, with identified regulation here displaying the most powerful motivator to exercise at every level of the behaviour change pathway. Introjected regulation also diverged from the more internal forms of motivation at the later stages of the transtheoretical model, which is of particular interest as we consider the guilt, shame and appearance focused nature of the fitness industry which has implications for exercise adherence and body image (Hurst et al., 2017).

Introjected regulation is a motivational orientation that has a complex relationship with exercise participation, one that is prevalent in the exercise domain and that can be very powerful, particularly in the short term (Gillison et al., 2009). Ng et al. (2012) found in their meta-analysis of SDT applied to health contexts that introjected regulation was related to certain positive mental and physical health outcomes in the short term, however this was often accompanied by states of anxiety and dissatisfaction, and the evidence for its efficacy in the long term is much less substantial (Zamarripa

et al., 2018). It should also be noted that this study looked specifically at health practices including physical activity, diabetes care, abstinence from tobacco, and weight control, all of which can be affected by various forms of motivation, with introjected regulation, as aforementioned, a powerful controlling force in the short term. Further evidence of the short-term power of introjected regulation came from Guérin & Fortier (2012) who found introjected regulation to be most associated with positive affect following an acute bout of physical activity (a 30 minute run on a treadmill), indicating an immediate "feel good" or "relief" gained from performing exercise under the influence of introjected means. Fortier (2009) found in their sample of 218 male and female adults that "excessive" exercisers showed greater levels of introjected regulation than "healthy" exercises. This finding was caveated by the definition of "excessive" possibly not being strong enough with exercise dependency not being part of the definition. Introjected regulation was also higher amongst those with borderline excessive attitudes to exercise (but who did not engage in exercise as frequently), when compared to healthy exercisers. Whilst "excessive" exercisers also displayed higher identified, integrated and intrinsic motivation, the finding that introjected regulation was associated with excessive attitudes and behaviours towards exercise is concurrent with other research (Downs et al., 2013) and reflects the controlling nature of this behavioural regulatory style (Deci & Ryan, 2008). Excessive exercising may also be indicative of Basic Psychological Need frustration (along with a stronger focus on body image and appearance) and acts as a compensatory behaviour (Verstuyf et al., 2012). This highlights some of the potentially serious consequences of individuals being motivated by introjected means and will be discussed further in relation to how fitness social media promotes exercise participation in due course.

There has been evidence to suggest that there may be some gender differences with regards to the influence of introjected regulation, first identified by Frederick et al. (1996) in their study of 130 university students, finding extrinsic, introjected motives were predictive of exercise adherence in men only. Body related motivations (relating to one's appearance such as weight or muscularity) were directly predictive of days per week spent exercising in men, and whilst there was little inherent pleasure derived from these motives, they were clearly a powerful force for controlling behaviour. These results must be placed in the context of the time, when male body image concerns were not as prevalent as they are today (Monocello & Dressler, 2020) and fitness culture and male and female experiences and motivations for exercising were different. One reason for this difference may be that introjected motives for males more often centre around ego and competition whilst female introjected motives more often relate to appearance as identified by Zervou et al. (2017) in their sample of 306 adult exercisers in Athens, Greece.

To what extent these differences reflect biological differences and sociocultural differences is difficult to ascertain. The ideas of sport, competition and training are still more culturally acceptable and prevalent for males (Cooky, 2018) and it may be that this environment contributes to the internalisation of these habits by males to a greater extent than for females, leading to greater overall exercise participation and in particular, high levels of ego/competition motives. In addition to this, with females being the choosier sex with regards to mate choice throughout our evolutionary history (Geary et al., 2004), males may have evolved to thrive more on competition as this predisposition is likely to have been rewarded in the gene pool (Baldauf et al., 2018). A similar hypothesis can be made for the consistent finding that women are more likely to be motivated by appearance concerns than men (Zervou et al., 2017). This also reflects a difference in societal expectations for appearance (with some evidence to suggest this discrepancy is closing (Galioto & Crowther, 2013; Murry et al., 2013) with women much more likely to internalise the frequent encouragement to look a certain way and for this to be a priority in their lives (Chrisler & Johnston Robledo 2018). Similarly, evolutionary psychology has shown that males are likely to place a heavier emphasis on appearance in mates (due to females also placing emphasis on resource provision, likelihood of paternal care and social dominance in a mate (Rosenthal, 2017), providing a potential evolutionary explanation for this phenomenon.

Whilst this distinction between different motivational orientations is a key strength of SDT and helps to understand motivation in a complex manner it is important to understand the limitations of this moving forward. Motivations for any behaviour are rarely singular (Howard et al., 2020). Motivations for a behaviour often contain both autonomous and controlled motivations, and the strength of these vary. The measurement tools used in this thesis do attempt to take this into account and will be discussed in more detail in Chapter 3. Taken as a whole, this body of research shows clear associations between autonomous forms of motivation and enhanced wellbeing, and long-term exercise behaviour, and between controlled motivations and poorer wellbeing and less consistent long term exercise behaviour.

2.19 Basic Psychological Needs and Exercise Motivation

Moving back to a focus on Basic Psychological Needs, exercise provides an environment whereby the needs of Autonomy (through internalised motivation and choice such as choosing to exercise because one deems it valuable), Competence (through improvement, and the completion of actions one deems valuable, such as seeing tangible improvements in one's physical fitness) and Relatedness (through social interactions such as training with a partner or playing sports as part of a team), may be met although the satisfaction of these needs requires the correct conditions for this

to take place (Kirkland et al., 2011). Teixeira et al. (2012) found in their systematic review of physical activity, exercise and SDT, that whilst perceived competence consistently showed a positive association with physical activity, the relationship with autonomy and in particular relatedness, was more mixed. For multivariate analyses, only competence showed a significant positive relationship with physical activity across the 17 available studies, however correlational analysis did reveal an even stronger pattern for competence, somewhat less so for autonomy and no significant association for relatedness. Possible explanations for this could include the exercise contexts, with many of the participants exercising alone (blunting relatedness), and the potential mix of motivational orientations that contribute to exercise participation covered in the previous section (blunting autonomy). In addition to this, there was a wide range of tools used, with different scales, and a mixture of quantitative and qualitative analyses, not allowing for direct comparison of results between studies.

Whilst relatedness appears to show the weakest positive relationship with exercise adherence of the three basic psychological needs (Teixeira et al. 2012, Teixeira et al., 2018), it may play a crucial role in exercise motivation in other contexts. Divine et al. (2019) found in their investigation of Facebook and exercise motivation, that relatedness mediated the relationship between Facebook use and positive, autonomous forms of motivation (as well as introjected regulation), which supports work pertaining to the positive effects of using social media in an active capacity (Weinstein, 2017; Rozen et al., 2012; Ryding & Kuss 2019; Verduyn et al., 2017). It was also suggested that social media could be used as a powerful tool for exercise motivation through groups and other physical activity supportive environments on their platforms, which is of particular concern to the present research.

2.20 Self Determination Theory and Body Image

SDT has also been applied to body image research and its related areas in several studies (Verstuyf, 2012; Thøgersen-Ntoumani, 2011), however most of this work has been applied to females with very little work available up to this date in men, and particularly with regards to men and muscularity (Selvi & Bozo, 2020). Motivational orientations and basic psychological need satisfaction have potentially interesting and highly consequential relationships with drive for muscularity and muscle dysmorphia, the current evidence for which will be explored here.

In their investigation of drive for muscularity in a sample of 175 male bodybuilders in Switzerland, Chaba et al. (2019) found that autonomous motivation showed a non-significant negative relationship with attitude to gain muscle mass, whilst controlled motivation showed a significant positive relationship. In addition, controlled motivation was significantly directly related to drive for muscularity, whilst autonomous motivation was indirectly related to drive for muscularity, mediated

by perceived behavioural control and intention to gain muscle mass, which helped establish a clear link between higher drives for muscularity and more controlled motivational orientations. This is concurrent with other research that higher autonomous motivation and perceived behavioural control are protective over some of the more damaging behaviours that can come from sport and exercise (Hagger & Chatzisarantis, 2009) including doping (Chan, 2015) which is a key facet of Muscle Dysmorphia (Rhea et al., 2004). These results showed similarities with further research by Edwards et al. (2016) who found autonomy moderated the direct effect between perceived pressure and internalisation of the mesomorphic ideal in a negative way, however strengthened the indirect pathway via drive for muscularity in a sample of 330 undergraduate male sports students. These findings are in accordance with SDT and show autonomy to have a protective effect against perceived pressure from external sources (notably those from the tripartite model), whilst enhancing drives that appear to come in the absence of external pressure and emanate more from within. The authors note that future interventions aimed at reducing the potentially dangerous effects of strongly internalising the mesomorphic ideal may look to take a two-pronged approach, focusing on reducing the drive for muscularity whilst also looking to increase autonomy. This may also have consequences with regards to social media usage, as more autonomously orientated people have been found to engage in less social comparison, have a more stable sense of self, and report less stress and more adaptation to stressful and potentially threatening (including body image threats) situations (Neighbors & Knee, 2003).

Drive for muscularity was conceptualized by Selvi & Bozo (2020) as an extrinsic motivation, hypothesising that such drives often emanate from a frustration of basic psychological needs, both in developmental years and in the present, an idea for which there is evidence regarding female body image concerns and related behaviours (Strauss & Ryan, 1987; Verstuyf et al., 2013). Whilst attempts were made to diversify their study sample in Turkey from just university students, ultimately 87% of the 245 participants were students, with others drawn from bodybuilding forums in the wider community. Results showed that needs frustration had a significant positive direct effect on muscle dissatisfaction and a positive indirect association (via drive for muscularity) with bodybuilding dependence, muscle checking, substance use and injury, linking closely to previous work conducted in females around needs frustration and body dissatisfaction (Verstuyf et al, 2012). This ultimately showed needs frustration had a significant positive effect (either directly or indirectly) with every facet of muscle dysmorphia. This work closely links with “threatened masculinity” research in that a lack of security in one’s masculinity in this instance has been linked to higher drives for muscularity. In addition, autonomy and competence are core components of

masculinity (Garlick, 2016) and may help to represent significant overlap in these two fields of research.

Frustrated relatedness had the most significant effect on Muscle Dysmorphia symptoms of the three basic psychological needs when examined by Selvi & Bozo (2020) and particularly on muscle dissatisfaction in those with lower drives for muscularity. This finding may in part be explained by elements of attachment theory (Bowlby, 1969) whereby insecure attachments with primary caregivers in childhood lead to anxious attachment styles that involve approval seeking and a more negative view of the self, leading to a greater risk of body image disorders (amongst other conditions). These results concur with previous work and hypotheses developed by SDT (Ryan & Deci, 2017). When needs are consistently frustrated, compensatory strategies are often engaged in, to prove worth to oneself and others. This may manifest itself in a variety of external ways including the accumulation of wealth, fame or a "perfect" body (Thøgersen-Ntoumani et al., 2018). Perfectionist tendencies often flow from this context, with individuals setting unending higher and higher standards, with failure not being tolerated and success acting as a short term and ultimately unfulfilling substitute for basic psychological needs (Vansteenkiste & Ryan, 2013). A high drive for muscularity, and in extreme cases, Muscle Dysmorphia, is one possible compensatory mechanism of needs frustration (Selvi & Bozo, 2020), and that this is likely to occur under conditions where muscularity is something that has been valued by the individual (Kernis, 2003).

2.21 Social Media, Body Image, Exercise Motivation and Fitness Social-Media

A small number of studies have begun to look at the effects of fitness social media on body image and exercise motivation, but with mixed results and contrasting methods. Robinson et al. (2017) found that exposure to "fitspiration" imagery, decreased body satisfaction in their sample of female university students, consistent with many previous studies (Tiggemann & Zaccardo, 2015; Tiggemann & Slater, 2019; Homan et al., 2012; Raggatt et al., 2018) but found no effect on exercise motivation. Exercise motivation in this context was measured by participants being asked to run on a treadmill for ten minutes at a speed of their choosing after exposure to imagery. It is unlikely this contrived and short-term protocol would reflect any meaningful effects on exercise motivation from these images as it does not represent a naturalistic way of exercising, whilst failing to understand the link between motivation and physical activity. The participants did however show increased "inspiration" to be physically active after viewing fitspiration imagery. This theme was also evident in an investigation into male body image and exercise motivation by Fatt et al. (2019) who found whilst participants reported greater motivation to exercise after viewing fitspiration imagery, this did not

result in any change in exercise behaviour, and also in a more recent study of male and female students by Arigo et al. (2021), who saw increases in perceived exercise motivation but no increase in exercise behaviour, this time measured by visits to the university fitness facilities in the following 7 days. One possible explanation for this is a concept termed "vicarious goal fulfilment(/satiation)" whereby seeing someone else perform an activity partly replaces the actual act of doing it (McCulloch et al., 2011). This has also been seen upon viewing healthy food that can lead to viewers engaging in even less healthy behaviour upon seeing these images (Wilcox et al., 2009). Another hypothesis put forward by Fatt et al. (2019) is that the external, appearance-based motivation of fitspiration imagery is not sufficient to motivate people to change exercise behaviour. Work in the domain of SDT and exercise motivation would suggest that whilst external, appearance-based motivations are not associated with long term exercise adherence (Teixeira et al., 2012; Zamarripa et al., 2018), they can be a powerful short term motivator (Ng et al., 2012), particularly for men (Frederick et al.,1996, Zervou et al., 2017). This is supported by work from Fortier (2009) who found introjected regulation to be associated with excessive attitudes to exercise but not always with increased exercise frequency. This has not been examined in the available research to date directly investigating social media's relationship with body image and exercise motivation (Fatt et al., 2019; Robinson et al., 2017; Arigo et al., 2021). In addition to this, these studies show conflicting results regarding the effects of fitness social media imagery on body image, with no significant effects being detected for men by Fatt et al. (2019) or Arigo et al. (2021).

There are a number of methodological limitations in these studies which have all sought to detect effects on exercise motivation and body image in acute, experimental settings. Whilst helpful to detect acute effects in controlled conditions, these settings do not accurately reflect real life usage of social media (which is much more frequent but also mixed in terms of exposure type) and have only measured exercise behaviour in short term settings after single bouts of exposure to imagery, with more long-term effects on body image and exercise motivation requiring further research. Body image measures have not tended to be male specific in these studies and have not included drives for muscularity which may be particularly relevant to fitness social media, and its high volume of posts containing muscular men. In addition, the imagery used has still been drawn from "fitspiration" content, the limitations of which have been addressed above. Exercise motivation has been measured in rudimentary ways with some studies asking a single question to ascertain motivation. The effects of fitness social media on different types of motivation has not been examined in these cases, and the application of SDT to this area may help to provide greater insight. Finally, all the studies mentioned here used undergraduates for research, something common throughout this field, with research into broader populations currently lacking.

Chapter 3-Methodology

3.1 Introduction

This chapter will begin with the ontological and epistemological positions taken for this thesis, with an explanation and elaboration on this position. This is followed by an outline of the overarching methodology taken throughout the PhD which included a mixed methods approach, with further elaboration on the use of this. This is then followed by an overview and exploration of the different methodological considerations required for each of the three study phases of this thesis. Ethical considerations for these studies follow, with methodological reflexivity concluding this chapter.

Each data chapter (Chapters 4,5,6 and 7) contains a methods section detailing the respective participants, procedure, materials used and statistical analysis. Rather than repeating these details here, this chapter will provide broader contextual information and background that helps to explain why these decisions were taken, as detailed above.

3.2 Philosophical research position

The philosophical approach adopted for this PhD is one of pragmatism. Pragmatism understands there are differing metaphysical approaches to knowledge and understanding but seeks to exist outside of these traditional approaches. Pragmatism notes that all these approaches exist in a social context and their conflict and individual axioms may themselves be limiting when approaching research (Morgan, 2014). For example, post positivists believe that the world exists apart from our understanding of it, whilst constructivists believe the world is created by our conceptions of it (Guba & Lincoln, 2005), whereas pragmatists would acknowledge both assertions are equally important claims about the nature of human experience (Morgan, 2014). Critical realist and post positivist positions were considered as philosophical positions to be taken when approaching this PhD, however, neither were deemed fully appropriate, which led to a deeper exploration of further ontological and epistemological positions, and ultimately the adoption of, pragmatism.

Pragmatism is primarily concerned with the practical effects of questions about the world and thus how our conceptions of them constitute these practical implications (Bacon, 2012). This allows the pragmatic approach to be more flexible than positivism or constructivism and acknowledges that different methods are required depending upon the questions being explored (Feilzer, 2010). This makes it a position particularly well suited to supporting mixed method research (Parvaiz et al., 2016). For the purposes of this PhD, applying different methodological approaches allows for the collection of different types of evidence that help to explore and describe the phenomena in a more

detailed and complete fashion. Quantitative methods are associated with more a positivist approach, whilst qualitative methods are associated with more constructivist approaches (Bishop, 2015). Pragmatism offers an approach that subverts this objective/subjective dualism, maintaining that there are a wide range of ways in which we can attain knowledge from varied experiences and methods (James, 2001).

Pragmatism believes that reality is not static and is in a constant state of becoming and thus flexibility is an essential part of moving toward a better understanding of phenomena (Kaushik & Walsh, 2019). This idea is particularly appropriate when working in the in the field of social media research, where changes to the nature of social media and how it is used are occurring constantly (Nilsson et al., 2022). Pragmatism also holds that our experiences and actions are the result of shared social world views, but also that no two people will have identical experiences (Morgan, 2014). This bares relevance to research in social media where different individuals will have completely different responses to the same types of content, in addition to different individuals also having idiosyncratic behaviours on social media (Dolan et al., 2015). For investigating the experiences and impact of social media on individuals, quantitative methods can help to show trends, but individual experience is lost and can only be explored meaningfully using qualitative methods (Prosek & Gibson, 2022).

Pragmatism represents not just an epistemological and methodological position, but also a flexible social ontology, centrally focused on the transactional relationship between individuals, their acts, and the environment around them (Pratt, 2016). This makes it well-suited to social media research where the relationship between individuals and platforms used is bi-directional (Andrews et al., 2020). Pragmatism finds it inherent in human capacity for constant innovation, allowing for a freedom of movement and action based on the results of previous experience, allowing for the use of multiple methods without the constraints of other ontological positions (Turner, 2006). In the context of the present thesis, this allows for social media experience to be investigated using cross sectional, qualitative, and experimental methods in order to attain a comprehensive picture of men's experience with fitness-based social media.

3.3 Mixed Methods Rationale

This thesis took a mixed methods approach to investigate how social media is related to body image and exercise motivation in physically active men. Mixed methods research includes multiple methods (often quantitative and qualitative) to address a research question (Dawadi et al., 2021). Whilst there exists debate around the distinction between multimethod and mixed methods, mixed methods combine different methods either sequentially or within the same study in order to answer

the same research question. This contrasts with multi methods where more than one method is used but with less of an intrinsic link and without qualitative and qualitative methods necessarily both being used (Anguera et al., 2018).

Chapters 4 and 5 (cross sectional) used a quantitative, cross sectional study design which directly informed Chapter 6 (qualitative) which used a qualitative, interview design that sought to build on the findings from Chapters 4 and 5 (cross sectional). Whilst Chapters 4 and 5 (cross sectional) are quantitative and Chapter 6 (qualitative) is qualitative, suggesting a multi methods approach, they were used together in an explanatory sequential design, exploring similar issues with different methodological designs to answer the same overarching research question, thus taking the form of a mixed method design of the overall thesis. Chapter 7 (experimental) used an experimental design containing both quantitative and qualitative methods within the same study representing a mixed methods study in itself. Mixed method approaches are able to provide a more complete and detailed investigation than using purely qualitative or quantitative methods (Schoonenboom & Johnson, 2017) and were thus used to explore men's experience of fitness based social media in a variety of ways.

Quantitative survey methods are commonly used in social media research (Kapoor et al., 2018) and allow for the collection of large sample sizes in a fast, efficient and non-intrusive way (Jarman et al., 2022). This made this type of method suitable for Chapter 4 and 5 (cross sectional) of this thesis, providing a means of collecting a large amount of data from a large population on subjects that had not been previously directly investigated in this demographic. Quantitative survey methods do have limitations, including the reliability of self-report measures (and in particular, social media use, self-reporting) (Jarman et al., 2022)) and their inability to determine cause and effect mechanisms. They are thus often used as exploratory, hypothesis generating studies (Snelson, 2016). This was the case in the present thesis as the first two studies explored men's social media use and its associations with body image (Chapter 4) and exercise motivation and behaviour (Chapter 5). Experimental methods can more accurately establish cause and effect in social media and body image research (deValle et al., 2021) and were used for the final study of this thesis (Chapter 7), however they are limited given the difficulty in accurately mimicking the ever-changing, real-life experiences of social media (Fardouly & Vartanian, 2016). Another limitation of experimental and cross-sectional survey research is the reduction of user's experiences to numbers, scales and statistics, with their failure to capture nuance and the detailed experiences of using social media and one's relationship with one's body (Jarman et al., 2022). Qualitative methods, and in particular, in depth, semi-structured interviews are able to gain rich, detailed information from the participants perspective that cannot be captured using quantitative methods (Choy, 2014). They were thus used to build on the findings

of the first study in this thesis and are covered in Chapter 6 (qualitative). Qualitative, interview methods also have their limitations, including their time-consuming nature and the lack of statistical generalisability of the findings derived from them (Queirós et al., 2017). They do however provide other forms of generalisability allowing for the views of specific populations and of concepts and stories that can be extrapolated to others in these populations (Smith, 2018).

Recent reviews have recommended mixed methods as a way of mitigating the limitations of specific methods and as a more comprehensive way of examining social media and body image (Harriger et al., 2023). The present thesis employed an explanatory sequential design which has been used in previous social media and body image research (Snelson, 2016). This allows for quantitative findings from the first phase to be explored in more detail in the qualitative second phase (Toyon, 2021). The data collected from these phases was then used to inform a final experimental study to test the hypotheses, trends, and results generated from the quantitative and qualitative phases. This study contained an explanatory sequential design within: first reporting the quantitative findings and then using the qualitative analysis to help explain and add detail to the quantitative findings.

3.4 Methodological Considerations for each study

3.4.1 Quantitative Study 1 (Chapters 4 and 5)

The first study conducted as part of this thesis was a cross sectional, quantitative survey about men's use of social media, their body image and motivation to exercise. Due to the volume of data collected in this study, it was divided into two papers which form Chapters 4 and 5 of this thesis. These chapters contain an explanation of the methods used for this study which will not be included in detail here. To determine which measurement tools would be best to use in this study, several options were considered and critically reviewed to allow the selection of the most appropriate tools. An overview of this process follows with a critical analysis of the different options, and the rationale for why the measures that were included in the study were chosen.

3.4.2 Aspects of Social Media Use and Measurement tools

Most earlier research investigating social media use in relation to wellbeing and body image used only time and frequency as measured variables, with both variables associated with higher rates of body dissatisfaction in a systematic review by Holland & Tiggemann (2016). Many of the studies included in this review were conducted over ten years ago and relate to some earlier forms of social media such as Myspace, and many look at Facebook which has now become less popular amongst younger groups (DeLegge & Wangler, 2017; Harriger et al., 2023). In addition, other research also

failed to find a relationship between time on social media and mental health concerns (Ferguson et al., 2022), or body image concerns (Kim & Chock 2015). A more recent meta-analysis by Saiphoo & Vahedi (2019) noted that whilst there was a small negative effect found for the influence of social media on body image amongst their sample of 56 studies, it was smaller than expected with several studies showing null or even positive effects on body image from social media. Time on social media is a rather 'blunt' measure and fails to capture how people use social media which is crucial for understanding how it affects body image. Therefore, it was determined that more nuanced measures would be required to provide a more informative picture of social media use in the first study of this thesis.

One of the more in depth ways in which social media has been measures is with active and passive social media use (for a more comprehensive overview of these terms see Chapters 2 and 4). A measure for specifically passive social media use was created by Gersen et al. (2017) called the Passive Active Use Measure (PAUM) for Facebook. This work found that a three-factor model best fit their data of: Active social use (messaging and commenting), Active non-social use (tagging, sharing links and video posting) and Passive use (viewing other's content without interaction). This scale provides a more specific measure for passive use compared to other measures which is a major strength. This scale also has its limitations, notably that it was developed specifically for Facebook and has limited applicability to other platforms. In addition to this, users may engage in all three types of use in a single session, and as yet, a universal, validated tool for type of social media use has not been created (Trifiro & Gerson, 2019).

Further complications between active and passive social media use and body image have been found in the literature. Hogue & Mills (2019) found that active engagement with "attractive peers" by young women, led to worse body image outcomes whilst engagement with family members (not deemed more attractive than the individual) did not lead to worse body image outcomes, a finding in line with Social Comparison Theory (Festinger, 1957). This highlights the differences between what content and which people individuals are actively or passively engaging with is another factor influencing social media's impact on body image. Kim & Chock (2015) found that "social grooming" (relationship maintenance and social information seeking) activities including viewing and commenting on peer's profiles was positively associated with appearance comparison and drive for thinness (but not drive for muscularity) in males and females. Questions pertaining to "social grooming" asked about participant's viewing and engaging in peers and acquaintance's profiles (e.g., "How often do you visit the profiles of close friends? How often do you leave comments on the profiles of acquaintances? How often do you browse around, check profiles of people not in your network?") Whilst informative, these questions include behaviours that would be defined as both

active and passive and thus do not help to understand which of these, if either, were contributing to the significant findings. These studies indicate that certain types of active social media use may be harmful for body image, particularly those that involve social comparison, and particularly with those deemed attractive, or "more attractive" than the viewer (Hogue & Mills, 2019; Kim & Chock, 2015). This was important in informing the design of the questionnaire in Chapters 4 and 5, and specific questions about active and passive use were contained in addition to specific questions about fitness social media use. For the purposes of this study, Active social media use was defined by any use that involves communicating with another individual or account, whilst passive use was defined by the consumption of content without any direct communication with others (Yang et al., 2021). The exact items created for active and passive social media use measures are discussed and included in the methods section of Chapter 4.

To understand the types of content users consume on social media, research has tended to focus on direct yes/no questions such as "I visit websites/blogs/Facebook/Twitter etc. to gather information about. …". Participants will then confirm whether different options such as fashion, cosmetics/skin care, hair, fitness/exercise, weight loss/dieting, plastic surgery apply to them (Lee et al, 2014). Another example from Carotte et al. (2014) asked "Do you like/follow any of the following types of pages on Facebook, Instagram, or Twitter?" with the options of: Weight loss/fitness motivation profiles (e. g., personal trainers, athletes, fitness models), Cleanses or detoxes (e.g., juice detox) or Diet plans or weight loss/fitness challenges (e.g., I Quit Sugar, Michelle Bridges 12WBT, Kayla Itsines Bikini Body Challenge) available. This type of specific question, tailored to the research question and the population demographic being investigated may have additional utility for specific populations, and helps to explain the lack of universal social media use questionnaires. The use of closed questions, particularly with binary yes/no answers is a limitation, however, as it does not allow for differentiation of frequency and intensity of usage and makes assumptions about specific social media content. For the questionnaires used in this thesis, binary yes/no questions were avoided, and open questions, or multiple choice questions that allow for a spectrum of answers were used.

For the first study included in this thesis, it was decided to investigate active and passive use social media use. Active social media use was defined as being any use that involves communicating with another individual or account, whilst passive use is defined by the consumption of content without any direct communication with others (Yang et al., 2021; Thorisdottir et al, 2019; Escobar-Viera et al, 2018). Whilst the questionnaire was to be asked about overall social media use, the most popular social media platform for this demographic (males aged 18-50) in the UK is Instagram (Statista, 2023) and thus the questions were phrased to capture usage on all platforms but with this platform in mind. For a full overview of the exact questions used please see Chapter 3 and appendix 1.

Whilst limited on its own (Kaye, 2021), overall frequency of social media use was chosen to be included alongside the more nuanced measures, particularly as this could be ascertained with a single question. Little research has investigated the impact of different social media platforms on body image or exercise motivation. Therefore, an item was included to determine how often participants used specific social media platforms. To investigate fitness social media use, two items were included differentiating between engaging with the fitness content of friends and peers and that of specific fitness social media accounts of influencers, celebrities and brands. Whilst previous research has often investigated terms such as "fitspiration" (e. g., Deighton-Smith & Bell, 2018; Raggatt et al., 2018; Tiggemann & Anderberg, 2020), it is common for individuals to engage in fitness based social media in their own peer groups (e. g., Piatkowski, 2021; Chatzopoulou et al., 2020; Reade, 2020). It is not known if there are different effects from these different types of content and thus different items were included to be able to investigate this. Additionally, the term "fitspiration" is not known or used by many people and thus more self-explanatory terminology was used. Participants were thus asked about "fitness social media accounts" and "friend's fitness social media" to avoid these issues.

3.4.3 Self Determination Theory in the exercise context

SDT was decided on as a conceptual framework for the motivation component of this thesis (for more detail on this see Chapter 1). There are several measurement tools that have been developed for measuring motivation in the SDT context. Relevant measures will be critically reviewed below in relation to the present thesis.

The third version of the Behavioural Regulation in Exercise Questionnaire (BREQ-3) is a widely used questionnaire that measures exercise motivation through the lens of SDT (Cid et al., 2018). This tool was used in the first and final studies in this thesis. Primarily, this was chosen as it is an exercise specific measure of motivation, in contrast with some of the other more general SDT questionnaires such as the General Causality Orientations Scale (Deci & Ryan, 1985). The General Causality Orientations Scale was originally developed by Deci and Ryan (1985) as a means of assessing individual's general motivational orientations (Autonomous, Controlled and Amotivated) and has subsequently been refined, validated and used in many studies (Hagger & Hamilton, 2020).

Studies that have looked at body image and exercise motivation from a SDT perspective have tended to use the more exercise specific BREQ-3 (Thøgersen-Ntoumani & Ntoumanis, 2007; Chaba et al., 2019; Brunet & Sabiston, 2011) or focus on links to Basic Psychological Needs thus using the Basic Psychological Need Satisfaction and Frustration Scale (Selvi & Bozo, 2020; Brichacek et al., 2018; Liu et al., 2020) with only Liu et al. (2020) of the aforementioned studies also looking at General

Causality Orientations. An exercise specific Basic Psychological Needs tool: The Basic Psychological Needs in Exercise Scale (Vlachopoulos & Michailidou, 2006) was developed to specifically test the satisfaction and frustration of the three basic psychological needs in exercise contexts and has been used in a wide variety of contexts and populations (Teixeira et al., 2012). For the present thesis, the main research question regarding motivation pertained to the relationship between fitness social media and exercise motivation and thus basic psychological needs questionnaires were not deemed the most appropriate for investigating this particular topic.

The BREQ-3 also assesses all the 6 motivational orientations developed in SDT (Ryan & Deci, 2000), allowing for a detailed assessment of exercise motivation. This contrasts with another exercise specific measure The Exercise Causality Orientations Scale (Rose et al., 2001) which looks at whether the orientation of causality for exercise is Autonomous, Controlled or Impersonal. This does not allow for as much detail as the BREQ-3, and has subsequently not been used as frequently in subsequent years. There also exists a Behaviour Regulation in Sport Questionnaire, which looks at motivation toward sport specifically, rather than exercise overall (Rodrigues et al., 2020). Given the present thesis was looking at "exercise" and not sport specifically, this was also not deemed the most appropriate measure.

3.4.4 Body Image Tools in Men: Drive for Muscularity

As discussed in Chapter 1, body image concerns the thoughts, feelings, perceptions and behaviours individuals have regarding their bodies (Cash & Smolak, 2011). It was important to include measurement tools that would capture these components of body image. In addition to this, with many body image tools being designed initially for females (Quittkat et al., 2019), it was important that the tools used were appropriate for a male sample. This section will give an overview of the body image tools used in the first study of this thesis.

3.4.4.1 Drive for Muscularity

Given the aforementioned importance of muscularity to male body image (see Chapter 1), it was deemed important to include a muscularity oriented measurement tool. The "Drive for Muscularity" is a term coined by McCreary & Sasse (2000) who developed the initial measurement tool to measure this. Since then, several questionnaires have been developed to measure drive for muscularity including The Drive for Muscularity Scale (McCreary & Sasse, 2000), the Drive for Muscularity Attitudes Questionnaire (Morrison et al, 2004), another Drive for Muscularity Scale (Yelland & Tiggemann, 2003) and the Swansea Muscularity Attitudes Questionnaire (Edwards & Launder, 2000). These scales were evaluated by Tod et al. (2012) who found support for the psychometric properties of all the scales which were significantly and highly correlated with each

other. The original Drive for Muscularity Scale (McCreary & Sasse, 2000) was chosen for use in the present thesis.

One notable advantage to the Drive for Muscularity Scale is the inclusion of behavioural items (in addition to attitudinal items) such as “I lift weights to build up muscle” and “I drink weight gain or protein shakes”. Other questionnaires ask exclusively attitudinal questions with the majority of statements beginning with “I think..” and “I feel..”. The behavioural components of this scale help to address the behaviours towards one’s body, which have been identified as a key component of body image (Cash & Smolak, 2011). This strength of this scale when compared to other Drive for Muscularity scales was one consideration toward this scale being used in this thesis.

McCreary and Sasse’s (2000) Drive for Muscularity Scale is also the mostly widely used tool for measuring drive for muscularity (Ricketts et al., 2021) and has received validation in a wide range of populations (He, 2021). Despite this, some limitations are present in this tool. Questions such as “I try to consume as many calories as I can in a day” may fail to capture the experience of many with a high drive for muscularity who rarely try to consume as many calories as possible, and discriminate between muscle and fat gain, often with particular calorie and macronutrient targets. A question such as “I try to eat a diet that helps me to maximize my muscle building potential” may be better at capturing participant’s attitude to muscle building and without being unnecessarily exclusive. Tod & Edwards (2015) noted in their meta-analysis of studies using DM questionnaires that drive for muscularity had small to moderate relationships with exercise behaviour, exercise dependence, disordered eating, and supplement consumption in males. Therefore, it is important to consider the other variables that moderate this link. Finally, as with many related areas of related research, much of the work in this area and many of the validations of these questionnaires has been conducted with students (Edwards & Tod, 2014). When using older age groups and non-university based samples (as in this thesis), their validity may not be as strong, and this was tested for when used in the studies of this thesis.

Other measures that have been used to measure issues around muscularity less directly include The Sociocultural Attitudes Towards Appearance Questionnaire-4 Revised (SATAQ-4R) (Schaefer, 2017) which has been used as a means of identifying internalisation of the muscular ideal, particularly the muscular internalisation subscale from the male version of the questionnaire. This questionnaire draws on the tripartite model (Keery et al., 2004) with subsections on the influence of family, peers, and the media on body image in addition to attitudinal questions around muscularity and one’s appearance. The questions specifically use the term “media”, and no mention of “social media” is made although it is possible that social media may emphasise body ideals and pressures from

friends, family, and broader media (Suplee, 2016). The Physical Appearance Comparison Scale–3 (PACS-3; Schaefer & Thompson, 2018) looks more specifically at comparison to others and includes items surrounding comparisons with peers and media. Whilst useful in certain contexts, these measures do not address muscularity directly and were thus not deemed the most appropriate way of measuring the drive for muscularity concept.

3.4.4.2 Body Image Tools – Appearance Valence and Salience

In previous studies on body image, body satisfaction is often measured with as little as one question such as "How do you feel about your body image most of the time?" (with respondents answering on a scale from "very negative" to "very positive") (Women & Equalities Committee, 2021). This was not considered sufficient to measure the complexities of body image amongst participants in the present thesis. To do this, a more comprehensive and well validated measure was needed. The chosen tool to measure appearance satisfaction for the first study of this thesis was the Centre for Appearance Research Valence scale (CARVAL) (Moss & Rosser, 2012). The first study also used the Centre for Appearance Research Salience scale (CARSAL) (Moss & Rosser, 2012) to measure the saliency of appearance. A more detailed overview of these tools can be found in Chapter 1. Here, a brief discussion of other available tools will be provided alongside the rationale for why the CARVAL and CARSAL were used.

Several body image measurement tools have been created and validated including the Body Appreciation Scale (Avalos et al., 2005), The Body Acceptance by Others Scale (Swami et al., 2020), and The Body and Appearance Self Conscious Emotions Scale (Castonguay et al., 2014). They measure body image satisfaction in diverse ways and crucially are more applicable and sensitive to different populations (Thompson et al., 1999; Hausenblas & Fallen, 2006).

The Body Appreciation Scale was created due to a strong focus on the negative aspects of body image in other questionnaires and research at that point. It was designed as an attempt to also encapsulate positive attitudes towards individual's bodies such as appreciation, respect, acceptance and protection against threats (Avalos et al., 2005). This scale was constructed and validated using exclusively female samples and the original paper provides the suggestion of changing one particular item pertaining to "thinness" to "muscularity" when using the questionnaire with men. This scale has subsequently been used in men, although only with predominantly white, western students (Tylka, 2013). More neutral (without a strong focus on positive or negative aspects of body image) measures were ultimately chosen for inclusion in this study (CARVAL and CARSAL).

Castonguay et al. (2014) developed the Body Appearance Self Conscious Emotions Scale containing four subscales specifically looking at guilt, shame, authentic pride (pride in one's efforts) and

hubristic pride (pride in one's talents and abilities), thus focusing on both positive and negative emotions. The scale also maintains gender neutral language within the items, not specifically focusing on thinness or muscularity but rather the attitudes to one's body and appearance more generally. Men have been found to score more highly in both hubristic and authentic pride using this tool when compared to women (Alcaraz-Ibáñez et al., 2018), with the former associated with positive social and mental health outcomes with the inverse true for the later (Tracy et al., 2009). The focus of this questionnaire maps well onto SDT, although the themes of guilt, shame and pride skew heavily toward introjected regulation, and may not apply as well to wider motivations (Arvanitis, 2020). This scale is also long with 24 items, which presents a large burden on participants, particularly given they were completing this body image questionnaire alongside a range of other questionnaires and was thus not ultimately used.

Returning to the CARVAL and CARSAL, salience and valence have been shown to be conceptually independent and interdependent constructs (Moss et al., 2014). "Self-Evaluative salience" has been consistently associated with negative wellbeing outcomes (Jarry et al, 2019). These two questionnaires cover the two principal areas of attitudinal body image identified by Cash (1994) namely 1. The evaluation/affect of one's appearance often defined by degrees of satisfaction and 2. The salience, investment and importance of appearance as a concept to individuals. The tools are also shortest in length, compared to the aforementioned scales, thus reducing the load on participants. These scales are also free of gendered bias with no references to specific body parts, thinness or muscularity. Given the inclusion of a muscularity specific questionnaire (Drive for Muscularity Scale), it was deemed appropriate that other body image scales should be free from specific areas of concern. Additionally these scales appeared before the Drive for Muscularity Scale in questionnaires to avoid placing muscularity at the front of participant's minds when answering questions about their global feelings towards their bodies. The CARVAL and CARSAL are short, free of gendered bias, have been validated in male samples and cover the attitudinal component of body image comprehensively and were thus chosen for inclusion in Chapters 4 and 5.

3.5 Qualitative Methodology

Chapter 6 was qualitative in nature and aimed to add detail and explanation to the quantitative findings from Chapters 4 and 5. In particular, this involved providing men with a space to discuss their usage of social media and how they feel it relates to their body image and motivation to exercise. They were able to discuss the particular types of usage they engaged in and express their feelings about their body and their experience of exercise in ways that were unable to be captured using a quantitative cross-sectional methodology. Qualitative research of this type is well-

documented as being able to explore social phenomena in more detail and allowing individuals to express their experiences in their own words in a way that cannot be done with quantitative methods (Baškarada & Koronios, 2018). To allow for the experience and voice of participants to be heard whilst keeping the interview within the bounds of the research question, a semi-structured interview design was chosen (Kallio et al., 2016).

3.5.1 Interview Design

The interview was designed to begin with subjects that were likely to be less sensitive for participants, around their experience of physical activity, and as they became more comfortable and rapport was established, the interview then progressed to speaking about social media and then participant's relationships with their bodies. Establishing a rapport and a comfortable, empathetic and safe environment is crucial when conducting interviews on potentially sensitive topics (Dempsey et al., 2016) and this design was created with this in mind. Whilst interviews followed this structure, flexibility was allowed within this for participants to speak freely around the topics discussed and I often followed up on idiosyncratic conversations within these interviews. This is a key strength of semi structured designs as it allows for pertinent ideas to be explored as and when they arise and for the individual to be at the centre of the data (Adeoye-Olatunde et al., 2021). A draft script of the interview can be found in Appendix 2.

At the end of each interview, photo elicitation methods were used by presenting participants with three pictures from social media and asking for their thoughts and feelings about these images (a more detailed explanation of these images can be found in the method section of Chapter 5). Photo elicitation can allow for different responses than from using conversation alone, often bringing about different information, feelings and memories from participants (Harper, 2002). These were designed to understand the "in the moment" response from men towards typical forms of fitness based social media content. Photo elicitation using secondary source material (Jokela & Raento, 2011) were used as a means of stimulating discussion, helping the participants to feel at ease and also giving them a replication of the type of content men regularly view on fitness social media (Pyyry et al., 2021). These methods have been used successfully in the past to help facilitate qualitative research on social media and body image in different populations (Katzew & Azzarito, 2013; Bailey et al., 2021). For a more detailed explanation of the specific images chosen and why please see the method section of Chapter 6.

3.5.2 Thematic Analysis

Data was analysed using reflexive thematic analysis (Braun & Clarke, 2012). Thematic analysis provides a thorough and systematic process for analysing qualitative data that also allows sufficient flexibility to be tailored to specific data sets (Nowell et al., 2017). This flexibility also allows for thematic analysis to be applied with different theoretical frameworks (Clarke et al., 2015) and has frequently been used in research with a pragmatic underpinning (Bishop, 2015). Thematic analysis has received criticism for not being a particular method but a process for identifying patterns, however this conflates method (tools used to investigate a topic, for which thematic analysis is) and methodology (the broader conceptual frameworks underpinning research) (Terry et al., 2017).

The present study sought to follow the guidelines as outlined by Braun & Clark (2019) and analysed data in the following way:

1. Become familiar with the data
2. Generate initial codes
3. Search for themes
4. Review themes
5. Define themes
6. Write Up

In reality, the path was not this linear, with some steps needing to be revisited and repeated where appropriate, a practice accepted and recommended where required (Maguire & Delahunt, 2017). An overview of this process is detailed below.

Interview transcripts were transcribed by hand which allowed for me to spend more time with the data, immerse myself in it and get a greater understanding of it, whilst acting as an initial level of analysis. Following this, a more formal analysis was conducted, identifying codes working through from interview 1 to 20, noting the frequency of each code, and which participants this was relevant to. Upon coding all 20 interviews, they were reviewed again to ensure codes generated by later interviews were checked in previous interviews. Following this, the frequency of code appearance was noted, and codes were grouped into initial themes. These themes were then refined and revised over two phases of analysis and discussion with three other academics, ensuring their relevance to the research question, whilst also reflecting the voice, views and experiences of the participants. Three main themes were identified, which were then broken down into four sub themes for each. These sub themes were also reflected upon and refined over two phases of review both from myself and then in conjunction with 3 supervisors. This process involved making sure themes and sub

themes did not overlap, that sub themes existed suitably under the umbrella of their theme, and that the themes and sub themes addressed the original research question.

3.6 Experimental Methodology

Following the cross-sectional and qualitative studies comprising Chapters 4,5 and 6, an experimental study was designed to test some of the findings generated from the first three studies in addition to addressing some of the gaps these previous designs were unable to target. These three studies were able to show trends and relationships between social media use and exercise motivation, behaviour and body image, and also get an understanding of men's own experience of these relationships in their own words. What they were not able to do was establish clear causal relationships between these phenomena. Participants completed questionnaires about body image and exercise motivation before and after exposure to a set of social media images. Participants were also asked to provide written thoughts and feelings about each image. A more complete explanation of this is available at the beginning of Chapter 7.

Several designs were discussed including longitudinal designs, however due to time and resource constraints, a short exposure experimental study was ultimately implemented. Experimental methodologies are still far less common when assessing social media's effects on body image (Harriger et al., 2023), and most available studies use samples of mostly or exclusively female and undergraduate samples (Fioravanti et al., 2022; de Valle et al., 2021).

3.6.1 Intervention Design

To test the impact of different types of fitness based social media on body image and exercise motivation, an experimental design with pre and post image exposure measures of body image and exercise motivation was chosen. This was based on several previous studies that have examined the impact of imagery on body image in different contexts (Mulgrew et al., 2014; Tiggemann & Anderberg, 2020; Arigo et al., 2020; Murnen & College, 2019). Six images were chosen as a suitable number, as similar numbers have been used in previous studies (Yee et al., 2020; Mulgrew et al., 2014). Due to the length of the questionnaire, with pre and post test questionnaires to be completed, in addition to a qualitative component, it was decided not to exceed 6 images to reduce load on the participants and reduce the risk of poor-quality responses due to participant fatigue (Ghafourifard, 2024). It was decided that participants would write a brief paragraph under each image describing their thoughts and feelings about each image. This served two main aims: firstly, it ensured that participants were actively engaging with the images and not simply scrolling past them. This strategy has been used in prior research as a means of ensuring participants are engaging in the

intervention materials (Tiggemann & Anderberg, 2020). Secondly these responses provided qualitative data that could then be analysed to better understand participant's experiences of viewing fitness social media imagery. This is similar to the procedure used by Murnen & College (2019), although the combination of qualitative and quantitative data is novel.

3.6.2 Study Measures

A state body image measure was chosen for inclusion in this study in contrast to the trait style measures used in Chapter 4 (state and trait body image as concepts were defined in Chapter 1). This was to capture participants' feelings about their body image in the moment, in order to capture any short-term differences felt about their bodies before and after viewing the intervention images. There are far fewer state measures of body image available when compared to trait measures (Bardi et al., 2021). The Body Image States Scale (BISS) created by Cash et al., (2002) was chosen as the most appropriate tool for this study for several reasons. This is the most widely used body image state scale and has been validated using a range of population demographics (Bardi et al., 2021), including men (Diedrichs & Lee, 2010), and is 6 items in length. Given the large battery of questions and the requirement for participants to complete the questionnaires twice, shorter measurement tools were preferable. This reduced the risk of issues surrounding response quality in long questionnaires, whilst still assessing the required variables in a comprehensive manner (Rolstad et al., 2011).

Of the other limited state body image options, one included Visual Analogue Scales which have long been used as means of state mood and body dissatisfaction (Heinberg & Thompson, 1995) and have been used in female samples when investigating the effect of social media on body image (e.g., Fardouly et al., 2015). They have been used in men, albeit less frequently (Humphreys & Paxton, 2004; Tiggemann & Anderberg, 2020). These scales have been used less extensively when compared to the BISS and are limited by their presentation and the specific population being used to view them (Bardi et al., 2021), and ultimately the BISS was chosen.

For measuring drive for muscularity, no state measures were available. Changing the item phrasing of the Drive for Muscularity Scale (McCreary & Sasse, 2000) was discussed, however due to the extensive validation of the measure, it was decided to keep this measure as it is. This was also the case for measuring exercise motivation. The third iteration of the Behavioural Regulation in Exercise Questionnaire (BREQ-3) which has been covered earlier in this chapter was also used to measure exercise motivation.

3.6.3 Images used

The images used in this study were all taken from publicly available Instagram accounts and permission was sought for all images. The content of the images were chosen to represent : 1: Aesthetic focused body images (images where the appearance of the body is the most salient aspect), 2: Function focused body images (images where the functionality of the body is the most salient aspect), 3: Control images of landscapes. Images were chosen to represent commonly seen presentations on social media of lean and muscular men from fitness accounts with high engagement (over 1 million followers). More information on the process for the selection of specific images can be found in the methods section of chapter 7, and the images themselves can be viewed in Appendix 3.

3.6.4 Qualitative component

Participants were also asked to comment any thoughts and feelings they had about the images they were presented with. This was to gain qualitative data from the study that could help to enhance and explain the quantitative findings collected from the aforementioned pre and post-test measures (Bowen et al., 2017), thus employing an explanatory sequential design to help gain a greater insight and understanding as to men's responses to fitness social media content, (Toyon, 2021). This data was analysed using reflexive thematic analysis (Braun & Clarke, 2019), which has been discussed in greater detail earlier in this chapter in relation to Chapter 6. This was chosen as the most appropriate way of analysing this data as it was able to provide a means of displaying the perspectives of the participants whilst also building themes that could help to better understand what impact the images were having on men and how men responded to them (Deighton-Smith & Bell, 2018).

3.7 Ethical Considerations

Ethical approval was granted by Brunel University London's College of Health, Medicine and Life Sciences Ethics Committee ahead of all periods of data collection. For all studies, participants were provided with a Participant Information Sheet that comprehensively covered the aims and protocols of the study in addition to any ethical issues. Please see appendix 4 for copies of these. Participants also consented of their own volition to participate in each study after being fully informed about the study and their participation. There were several ethical considerations that needed to be addressed throughout these studies. These are discussed below.

Throughout all studies, one of the main ethical issues pertained to the potentially sensitive nature of answering questions about one's body image. To attenuate for this, participants were provided with

the numbers for support services relating to men's mental health issues at the beginning and end of the study. Additionally, the participant information sheet provided information about what participation required and what topics would arise. Furthermore, items within questionnaires pertaining to body image were taken from previously well-validated, and extensively used, questionnaires (McCreary & Sasse, 2000; Cash et al., 2002; Moss & Rosser, 2012).

Participants were made aware of their right to withdraw at any stage before their data was submitted and data was anonymised and stored securely on Brunel servers. Anonymity is an important feature of research both from an ethical perspective but also in helping data to be analysed and interpreted with the highest possible quality (Vainio, 2013). This is more straightforward to enact in quantitative research (such as in Chapters 4 and 5), when compared to qualitative research (particularly interviews such as in Chapter 6), where it is also ethically and methodologically important (Kelly, 2009; Vainio, 2013). For Chapters 4,5 and 7, which all used online questionnaires, participants were not required to give any identifying information and responses were submitted anonymously.

For Chapter 6 (qualitative), which involved interviews, care was taken to remove identifying information and any names and places mentioned in interviews were kept out of the final paper. Raw data was stored on secure University servers in accordance with university ethics guidelines but confidentiality was maintained. Recordings were deleted as soon as the transcripts of them had been made.

Where external images were required, as in Chapter 7 (experimental), permission was sought from all of the creators of the images, that were taken from publicly available Instagram accounts, in line with guidance provided from previous researchers in the field (Warfield et al., 2019). The chosen images were images freely available and visible on social media to any users. They did depict muscular and lean body types which may have caused some levels of distress in participants. Participants were made aware of this before the study began in the participant information sheet and contact details of support services were provided at the beginning and end of the procedure.

3.8 Reflexivity

Whilst it has been found that participants are more likely to take part in research they are interested in, thereby potentially affecting results (Glass et al., 2015), it is also the case that researchers themselves are often in this position, conducting research in areas for which they are an "insider". This has positive effects such as enhanced intellectual curiosity for the subject, but it can also lead to the biases and assumptions of the researcher being brought to their research (Mayer, 2008).

Researcher positionality refers to the ontological, epistemological, and social position of the researcher, and is particularly relevant in the social sciences (Holmes, 2020). Reflexivity involves not just the reflection on ourselves and processes, but a critical view of them that requires self-monitoring and self-responding to our thoughts, feelings and actions (Corlett & Mavin, 2018).

Considering my own perspectives, background and positionality, I approached this research as an insider, as somebody who fits the demographic of my study population and has a strong interest in, and experience with fitness social media, male body image and physical activity. I was therefore bringing biases and assumptions to this research, with the view that fitness-based social media was largely superficial and was contributing to men's body image concerns. Despite this, I did my best to approach this research with an open mind. I was aware that there had been limited research in this subject, with this population, and I was aware of the nuances around "fitness social media" (a broad encapsulating term that covers many types of exercise and presentation style), as well as the complexities of body image and physical exercise. I could not escape having had my own experience with my body, how I have felt about my body, what has impacted that, and how fitness social media and gym-based environments have affected my own body image.

Whilst I cannot entirely disentangle myself from these aspects of myself, I am able to have an awareness of them and how they may impact on my research in this field. This occurred frequently throughout this PhD, and particularly regarding the methodology of the studies. The design of questions in questionnaires and during interviews were areas I needed to scrutinise so as not to bring my own biases and assumptions to them. To achieve this, all questions were created based on previous empirical research to establish their rationale and were presented in as neutral a fashion as possible in an attempt not to lead participants in a particular direction (e.g.: "How often do you engage in the following behaviour on social media?" Or "How do you feel about your body?"). These questions were also reviewed by my supervisory team to provide more of an 'outsider's' perspective. In many cases, this did lead to small changes in the phrasing of questions to avoid them being leading. This was particularly the case in in Chapter 6 (qualitative), where some of my initial questions such as "do you find that social media…(motivates you to exercise/impacts your body image)" were leading, and were changed to allow participants to discuss their experiences more openly (e.g. "Tell me about your experience of social media").

There were similar issues that arose with the selection of images for the experimental study, whereby my initial pool of selections and my views on which were "aesthetic" focused and which were "functional" focused differed from those of my supervisory team. To overcome this and take

my personal biases out of it, images were scored on a scale of 1-10 by all 3 supervisors independently, with the 5 highest scoring images for each condition chosen for inclusion.

The interviews conducted in Chapter 6 (qualitative) themselves were sometimes in-person and sometimes online which also created a different experience for me as the researcher and invariably for the participants. Being in a confidential space but not in my home environment added a layer of formality to in-person interviews. However, in person interviews allowed for rapport to be built more quickly, when compared to online, helping to negate this formality after the initial few minutes of these interviews. Occupying the same physical space as the participants also provided a subjectively different experience, particularly when speaking about body image with our bodies more on display to each other than in online settings where just the head and shoulders are visible. When talking about body image, being in the presence of another body may have the potential to bring about body and appearance comparisons, particularly when I am a man interviewing other men about their body image. This has been demonstrated in prior research as a consideration for some men (Yager et al., 2013).

3.9 Following chapters

The next two chapters comprise two papers that were written based on the first cross-sectional quantitative study conducted in this thesis, and this came from the same phase of data collection. Chapter 4 examines the relationship between social media and body image, and Chapter 5 examines the relationship between social media and exercise motivation and behaviour. They are presented here as they have been submitted for publication as full self-contained papers and thus the introduction sections contain some repetition of literature that has already been reviewed in Chapter 1. This study was separated into two papers due to the volume of data collected and the logical division of subject matter. Chapters 6 and 7 have been written specifically for this thesis but follow the same pattern as being formatted as papers that can stand alone but do not contain repetition of the kind mentioned.

Chapter 4- Active and passive social media use: Relationships with body image in physically active men

Abstract

Little is known about how different types of engagement with social media (active vs passive) relate to body image in men. This study explored relationships between social media use (active and passive), body image and drive for muscularity in physically active men. A questionnaire containing measures of body image (appearance valence, appearance salience), drive for muscularity, and social media use was completed by 224 men aged 18-50. Results showed a negative relationship between active social media use and appearance valence. Active and passive social media use were positively associated with drive for muscularity and appearance salience. Passive social media use was predictive of higher appearance salience and drive for muscularity in linear regression models. These findings suggest social media may be linked to body image and muscularity concerns in men.

4.1 Introduction

Body dissatisfaction rates are high, with one recent survey in the UK finding 61% of adults felt negatively about their body most of the time (Women and Equalities Committee, 2021). Despite historically being seen as a female problem (Harriger et al., 2023), 53% of men felt negatively and 14% of men felt very negatively about their body most of the time, a higher proportion than for women. In a recent YouGov survey in the US, 51% of adults said they felt a pressure to have a particular body type, including 42% of men (Ballard, 2021). Further to this, 56% of men felt the media promotes an unobtainable body image for them (Ballard, 2021). These findings pose potential health risks, with poorer body image associated with a range of negative outcomes including disordered eating, depression, and other mental and physical health problems (Turk & Waller, 2020). Body and appearance dissatisfaction appears to be worsening, with a growing body of research showing links between social media usage and body dissatisfaction (Saiphoo & Vahedi, 2019). The present study aims to investigate the relationship between different types of social media use (active and passive use) and body image (appearance valence and salience) in physically active men. This introduction will begin with an exploration of the psychological literature about body image in men, followed by an examination of previous work that explores the relationships between social media and body image in this population. The terms “Active” and “Passive” social media will then be discussed and research in this area reviewed. The introduction concludes by explaining the unique

contributions of the present study to a growing body of literature in health psychology and cyberpsychology.

4.1.1 Body Image, Drive for Muscularity and Muscle Dysmorphia

Body image can be defined in several ways, with one classic definition by Slade (1988, p.20) describing it as "the picture we have in our minds of the size, shape and form of our bodies; and to our feelings concerning the size, shape and form of our bodies, and its constituent parts". More recent definitions explain that body image comprises of the thoughts, feelings, perceptions, and behaviors associated with the lived experience of having a body (Cash & Smolak, 2011). Body image can be defined and assessed in different ways, with two important aspects of body image being *appearance valence* (the extent to which someone evaluates their appearance in a positive/negative way) and *appearance salience* (the extent to which appearance and physical self is brought into conscious awareness) (Moss & Rosser, 2012). Research has demonstrated that appearance valence and salience are conceptually independent and interdependent constructs (Moss et al., 2014). Whilst numerous scales have been developed for measuring variations of appearance valence or body satisfaction, appearance salience has received less attention. Cash et al. (2004) demonstrated the importance of appearance salience in the form of self-evaluative salience (the importance of how one looks to oneself) and motivational salience (the importance placed on how one appears to others) towards one's appearance. Men who scored more highly in these measures showed greater levels of appearance dissatisfaction, greater internalisation of media ideals and more frequent dysmorphic body image emotions.

Traditionally, body image research has focused more heavily on women, and whilst this has begun to change, a large discrepancy in the volume of literature remains (Sklar & Rokusek, 2018; Harriger et al., 2023). As a result of this historic incongruity in body image research populations, many of the tools used to measure body image have a female-centric focus, with a strong (and sometimes exclusive) emphasis on drive for thinness, without accounting for the nuances of muscularity that appear more salient for men (Cohane & Pope, 2001). This means that gender differences in body satisfaction derived from using the same methods must be treated with caution. Some research suggests there is relative parity between male and female body dissatisfaction (Fiske, 2014; Murray, 2013), further supporting the need for male specific research in this field. In addition to this, whilst physical activity has usually been associated with more positive body image (Sabiston et al,. 2019), physically active men may be at greater risk of body image threats, such as internalisation of the muscular ideal (Edwards et al., 2016), and particularly those training in "gym" environments (Stapleton et al., 2016).

Male body image concerns place a high degree of importance on muscularity (Tylka, 2021), whilst still maintaining an awareness and concern with levels of body fat (Tylka, 2011). This may represent dual and, in some ways, conflicting pressures for the body to be larger from a muscularity perspective but smaller from an adiposity perspective (Grammas & Schwartz, 2009). This has been termed a "dual pathway" to body image problems and eating disorders in men (Tylka, 2011). Several studies have found muscularity to be the primary source of dissatisfaction in men (Heath et al., 2016; Pope et al., 2000), with extreme cases of this being defined under the term "Muscle Dysmorphia" (Tod et al., 2016). This is defined by a pathological pursuit of muscularity that includes preoccupation with weight training, supplement use, anabolic steroid and associated substance use (Grieve, 2007). This can have deleterious effects on individual's wider life in conjunction with a belief that one is not sufficiently muscular (Mitchell et al., 2017).

Muscle Dysmorphia can be strongly predicted by "drive for muscularity" (Robert et al., 2009), a term used to describe the extent to which one's attitudes and behaviors are driven towards being muscular (McCreary & Sasse, 2000). Whilst a moderate drive for muscularity may represent a dedication to weight training and may not necessarily be unhealthy, research continues to show higher drive for muscularity scores associated with a range of broadly negative outcomes. These include Muscle Dysmorphia (Robert et al., 2009), disordered eating practices (Eik-Nes et al., 2018), perfectionism and emotional dysregulation (Chaba et al., 2019), and unhealthy social comparisons (Edwards et al., 2016). The drive for muscularity concept was developed to represent the desire to increase one's muscularity as a parallel to the previously well established "drive for thinness" (Edwards et al., 2016). The Drive for Muscularity Questionnaire (DMQ) contains both attitudinal (e.g. "I wish I were more muscular") and behavioral (e.g. I lift weights to build up muscle") components (Mcreary & Sasse, 2000). Drive for muscularity behavior is partly defined using variables relating to physical exercise, and there exists a large body of literature showing positive effects of exercise on body image (Sabiston et al., 2019). However, it has also been found that whilst exercising for autonomous reasons (e.g., health, wellbeing, and enjoyment) is associated with more favourable body image, exercising for controlled reasons (e.g., appearance motives) is associated with lower body image (Panão & Carraça, 2020). The present study will also investigate the relationship between different types of social media use and Drive for Muscularity in physically active men.

4.1.2 Body Image and Social Media

Whilst several factors affect men's drive for muscularity, and body image more generally, the dominant model of influence is the socio-cultural model (Veldhuis et al., 2020). The socio-cultural model of body image suggests that: 1) there exist societal ideals of beauty (within particular

cultures) that are; 2) transmitted via a variety of socio-cultural channels which are then; 3) idealised by individuals so that; 4) satisfaction (or dissatisfaction) of appearance will be a function of to what extent these ideals are fulfilled by the individual (Tiggemann, 2011). One of the most frequently cited socio-cultural models for body image is the Tripartite Model (Thompson et al., 1999) that states there are three primary influences on body image from family, peers, and the media. This model has received support from a range of studies in a variety of populations and cultures (Tylka, 2021) and has been applied to men (Tylka, 2011). Of these three influences, media (both production and consumption) has changed considerably in recent decades, with the advent and proliferation of social media (Rajendran & Thesinghraja, 2014).

Social media may be defined as "internet-based channels that allow for self-presentation and interaction with others who derive value from user generated content (Carr & Hayes, 2015: 50). Social media use has continued to grow in popularity since its inception towards the beginning of the 21st century, both in terms of the number of people using these platforms and the time individuals spend on them (Ryding & Kuss, 2020). The effects of social media on wellbeing have been the subject of a growing body of research displaying mixed results, depending upon several factors including type, frequency, intensity of usage and the characteristics of individual users (Orben, 2020). These findings on broader wellbeing have been echoed by research into the relationships between social media use and body image (Holland & Tiggemann, 2016). One of the key distinctions that has begun to receive research attention is between *active* and *passive* use of social media. Passive social media use (or "social browsing") has been found detrimental to well-being in several studies due to the lack of active relatedness (engaging in pro-active communication) and the tendency for content and images viewed to be idealised (Weinstein, 2017). In contrast to this, active social media use (engaging with others on platforms) has often been reported as positive for wellbeing due to the higher levels of active relatedness and the social interactions it facilitates (Hancock et al., 2019). This also extends specifically to body image, and some evidence has suggested that passive social media use is predictive of social comparison in young males, that is also linked to decreased body satisfaction (Rousseau et al., 2017). The present study will examine the potential differing relationships between active and passive social media use and men's body image. Research exposing men to idealised social media body imagery in a passive fashion has demonstrated significant negative effects on body satisfaction (Tiggemann & Anderberg, 2020). Other work suggests passive social media use may be linked to drive for muscularity in men, through repeated exposure to muscular bodies (Ryding & Kuss, 2020).

However, a recent critical scoping review from Valkenburg et al., (2022) found that whilst this active/passive dichotomy is often quoted and discussed, most studies do not support these

hypothesized associations. Recent meta-analyses on the effects of active and passive use on wellbeing have shown conflicting results in support and rejection of the dichotomous hypothesis (Liu et al., 2019; Yin et al., 2019). One of the primary reasons for this is a stark a-symmetry between the volume of active and passive use, with most social media use being passive (Erliksson et al., 2020). These conflicting results are also affected by varying definitions of well-being, a lack of universal questionnaires for social media use (Trifiro & Gerson, 2019), and different definitions of active and passive use.

A smaller volume of research has identified passive social media use as associated with body image dissatisfaction (Ryding & Kuss, 2020). However, more research is needed, particularly in male samples to further understand this link and explore whether the mixed results pertaining to wellbeing extend to body image specifically. In addition to this, social media usage has been associated with changes in appearance salience (Choukas-Bradley et al., 2020). The saliency of one's presentation on social media has been linked with poorer body image, disordered eating and depressive symptoms, due to the increased exposure to idealised body images and the pressures to adhere to such presentations (Choukas-Bradley et al., 2020). To the author's knowledge, no research has yet investigated the differing effects of active and passive social media use on drive for muscularity.

4.1.3 The Present Study

The present study aims to answer the following question: How are active and passive social media use related to body image in physically active men? Active social media use has been defined by any use that involves communicating with another individual or account, whilst passive use is defined by the consumption of content without any direct communication with others (Yang et al., 2021). Physically active men will be included as this group may be particularly vulnerable to idealised body ideals (Rossi & Tirapegui, 2018), higher drives for muscularity (Almeida et al., 2019), and are likely to engage with fitness-based social media (thus exposing them to more idealised body presentations) more so than sedentary men (Stollfuß, 2020). The study aims to expand the research in the psychology sub-discipline fields of cyberpsychology and health psychology by examining a range of ages (18-50) where previous literature has focused heavily on undergraduates (Fatt et al., 2019; Selvi & Bozo, 2020). More research is still required outside of female and adolescent samples and with more complex measures of social media use (Harriger et al., 2023), and the present study seeks to address some of these gaps. Based on the literature and rationale presented above, the following hypotheses are proposed:

H1: Active and passive social media use will be negatively associated with appearance valence.

H2: Active and passive social media use will be positively associated with appearance salience and drive for muscularity.

H3: Passive social media use will show stronger negative associations with appearance valence and stronger positive associations with appearance salience when compared to active social media use.

4.2 Method

4.2.1 Participants and Procedure

Inclusion criteria for the study required participants to identify as male, be aged 18-50, be physically active at least once per week, and use some form of social media. Participants were recruited on social media using a poster stating the inclusion criteria and the requirements of the study on professional accounts on Instagram and Facebook, in addition to snowball sampling. Instagram and Facebook were used as these represent the two most used social media platforms by adult men in the UK (Statista, 2023). In total, 224 participants were included in the study (*M* age = 32.76; *SD: 7.57)*. Institutional ethical approval was obtained prior to data collection. After reading the information section and consenting to participate, participants completed an online questionnaire created using the JISC (Bristol, UK) survey platform to collect the relevant variables. Recruitment and data collection took place over a two-month period in January and February 2022.

Demographic information was collected to better understand the characteristics of participants. The sample comprised participants who identified as White (81.8%) Black (6.1%), Asian (4.0%), South Asian (3.0%). Mixed Race (2.5%), Middle Eastern (2.5%) and Participants identified themselves as heterosexual (69.1%), homosexual (26.6%) and bisexual (4.3%). Furthermore, 80.8% of the sample had an undergraduate degree or higher.

4.2.2 Measures

Demographic information including Age, Ethnicity, Sexual Orientation, Education and Occupation were collected and are reported above. This data was collected to understand the characteristics of the sample but was not used in the main analyses.

Social Media Use

Due to the lack of a universal social media use questionnaire (Trifiro & Gerson, 2019), social media use was collected using original questions. Passive social media use was measured by four questions pertaining to browsing friends, influencers, newsfeeds, and search/explore functions. Active social media use was measured using two questions pertaining to messaging and engaging with others

through features such as likes and comments. The questions used to measure these were novel, but based on previous research, crucially distinguished between active "doing" on social media and passively browsing and reflected elements of social media use that make up "Active" and "Passive" use (Escobar-Viera et al., 2018; Valkenburg et al., 2022; Liu et al., 2019). Active use was measured with the following items: "How often do you engage with other's content with features such as likes and comments?" "How often do you message and/or communicate with others on Social Media?". These types of items specifically asking about frequency of liking and commenting and frequency of messaging others have been used as items used in previous research measuring active social media use (Pang et al., 2021; Aalbers et al., 2019) which also used likert scales to measure these specific behaviours. Passive use used: "How often do you browse the profiles of friends?" "How often do you browse the profiles/content of celebrities and/or influencers?" "How often do you browse your own newsfeed?" "How often do you browse using search/explore features?". Items asking about newsfeed browsing, searching and browsing the profiles of friends have been used in other research (Dibb & Foster, 2021), in addition to items about browsing influencer's profiles (Burnell et al., 2020) as measures of passive social media use. Answers were given on a Likert scale from "Never" to "Very Often" (scored 1-5), as used in previous studies (Dibb & Foster, 2021; Pang, 2021). Total scores for active and passive use were calculated by adding scores from the 2 active and 4 passive questions respectively, with higher scores indicating more engagement. The questionnaire showed good internal consistency in the sample (Cronbach Alpha .766).

Appearance Salience

Appearance salience was measured using the Centre for Appearance Research Salience Scale (CARSAL) which is a 5-item questionnaire with answers on a Likert scale (from "Strongly Disagree" to "Strongly Agree", scored 1-6). The questionnaire measures the salience of appearance to individuals and includes items such as "I am often aware of the way I look to other people". Total appearance salience scores were calculated by adding scores from each item with a higher total score indicating higher levels of appearance salience. The questionnaire showed good internal consistency in the sample (Cronbach Alpha .891).

Appearance Valence

Appearance valance was measured using The Centre for Appearance Research Valance Scale (CARVAL) which is a 7-item questionnaire with answers on a Likert scale (from "Strongly Disagree" to "Strongly Agree", scored 1-6). The questionnaire measures appearance valence in individuals with five positive items (e.g., "The way I look makes me feel good about myself"), and two negative items (e.g., "I don't like the way I look") which were reverse scored. Total appearance valence was then

calculated by adding scores for each item with a higher total score indicating higher levels of appearance valence. The questionnaire showed good internal consistency in the sample (Cronbach Alpha .938).

Drive for Muscularity

Drive for muscularity was measured using the Drive for Muscularity Questionnaire (DMQ) which has 15 items answered on a Likert scale (from "Never" to "Always", scored 1-6). This includes seven items pertaining to drive for muscularity attitude (e.g., "I wish that I were more muscular") and eight items relating to drive for muscularity behaviour (e.g., "I life weights to build up muscle"). Drive for muscularity was calculated by adding scores for all 15 questions. The questionnaire showed good internal consistency in the present sample (Cronbach Alpha .917).

4.2.3 Statistical Analysis

Statistical Analysis was conducted using the software IBM SPSS Statistics 26. Descriptive statistics were calculated for questionnaire responses. Pearson Correlations were conducted on types of social media (active, passive and their subcomponents) and body image variables (appearance valence, appearance salience and drive for muscularity).

Due to levels of collinearity between the subcomponent variables of active and passive use, multiple linear regressions were conducted to predict appearance valence, appearance salience and drive for muscularity using total active and passive social media use scores. Active and Passive use were significantly positively correlated (r =-.509, p<0.01). Variables were entered using the "enter"/simultaneous method.

4.4 Results

4.4.1 Descriptive Analysis

Descriptive statistics of the sample's responses to the questionnaires can be seen in Table 4.1.

Table 4.1

Means, standard deviations, and ranges of the assessed social media, body image, and drive for muscularity variables

	Mean (Standard Deviation)	Range
Celebs Browse	2.71 (1.10)	1-5
Newsfeed Browse	3.42 (1.27)	1-5
Search Browse	3.09 (1.14)	1-5
Friends Browse	2.72 (.88)	1-5
Passive Use Total	11.91 (3.23)	4-20
Messaging	3.71 (1.15)	1-5
Likes and Comments	3.42 (1.17)	1-5
Active Use Total	7.21 (2.02)	2-10
Appearance Valence	27.56 (7.42)	7-42
Appearance Salience	23.09 (4.84)	6-30
Drive for Muscularity	47.90 (16.16)	16-83

4.4.2 Inferential Statistics – Correlational Analysis

Pearson Correlations between social media usage and measures of body mage were conducted, the results of which can be seen in Table 4.2. Appearance valence was significantly negatively correlated with liking and commenting (r =-.148, p<0.05) and overall active social media use (r =-.136, p<0.05) but was not significantly correlated with any other measures, demonstrating partial support for hypothesis 1 but no support for hypothesis 3. Appearance salience was significantly positively correlated with all aspects of social media use except for browsing search functions and liking and

commenting (all $r \leq .143$ all $p \geq 0.05$) and drive for muscularity was significantly positively correlated with all aspects of social media use (all $r \leq .193$ all $p \geq 0.01$) showing support for hypothesis 2.

Table 4.2

Pearson Correlations for Social Media Usage and Body Image Measures

		Appearance Valence	Appearance Salience	Drive for Muscularity
Passive Use	Friends Browse	-.095	.178**	.193**
	Celebs Browse	-.066	.143*	.250**
	Newsfeed Browse	-.038	.179**	.271**
	Search Browse	-.012	.107	.216**
	Passive Use Total	-.076	.210**	.329**
Active Use	Messaging	-.085	.194**	.197**
	Likes and Comments	-.148*	.127	.214**
	Active Use Total	-.136*	.183**	.237**

Note: *$p < 0.05$ **$p < 0.01$ (DM: Drive for Muscularity)

4.4.3 Multiple Linear Regressions

Multiple linear regressions were conducted using active and passive social media use to predict appearance valence, appearance salience and drive for muscularity, the results of which can be seen in Tables 4.3, 4.4, and 4.5 respectively. Neither active nor passive social media use were significant predictors of appearance valence R^2=.018, $F(2,223)$=2.08, p=.091 beta=-.482(active), p=.910 beta=-.020(passive)), thus not supporting hypothesis 1. Higher scores for passive, but not active social media use, were predictive of higher appearance salience (R^2=.052, $F(2,223)$=6.06, p=.182 beta=.244(active), p=.038 beta=.238(passive))in support of hypothesis 3. Higher scores for passive, but not active social media use, were predictive of higher drive for muscularity (R^2=.116, $F(2,223)$=14.015, p=.173 beta=.814(active), p=<.001 beta= 1.432(passive)) in support of hypothesis 3.

Table 4.3

Multiple Linear Regression to predict Appearance Valence using Active and Passive Social Media use

Appearance Valence			95% CI			
Variable	Beta	*SE*	*LL*	*UL*	β	P
Active Social Media Use	-.482	.284	-1.042	0.78	-.131	.091
Passive Social Media Use	-.020	.178	-.371	.331	-.009	.910

R^2=.018

F=2.082

Note: **p* < 0.05 ***p* < 0.01

Table 4.4

Multiple Linear Regression to predict Appearance Salience using Active and Passive Social Media use

Appearance Salience			95% CI			
Variable	Beta	*SE*	*LL*	*UL*	β	P
Active Social Media Use	.244	.182	-.115	.603	.102	.182
Passive Social Media Use	.238	.114	.013	.462	.159	.038*

R^2=.052

F=6.061

Note: **p* < 0.05 ***p* < 0.01

Table 4.5

Multiple Linear Regression to predict Drive for Muscularity using Active and Passive Social Media use

Drive for Muscularity			95% CI			
Variable	Beta	*SE*	*LL*	*UL*	β	P
Active Social Media Use	.814	.595	-.359	1.986	.101	.173
Passive Social Media Use	1.432	.377	.688	2.175	.280	<.001**

R^2=.116

F=14.015

Note: *$p < 0.05$ **$p < 0.01$

4.5 Discussion

The present study aimed to examine the relationship between different types of social media use (active and passive) and different aspects of body image (appearance valence, appearance salience and drive for muscularity) with an understudied sample of physically active men aged 18-50 years old. The study found that men who reported more active and passive social media use behaviours also reported higher appearance salience (the extent to which appearance and physical self is brought into conscious awareness) and drive for muscularity scores, with passive social media use predictive of higher appearance salience and drive for muscularity in linear regression models. Furthermore, those who reported more active social media use usually reported lower appearance valence (the extent to which the respondent evaluates their appearance in a positive/negative way). Significant positive correlations were found between all measured aspects of social media use and drive for muscularity.

4.5.1 Social Media and Appearance Valence

The finding that higher active social media use was significantly associated with lower appearance valence suggests individuals who engage in social media in more active ways are more likely to evaluate their appearance in negative ways. Liking and commenting behaviours were the only social

media behaviour significantly negatively correlated with appearance valence, suggesting increased liking and commenting on social media may be linked to evaluating appearance in a negative way. In a linear regression model, neither active nor passive use were significant predictors of appearance valence though, suggesting neither form of social media use were related to men's feelings towards their bodies. Active social media use showed a non-significant trend towards lower appearance valence (*p=.09)*. These results thus demonstrate only partial support for hypothesis 1 that active and passive social media use would be negatively associated with appearance valence.

This somewhat contrasts with the zeitgeist and generally accepted view that social media is having a negative effect on body image (Fardouly & Vartanian, 2016). This view appears too simplistic and social media can have varying effects on body image depending on the type of content users engage with (Saiphoo & Vahedi, 2019). Previous research that has demonstrated a negative effect of social media on men's body image has involved specific exposure to idealised bodies (Tiggemann & Anderberg, 2020), whereas the present study looked at social media use more generally, further helping to explain this difference. This was also evident in a recent experimental study by Sumter et al. (2022) who found that passive Instagram usage resulted in lower body esteem in their sample of young men, but only when this took the form of exposure to muscular male bodies.

Another factor that may help to explain the lack of association between many aspects of social media use and appearance valence in the present study, is a growing body of literature suggesting men may be quicker to bolster their self-esteem in the face of body image threats (Voges, 2019). For example, Franzoi et al. (2012) found that men were more self-hopeful in the face of appearance comparisons whereas women were more commonly self-critical. This may have contributed to the more pronounced relationships between social media and drive for muscularity and appearance salience when compared to appearance valence in the present sample. Furthermore, other research has indicated that males are more likely to use active coping strategies and exhibit greater agency over their bodies in response to social media threats toward body image, for example by believing they could attain such physiques if they applied the appropriate amount of time and effort (Mahon & Hevey, 2021). Research has also shown that there is often a social desirability for men to appear strong and to retain self-belief, that can also lead to a rejection of negative body image or body image threats (Gattario & Frisén, 2019).

Despite the lack of association between passive social media use and appearance valence in the present study, engaging in the active social media behaviour of liking and commenting was still associated with lower appearance valence. This suggests that when individuals engage in more liking and commenting behaviours, they were more likely to evaluate their appearance negatively. This

supports similar work by Kim & Chock (2015) who termed actions such as liking and commenting as "social grooming behaviours" and found them to be predictive of drive for thinness in their sample of mostly female students using Facebook. Tiggemann et al. (2018) also found that investment in likes and comments was associated with appearance comparison and facial dissatisfaction in their sample of female undergraduate students. This may also help to explain the association seen in the present study, although here the frequency of engaging in likes and comments was measured, rather than the receipt of them. To the author's knowledge, this is the first study to investigate the link between social media likes and comments and body image in men.

4.5.2 Social Media and Appearance Salience

The effects of social media on appearance salience are less well-studied and to the author's knowledge, this was the first study to use the CARSAL tool in the context of social media use. The positive associations found between appearance salience and active and passive social media use suggest that when individuals engage in more active and passive social media behaviours they are more likely to bring appearance into conscious awareness. This provides support for hypothesis 2 that social media use would be positively associated with appearance salience. This suggests that whilst most social media use was not associated with participant's evaluation of their bodies, it was more consistently associated with appearance being more salient to them, or in other words, social media was making men more aware of their appearance without making them feel more or less positively about it. This would support previous research identifying links between social media and appearance preoccupation in teenagers (Hawes et al., 2020) and adult women (Cohen et al., 2020) and adds novel findings in this regard using adult male participants. Passive, but not active social media use was found to be a significant predictor of higher appearance salience in a linear regression model, suggesting that the passive consumption of social media content may be related to men's appearance becoming more salient to them. Previous research has found that repeated exposure to idealised body content on social media resulted in increased appearance salience (Casale et al., 2021). This may help to support the findings here, however given the associations are small and specific types of content usage were not measured in the present study, these findings must be interpreted with caution.

4.5.3 Social Media and Drive for Muscularity

Drive for muscularity showed the strongest and most consistent associations with all measurements of social media use in support of hypothesis 2, suggesting social media use was contributing to increased drive for muscularity in men. All social media measurements were most strongly associated with drive for muscularity when compared with appearance valence and salience. This

would suggest that social media was more closely related to drive for muscularity in men when compared to appearance valence or salience and is consistent with numerous previous studies linking social media use with drive for muscularity in men (Ryding & Kuss, 2020). In addition to this, the present study required participants to be regularly physically active (at least once per week) and the sample was very active with over 40% exercising 5 or more times per week and 85% exercising at least 3 times per week. This suggests many of the participants are likely to be interested in sports and fitness which, whilst not synonymous with muscularity, has links to it, particularly in the way active men are portrayed on social media (Gültzow et al., 2020). The rise in portrayals of lean, toned, muscular male bodies in traditional media in recent decades has been noted in several studies (DeCarlo, 2012; Frederick et al., 2007), and this appears to have continued in recent years on social media (Gültzow et al., 2020). This may help to further explain the present findings, with previous research showing evidence of this link (Sai et al., 2020), however as the present study did not investigate specific types of content usage, this must be interpreted with caution.

Passive social media use was also a significant predictor of higher drive for muscularity scores in a linear regression model. Most previous literature linking social media use and drive for muscularity in men has involved passive usage, and the effect of exposure to muscular bodies on this phenomenon (Ryding & Kuss, 2020). Viewing "fitspiration" content on social media has been found to directly predict higher drives for muscularity (Seekis et al., 2021) and whilst the present study did not investigate "fitspiration" exposure, it would lend support to the influence of social media on men's drive for muscularity.

4.5.4 Active and Passive Social Media Use and Body Image

The positive associations between appearance salience and both active and passive social media use suggest that social media was having an influence on bringing appearance into conscious awareness. Appearance valence showed only a significant negative association with active social media use through liking and commenting. Passive social media use did not show stronger relationships with body image when compared to active use. This suggests that social media was having a larger effect on bringing appearance into the conscious awareness of participants in comparison to changing their evaluation of their appearance. Passive, but not active, use did significantly predict higher drive for muscularity and appearance salience in linear regression models. Neither were significant predictors of appearance valence, although active use did show a non-significant trend toward predicting lower appearance valence. These results demonstrate partial support for hypothesis 3 (that passive social media use will show stronger negative associations with appearance valence and stronger positive associations with appearance salience when compared to active social media use).

The relationship between passive social media use and body image has produced mixed findings with several studies pointing to negative effects of passive use on wellbeing and body satisfaction (Holland & Tiggemann, 2016; Ryding & Kuss, 2020; Weinstein, 2017), whilst other studies have failed to find a difference (Valkenburg et al., 2022; Vornholt, 2018). In addition, it is possible that the concept of men's propensity to be more self-hopeful when presented with idealised images (Franzoi et al., 2012), may also have contributed to the lack of differences seen between active and passive social media use and appearance valence here.

The results of the present study would support more recent analyses of active/passive social media use finding no significant differences on wellbeing (Valkenburg et al., 2022; Liu et al., 2019; Yin et al., 2019) and specifically on body image (Vornholt, 2018). Other variables including the type of content consumed (Tiggemann & Zaccardo, 2018) and individual personality differences (Sumter et al., 2022) are likely to have more significant effects than passive and active use (Valkenburg et al., 2022). Despite the lack of difference in evaluating one's appearance, the present study does suggest passive use may be more influential in making appearance a more salient concern for men, along with playing a role in increasing their drive for muscularity. Previous research has shown exposure to idealised bodies can increase both measures (Ryding & Kuss, 2020; Hawes et al., 2020). This occurs from passive browsing rather than communicating with others on social media and this may help to explain the differences seen here.

Strengths and Limitations

This study contains several strengths and limitations. The use of a non-student sample adds to a field that is currently dominated by samples of undergraduate students. This is important because social media use is prevalent in a wide range of age groups and its effects on body image are less known in other groups of adults. In addition, the use of novel questions to measure active and passive social media use enables this variable to be investigated in a more detailed way than in many previous studies (Valkenburg et al., 2022). This is important because we are beginning to understand that it is in the nuances of how social media is used that effects on phenomena such as body image are consequential. The inclusion of a range of body image measures, including drive for muscularity alongside appearance valence and salience allowed for a more complex and multifaceted measurement of male body image than in much of the previous research on the topic, which is crucial when working with male populations who's experience of body image is likely to differ from that of female samples (Tylka, 2021).

The results of the present study must be considered in the light of some limitations. Firstly, the exploratory design and correlational nature of this research do not allow for clear cause and effect

conclusions to be drawn. This is a common theme amongst cross sectional research in social media (de Valle et al., 2021), and whilst this study provides new insights into male body image and social media, experimental and longitudinal research would be required to establish cause and effect relationships.

Limitations also exist regarding some of the measurement tools chosen. Whilst active and passive use were measured in novel ways, the type of content being engaged with on social media is unknown. Future research should look to ascertain in greater detail the type of content participants engage with on social media. This is difficult to achieve in a study of this nature and a qualitative research design may be more suitable.

Furthermore, the results must still be interpreted in the context of this sample being disproportionately educated (85% of the sample had an undergraduate degree or higher and 40% had postgraduate degrees), white, and based in the U.K., limiting their extrapolation to other demographics. The sample was also highly physically active, which may have led to higher mean scores on body image variables when compared to a less active sample. Future research should focus on other ethnic groups and social classes to further investigate these results.

4.6 Conclusion

Male body image concerns have risen in recent decades, particularly since the advent and proliferation of social media, and the present study provides greater detail on how this relationship may work in adult men. Results showed active and passive social media use to be associated with higher drives for muscularity and appearance salience (the extent to which appearance and physical self is brought into conscious awareness). Furthermore, liking and commenting was associated with lower appearance valence (the extent to which the respondent evaluates their appearance in a positive/negative way). These results demonstrate that social media may be influencing men to be more aware of their appearance and more driven to be muscular. In addition, engaging in liking and commenting on social media may be linked to lower appearance satisfaction. This study provides novel findings on how social media may be affecting male body image and provides insights into how male social media use may be contributing to negative body image and body related behaviours.

Chapter 5- The Relationship between Social Media, Exercise Motivation, and Exercise Behaviour in Physically Active Men

Abstract

Fitness-based social media continues to grow in popularity, however its effects on exercise motivation and exercise behaviour are underexplored in adult men. The present study investigated this in 224 male exercisers aged 18-50 who used social media. Questionnaires on social media use, (platform use and fitness social media use) and exercise (motivation, frequency and history) were completed. Results showed that Fitness Social Media use was positively associated with Exercise Frequency (current number of exercise sessions per week) but not Exercise History (length of time consistently exercised for). Overall Frequency of Social Media use was negatively associated with Exercise History. Fitness Social Media use was more strongly associated with autonomous motivations (rather than controlled). Findings show fitness social media to be associated with short-term, but not long-term exercise behaviour. This suggests fitness social media may have a short-term but not long-term impact on exercise behaviour in men, but its links to exercise motivation are complex and likely bidirectional.

5.1 Introduction

Physical Inactivity is a global health concern that has been prevalent in the developed world for several decades, and now affects populations in most countries around the world (Brand & Ekkekakis, 2019). A lack of physical activity has been associated with a range of chronic diseases, including many cancers, cardiovascular diseases, and mental health disorders (Barker et al., 2019; González et al., 2017). Regular physical activity also provides a wealth of benefits to health including improvements in cardiovascular fitness, strength, flexibility, coordination and mental health (Barker et al., 2019). Despite this, physical activity rates have continued to decline across the globe, particularly in more developed countries, (Althoff et al., 2017). The reasons behind the physical activity rates of individuals and populations are complex and multifaceted (Brand & Ekkekakis, 2019), but one crucial aspect is motivation (Rodrigues et al., 2020). The present study seeks to explore the relationship between social media and exercise motivation and behaviour in physically active men. This introduction will begin with an overview of exercise motivation as conceptualised

by Self Determination Theory (SDT), followed by a review of the current body of research examining links between fitness based social media and exercise motivation and behaviour.

5.1.1 Exercise Motivation and Self Determination Theory

SDT is a leading theory of human motivation (Ryan & Deci, 2017) and has been used extensively in the context of physical activity, sport and exercise (Teixeira et al., 2012). The central tenant of SDT is the degree to which behaviour is "Self Determined", in other words, whether the perceived locus of causality comes from within rather than from external sources (Ryan & Deci, 2017). Research has repeatedly found that more self-determined forms of motivation (e.g., autonomous motivation) in a range of contexts are more sustainable, meaningful, and psychologically satisfying (Ntoumanis et al., 2021). In contrast to this, less self-determined motivations (e.g., controlling motivation) are less sustainable and are associated with poorer psychological wellbeing (Teixeira et al., 2012; Zamarripa et al., 2018). Figure 5.1 shows a model of the spectrum of motivations included in SDT (Ryan & Deci, 2017: p179). As one moves from left to right, motivations become more internal and autonomous. These motivations will be discussed in relation to exercise in more detail below.

Figure 5.1

The spectrum of motivation according to SDT (Adapted from Ryan and Deci, [2017 p.193]).

Behaviour	**Not Self Determined ←----------→Most Self Determined**					
Type of Motivation	Amotivation	←----------Extrinsic Motivation ----------→				Intrinsic Motivation
Type of Regulation	No Regulation	External Regulation	Introjected Regulation	Identified Regulation	Integrated Regulation	Intrinsic Regulation
		Controlled self-regulation		**Autonomous self-regulation**		

In a systematic review of studies applying SDT to exercise and physical activity, Teixeira et al. (2012) found autonomous motivation to be consistently related to both short- and long-term exercise behaviour. The same systematic review identified that intrinsic motivation (the most self-determined form of motivation, whereby an action is deemed an end in itself) was most closely related to long-term exercise behaviour, whilst identified regulation (an autonomous form of regulation whereby the individual identifies that the action is meaningful and valuable) was most closely associated with short-term exercise adoption. The finding that intrinsic motivation is particularly closely related to long-term exercise behaviour has been noted in many studies (Teixeira

et al., 2012) and may play a particularly strong role in the exercise habits of older individuals (Dacey et al., 2008). Despite this, intrinsic motivation does have its limitations regarding exercise behaviour. Edmunds et al. (2006) noted intrinsic motivation has rarely shown associations with strenuous exercise and is not sufficient alone to motivate many to dedicate the necessary time, money, and organisation required for regular exercise. Previous research has shown intrinsic motivation to work best when bolstered by other autonomous, but extrinsic motivational orientations (Edmunds et al., 2006). This occurs when the individual has identified exercise as a valuable pursuit and then begun to integrate this behaviour within their sense of self (identified and integrated regulation) (Ryan & Deci., 2017).

Identified and integrated regulation are extrinsic but autonomous forms of motivation that originate from the individual (Ryan & Deci, 2017). A dose responsive relationship between the extent to which exercise activities have been internalized, and long-term adherence, has been established in a range of literature (Teixeira et al., 2012). For example, it has been shown that autonomous motivations become more important for longer term exercise behaviour and maintenance (Zamarippa et al., 2018). In contrast to this, on the controlled side of the motivational spectrum, introjected motivation (motivations that attempt to avoid guilt, shame and other negative emotions), provides a powerful motivator for short-term exercise participation (Gillison et al., 2009). However, this type of regulation may also result in anxiety and psychological dissatisfaction, whilst showing less efficacy as a suitable long-term motivator (Ng et al., 2012). Introjected regulation has also been associated with excessive attitudes and behaviours in exercise, where exercise may take the form of an addiction (Fortier, 2009), because of its controlling nature (Deci & Ryan, 2017 p210). External regulation (whereby behaviour is enacted upon as a direct result of external instruction), is the most external form of motivation in the continuum and has shown negative associations with exercise participation in a range of studies (Ingledew & Markland, 2008). It must be noted that individual's motivations for exercise are complex and will comprise of a range of motivations across this spectrum (Ednie & Stirbor, 2017). This is one limitation of viewing motivation in a completely compartmentalised fashion, and it is important to consider the range of motivations that coexist for individuals toward physical exercise.

5.1.2 Social Media

Social media has grown rapidly over the past two decades, and research has begun to examine its associations with exercise motivation (Johnston & Davis, 2019), particularly given the growing popularity of fitness based social media (Kercher et al., 2023). Social media, which may be described as internet-based channels that allow for self-presentation and interaction with others

(Carr & Hayes, 2015), has become ubiquitous in modern society (Adjin-Tettey et al., 2022). Since its inception towards the beginning of the 21st century, both the number of social media users and the time spent on these platforms have continued to rise (Ryding & Kuss, 2020). Some research suggests that the amount of time spent on social media in developed countries exceeds that of time spent on physical activity or time with friends and is comparable with the time spent eating (Verduyn et al., 2017). As a result of this, much research has been devoted in recent years toward the effect that social media is having on a wide range of health and wellbeing outcomes, with a complex relationship emerging (Orben, 2020). Factors including impaired sleep, sedentary behaviour, online multi-tasking, social support, social comparison, and the passive (browsing without actively engaging with others) and active (engaging with others on social media through features such as likes and comments) engagement have all been found significant in affecting the relationship between social media and wellbeing (Keles et al., 2020).

5.1.3 Fitness Social Media

Recent decades have seen a large expansion of the "health and fitness industry", which includes commercial, community, clinical, and corporate services related to health and fitness (Thompson, 2018). This has seen the number of "fitness users" (people accessing fitness industry products and services) in Europe increase by 72% in the past ten years, with this growth expected to continue in the coming years (Batrakoulis, 2019). This industry has a large and growing presence on social media (Raggatt et al., 2018), with content claiming to "motivate" or "inspire" individuals to exercise (Tiggemann & Zaccardo, 2018). Fitness social media is a broad ranging term that encapsulates social media that focuses on sport and exercise (Wood & Watson, 2023). This can include professional sports people, "fitness influencers" or friends and family posting about their sport and exercise (Kim, 2022). Whilst a large amount of research has been dedicated towards the effects of fitness-based social media on body image (Fatt et al., 2019; Tiggemann & Zaccardo, 2018), less has been devoted to the effects of fitness social media on exercise behaviour and motivation (Robinson et al., 2017).

5.1.4 Fitness Social Media and Exercise Motivation

Evidence suggests that fitness social media can provide a mixture of positive and negative effects on wellbeing and exercise motivation for users (Wood & Watson, 2023). Raggatt et al. (2018) found that that having access to reliable health and fitness information and increased opportunities for social connectedness were positive aspects of fitness social media. Contrasting this however, they also highlighted its associations with disordered eating and compulsive exercise, appearance-based comparisons, and appearance related exercise motives. It must be noted that "fitness social

media" covers a wide range of content, including body positive content, idealised body imagery content, sports content and content shared by peers and influencers, and this varying content also contributes to varying consequences on user's wellbeing (Ladwig et al., 2024).

Fitness is often depicted on social media as a look, rather than a reflection of function, with much of fitness social media encouraging self-objectification and associating muscles and lean bodies with fitness, distinct from functionality or health (Deighton-Smith & Bell, 2018). This has been identified as potentially harmful and dangerous, particularly for younger adults, with social media playing a role in propagating extreme exercise and dietary practices and encouraging a strong emphasis on the aesthetics of one's body (Tiggemann & Zaccardo, 2018). Chatzopoulou et al. (2020) examined the influence of fitness media on the popular social networking platform Instagram on young males in the U.K. Findings showed that despite some feelings of enhanced masculinity and self-confidence, there were also associations with higher anxiety, and higher risk of muscle dysmorphia symptoms in these men, pointing to more controlling exercise motivations being derived from fitness social media exposure.

The effects of fitness social media on exercise behaviour and motivation have been investigated experimentally in a small number of studies. Arigo et al. (2021) found that upon acute exposure to "Fitspiration" (Fitness Inspiration) content on Instagram, participants' perceived exercise motivation and behaviour was unaffected. Fatt et al. (2019) used a cross-sectional design to investigate links between social media consumption and exercise motivation using exclusively male participants. No direct link was found between viewing "Fitspiration" posts and either health-based or appearance-based exercise motivation in their sample. Although, indirect links suggest that fitness social media was affecting men by encouraging internalization of the muscular ideal. Robinson et al. (2017) exposed participants to "Fitspiration" imagery and then asked them to run on a treadmill shortly afterwards for as long as they wanted to capture exercise motivation and behaviour. This method found no significant differences between groups, but is limited by its contrived test procedure and short term exposure.

All these studies were conducted using undergraduate students and thus their results cannot be well extrapolated to demographics outside of this narrow population. Whilst a theme of "Fitspiration" content failing to motivate participants to exercise was common, measures for both exercise motivation and behaviour were limited, in some cases being based on a single question or a contrived, acute setting such as running on a treadmill post exposure. In addition, all studies used content described as "Fitspiration", a term that has garnered much interest in academia (Tiggemann & Zacardo, 2018) but may not accurately reflect how people use and consume fitness-based social

media. For example, a search for the hashtag “fitspiration” on Instagram displays 19.4 million posts whilst associated words “fitness” (467 million), “fit” (180 million) or “fitnessmotivation” (111 million posts) show much higher usage.

Only a small number of studies have looked at specific social media platforms in relation to exercise motivation, with a number of these focusing on the image-based platform Instagram, where a lot of “fitspiration” content is generated (Peng et al., 2019; Arigo et al., 2021). Others have looked at Facebook, noting the benefit of social relatedness in supporting exercise motivation (Divine et al., 2019), or have used Facebook to deliver interventions with mixed success (Gilmour et al., 2020). Young (2010) sought to use Twitter to help motivate teenage girls to exercise but little research has been conducted in this field with this platform since. Park (2022) found that users may organically use platforms such as Twitter to encourage and sustain physical activity through peer support, but this was not investigated on any other platforms. Other platforms such as Snapchat and TikTok have been less well studied regarding their links to exercise motivation and more work on these platforms is needed (Harriger et al., 2023). Furthermore, studies examining the differing effects of these social media platforms are limited, with those that exist being conducted with women and demonstrating mixed findings (McColgan & Paradis, 2022). Different platforms may have diverse impacts on exercise motivation because of their various qualities. For example, text-based platforms, such as Twitter, image-based platforms such as Instagram, and mixed platforms such as Facebook, all have the potential to provide motivational content in different forms.

5.1.5 The Present Study

The present study aimed to investigate the question: How are fitness social media use and different platform use related to exercise motivation and behaviour in physically active adult men? Physically active men were chosen as this population are frequent users of fitness based social media (Barron et al., 2021). In addition, the majority of social media research in men up to this date has been conducted in undergraduate samples and little is known about older populations of men and how social media influences their exercise motivation and behaviour (Li et al., 2023). There has been limited research addressing the differing effects of different social media platforms (Kross et al., 2021), something that this study addressed directly. The present study built on previous research with added detail and novel aspects including the use of male participants with a variety of ages and vocations, where previous research has focused heavily on undergraduate populations. Finally, the present study sought to use SDT as a conceptual framework for exercise motivation, which allows for a more detailed exploration of exercise motivation than previous research. Based on this, the following hypotheses are proposed:

H1: Social media use and fitness social media use will be more strongly positively associated with controlled rather than autonomous motivation.

H2: Social Media use and fitness social media use will be positively associated with exercise frequency but not exercise history.

In addition to these hypotheses, the study also aimed to examine the relationships between different social media platforms and exercise motivation. Due to the lack of previous research on this topic, no directional hypotheses were made.

5.2 Method

5.2.1 Participants

In total, 224 participants were recruited, (*M* age = 32.76; *SD: 7.57)*. The sample comprised participants who identified as White (81.8%), Black (6.1%), Asian (4.0%), South Asian (3.0%), Mixed Race (2.5%), and Middle Eastern (2.5%). Participants identified themselves as heterosexual (69.1%), homosexual (26.6%), and bisexual (4.3%). Furthermore, 80.8% of the sample had an Undergraduate degree or higher and 83.5% of the sample used gym facilities. An a priori power analysis showed that a minimum sample size of 115 was needed to detect a medium effect size with an alpha of .05 and power of 0.95 using a bivariate correlation model, therefore, this sample size was considered sufficient. Inclusion criteria for the study required participants to be male, aged 18-50, physically active at least once per week, and use some form of social media. Participants were recruited on social media through posts and stories on Instagram and Facebook and snowball sampling. All participants provided informed consent to take part in the study and ethical approval was given by the Ethics Committee of the lead institution.

5.2.2 Procedure and Measures

Participants were asked to complete an online questionnaire (hosted on JISC online Surveys, Bristol, UK) including measures associated with Exercise Behaviour, Social Media Use, and Exercise Motivation, which are detailed below. Demographic information including age, ethnicity, sexual orientation, education, and occupation were also collected to provide context for the sample.

Exercise Behaviour

Exercise Behaviour was measured in two ways: (i) Exercise History (how long participants had been consistently exercising for) and (ii) Exercise Frequency (How often participants exercised), to capture both current exercise behaviour and long-term adherence. Exercise Frequency was

determined through the question “How often do you usually exercise?” with a brief definition included with participants choosing 1, 2, 3, 4, or 5+ times per week. Exercise History was measured using the question “How long have you been regularly exercising for? (Not including breaks of one month or more)” The following response options were presented: <3 months, 3-6 months, 6-12 months, 1-3 years or 3+ years.

Social Media Use

Due to the lack of a universal social media use questionnaire (Trifiro & Gerson, 2019), social media use was also collected using original questions. Firstly, Frequency of Social Media use was assessed by participants indicating the length of time they spend on social media using the following responses: >1x per day, 1-2x per day, every few hours, every hour or more. Specific platform use of Instagram, Facebook, Twitter, Snapchat, and TikTok was measured on a Likert type scale (scored 1:” never”, 2: “rarely”, 3: “occasionally”, 4: “daily”) and space was provided for participants to write down any other platforms used. Fitness Social Media use was measured by two questions: (i) assessing engagement with fitness accounts in general: “How often do you engage with, or view fitness social media accounts?”, (ii) assessing engagement with friend’s fitness accounts: “How often do you engage with or view the content of friends/peers who post about fitness?”. Both were measured on a Likert type scale (scored 1: “never”, 2: “rarely”, 3: “sometimes”, 4: “often”, 5: “very often”) with a total score comprising the two added together. The questionnaire showed good internal consistency in the sample (Cronbach Alpha .627).

Exercise Motivation

Exercise Motivation was measured using the Behavioural Regulation in Exercise Questionnaire (BREQ-3) (Cid et al., 2018). This questionnaire contains 24 items that are measured on a Likert type scale (scored 1: “not true for me”, 2: “rarely true for me”, 3: “sometimes true for me”, 4: “usually true for me”, 5: “very true for me”) and includes 4 questions pertaining to each of the motivational orientations developed in SDT. Example components include “I enjoy my exercise sessions” (Intrinsic Motivation), “I consider exercise part of my identity” (Integrated Regulation), “ It’s important to me to exercise regularly” (Identified Regulation), “I feel guilty when I don’t exercise” (Introjected Regulation), “I exercise because others will not be pleased with me if I don’t” (External Regulation), and “I don’t see why I should have to exercise” (Amotivation). The 4 questions for each motivational orientation were added together to create a total score for each motivational orientation. Scores for External Regulation and Introjected regulation were added together to provide a total score for controlled motivation. Intrinsic, Identified, and Integrated Regulation scores

were added together to provide a total value for autonomous motivation. The questionnaire showed good internal consistency in the present sample (Cronbach Alpha .795).

5.2.3 Statistical Analysis

Statistical analysis was conducted using the software IBM SPSS Statistics 26. Correlational analyses were conducted to assess associations between Fitness Social Media Use, Specific Platform Use, Exercise Motivation, and Exercise Behaviour. Social Media use variables were coded ordinally, and skewness and kurtosis scores revealed the data was not normally distributed (Specific Platforms and Fitness Social Media Use), thus Spearman correlations were conducted. Following this, multiple linear regressions were conducted to explore which social media variables (Fitness Social Media Use and Specific Platform Use) could predict Exercise Frequency, Exercise History, Autonomous Exercise Motivation and Controlled Exercise Motivation). Variables were entered using the enter/simultaneous method.

5.3 Results

5.3.1 Descriptive Analysis

Descriptive statistics for the main variables can be seen in Table 5.1

Table 5.1

Descriptive Statistics of the Sample

	Range	Mean (Standard Deviation)
Age (years)	18-50	32.76 (7.57)
Exercise History	1-5	4.37 (1.13)
Exercise Frequency	1-5	3.86 (1.18)
Social Media Frequency	1-4	2.92 (0.78)
Fitness Social Media Score	2-10	6.41 (2.10)
Instagram Use	1-4	3.47 (0.98)
Facebook Use	1-4	2.78 (1.18)
Twitter Use	1-4	2.31 (1.24)
TikTok Use	1-4	1.52 (1.00)
SnapChat Use	1-4	1.48 (0.89)
Intrinsic Regulation	4-20	16.46 (3.03)
Integrated Regulation	6-20	16.00 (3.88)

Identified Regulation	9-20	17.72 (2.47)
Autonomous Motivation Total	**21-60**	**50.18 (8.27)**
Introjected Regulation	4-20	13.81 (4.03)
External Regulation	4-18	6.08 (2.53)
Controlled Motivation Total	**8-33**	**19.89 (5.03)**
Amotivation	4-11	4.52 (1.32)

5.3.2 Correlational Analysis

To establish links between Fitness Social Media Use and motivational orientations, Spearman correlations were conducted between these variables, the results of which can be seen in Table 5.2.

Table 5.2

Spearman Correlations for Exercise Motivation and Fitness Social Media Use

	Fitness Accounts	Friend's Fitness	Fitness SM Total
Amotivation	-.138*	-.019	-.090
External Regulation	-.016	0.62	.016
Introjected Regulation	.185**	.103	.175**
Controlled Motivation Total	**.136***	**.098**	**.139***
Identified Regulation	.274**	.206**	.270**
Integrated Regulation	.290**	.234**	.296**
Intrinsic Regulation	.253**	.186**	.237**
Autonomous Motivation Total	**.302****	**.238****	**.300****

Note: Bold type indicates total scores for controlled and autonomous motivation. *$p < 0.05$ **$p < 0.01$

Significant positive correlations were found for all autonomous forms of motivation and all forms of Fitness Social Media Use (all *rs* values ≥ .186; all *p* values < 0.01). In addition, engagement with Fitness Accounts and total Fitness Social Media use scores were significantly positively correlated with Introjected Regulation (both *rs* values ≥ .175; both *p* values < 0.01), whilst engagement with Fitness Social Media accounts was significantly negatively correlated with Amotivation (*rs* = -.138; $p < 0.05$).

Spearman correlations were conducted for Exercise History, Exercise Frequency and Social Media Use, the results of which can be seen in Table 5.3.

Table 5.3

Spearman Correlations for Exercise Behaviour and Social Media Use

	Exercise History	Exercise Frequency
Fitness Accounts	-.040	.266**
Friend's Fitness Accounts	-.021	.283**
Fitness Social Media Total	-.034	.300**
Frequency of Social Media Use	-.229**	.034
Instagram	-.098	.109
Facebook	.027	.180**
Twitter	-.159*	-.048
SnapChat	-.161*	.006
TikTok	-.184**	.025

Note: Values displayed are *rs* values. *$p < 0.05$, **$p < 0.01$

Significant negative correlations were found between Exercise History and Frequency of Social Media Use, Twitter, SnapChat and TikTok use (all *rs* values ≥ -.159; all *p* values < 0.05). Significant positive correlations were found between Exercise Frequency and Fitness Accounts, Friends Fitness Accounts, Fitness Social Media total score and Facebook use (all *rs* values ≥ .180; all *p* values < 0.05).

5.3.3 Multiple Linear Regression Analysis

Following this, Multiple Linear Regressions were conducted using variables collected on Social Media Use (Fitness social media and specific platform use) to predict their impact on Autonomous and Controlled Exercise motivation, and Exercise History and Exercise Frequency, the results of which can be seen below.

Table 5.4 shows the results of two multiple linear regression models assessing how measures of social media use may predict Autonomous Exercise Motivation total scores ($R^2 = .092$, $F(6,218) = 4.76$), and Controlled Exercise Motivation total scores ($R^2 = .058$, $F(6,218) = 2.21$). Higher Fitness Social Media Use was predictive of higher Autonomous Exercise Motivation ($p < .001$). No social media variables were significant predictors of Controlled Exercise Motivation.

Table 5.5 shows the results of two multiple linear regression models calculated to predict Exercise Frequency ($R^2 = .116$, $F(6,218) = 4.72$) and Exercise History ($R^2 = .053$, $F(6,218) = 1.99$) based on measurements of social media use. Higher Fitness Social Media Use ($p < .001$) and Facebook Use

(p = .028) were found to be significant predictors of increased Exercise Frequency. No social media variables were significant predictors of Exercise History.

Table 5.4

Multiple Linear Regressions – Predicting Autonomous and Controlled Exercise Motivation using Social Media Use

	Autonomous Exercise Motivation						Controlled Exercise Motivation					
			95% CI						95% CI			
Variable	Beta	*SE*	*LL*	*UL*	β	*p*	Beta	*SE*	*LL*	*UL*	β	*p*
Fitness Social Media Use	.338	.289	.774	1.914	1.344	<.001**	.121	.181	-.064	.652	.294	.107
Facebook	.052	.456	-.531	1.267	.368	.421	.076	.286	-.889	.240	-.325	.258
SnapChat	-.069	.632	-1.882	.607	-.638	.314	.085	.396	-.304	1.258	.477	.230
Twitter	-.095	.440	-1.502	.232	-.635	.150	.162	.276	.116	1.204	.660	.018
Instagram	-.030	.594	-1.425	.918	-.254	.670	-.036	.373	-.918	.552	-.183	.624
TikTok	-.067	.566	-1.668	.562	-.553	.330	.046	.355	-.470	.930	.230	.518
	R^2=.092						R^2=.058					
	F=4.763						*F*=2.210					

Note: SE = Standard Error; CI = Confidence Interval; LL = Lower Limits; UL = Upper Limits

*$p < 0.05$, **$p < 0.01$

Table 5.5

Multiple Linear Regressions – Predicting Exercise Frequency and Exercise History using Social Media Use

	Exercise Frequency						Exercise History					
			95% CI						95% CI			
Variable	Beta	*SE*	*LL*	*UL*	β	*p*	Beta	*SE*	*LL*	*UL*	β	*p*
Fitness Social Media Use	.178	.041	.097	.259	.314	<.001**	.035	.041	-.045	.116	.065	.387
Facebook	.144	.065	.016	.272	.144	.028*	.026	.084	-.102	.153	.027	.692
SnapChat	-.113	.090	-.291	.064	-.086	.209	-.111	.090	-.289	.067	-.086	.220
Twitter	-.044	.063	-.168	.079	-.046	.482	-.089	.062	-.211	.034	-.097	.155
Instagram	-.033	.085	-.199	.134	-.027	.701	-.108	.084	-.274	.057	-.094	.198
TikTok	.002	.081	-.157	.161	.002	.980	-.152	.080	-.311	.007	-.133	.060
	R^2=.116						R^2=.053					
	F=4.715						*F*=1.986					

Note: SE = Standard Error; CI = Confidence Interval; LL = Lower Limits; UL = Upper Limits

*$p < 0.05$, **$p < 0.01$

5.4 Discussion

The current study aimed to examine the link between Fitness Social Media use, Specific Platform use, Exercise Behaviour and Autonomous and Controlled Exercise Motivation in a sample of physically active men. Despite the claims that fitness social media content can motivate and inspire people to exercise (Raggat et al., 2018), little research has investigated how it is associated with exercise behaviour (Arigo et al., 2021). This is the first study to investigate how habitual social media use may be related to male exercise behaviour and motivation using SDT as a conceptual framework. The present study aimed to further explore links between specific social media platform use, fitness social media, and exercise behaviour and motivation in men.

5.4.1 Fitness Social Media Use and Exercise Motivation

The first hypothesis, that Fitness Social Media use would be more strongly associated with Controlled, rather than Autonomous motivation, was not supported. Fitness Social Media use showed small, positive correlations with Introjected Regulation but it was more strongly correlated with all forms of Autonomous Motivation. In addition to this, Fitness Social Media use was included as a significant predictor of Autonomous Exercise Motivation but not Controlled Exercise Motivation in a linear regression model. This suggests that participants who used more fitness social media were also more autonomously motivated to exercise. Other research has shown that controlled motivation through social comparison is one of the main drivers behind exercise motivation on social media (Johnston & Davis, 2019). Whilst overall Controlled Motivation was not associated with Fitness Social Media use in the present study, Introjected Regulation was. This aligns with previous research that links introjected regulation to body-related envy, thus working as a controlled motivation to exercise (Pila et al., 2014). Whilst this study did not assess social comparison, it may be that this could help to explain the link between Introjected Regulation and Fitness Social Media exposure, as previous research has shown that Introjected Regulation is linked to social comparison and appearance goals in exercise (Hurst et al., 2017). Introjected Regulation was also related to the browsing of Fitness Social Media Accounts, but not related to browsing Friend's Fitness Accounts. This may reflect the type of content posted by friends compared with fitness accounts, with friend's accounts reflecting more authentic content, whilst fitness and corporate accounts more often have economic motives (Johnston & Davis, 2019). The use of guilt in marketing, particularly for fitness and weight loss products has been widespread for several decades (Coulter & Pinto, 1995), and these appear to have continued in recent years into fitness social media content and promotion (Easton et

al., 2018). This may help to further explain the links seen here between Fitness Accounts and Introjected Regulation which is often associated with feelings of guilt (Hurst et al., 2017).

The unexpected finding that Fitness Social Media use was positively associated with Autonomous Motivations to exercise may have several explanations. Firstly, Tiggemann & Zaccardo (2018) found in their content analysis of "Fitspiration" content on Instagram that most of the male focused content portrayed functionality and fitness-related activities rather than exclusively aesthetic presentations (although often these two concepts are combined and/or conflated). This focus on functionality and movement may help to promote more internal forms of motivation rather than introjected or external regulation (Dimas et al., 2021). A study of Instagram users found Fitspiration imagery motivating and, whilst not specifically measured, it was suggested that many of these motivations centred around the autonomously motivated idea of self-improvement (Peng et al. 2019). Additionally, reverse causation may help to explain the link between Autonomous Motivation and Fitness Social Media use. Those who possess Autonomous Motivation toward exercise are more likely to show greater interest in health and fitness as a concept – with identified, integrated and intrinsic motivation all associated with increased enjoyment and interest (Duncan et al., 2010). This may help to explain why participants who used more fitness social media had higher levels of autonomous exercise motivation. It is not possible from the present study to accurately determine whether fitness social media use was driving higher autonomous motivation or vice versa. The study found no social media variables to be positively associated with Exercise History however, with overall Frequency of Social Media use, TikTok, Snapchat and Twitter use all negatively correlated with long term exercise behaviour. This would suggest social media was not having a significant effect on long term exercise behaviour. Gender differences have been noted with regards to negative social comparisons to media images (Murnen & College, 2019), and in the belief that idealised bodies are often perceived as obtainable for men (Piatkowski et al., 2021). This, in addition to higher levels of autonomous exercise motivation typically seen in men (Lauderdale, 2015), may help to further explain the links seen between fitness social media use and autonomous motivation in the present study.

5.4.2 Fitness Social Media Use and Exercise Behaviour

The hypothesis that Fitness Social Media use would be associated with increased exercise frequency but not with increased exercise history was supported. Fitness Account use was significantly positively correlated with Exercise Frequency. Furthermore, Fitness Social Media use was predictive of higher Exercise Frequency in a linear regression model. This suggests that

participants who used more fitness social media also exercised more frequently. The finding that short-term exercise behaviour was related to Fitness Social Media use, whilst long-term adherence was not, is in line with previous research on the topic. Williams et al. (2014) noted that in a systematic review of formal diet and exercise interventions on social media, many studies showed higher initial adherence, but this effect waned over time. Berg et al., (2020) used a SDT based social media exercise motivation intervention on Instagram and found contrary to hypotheses, that no differences for passion (harmonious or obsessive) were found, suggesting social media has limited utility in affecting more autonomous motivations. In the present study, specific types of fitness social media content engagement (e.g., bodybuilding, yoga, or team sports) were not measured, but it is likely there was a range of content types being engaged with that appear to be linked with increased levels of short-term exercise behaviour. This was also supported by the findings in the current study that Frequency of Social Media Use, Snapchat, TikTok and Twitter use were all significantly negatively correlated with exercise history, suggesting that this type of social media use was not consistent with a long-term adherence to physical activity.

5.4.3 Social Media Platforms and Exercise Motivation and Behaviour

Given the lack of previous research on specific social media platforms and exercise motivation and behaviour, it was difficult to make specific hypotheses about how these relationships would appear in the present study. Given the diverse nature of social media, with text, image and video taking priority across different platforms, there is a pressing need for more research into this subject. Facebook use was significantly positively correlated with Exercise Frequency, and predictive of higher Exercise Frequency in a linear regression model, suggesting that participants who used Facebook more frequently, also exercised more frequently. Other research has also shown positive associations between Facebook and physical activity. For example, Divine et al. (2019) found Facebook use was strongly linked to introjected regulation, but also more autonomous forms of exercise motivation in their study using undergraduate students. Facebook allows for long form text contributions, along with multiple forms of media when compared to other platforms used in this study. This may have facilitated social encouragement for exercise through peer support in groups, and the sharing of fitness information in the forms of articles, videos and images. In addition to this, many younger users have transitioned away from Facebook to platforms like Instagram (Hou & Shiau, 2019), with other evidence suggesting autonomous motivations for exercise become stronger as one ages (Dacey et al., 2008), which may also help to explain the relationship seen here.

In addition to the relationship between Facebook and Exercise Frequency, small negative correlations found between both Snapchat and TikTok and Exercise History. This suggests that these platforms may be associated with lower rates of long term exercise behaviour in men. This may be in part be explained by the younger age group's attraction to TikTok (Yang & Zilberg, 2020) and to a lesser extent Snapchat, which may have stronger associations for content with other sectors outside of health and fitness (Massey et al., 2021). Differences in age were not assessed directly in the present study, and whilst previous research has shown that exercise motivations change throughout the lifespan (Box et al., 2021), the impact of social media on this requires further research. Instagram was the most used platform by the men in this study, however no significant associations were found for Instagram use and exercise motivation. There is a growing body of research linking fitness social media consumption on Instagram with body Image concerns in men (Tiggemann & Anderberg, 2020), and other research has shown that idealised bodies on Instagram may be linked to maladaptive motives for exercise. (Wood & Pila, 2022). This may help to explain the lack of association found in the present study but more research is needed. Whilst this study provides a start with regards to research into individual social media platform usage and exercise behaviour and motivation, further research must be conducted. This is important as the present study suggests there may be differing effects between various social media platforms. Future research may look to include qualitative research designs to examine in greater detail the influence the specific types of content may have.

On a final note, higher social media use has been associated with higher levels of sedentary behaviour and lower physical activity levels in previous research (Sandercock et al., 2016) a finding supported by the present study with negative associations seen between Frequency of Social Media Use and Exercise History. This forms part of a wider issue of technological advancements leading to lower physical activity levels and in turn, contributing to higher rates of chronic disease and mental health problems (Lin & Lachman, 2021).

5.4 Conclusion

Fitness-based social media content continues to rise in popularity but its effects on exercise motivation and behaviour are not well understood. Results from the present study showed social media was more closely associated with Autonomous, rather than Controlled, Motivations to Exercise. Fitness Social Media use was positively associated with short-term, but not long-term exercise behaviour and overall time spent using social media was associated with lower long-term

exercise behaviour. These results suggest fitness social media may have a short-term but not long-term impact on exercise behaviour but its links to motivation are complex and likely bidirectional.

Chapter 6 – Men's experience of social media and what role it plays in their body image and motivation to exercise: A Qualitative Study

Abstract

There is a paucity of research examining men's experiences with social media, body image and exercise motivation and behaviour. This study sought to explore men's experiences using a sample of 20 men (aged 22-46) who each took part in in-depth interviews about their experiences of exercise, social media and body image. Using thematic analysis, three main themes emerged: 1. Social Media's role in influencing exercise motivation. 2. Social Media's role in influencing body image and 3. Beyond appearance: strategies for fostering a positive body image. Whilst some men derived appearance-based motivation from social media, most men did not find it motivational but did find it useful for practical advice. Men discussed social pressures to change their appearance, partly driven by social media, and how this impacted their mental health and diet and exercise behaviours. Men also discussed critical thinking around social media presentations and discussed the negative side of seeking idealised bodies, which helped protect them from body image threats. These results present novel insights into how adult men experience social media in the context of body image and physical activity.

6.1 Introduction

6.1.1 Rationale based on previous studies in this thesis

This chapter will explore men's perspectives on the role social media plays in their body image and exercise behaviour and motivation and build upon the quantitative findings of Chapters 4 and 5.

Chapter 4 adopted a quantitative questionnaire-based approach and revealed links between social media and increased drive for muscularity and appearance salience in addition to decreased

appearance valence. Chapter 5 found associations between fitness social media use and short term but not long term exercise behaviour, in addition to associations between fitness social media use and both controlled and autonomous exercise motivation. A different methodological approach is required to explore these findings in more depth and explore the details and nuances that could not be ascertained using a quantitative, questionnaire-based approach (Baškarada & Koronios, 2018). This chapter applies a qualitative methodology to expand on the findings discussed in Chapters 4 and 5. One key advantage of qualitative research in social media is that it is able to achieve deeper, richer and more detailed real-world findings when compared to using quantitative monitoring methods (Branthwaite & Patterson, 2011). Following on from the previous quantitative studies as part of an explanatory sequential design (Toyon, 2021), this chapter employs a qualitative, semi structured interview design to help to understand, explain and build on the findings from the quantitative Chapters 4 and 5. Additionally, Chapter's 4 and 5 investigated the topics of social media and body image, and social media and exercise respectively but did not integrate the subjects of social media, body image and exercise motivation and behaviour. This chapter will seek to explore men's experiences of social media, body image and exercise together. (For further exploration of this point related to methodology please see Chapter 3 "Methodology").

This chapter seeks to explore men's experience of social media, body image and exercise motivation from their perspectives, and how these areas of their lives are interconnected. This design specifically looks to build on the previous chapters by exploring men's views and experiences of their own bodies, their relationships with exercise and their experiences on social media from their perspectives in their own words. This allows for a more detailed understanding of the type of social media content men are consuming and how (if at all) they feel this has affected their feelings about their body, or their exercise motivations and behaviours.

6.1.2 Current gaps in the literature and research questions

As noted in Chapter 2, there is a wealth of research examining the links between social media, and fitness social media and body image in younger and predominantly female samples, with much less available in men and older age group samples (Harringer et al., 2023). Furthermore, most of this research has used quantitative methods and there is a lack of qualitative research on this topic, which is essential for deepening our understanding of men's body image and provides a research approach that is not constrained by pre-determined variables (Lennon & Johnson, 2021). In addition to this, whilst there exists a large body of research using SDT as a means of explaining exercise motivation and behaviour (Teixeira et al., 2012; Teixeira et al., 2018), there is a lack of research using

SDT to help explore the concepts of fitness based social media and exercise motivation, particularly using qualitative research methods. Most SDT research up to this point has used quantitative methods, yet qualitative methods are essential for deepening the understanding of this theory and challenging its assumptions (Linch et al., 2020). Quantitative methods in psychology have several limitations, primarily as they require the reduction of qualitative phenomena to quantitative values (Toomela, 2010). By doing this, much of individual's true experience is lost and quantitative variables may provide results that do not show the whole picture and fail to capture the full lived experience of individuals (Toomela, 2008). Other research exploring SDT using qualitative methods have been able to unveil more detail and show the participant's perspective in ways that cannot be realized with quantitative methods (White et al., 2021).

Of the few qualitative studies available that have explored men's body image and/or exercise motivation and/or social media use, Chatzopoulou et al. (2020) explored young men's motivation to conform to the "Instabod" (A muscular and lean physique typically seen on the social media platform Instagram). They found positive (increased feelings of masculinity and self-confidence) and negative (increased anxiety and muscle dysmorphia symptoms) influences on men's wellbeing in their sample of white British 18-25 year old men but did not investigate motivation using a conceptual framework such as SDT. Easton et al. (2018) conducted interviews with young adults who used "fitspiration" social media, finding a range of positive and negative effects on wellbeing, body image and exercise behaviour. Their sample was predominantly female however, with only 4 males participants included, and all were under 25 years of age. Morgan & Arcelus (2009) also used a sample of young men aged 18-24, investigating body image and disordered eating in homosexual and heterosexual men. They found body dissatisfaction was widespread and found more commonality than difference between homosexual and heterosexual men, also noting that health concerns acted as protective of disordered eating behaviours. Piatkowski et al. (2020) investigated the motivations for pursuing muscular bodies in young Australian men who regularly trained with weights and had used steroids. They found that men discussed issues including low self-confidence, social media pressure and adherence to strict regimes in relation to the strict pursuit of an idealised muscular body. Again, all men were young, in this instance 16-30 years old, and motivation was again defined informally without the presence of a guiding framework.

Whilst these studies have helped to increase understanding of men's body image, men's motivations for wanting to become more muscular, and the influence of social media, they have done so with several limitations. All the aforementioned studies used samples of young men, all under 30 years of

age and most under 24 years of age. Qualitative research exploring adult men's experiences of social media and body image is still very sparse, particularly with men over the age of 30. None of the previous studies investigating exercise motivation used a conceptual framework of motivation to support their investigation of this phenomena and none explored exercise motivation aside from its relation to physical appearance.

Individuals have a bidirectional relationship with media, acting as critical consumers who can filter information based on personal factors, education, and preexisting beliefs (Bandura, 2009). Social media takes the level of personal agency users have further with them acting not just as passive consumers but also as active users, choosing what they engage with and managing their exposures and experiences on social media (Andrews et al., 2020). Social media exposes users not just to information (as is the case with traditional media), but also to other users for person-to-person interactions adding a further level of autonomy to social media use (Lin et al., 2018). Previous studies in this field have tended to view participants from the perspective of being passive consumers of social media only, and this chapter seeks to explore men on social media as critical users who have the ability to actively manage their social media experiences.

6.1.3 The Present Study

This study thus aims to investigate the active role that men take in using social media and responding to it. Based on the results of these studies along with the results from the quantitative studies thus far conducted in this thesis, the present study aims to explore the following research questions:

RQ1 What are men's experiences of using social media in relation to their body image?
RQ2 What are men's experiences of using social media in relation to their exercise motivations and behaviours?
RQ3 How do men actively manage their social media experiences?
RQ4 How do men's experiences of social media, body image and exercise interact?

6.2 Method

6.2.1 Study Design

This study was informed directly by the results of Chapters 4 and 5, looking at associations between social media and body image and exercise motivation in physically active men. The results of this

research helped to inform the design and structure of the interview conducted here. The previous study had shown limited links between social media and body image but clearer links between social media and drive for muscularity. The study design and aforementioned aims were created with the intention of building on these results, along with previous literature on the topic. Specifically, this included providing men with a space in which they could discuss social media's relationship with their body image and exercise motivation and behaviour from their perspective, through a qualitative methodology (see Chapter 3 for a more detailed overview of the design and Appendix 2 for a draft script of the interview).

6.2.2 Participants

Participants were required to be male, aged 18-50 years old, physically active at least once per week and current social media users. The sample consisted of 20 participants, with their demographic information shown in Table 6.1. Ages ranged from 22-46 with twelve participants identifying as White British, 6 as White (other nationalities), 1 as Black Caribbean and 1 British Asian. Eleven participants identified as heterosexual, one as bisexual and eight as homosexual.

Table 6.1

Demographic of Study Participants

Participant #	Age	Ethnicity	Occupation	Sexual Orientation	Interview Location
1	27	Black Caribbean	Personal Trainer	Heterosexual	Online
2	46	White British	Support/Care (Autism)	Heterosexual	Online
3	35	White British	Workshop Controller	Heterosexual	Online
4	33	White British	Personal Trainer	Heterosexual	Online
5	36	White (Algerian)	Lawyer	Homosexual	Online
6	35	White (S Africa)	Consultant Anaesthetist	Homosexual	Online
7	38	White European	Trainer	Heterosexual	Online
8	25	British Asian	Unemployed	Bisexual	In person

9	43	White Portuguese	Architect	Homosexual	Online
10	22	White British	Accountant	Heterosexual	Online
11	31	White British/Fr	Digital Marketing	Homosexual	In person
12	27	White British	Physiotherapist	Homosexual	In person
13	31	White British	Studio Manager	Homosexual	In person
14	22	White British	Decorator	Heterosexual	Online
15	32	White British	Teaching	Heterosexual	Online
16	26	White British	Unemployed	Heterosexual	Online
17	32	White British	Medical Writer/Student	Heterosexual	In person
18	35	White British	Senior Management	Heterosexual	Online
19	34	White European	Bookkeeper Self Employed	Homosexual	In person
20	39	White British	Pensions	Homosexual	Online

6.2.3 Procedure

Participants were recruited through advertising on social media (Instagram and Facebook), in a gym in Southwest London (through posters placed around the gym) and through snowball sampling from the author. Institutional ethical approval was obtained prior to advertisement. After reading the information section and consenting to participate, participants participated in an interview (lasting 50-80 minutes) either online (14 participants) or in a confidential space in person (6 participants). Some research has suggested that in person interviews are the gold standard and represent the best opportunity for rich and dense interview data (Johnson et al., 2021), however online settings also present practical benefits and the comfort of participants being in a home environment can allow them to be more expressive than in person (Oliffe et al., 2021). Participants were presented with the choice for either setting and the one they were most comfortable with was then chosen. This provision of choice for research participants in qualitative research has been found to be beneficial in previous research (Irani, 2019). Consent was obtained in verbal and written form and participants were made aware of their freedom to withdraw at any stage before the commencement of the interview. All interviews were recorded on a Dictaphone with the participant's permission and later transcribed by the researcher.

6.2.4 Interview Design

This study aimed to better understand men's experience of social media, body image and exercise motivation from their perspective. The interview therefore consisted of open-ended questions about the participant's experiences of exercise, their motivation to exercise, social media use and body image in addition to how these areas affected each other, and particularly how they felt social media impacted their body image and exercise motivation. A semi structured approach was thus used. This allows for the participants to speak with flexibility about the topics required and allows for the interviewer to establish a rapport and a reciprocal relationship that encourages the participant to open up (Kallio et al., 2016), which is particularly useful when talking about potentially sensitive topics (Low, 2019).

The interview was designed to better understand men's experience of social media, body image and exercise motivation, but also to facilitate an environment where subjects would be comfortable speaking about potentially sensitive topics. The interviews followed a structure of speaking about exercise behaviour and motivation to begin with, followed by social media use. The interview then moved into the participant's experience of their body image after this, when they were more settled and comfortable with the interviewer, before then drawing together these topics towards the end, whilst providing an open space for the participants to discuss any other subjects or experiences they felt may be relevant. This structure drew on previous literature emphasising the importance of participants being provided with a comfortable environment and feeling comfortable with the researcher when discussing potentially sensitive topics (Elmir et al., 2011). Photo elicitation methods were also used (Harper, 2002), including posts from social media that participants were asked to give their thoughts and feelings about. 3 images were chosen to reflect different commonplace aspects of fitness social media use. One image was of the popular Actor "The Rock" (397 million Instagram followers), who is one of the most popular figures on social media and renowned for his hyper muscular physique. Another was of the footballer Christiano Ronaldo (625 million Instagram followers) who is the most followed person on Instagram and is also well known for his lean and athletic physique which he regularly displays on social media. The final image was a "before and after" from a well-known personal training company. These types of images are common on fitness social media, and highlight changing the image of the body, usually with connotations of more muscle and less fat leading to improvements in health, confidence and wellbeing (Weber, 2020). Participants were shown these images at the end of the interview and asked if they had any thoughts or feelings that came to mind upon viewing them.

6.2.5 Data Analysis

Data was analysed using reflexive thematic analysis (Braun & Clarke, 2012; Byrne, 2022). Thematic analysis was chosen as a rigorous and appropriate method for analysing large qualitative data sets (Nowell et al., 2017) such as that produced in the current study. In addition, it is well suited to exploratory research of this nature as it allows for a flexible approach that is still rich in detail and complexity (Braun & Clarke, 2006). For a more detailed review of this methodology, see Chapter 3.

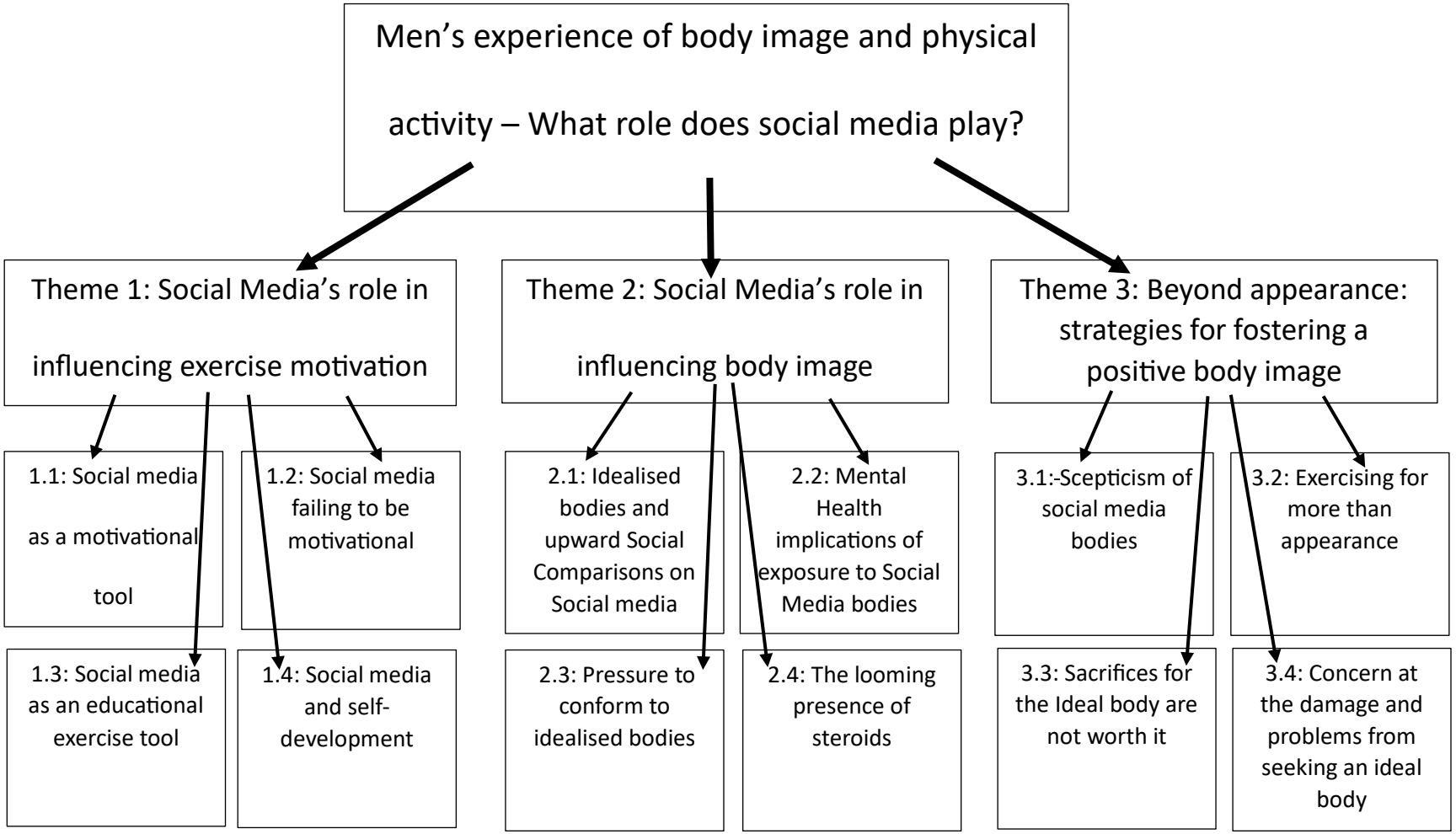
In accordance with recommended practice when executing thematic analysis (Braun & Clarke, 2019; Maguire & Delahunt, 2017), interviews were initially coded through two phases of analysis and then sub themes were generated from common codes and by grouping codes together. These sub themes were then organised into larger, overarching themes. Upon further reflection and analysis, these initial themes were then refined to eliminate overlap between themes, to reduce the breadth of the themes and to bring them more specifically in line with the research question. This involved reflection on the participant's experience, checking my own assumptions and making sure the themes that came out of this analysis aligned with both the research question and the lived experiences that participants discussed during the interviews. Reflexive thematic analysis provides a structure and rigor that helps to reduce the impact of researcher assumptions and biases whilst still allowing enough flexibility that the data can speak for itself and not be shoehorned into themes or ideas that are not really present (Braun & Clarke, 2019).

6.3 Results

Figure 6.1 shows a map of the Research Question, Themes and Sub Themes identified.

Figure 6.1

Map of Overarching Research Question, Themes and Sub-Themes



6.3.1 Theme 1: Social Media's role in influencing exercise motivation and behaviour

The first theme explores the role of social media in influencing men's exercise motivation and behaviour. Four subthemes represented differing ways in which this occurred for men: Social media as a motivational tool (1.1.), Social media failing to be motivational (1.2), Social media as an educational exercise tool (1.3), Social Media and Self-Development (1.4). This theme found that men differed in their views on fitness social media as a motivational tool. Men spoke more unanimously about its use as a practical tool for learning new exercises and its value as a self development tool.

Social media as a motivational tool (1.1)

Of the 20 men interviewed, only 6 said they found fitness social media was inspirational or motivating in relation to exercise. Some men spoke of how exercise motivation was one of the primary reasons they use social media. For example, when asked what they use social media for, participant 18 said: "for my own personal interests its very similar to what I consume on YouTube from a fitness, wellbeing, nutrition erm motivation, perspective" (P18). Motivation sometimes came in the form of seeing progress others had made: "Oh yeah, definitely, I like when I see the progression that they have made, it inspires me." (P1). In other cases, participants had been moved to replicate behaviours of those they looked up to on social media, although these behaviours were not always healthy: "…and I knew it was mad but I was doing it because some fella was doing it and giving me inspiration to do it" (P15).

This was echoed by other participants who caveated the idea that they derive inspiration from social media, with the need to be critical of content:

> …it provides motivation and inspiration but if you are not fully tapped in, if you are gullible or fall for the marketing ploys like, that, those old school fitness marketing like gain 2 inches, gain 2 inches of muscle on your arms in 6 weeks, like I know it's not going to happen…(P1)

One means by which motivation was derived from social media, was indirectly through the consistent exposure to idealised bodies and the upward social comparisons made in relation to this content. This suggests social media was leading to introjected motivations in some men. For example participant 5 noted: "when you see these really muscular men who are 5% bodyfat who are huge and peeled and veined up and jacked, you look at yourself and think I don't look like that, I wish I did" (P5).

Social media failing to be motivational (1.2)

Not all men found social media to be motivating from an exercise perspective and some men found this had the opposite effect, explicitly stating that social media was only a source of Amotivation, for example: “there’s nothing that inspires me to do my workout. If anything if I see one of those muscle guys on there it just gives me more anxiety.” (P5). One man spoke of the conflict created within himself upon viewing idealised body imagery when asked if he found it motivational or inspirational:

> Erm…not inspirational, motivational to try new things sometimes – yes erm and obviously every now and again I will come across people I follow and those who have gone on a weight loss journey or those that have gone through surgery and stuff like and obviously I identify with that but sometimes the negative comes in and I think Jesus he must have had a better surgeon than me, he has a six pack and I don’t you know. But so, yeah, that would be, but I don’t find that particularly inspirational no. (P6)

Others spoke explicitly of how they did not experience any feelings of motivation from viewing fitness based social media. For example, one participant when discussing the feelings they get from viewing idealised bodies on social media said: “for me I never get motivation from seeing those images or videos” (P7), another described how viewing others exercising on social media did not inspire them to follow suit: “I’m exposed to lots of different types of exercise but I wouldn’t necessarily say that then sparks like an interest for me to then go and explore it” (P11). It was even the case for some participants that they had unsuccessfully attempted to use fitness based social media as a way of developing their own motivation, but found this attempt to use social media as a controlling motivational tool to be in vain:

> Well I used to follow *laughs* lots of kind of, aesthetically pleasing people who have that kind of life in the hope that it would kind of motivate me to follow the same suit. And then I quickly kind of realised that it wasn’t very helpful (P12)

Social media as an educational exercise tool (1.3)

Social media was more commonly cited as a source of practical and educational advice for exercise, something noted by 16 participants, for example: “I follow quite a few climbers and mountain bikers on Instagram erm just because I like watching the videos and some of them will put training tips on there and I try and work those into my routines sometimes” (P3). Given the nature of platforms such as Instagram being dominated by pictures and videos, this was seen as particularly useful for

learning new exercises: "…I just find it very much like a recipe for making a meal sort of thing, I can't read that stuff, I need to see somebody doing it and then I can replicate it and then it works really well"(P20).

Participants noted that even if social media was not inspirational, it could provide utility and support autonomous motivation by introducing them to new ideas and exercises that they were excited to try: "…not inspirational, motivational to try new things sometimes" (P6). The usage of social media for learning practical exercise information was deemed positive by all participants, for example:

> …so I found that when I followed him and I started doing that my results sky rocketed because I was training in lower rep ranges than I was used to and I was pushing myself and going heavier than I had, not had to but than I was used to, so he was definitely very influential (P1)

YouTube provided a platform that was particularly popular with men from an educational perspective for a variety of topics including health and fitness with several men consuming this type of content, for example: "Hmm, generally like lectures, talks, podcasts, stuff like that." (P17) and others deriving sport specific routines and technique advice from it: "…that will be based on say how to improve your technique in rowing or how to do different routines in the gym to compliment different sets of exercises or things."(P10). This shows how content was used as a means of gaining practical knowledge that men could apply in their own lives and exercise routines.

Most participants demonstrated an awareness of the varying quality of information on social media and the need to be critical of what they consumed, for example: "If I see something on social media, I don't trust it, because I can say I'm a PT and put a video online and say do this exercise to do this but I don't know your credentials"(P5). When speaking about fitness based social media, participant 1 was particularly expressive of the need to be critical: "...people need to utilise their critical thinking and learn things for themselves because then, then and only then can you look at a platform or look at an influencer posting things and go hmm that doesn't sound right…"

Social Media and Self-Development (1.4)

Several participants discussed the idea of self-development and constant progress, speaking about the development of the body, one's career, one's health and education as important parts of their life. Whilst this could be healthy and positive if pursued autonomously, it was evident these ideas were often encouraged by social media and could become more controlled and obsessive, with one participant reflecting on a past obsession with this:

> I was watching some mad unnecessary stuff but I felt like I had to cos if I watched these relationship bits of advice then I'll be able to get a good girlfriend and if I watch all these fitness influencers then I'll be able to get a six pack and you know if I watch all of these self-improvement videos then I'm gonna feel like a rockstar you know and it was all a bit…unnecessary really (P15).

Some participants discussed the idea that social media should be used as a tool for education and self-development, and if it was just for socialising or enjoyment then this would be a waste of time:

> I think sometimes I look at Instagram and I think what is the point, unless you are finding something that is going to progress you academically, financially err then you are just taking the time to post pictures for what?... (P12)

Several men also discussed the pressures from media and social media on men to be a winner. For example, when discussing the cultural ideals seen for men on social media, participant 14 said: ". I know it's not specific to body image but it's all about winning isn't it." (P14). This often took the form of competition both with oneself and with peers, driven by social comparison, further showing evidence of the controlling motivations coming from social media which had the potential to lead to more extreme and deleterious consequences:

> You see these things and you start watching all these videos about self-improvement and stuff and the competitive nature in me comes out like oh I can look like that, I can do that, I can you know, I'm just as good as all of these social media influencers myself and that's when it starts becoming a bit of an obsession and you start taking away from other aspects of your life to get to this point which, probably without PEDs would be unobtainable you know. (P15)

6.3.2 Theme 2: Social Media's role in influencing body image

The second theme explores the role of social media in influencing men's body image. Four subthemes represented differing ways in which this occurred for men: Idealised bodies and Upward Social Comparisons on Social Media (2.1), Mental Health implications of exposure to Social Media bodies (2.2), Pressure to conform to idealised bodies (2.3), The looming presence of steroids (2.4). This theme found that social media was affecting men's perceptions of their bodies through upward social comparisons, leading to a range of difficulties. They also discussed the pressures from social media and wider society they felt on their bodies along with the topic of steroids.

Idealised bodies and Upward Social Comparisons on Social Media (2.1)

Fifteen men spoke of frequent exposure to idealised male bodies, with social media the most common place where this occurred: "so my algorithm has fully gone into muscle men…don't ask me why…its literally like my search page is inflated men" (P19). One participant discussed frequently seeing this despite not looking for this type of content: "I still find though I'm exposed to a lot of like naked skin and yeah I kind of the aesthetic part of Instagram, every day I'm consuming it I guess." (P7)

Fifteen men discussed how they would make upward social comparisons with the bodies they saw on social media, for example when asked about whether social media had had any influence on their body image, participant 11 said: "Yes I think it does, I am exposed to some incredible guys that have some incredible bodies erm…and I guess it does maybe subconsciously you go *exhale* god I wish I looked like that kind of thing…" (P11).

Most men showed an awareness of the ways in which social media was driving social comparison and the negative implications it could have. Despite this, they still recognised that it was a habit that continued to occur: "I think the more that I look at it, the more that I tend to look at other people and feel jealous or whatever the case may be" (P4).

For homosexual men this was often heightened due to physical attraction to such bodies leading to greater exposure to them:

> I probably do follow some health and fitness accounts but completely honest it's not really to get health and fitness advice, it might be because I find the person attractive, like so that's absolutely why and there's never any interaction there, it's just purely seeing their content and not from a fitness point of view purely from an attraction point of view (P13).

Mental Health implications of exposure to Social Media bodies (2.2)

It was evident that this exposure and its inescapable nature had led to negative consequences for some of these men:

> I found that with Instagram and the algorithm it was making me feel all like shit basically. Because I'm gay as well so there's a…I see a guy who's good looking or whatever so I see a photo or whatever and you know the next thing, when you go to the search feature on Instagram and it's based on the algorithm of what you have liked (P6).

This had led to some participants adopting unhealthy and disordered eating behaviours, sometimes as a direct result of following social media advice, for example when speaking about a heavy consumption of fitness based social media in the past one participant noted: "…I think I was aware that it was affecting me…you know sometimes I would do some mad diets…" (P15)

Comparison with others was noted by a number of participants as being driven by social media and having a negative effect on their wellbeing: "I compare too much and that gets me down so I don't think it's a great tool for my mental health." (P13). This was particularly prominent for gay participants, for example when one man was speaking about what they see on their Instagram search page he said: "the first 20 or 30 things I'd see would be these massive, ripped, buff, gorgeous men and it just got too much and it was like "I don't look like this guy, I don't look like this guy"(P6)

Desirable male bodies on social media came from a variety of sources including the presentations of men's peers and friends on social media:

> I've been triggered by something on social media whether I see a friend like X looking great with his abs thinking wouldn't it be great, like now I'm in my 30s wouldn't it be great to just get in the best shape of your life or run the fastest 5k of my life when I'm 32 kind of thing… (P15).

Pressure to conform to idealised bodies (2.3)

Many participants discussed the pressure they felt from a range of sources including friends, family, partners, wider media and social media to achieve and maintain a certain body type:

> I know there are plenty of people out there in relationships who aren't fit or whatever that don't have aesthetic bodies so I know that exists regardless of the fitness and the body but…when it comes down to vanity and all of that then yeah, it's essential (P13)

> When discussing how consistent praise for their looks from childhood through to adulthood had led to a constant anxiety about their appearance, one man said:

> …so I need to pursue that to be more attractive and to be better in myself so basically just question things that right now I don't even know how I could question it, they would really trigger me and it was really an obsession to chase a certain look to, to be more attractive, a perfect look I guess…(P7)

Some men expressed feelings that even though they knew social media was warping their view of reality regarding bodies, they still felt that they should try and live up to these standards or risk being dissatisfied "Everyone thinks everyone is fit and gorgeous and what not and then if you're not then

we have to pretend that its ok and it's not ok, I mean its ok if you're fine with it but most people are not."(P14).

It was also evident that some men felt the need to present their bodies on social media to be desirable and to keep up with social norms: "Yeah you have to play the game otherwise you're out." (P5). This also provided a platform where some men were able to receive validation for their bodies: "yeah I would sometimes find myself posting a torso picture on Instagram just to get validation" (P11). Similarly, it was also a place men could receive validation not just for their bodies but for the effort they were putting in toward their bodies: "I had to check in at the gym on Facebook, everyone had to know that I was there and that I was on this improvement journey and whatever else, I had to scream and shout about it." (P15)

The looming presence of steroids (2.4)

The topic of steroids was raised by 17 participants and it was a subject that loomed large when discussing fitness based social media "when you see a guy on YouTube say with muscles and a six pack you think oh this guy must know what he's talking about but you don't know if he's taking steroids…"(P8) When presented with a social media post from the well known actor "The Rock" several participants brought up steroids: "he's done well for himself but he's 50 and he's having to take steroids to keep up the, the public view of him" (P2).

There was also a view from several men that a lot of social media presentations were the product of undisclosed steroid use, further leading to body image problems: "yeah there's a certain danger to using someone, following someone who is not being authentic in how they have got there" (P12)

Participants were not asked about their own steroid usage but one participant did discuss the physical and psychological effects of prior usage, which came about as a result of social pressure from a range of sources including social media: "…so I put on 8kg in a month like oh can I push to go more like can I go bigger and bigger and it starts the whole process in your head like where do you stop with it in your head, I guess that's quite scary like where do you stop with it."(P11). He also noted how physical and mental health concerns and experiences had put him off using again:

> I wouldn't do it again just cos I know about the health side of it and I want to look after my health in more regards to my physical appearance and if I can get a medium gain then even better but steroids really affected me in a bad way afterwards… (P11)

6.3.3 Theme: 3 Beyond appearance: strategies for fostering a positive body image

The final theme explores the ways in which men were proactive in combatting body image threats and fostering a more positive view of their own bodies. This was often spoken about in relation to social media but did extend away from this topic as well. Four sub themes examine the differing ways in which men did this: Scepticism of social media bodies (3.1), Exercising for more than appearance (3.2), Sacrifices for the Ideal body are not worth it (3.3), Concern at the damage and problems from seeking an ideal body (3.4). This theme looked at the ways men navigated body image threats and how they were able to bolster their own body image through exercise and a critical understanding of social media content.

Scepticism of social media bodies (3.1)

Whilst frequent exposure to idealised bodies was regularly discussed alongside frequent exposure to fitness based social media, there was also a lot of scepticism shown towards these presentations, particularly around the staged and unnatural nature of them: “Everything is very produced and very staged and not natural, and that, that’s how people portray themselves and this is the image that they want to project…” (P9)

This was most frequently noted about the platform Instagram, where there was often an expected inauthenticity about content: “Instagram is about you know modified pictures and edits and filters…” (P11).

By attributing steroid use to many of the online presentations, some men were able to distance themselves and their goals from these bodies, as well as applying a critical eye to these types of physiques:

> I don’t expect myself to ever achieve the kind of crazy physiques that you see on the internet because I know that often they are on something and they are there selling supplements where the normal population will look at that and think I can look like that if I take that… A lot of these people are fake, what I would call fake natties and they look ripped and more than likely they are taking something and they say if you do this and take these supplements you will look like me, you know what I mean… (P2).

This scepticism was often so extreme it often led to a disbelief in the reality of much content, for example in response to seeing a "before and after" post, one participant remarked: "…I always struggle with those, just because like because…my mind goes straight to – is this real?" (P5).

Exercising for more than appearance (3.2)

A focus on what the body can do rather than what it looks like was regularly cited as fostering positive wellbeing. Often this took place in non-gym environments where autonomous motivations were frequently cited in relation to exercise, for example: "… I've ridden the Guild wheel maybe 30, 40 times now and every time you go round you'll always see something different and that's one of the reasons why I enjoy doing things" (P3). This was particularly salient for outdoors activity in nature "I love outdoors, I, I'm always going to go fishing, I'm always going to walk in the woods" (P14). These men also spoke of how they also used social media as a means of further exploring these interests, for example: "I've starting following like climb daily, lattice climbing err I follow a couple of mountain bikers" (P3)

When asked how they felt about their bodies, most participants responded exclusively about the way it looked, and required further prompts to discuss it from other perspectives such as functionality. Whilst feelings about body aesthetics were mixed, most participants were positive about the functionality of their body, with 15 alluding to this, for example: "From a functional point of view I'm pretty happy, my body can – within reason – do whatever I want it to do at any given moment" (P4); "My body is functioning very well" (P16). It also brought about a sense of pride in some of the physical achievements and consistency achieved by many of the participants. One participant who had previously discussed difficulties with their body image from an aesthetic perspective noted: "I feel quite good about myself, I, I don't think it's any mean feat to walk 17000 steps per day on average over a period of 6 months or 15000 steps over a year" (P2).

Surprisingly, whilst physical health was a consideration for most men in why they exercise: "Mostly it's just to stay fit and healthy I think to aim for longevity and a general level of fitness" (P20), mental health was discussed more often with all men citing this as motivating factor for exercise. In some cases, exercise was discussed as a calming and mindful activity and a chance for men to do something for themselves: "…it's the mental clarity that I get from exercise, that I keep coming back to. There's something about working out that's almost like active meditation because you're so focused on what you're doing…" (P4); "It's a real *breath*, just you and the water, yeah and you can you know, I don't know what do I think about when I'm swimming? I don't know I suppose I just I usually count the number of strokes that I do and it's just so calming." (P5).

Others noted that exercise worked as a powerful way of maintaining their mental health and preventing poor mental health: “I have recently gone through a bit of a rough patch with the mental health and I found that, if, if as long as I keep going to the gym things don’t get really bad…”(P11); “…this is why exercise is so important…it’s a good way of stabilising my head…”(P8)

Sacrifices for the Ideal body are not worth it (3.3)

For many men, the priorities in their life had led to a recognition that the sacrifices required to achieve the types of idealised physiques they saw on social media were not worthwhile:

> …and this is generally driven by celebrities, you see people that are older on Instagram showing their bodies and things and they are in amazing shape and you don’t realise that they are like, they never drink, never drink any sugar, goes to bed at 7pm every night and gets up at 3am to do a workout and literally yeah, erm, is that really ideal and living their best life? *laughs* (P18).

Sacrifices of time and close relationships with friends and family were commonly cited as things participants would not want to do in pursuit of a more muscular body “these various things of the things you have to do to get a body like that, you do have to sacrifice something else whether it’s your free time, your time with your kids…” (P3).

For many participants, they were aware of the idea of balance in their life, making sure they were able to dedicate sufficient time to all the things that were important to them. This often meant breaking free from the controlled motivations associated with the pursuit of an ideal body and living more autonomously:

> …then it came in time that I got some balance in my life, I want balance in my life, I don’t want to have to restrict myself or...I didn’t want to restrict myself in any way and I wanted to be able to go and travel and you know eat what I wanted, go out and have a beer if I wanted, I didn’t want to obsess over it and go out and live my life how I wanted to (P15).

Concern at the damage and problems from seeking an ideal body (3.4)

There was a concern from many men about the potential risks, harm and damage that could come from body image pressures and the pursuit of the ideal body. This came in several forms, including the risks associated with anabolic steroid use: “…but yeah they’re absolutely ripped but they aren’t healthy, they’re on steroids” (P2). Some of the more extreme practices with regards to lifting weights and supplementation and the physical adaptations required to achieve many of these bodies was also seen by some as dangerous and highly concerning:

> …but if you are a slave or are enslaved by exercise or part of exercise because you are looking for a body that is unsustainable for your age because then you see people damaging their bodies and doing things like crazy and you wonder what is behind this, this drive or this craziness behind this. There are so many things in your life where you can make a difference, what is the point in damaging your body? What will that bring you to justify going through that to bring about that violence? (P9).

It was not just physical health issues that concerned men, but also mental health concerns associated with body image pressure. This had led to serious consequences for several of the men in the study and their peers:

> …and I feel like a lot of these people don't realise the impact it is having on their mental health in the long term which then makes me sad because you know I don't, I don't like it…I'm very, I'm not against suicide but I know the other side of it and what that can lead to and I have lost a couple of friends to depression and know that in itself that may have had some impact on them which led to all this stuff and them taking their own lives so like you don't understand how that had an impact on your own mind and what that can lead to. Cos the real sufferers of suicide are those that have stayed here and it's, it's a horrible thing to really go through, you shouldn't have to be burying your friends because of like all of this social pressure that we all have, especially as gay men, its, it's very damaging and its sad to see all these people doing it to themselves and not realising what they're doing (P19).

6.4 Discussion

This study sought to investigate the experiences of physically active men (aged 22-46) with regards to physical activity, motivation, body image, and understand what role social media played in affecting these areas. Using a semi structured interview, participants were able to discuss in detail their experiences of physical activity, exercise motivation and body image. They were also able to discuss their experiences with social media and what role it played in affecting their body image and exercise experiences, in addition to how they took an active role in their relationship with social media. This discussion will cover three sections exploring 1) Social Media's role in influencing exercise motivation and behaviour 2) Social Media's role in influencing body image 3) Beyond appearance: Strategies for fostering a positive body image. SDT will be used as a conceptual framework for understanding men's motivation and how this interacts with their body image.

6.4.1 Social Media's role in influencing exercise motivation and behaviour

Whilst a minority of men discussed deriving motivation and inspiration from social media, the majority did not feel that social media was a motivational tool for their physical activity. The lack of motivation discussed by most participants coming from social media in the present study reflects much of the previous research on the topic that has used both qualitative and quantitative designs (Arigo et al., 2021; Fatt et al., 2019). The finding that some men found social media motivating whilst others did not, has been seen in other contexts including the use of social media interventions (Tate et al., 2015). Others have used experimental methods to assess whether fitness based social media has a direct effect on exercise behaviour, with no significant effects detected (Robinson et al., 2017). The present study was able to build on this quantitative research by examining the individual experiences of men's social media use and exercise motivation. This showed that a minority of participants in the present study spoke of fitness social media being motivating, but this was always associated with controlling, appearance-based motivation, something seen in previous research looking at men's exposure to fitness social media (Fatt et al., 2019). In addition, this was often supported by feelings of guilt, and from upward social comparisons eliciting introjected motives, which are known to be powerful short term motivators for exercise (More & Philips, 2021). Introjected exercise motives around weight and shape have shown less efficacy for long term behaviour and are associated with other negative wellbeing outcomes (Jankauskiene & Baceviciene, 2021). Men's motivations to exercise to achieve more muscular bodies is often rooted in body image insecurities and frustration of basic psychological needs (Selvi, 2018; Selvi & Bozo, 2020). Men who are less autonomy orientated, and who perceive higher levels of social pressure have also been found to be more vulnerable to muscularity concerns (Edwards et al., 2016). Social media pressure was discussed by several men regarding their appearance in the present study, and has been seen in other research examining men, social media and body image (Chatzopoulou et al., 2020). Furthermore, some men in the present study discussed a lack of motivation from seeing idealised bodies because of previous difficulties with their body image because of social pressure and had re oriented their motivation toward more autonomous goals such as health and wellbeing (Ryan & Deci, 2017).

These findings suggest men's perception of fitness social media is often that it is not a motivational force, with any motivation coming in the form of external, appearance-based motives. In the current study, participants did not discuss how social media positively impacted enjoyment, meaning and health, therefore there was no evidence of social media supporting more autonomous motivations

to exercise. The present study also contained three fitness professionals who demonstrated scepticism for much of the motivational content on social media. This may in part due to being creators themselves who are aware of how fitness social media content creators seek to advertise and gain followers (Wymer, 2022).

Social media was more commonly used by men for practical exercise assistance. This often involved men learning new training exercises from social media and then replicating them in their exercise sessions, usually with great success. This mirrored findings by Easton et al. (2018) who found young men and women found "fitspiration" (Fitness-Inspiration) social media particularly useful for learning new exercises. Another previous study by Durau et al. (2022), looking at feedback on fitness YouTube videos, found that users did find content motivating and practically useful, similarly to the present findings. A study of Chinese university students found content quality and perceived usefulness as crucial factors in social media content influencing exercise behaviour (Gao et al., 2021). The present study also found participants regularly critiquing the credentials of fitness influencers, and their attractiveness and desirability of their bodies was also frequently cited, mirroring findings by Durau et al (2022). This further highlights the interplay between motivation and body image for some men, with the desire to look like the influencers demonstrating exercises sometimes discussed. Perceived attractiveness of influencers can have mixed effects on men's exercise intention and motivation (Peng et al., 2019). This may be because of more controlled, introjected forms of motivation arising through upward social comparisons (Thøgersen-Ntoumani et al., 2018) that men experience in different ways, as found in the present study. There is limited research on the use of social media for finding specific exercises and as a training tool, but this was cited by most participants who used platforms such as Instagram to learn specific exercises and find new exercises.

Whilst most participants did not state that they found social media to be motivating when it came to exercise, frequent exposure to muscular male bodies led to appearance-based exercise motivations through upward social comparisons, as evidenced in the sub themes "Social media as a motivational tool" and "Idealised bodies and Upward Social Comparisons on Social Media". This has been seen in other research, and whilst these appearance-based motives can be powerful short-term motivators, they are not sufficient alone to produce long term exercise adherence (Fatt et al., 2019). Appearance based motivations, which were both seen frequently in the present study, have been negatively associated with long term exercise behaviour in previous research (Ingledew & Markland, 2008). This means that this controlling form of motivation is not sufficient for sustaining long term exercise behaviour alone. Appearance-based motivation has previously been found to weaken the link

between exercise and positive body image (Homan & Tylka, 2014), meaning that whilst exercise usually has a positive effect on body image, appearance focused exercise does not. Many of the participants who were most motivated by appearance in the present study showed elements of body dissatisfaction and a feeling that their body "could be better".

This may help to explain the conflicting findings within Theme 1 whereby some men found fitness based social media to be motivating, whilst most did not. Appearance based exercise has been found to weaken the link between exercise and positive body image (Homan & Tylka, 2014; Greenleaf & Rodriguez, 2021). Some participants who discussed having struggled with body image issues throughout their lives were particularly critical of fitness social media and how it does not provide them with motivation, often finding it de motivating. Additionally, participants who were fitness professionals were particularly sceptical of fitness based social media content and advertising, which often meant they did not describe fitness social media as being motivating. Previous research has found that women with high levels of autonomous motivation were more critical of fitness social media (Wood & Watson, 2023), and this may also help to explain the lack of motivation many men discussed here in relation to social media.

Several men discussed the idea of "self-development", both from a more general perspective and also in the context of social media and how social media can support self development. Chatzopoulou et al. (2020) found that men striving for a more muscular body inspired by Instagram, enjoyed heightened feelings of confidence and masculinity. The concepts of confidence and masculinity were discussed by some men in the present study as by-products of striving for a more muscular physique.

Negative aspects were also discussed, including heightened anxiety, sacrificing other areas of their life and further mental health implications, many of which were also identified by Chatzopoulou et al. (2020). Hegemonic masculine ideas are still prevalent on social media, and men are often encouraged to pursue ideas of victory and dominance, often through their bodies (Trott, 2022). Throughout the sub theme "Social Media and Self-Development" men discussed the cultural pressures on them to be winners and develop their bodies and selves in line with these ideas, with some men discussing how this had become more extreme at previous stages of their life. Social media is dominated by extremes, particularly regarding body presentations (Rodgers & Rousseau, 2022), and this influence can be harmful, as described by a minority of participants in the present study. This may also represent the controlling nature of appearance-based motivation (Pu et al.,

2022), and its links to more excessive exercise and extreme behaviours seen in previous research (Biggs et al., 2022), that were discussed in the present study by a minority of participants.

6.4.2 Social Media's role in influencing body image

Most men cited the frequent presence of idealised bodies on social media which is consistent with previous literature detailing the ubiquitous nature of idealised body presentations on social media for men and women (Vuong et al., 2021). This resulted in upward social comparisons being drawn between participants and these presentations, leading to a variety of negative consequences, something also found by Easton et al. (2018) in their sample of young male and female "fitspiration" users. Research has previously shown links between introjected regulation and body related envy (Pila et al., 2014), and feelings of anxiety and guilt were expressed by men in the present study in relation to viewing idealised bodies and being motivated by appearance to exercise.

Negative consequences from upward social comparisons on social media have been long documented (Vogel et al., 2014), but much research has been dedicated to finding that females are more adversely affected by this than males (Fox & Vendemia, 2016), in part due to more self-hopeful feelings from men about their bodies (Franzoiet al., 2012). The present study highlights the negative effects upward social comparisons on social media are having on men, and it is important that this demographic is not forgotten about in this regard. Much of the previous research in this subject area has used quantitative methods (Fox & Vendemia, 2016; Franzoiet al., 2012). The present study design, using interviews, was able to provide a space where men feel comfortable to discuss issues around their bodies and motivations which may have helped them to be more open about this topic, revealing information that may not come out of quantitative methods. Despite these challenges, men did show strategies and attitudes that could have a protective influence against the social pressures and explicit exposure to idealised body types that could threaten men's own body image. These will be presented in the discussion of Theme: 3 Strategies for fostering a positive body image. In addition, not all men reported upward social comparisons or negative emotions from social media use and exposure to idealised bodies, and a minority refused the idea that this content was having a negative impact on them. This has been seen in previous research examining men's experiences with fitness based social media with some men having much more positive experiences than others depending on the type of content consumed and individual personality differences (Chatzopoulou et al., 2020; Sumter et al., 2022).

The present sample included three fitness professionals and a digital marketer, who all had experience in creating fitness content on social media. This experience of being the creator as well

as the consumer had led to them being sceptical of many of the presentations seen on social media, discussing factors including edits, filters, and criticising the validity of many presentations. This demonstrated the potentially protective impact of greater media literacy when engaging with fitness based social media which has been shown in prior research (Ahadzadeh et al, 2022). They discussed strategies including applying critical thinking when exposed to idealised and extreme body imagery on social media, in addition to actively avoiding and unfollowing this type of content on social media to prevent any negative consequences. Previous research has shown evidence of the utility of these strategies for promoting positive body image in women (Evens et al., 2021), and the present study would suggest this also occurs in men.

Some men discussed more serious issues surrounding their mental health and body image including anxiety, depression and disordered eating behaviour. The impact of social media, and particularly fitness based social media was discussed as a contributing factor by these men. A recent systematic review by Blanchard et al. (2023) found positive correlations between various types of social media use total time, platform use, fitness social media use) and depressive and disordered eating symptoms, body dissatisfaction, and anxiety in male and female adolescents. Research in adult men has also frequently found fitness social media use to be associated with higher drive for muscularity (Seekis et al., 2021), which is in turn linked to dietary restraint and binge eating practices, depression, anxiety, low self-esteem, perfectionism and emotional dysregulation (Chaba et al., 2019). Men in the present study who discussed disordered eating practices did so in relation to introjected motives to change their bodies to conform to those seen on social media. Previous research has demonstrated that disordered eating is related to controlling forms of motivation and that higher levels of autonomy are protective against disordered eating (Hricova et al., 2020). The link between controlled motivations, disordered eating and drive for muscularity in men has been previously documented (Edwards et al., 2016), and men in the present study showed further evidence of how these areas are linked.

Most participants discussed the pressure they felt from a variety of sources including friends, family and the media on their bodies, consistent with the tripartite model of influence on body image (Tylka, 2011). Social media only heightened this pressure and served as a source of pressure from both celebrities and influencers and peers and family. Some men discussed how social media warps their sense of reality and what others' bodies look like, an issue that has been frequently documented in previous literature (Weinstein, 2017). By presenting posts of peers alongside those of celebrities, social media closes the perceived gap to celebrities and elicits further social

comparisons with both peers and celebrities (Frison & Eggermont, 2016). Whilst some men noted the different abilities and lifestyles of some influencers and celebrities, upward social comparisons with these individuals were still common.

Research has typically shown that body image and appearance concerns decrease over adult life (Tiggemann, 2004), and body satisfaction increases (Hockey et al., 2021). Additionally, some research has suggested that men's body image concerns change over time with muscularity more important in younger men, and body weight and fat more of a concern as they age (McCabe & Ricciardelli, 2004). In the present study men in their 20s, 30s and 40s discussed pressures pertaining to body fat and muscularity, whilst some men in their 40s believed that these issues were worse for younger men. This perception may be based on some reality (Hockey et al., 2021) or may reflect an exaggerated belief that social media presents a particular danger to young adult's body image (Kiefner-Burmeister et al., 2023).

Some men also discussed the pressure to present themselves a certain way on social media, in a socially desirable manner to maintain status and attract potential partners. This occurred similarly to previous work looking at young female Instagram users who sought to post pictures that represented what they wanted to portray, and what they believed others wanted them to look like (Toll & Norman, 2020). These attitudes have also been identified in previous qualitative research showing social capital as a driving force in Instagram usage (Kaye et al., 2024), with Instagram frequently used by the men in this study. Evidenced in the sub theme "Pressure to conform to idealised bodies" some men discussed the feelings of validation from receiving positive comments about their appearance on social media, a behaviour well documented in previous literature (Stapleton et al., 2017). Moya-Garófano & Moya (2019) found that appearance focus and seeking validation was linked to contingent self-worth in women but not men in their quantitative study. The present study found that some men did demonstrate appearance contingent self-worth, demonstrating the importance of qualitative research for examining individual's psychological experiences.

Men frequently brought up the topic of steroids in conjunction with body presentations on social media. This topic highlighted the link between social media, exercise and body image as steroids, which have typically been used as a performance enhancing drug, are now used more frequently as an aesthetic tool in conjunction with exercise, often due to pressures from social media (Ravn & Coffey, 2016). The topic was usually raised by men in the present study in a negative context, suggesting many of the bodies seen on social media were the product of steroid usage, and that

many men did not disclose this. There is a wealth of evidence surrounding the physical health risks of anabolic steroid use (Angell et al., 2012, Horwitz et al., 2019), and whilst specifics were not discussed, participants tended to be aware that steroids were generally negative from a health perspective. This served as one means by which men rejected the desirability of some idealised bodies, linking them to steroid use and thus unhealthy consequences.

The negative mental health consequences of anabolic steroid use were also discussed by a smaller number of participants who spoke of how social pressure, including from social media contributed to either themselves or friends having negative experiences with steroids. One participant described suffering a depressive period after a cycle of anabolic steroid use, something that is well documented in the literature (Bolding et al., 2002). One participant also discussed losing friends to suicide because of depression, in part due to societal pressures on image. Whilst anabolic steroid use was not specifically discussed in this context, suicide risk has also been found to be significantly heightened in anabolic steroid users (Gestsdottir et al., 2021). Controlling pressures and extrinsic motivation have been found to be associated with anabolic steroid use in previous research (Donahue et al., 2006) and the present findings would add support to the co-existence of controlled motivation and heightened risk of steroid usage.

A study similar to the present conducted in 2009 by Morgan & Arcelus, looked at the body image experiences of men in the UK, noting that the ideal body at that time was still within biological norms that did not require the use of steroids or other dangerous practices. The authors highlighted the less extreme measures required by men, compared to women at the time, to achieve such ideals. The present study suggests that these trends may have changed in a negative way with pressures from social media to be more muscular noted by almost all participants. Evidenced in the sub theme “Mental Health implications of exposure to Social Media bodies “, this was accompanied by discussions of steroids in conjunction with ideal physiques, as well as the need for rigid dietary practices, supplementation and a dedication to lifting weights. In addition to this, negative emotion and mental health problems because of societal pressure and exposure to idealised male bodies was frequently mentioned. This is in accordance with previous literature noting the link between idealised male body presentations and decreased mood and increased mental health (Allen & Mulgrew, 2020), and disordered eating (Griffiths et al., 2018) risks in men. These point towards worrying trends for men, their relationships with their bodies and the physical and mental health risks associated with this.

6.4.3 Beyond appearance: Strategies for fostering a positive body image

Despite these challenges and body image threats, men showed a range of strategies and attitudes to combat negative influences on their mental and physical health. Most men demonstrated a scepticism of idealised physiques, their authenticity, what was required for them to be developed, their health consequences, and perceived social advantages. Men were particularly critical of hyper muscular bodies on social media. This was highlighted when men were presented with different body presentations from social media, with the most muscular body (an image of the well-known actor The Rock) receiving the highest number of critical comments, alluding to health issues and anabolic steroid use. This mirrors previous work by Murnen & College (2019), who found in their sample of 103 men exposed to thin, athletic and hyper muscular male images, that most counter arguments (thoughts indicative of critical processing that resist persuasive messaging (Engeln-Maddox, 2005)) were made against the hyper muscular images, whilst women made most counter arguments against thin images. This adds further weight to the comparisons seen between thinness as an unhealthy body ideal for women, and muscularity as the male equivalent (Edwards et al., 2016). These findings also highlight the role than personal factors can play in men's interpretation of social media content (Bandura, 2009), and the potential this has to be a protective factor over threats to their body image (Rojo et al., 2023).

Many men in the present study also conveyed the sentiment that they could achieve something approximating an "ideal" body if they devoted the required time and effort, and similarly that their body would reach a more improved state in the future. Similar findings were evident in a study of adolescents by Mahon & Hevey (2021) who found boys had more positive agency over their bodies than girls and were able to use active coping strategies more freely to deal with body image threats, including retaining a belief that idealised bodies were achievable for them. Franzoi et al. (2012) also found men to be more self-hopeful (believing that they could attain certain body types in the future) in the face of body image threats, when compared to women who were more often self-critical (believing one's body is not good enough), in their sample of undergraduate students. Men's self-hopeful approach to body image was present for a minority of participants in the present study. Men's responses to images produced a range of responses however, with some being self-hopeful and others more self-critical, often eliciting upward social comparisons. It may be the case that as male body image pressures are increasing in society, more men are being affected by idealised imagery and are becoming more self-critical of their appearance than previously. This may be true in

the 11 years since Franzoi et al. (2012) conducted their research, with image based social media platforms such as Instagram emerging and gaining over a billion users in that time (Statista, 2023).

In addition to this, several men discussed how the sacrifices required to achieve an "ideal" physique were simply not worth it and they preferred to have balance and prioritise health over the pursuit of a very lean and/or muscular body. The aforementioned topic of steroids showed most men were aware of the negative health implications of steroid use and this helped as a protective factor against the threats of very muscular and lean bodies. Under the sub theme "Sacrifices for the ideal body are not worth it" men also discussed their desire to live a balanced life where they could socialise, be free from rigid dietary patterns and spend time with their friends and family without being preoccupied by their physique and the behaviours required to achieve and maintain it. This adds further evidence to the growing body of literature suggesting many men reject muscular body ideals and are aware of the potential harm and sacrifice involved in attaining such physiques (Murnen & College, 2019). Whilst this is encouraging, the sheer prevalence of muscular bodies on social media and the social rewards associated with them may still lead to body image issues despite men's knowledge of their risks and sacrifices (Gültzow et al., 2020; Chatzopoulou et al., 2020).

Whilst men's feelings about their body from an aesthetic point of view tended to be neutral and, in some cases, quite negative, men's feelings about their body's functionality tended to be positive, demonstrating that this way of framing one's body image may be useful for helping individuals achieve a better relationship with their body. Alleva et al., (2015) demonstrated improved body image using a focus on body functionality in an experimental study of 81 women. Evidence in the subtheme "Exercising for more than appearance" in the present study would suggest men may benefit from a similar attentional focus. It must be noted that the preset study comprised exclusively of men who were regularly physically active, which may have added to the positive evaluations of the functionality of their bodies. The present study does contrast with previous work that has suggested women are conditioned to evaluate their bodies aesthetically, whilst men are conditioned to evaluate their bodies functionally (Chrisler & Johnston-Robledo, 2018). When asked how they feel about their bodies, almost all men spoke about it from an aesthetic perspective and required further prompting to speak about its functionality. This may reflect the sample of men chosen here, but it may also reflect the changing environment in recent years where male objectification has significantly risen (Boursier & Gioia, 2022). These trends suggest that revisions and changes to objectification theory, first posited by Fredrickson & Roberts (1997) may be required to reflect the increasing parity in objectification between women and men in contemporary society. More recent

research has begun to apply self-objectification theory to men with success, but with key differences in the way this applies to men and women (Davids et al., 2019).

The finding that men tended to speak about their body more positively from a functional perspective rather than an aesthetic perspective was linked to the type of exercise men engaged with. Exercise that is not focused on what the body looks like (e.g. sports and outdoors activities) presents an opportunity to do something that often has a positive effect on one's body image and does not objectify the body (Kim & Kim, 2021). These types of activities are also often more motivated by intrinsic motivation, when compared to gym-based exercise, where extrinsic motives such as appearance are common (Richard et al., 1997; Ednie & Stibor, 2017). Outdoors activity and exposure to nature were mentioned by several participants as having a positive effect on their wellbeing and research has demonstrated this to be positive for general wellbeing and body appreciation more specifically (Alleva et al., 2021). The well documented benefits of physical exercise on body image through perceived changes to the physical self and building self-efficacy and confidence (Ginis et al., 2012) are able to be amplified in non-gym-based settings, with the absence of body image threats thus presenting an excellent opportunity for fostering a more positive body image. Previous research has found that sports and outdoor exercise tends to be motivated by more autonomous forms of motivation when compared to gym-based exercise (Ball et al., 2014), and this may also help to explain the different ways men spoke about their bodies in relation to different exercise modalities.

6.5 Conclusion

This study was the first to qualitatively explore the experience of adult men regarding social media, body image and exercise motivation using SDT. Findings show that men have a complex, varied, and bidirectional relationship with social media and its influence on body image and exercise motivation. Most men did not find social media to be a motivational tool for exercise, and those that did derived external, appearance-based motivation from it. Social media was more commonly used as a practical tool for learning about health and fitness, and in particular, new exercises. Most men alluded to making upward social comparisons on social media and this had negative implications on several men's mental health, with issues around disordered eating, body image, depression and anxiety discussed by participants. Many men felt a social pressure to conform to the "idealised" lean and muscular physique, and the topic of steroids was raised by most men in conjunction with ideal male bodies. Despite these challenges, men did display a range of attitudes and strategies for combatting the negative effects of social media on their body image. Several men demonstrated a scepticism of

online body presentations as well as acknowledging the harms and sacrifices that would be required to achieve these types of physiques.

Chapter 7- The impact of aesthetic and functionality focused social media images on men's body image and exercise motivation

Abstract

Experimental research examining the impact of different types of social media on men's body image and motivation to exercise is currently lacking. The present study investigated this using a mixed methods experimental design with 165 men aged 18-50. Men were randomly assigned to one of three groups who were exposed to either: 1. Aesthetic Focused fitness social media images 2. Functionality focused fitness social media images or 3. Control images of landscapes. Participants completed measures of body image, drive for muscularity and exercise motivation before and after viewing 5 images. Participants also wrote their thoughts and feelings about each image whilst viewing them. Quantitative analysis showed no significant difference in the post test scores for body image, drive for muscularity or exercise motivation whilst controlling for pre test scores. Qualitative analysis found that whilst men showed admiration for aesthetic focused images, they were also critical of the purpose and validity of the images. Men rarely discussed feeling motivated by images in either group. Taken together these results suggest that adult men's body image and motivation may not be affected by acute doses of fitness social media imagery, in part due to critical responses to these images.

7.1 Introduction

Results from Chapter 6 (qualitative) in this PhD showed that participants tended to evaluate their appearance more positively from a functionality perspective than from an aesthetic perspective. Furthermore, when asked how they felt about their bodies, all men begun by evaluating it from an

aesthetic point of view, commonly describing it as a work in progress with aspects they would like to improve. When asked about its functionality, most men responded positively about their bodies noting that they functioned well and allowed them to do all the things they wanted to do. Another finding was that men were often critical and sceptical of hyper muscular bodies, particularly on social media and provided reasons including health and life balance as reasons for not wanting to pursue such physiques. The present chapter will build on these findings by directly investigating how aesthetic and function focused social media imagery influence men's body image and motivation to exercise. It will also examine men's responses to this content to help further understand how this type of content impacts men.

Body functionality (see chapter 2.2 for a full description) has received a growing amount of interest in research in recent years as an important aspect of fostering a positive body image (Alleva & Tylka, 2021). A shifting emphasis from what the body looks like to what it can do, has been found to be a crucial component in improving body image in men and women (Gattario & Frisén, 2019). Reflecting the majority of body image research, most studies and interventions examining the effects of body functionality on body image have been conducted in female samples (Alleva & Tylka, 2021), and this idea is less well understood in men.

7.1.1 Aesthetic and Function focused Social Media content and Body Image

Fitness social media consists of a mixture of imagery including focusing on the body as an aesthetic object, and as a functional tool (and often both at the same time) (Tiggemann & Zaccardo, 2018). There is a strong emphasis on what fitness "looks like" on social media (Raggatt et al., 2018), with attention often placed on specific body parts (particularly the arms, chest, and abdominals in men) and on a lean and muscular body (Deighton-Smith & Bell, 2018). This focus on muscularity has also been shown to increase men's drive for muscularity in both observational (Fatt et al., 2019) and experimental (Yee et al., 2020) studies. Whilst these studies have helped to demonstrate links between viewing fitness social media content and lower body satisfaction and higher drive for muscularity, less is known about what specific types of content (e.g. body aesthetics and body functionality) are contributing to this.

A limited number of previous studies have investigated the differing effects of body functionality and body aesthetic focused content on men's body image. Mulgrew et al. (2014) examined the effects of different types of magazine body imagery on men using a 3-group experimental design. This included groups exposed to 7 images for 30 seconds each for a total exposure time of 3.5 minutes, of the "body as process" (body functionality), "the body as object" (body aesthetics), and finally landscapes

as a control group. Findings showed “body as process” images resulted in significantly lower appearance satisfaction in comparison to “body as object” images. The author’s interpreted that men viewing idealised bodies engaged in sport were deemed more natural and desirable compared to posed models, which in turn contributed to stronger negative effects on their appearance satisfaction.

In a similar study using Instagram images, Tiggemann & Anderberg (2020) looked at the effects of fashion models, bare-chested muscular models and control images on men’s body satisfaction. This involved exposing men to 14 images for 5 seconds each (either fashion images, “fitspiration” images, or scenery images). They found significantly lower body satisfaction in the bare-chested muscular group. They also examined motivation to exercise using a single question and found that both the fashion model and bare-chested images significantly increased men’s immediate intention to exercise. Yee et al. (2020) found similar results in their investigation of Fitspiration and thinspiration imagery on men’s mood, drive for muscularity and body satisfaction. Their experiment involved exposing men to 6 images per day at random intervals over a 7 day period of either “fitspiration”, “thinspiration”, or neutral landscape images, which provided a more robust and “real world” design compared with other research in this field. They found that Fitspiration images had the greatest effect in decreasing mood and body satisfaction. These images also led to the highest increases in drive for muscularity and intention to reduce body fat. In summary, this body of research suggests that exposure to fitness based social media may be leading to greater body image and muscularity concerns in men, but there are mixed findings regarding whether function or aesthetic focused content have differing effects.

Whilst these studies have helped to further understanding of the differing effects of function focused and aesthetic focused fitness body imagery on different populations, a number of gaps remain. This subject has not been investigated experimentally using social media imagery, and populations have been either female or exclusively young (18-30) age groups, with no experimental research conducted in populations that extend outside of this demographic. It is important to explore this with older age groups, who are also frequent users of social media (Statista, 2023).

7.2.1 Exercise Motivation and Fitness Social Media content

A focus on what one’s body looks like, and aesthetic focused goals have been characterised as being controlled motivations, whilst body functionality goals are more often driven by autonomous motivations, including the desire to improve one’s health and longevity (Teixeira et al., 2012; Ingledew et al., 2009). This is a simplistic dichotomy however, and people’s motivations to exercise

are usually multidimensional with overlapping and complex reasons (Emm-Collison et al., 2020). This was reflected in the Chapter 6 of this thesis, where participants discussed a range of motivations to exercise, with autonomous health and function-based motivations regularly existing alongside more controlled, appearance-based motives. In addition to this, individual's motivations for engaging in exercise is usually multidimensional, with autonomous and controlled motivations co-existing (Teixeira et al., 2012). This presents difficulty when investigating the impact of fitness media on exercise motivation, which often involves content that focuses on both function and body aesthetics simultaneously (Tiggemann & Zaccardo, 2018). Despite this, it is important that research is conducted in order to better understand how different types of fitness social media influence body image and exercise motivation. Up to the present, the vast majority of research has looked at "fitspiration" or fitness social media as a whole (Tiggermann & Zaccardo, 2018; Arigo et al., 2021), without differentiating between different types, which does help to understand which types of content are having what effects. Additionally, previous research looking at the impact of different types of media imagery on body image and motivation (Mulgrew et al., 2019) have shown differing results, but this is as yet unknown when examined specifically in social media.

A small number of studies have sought to directly investigate the effects of fitness social media on exercise motivation in men. Fatt et al. (2019) found no relationship between Fitspiration engagement (measured by how often participants had seen a variety of fitness hashtags) and exercise motivation in their cross-sectional study of young men. Arigo et al. (2021) used an experimental methodology to investigate the impact of fitspiration content on exercise motivation. They examined post-test measures of exercise motivation and behaviour (measured by attendance at university fitness facilities in the following 7 days), after participants viewed 10 Fitspiration posts with varying messaging attached and a control group. No significant differences in exercise behaviour or motivation were detected between the groups. It was unclear whether the limiting factor was the duration of exposure, the type of content used for exposure, or simply that "fitspiration" content does not significantly impact exercise motivation and behaviour. Once again, the demographic included was young with all participants aged 18-23.

Fitness social media and exercise motivation has also been investigated qualitatively by a small number of studies. These have required participants to provide written responses to fitness social media imagery, to gain a deeper understanding of its effects and how individuals react and respond to such content. Murnen & College (2019) found men were more likely to make counter arguments (negative criticisms of the body presentations) against hyper muscular men when compared to

athletic or thin men (whereas women were most likely to make counter arguments against thin women). This suggests that men are becoming aware of the dangers of hyper muscular bodies, in addition to viewing them as undesirable in many cases. Most of the research exploring the impact of counter arguments (e.g. asserting that certain "idealised" body types may be unhealthy) and applying social media literacy as a buffer to body image threats has been in women (Paxton et al., 2019). New research suggests these strategies and responses (such as guarding against unfavourable social comparisons and critiquing the veracity of social media content) may also work for men (Stiff & Cutts, 2024). Counter arguments have been defined as thoughts indicative of social processing that can help to resist the persuasive intent of messaging in media (Engeln–Maddox, 2005). These are not simply negative comments but involve critical thought or a rejection of the messaging, for example questioning the validity of the image, deeming it unrealistic or unhealthy (Murnen & College, 2018). In summary, this body of research suggests that when men apply critical thinking to the content they consume on social media, it can play a significant role on the impact it has upon them.

Whilst these studies have begun to further understanding of fitness social media's effects on exercise motivation, there are number of gaps and limitations. Primarily, the measures of motivation have been rudimentary with none of the aforementioned studies examining motivation in a detailed or complex way using an underpinning theory, such as SDT. In addition to this, no studies have used samples of men in their 30s and 40s who are regular users of fitness social media (Statista, 2023). This is important as different types of motivation are associated with different practical outcomes and different impacts on wellbeing (Ryan & Deci, 2017). It is also important to explore this in a demographic that includes men in their 30s and 40s as they are as yet understudied but are heavy consumers of social media content (Statista, 2023).

7.1.3 The present study

The present study aimed to build on the previous work of this PhD and previous literature examining the effects of different types of fitness social media imagery (aesthetic and functionality focused), on men's body image and motivation to exercise. Two research questions guided this study.

RQ1: Do aesthetic focused and functionality focused fitness social media images have different effects on men's body image and exercise motivation?

RQ2: How do men think and feel about aesthetic and functionality focused fitness social media images?

Whilst the effects of "Fitspiration" imagery on men's motivation to exercise has been investigated previously (Fatt et al., 2019; Arigo et al., 2021), this is the first study to the author's knowledge to investigate the differing effects of aesthetic vs functional focused imagery on men's motivation to exercise. This is important as this reflects two common types of imagery presented on social media, and their differing effects on men's body image and exercise motivation are yet to be investigated. This type of content has been shown to have consequential effects on other demographic groups in different contexts previous research (Mulgrew et al., 2014; Tiggemann & Anderberg, 2020; Fatt et al., 2019). It is also the first to measure exercise motivation comprehensively using a SDT framework in this context. This is important as it allows for the investigation of different types of social media on different qualities of motivation which may have implications for future interventions and broader practical applications to promoting physical activity using social media. This study also aimed to explore how men feel about, and respond to, fitness social media imagery by collecting their thoughts and feelings about the images they are presented with. This is important for better understanding how men respond to fitness social media images, and if their responses influence the impact this type of content has on them. Based on the literature and rationale presented, the following hypotheses are proposed that relate to the quantitative component of the study:

H1: Exposure to aesthetic focused imagery will lead to greater decreases in state body image scores when compared to functionality focused imagery

H2: Exposure to aesthetic focused imagery will lead to greater increases in drive for muscularity when compared to functionality focused imagery

H3: Exposure to aesthetic focused imagery will have a significant positive impact on external exercise motivation whilst functionality focused imagery will have a significant positive impact on autonomous exercise motivation

7.2 Method

7.2.1 Participants and Procedure

Inclusion criteria required participants to be male, aged 18-50, use some form of social media and exercise at least once per week (for further details see Chapter 3 (Methodology)). Participants were recruited through professional accounts on social media (Instagram and Facebook) and snowball sampling. Participants were presented with the three conditions without knowledge of the

differences between them and were asked to pick one link at random to complete the study. In total, 165 participants were included in the study (*M* age= 32.69; *SD*= 5.58). Institutional ethical approval was obtained prior to data collection. After reading the information section and consenting to participate, participants completed the online questionnaire measuring the relevant variables.

7.2.2 Measures

Demographic information including Age, Ethnicity, Sexual Orientation and Education were collected and can be seen in table 7.1.

State Body Image

State Body Image was assessed using the Body Image States Scale (BISS) (Cash et al., 2002) which is a 6-item questionnaire with items scored on a Likert scale from 1-9. The scale measures how individuals feel about their body and appearance in the present moment with all questions beginning with "Right now I feel…" followed by 9 options for each scale such as "Extremely dissatisfied with my weight" to "Extremely satisfied with my weight". Total scores were calculated by adding together scores for each item. Some items (5,6,7 and 9) were reverse scored as required. Higher scores were representative of greater levels of body and appearance satisfaction. The questionnaire showed good internal consistency in the sample (Cronbach Alpha .851).

Drive for Muscularity

Drive for muscularity was measured using the Drive for Muscularity Questionnaire (DMQ) which has 15 items answered on a Likert scale (from "Never" to "Always", scored 1-6). This includes seven items pertaining to drive for muscularity attitude (e.g., "I wish that I were more muscular") and eight items relating to drive for muscularity behaviour (e.g., "I life weights to build up muscle"). Drive for muscularity was calculated by adding scores for all 15 questions. The questionnaire showed good internal consistency in the present sample (Cronbach Alpha .887).

Exercise Motivation

Exercise Motivation was measured using the Behavioural Regulation in Exercise Questionnaire (BREQ-3) (Cid et al., 2018). This questionnaire contains 24 items that are measured on a Likert type scale (scored 1: "not true for me", 2: "rarely true for me", 3: "sometimes true for me", 4: "usually true for me", 5: "very true for me") and includes 4 questions pertaining to each of the motivational orientations developed in SDT. Example components include "I enjoy my exercise sessions" (Intrinsic Motivation), "I consider exercise part of my identity" (Integrated Regulation), " It's important to me to exercise regularly" (Identified Regulation), "I feel guilty when I don't exercise" (Introjected

Regulation), “I exercise because others will not be pleased with me if I don’t” (External Regulation), and “I don’t see why I should have to exercise” (Amotivation). Scores for External Regulation and Introjected regulation were added together to provide a total score for Controlled motivation. Intrinsic, Identified, and Integrated Regulation scores were added together to provide a total value for Autonomous motivation. The questionnaire showed good internal consistency in the present sample (Cronbach Alpha .815).

7.2.3 Images

Images were taken from public Instagram accounts with permission from the creators sought for all images. Three conditions were used for the study: 1: Aesthetic focused body images (images where the appearance of the body is the most salient aspect), 2: Function focused body images (images where the functionality of the body is the most salient aspect), 3: Control images of landscapes. For images in groups 1 and 2, a bank of 20 images was assembled of fitness social media posts from men which emphasized either the presentation of their physiques or the functionality of the body with exercise. To better ensure the validity of these images, and to ensure they accurately represented the groups they were selected for (aesthetic and function focused), these images were rated on a scale of 1-10 for aesthetic focus and function focus by 3 academics with the 5 highest scores for aesthetic and function included in the final study. Some images were accompanied by captions whilst others were not. This reflected whether the source images had captions and represents the experience on Instagram where some images have captions and others do not. Images were presented in the study as they would be seen on social media. Example images can be seen below (Figures 7.1,7.2 and 7.3). All images are included in Appendix 3.

Figure 7.1

Example of an Aesthetic Image

Figure 7.2

Example of a Functional Image

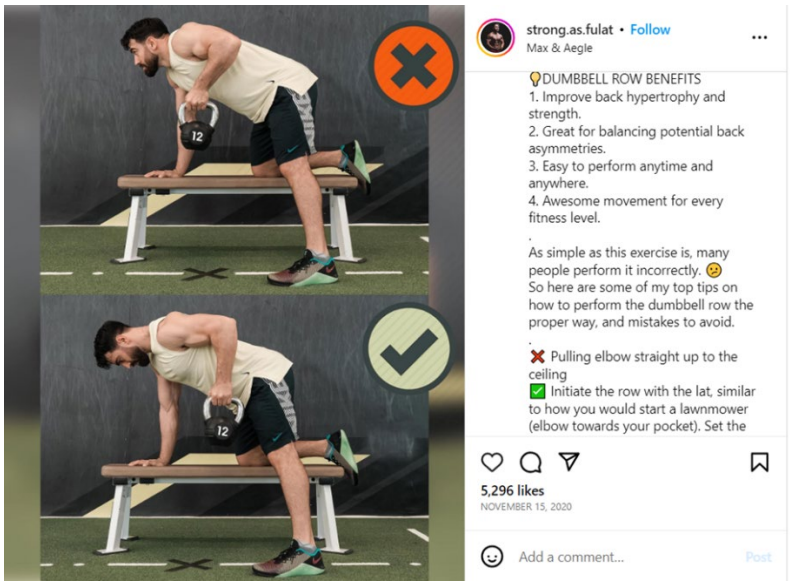
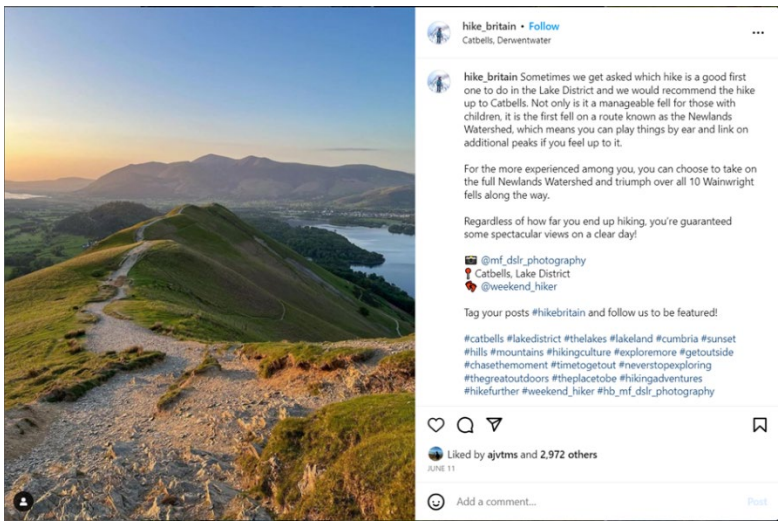


Figure 7.3

Example of a Control Image



7.2.4 Procedure

The study design was based on a prior experiment investigating function and aesthetic focused magazine imagery on men's body image (Mulgrew et al., 2014), and another experimental study looking at the impact of men's fashion and men's fitspiration social media content on men's body image (Tiggemann & Anderberg, 2020) (For further detail see Chapter 3). Participants were presented with three unnamed links which took them to one of the exposure procedures, leading to a randomised allocation. Participants were explicitly told to complete only one of the questionnaires. After completing demographic, state body image, drive for muscularity and exercise motivation questionnaires, participants were then presented with 5 images (either body aesthetic focused, body function focused or control images of landscapes). Participants were asked to write a brief description of each image along with any thoughts and/or feelings they had about the images as used previously by Murnen & College (2019). This was done for two reasons. 1: To ensure participants were viewing the images and considering them in detail. 2. To provide qualitative data to be subsequently analysed thematically. Whilst Mulgrew et al. (2014) used 7 images, and Tiggermann and Anderberg (2020) used 14, both only exposed participants for 5 seconds to each image. This study sought to expose participants to images for a longer duration on each image and thus total exposure time was longer than in these previous studies. To the author's knowledge, this was the first study to combine a thematic analysis with quantitative pre/post-test findings in this topic area. Following this, participants completed state body image, drive for muscularity and exercise motivation questionnaires again.

7.2.5 Thematic Analysis

The comments provided for each image were analysed using thematic analysis (Clarke & Braun, 2017). The comments were coded, with these codes then generating a set of themes. These themes were then reviewed by three academics and refined to ensure accurate representation of the data and relevance to the research question. The strategy used followed the same process as the data analysis in Chapter 6 (see this chapter for further information on this.) For a more detailed explanation of this methodology and how it was applied in the present study, please see Chapter 3 "Methodology".

7.2.6 Statistical Analysis

The pre- and post-test scores for state body image, drive for muscularity and exercise motivation questionnaires were statistically analysed using the software IBM SPSS Statistics 26. Data was entered and coded numerically where appropriate (e.g. Likert scales Strongly Disagree – Strongly Agree were coded 1-6). Skewness and Kurtosis analysis showed that all relevant variables were normally distributed. A set of ANOVAs were conducted to check the three groups did not differ significantly in their pre-test scores of state body image, drive for muscularity or exercise motivation. Following this, one-way ANCOVAs were conducted to investigate if there were significant differences in the post-test questionnaire scores, whilst pre-test scores were included in the analysis as a covariate.

7.3 Results

7.3.1 Quantitative Analysis

Demographic information of the three groups can be seen in Table 7.1

Table 7.1

Demographic Information

	Age	Ethnicity	Sexual Orientation	Education
Aesthetic (N=59)	32.69 (5.584)	78% White 5.1% Black 6.8% Asian 6.8% Hispanic 3.3% Mixed	76.3% Heterosexual 20.3% Homosexual 3.4% Other	High School: 11.9% Degree: 40.6% PostGrad: 37.3% Doctorate: 10.2%
Functional (N=57)	35.16 (7.907)	89.2% White 1.8% Black 3.6% Asian 1.8% Hispanic 3.6% Mixed	68.4% Heterosexual 29.8% Homosexual 1.8% Other	High School: 14% Degree: 45.6% PostGrad: 31.6% Doctorate: 8.8%
Control (N=55)	35.82 (7.419)	80.3% White 3.6% Black 7.2% Asian 1.8% Hispanic 7.2% Mixed	70.9% Heterosexual 23.6% Homosexual 5.5% Other	High School: 12.7% Degree: 38.2% PostGrad: 36.4% Doctorate: 12.7%

7.3.2 Preliminary Analysis

Baseline Difference Testing

A series of one way Analyses of Variance (ANOVA) were conducted and showed that the three conditions did not differ significantly in pre-test measures of state body image, drive for muscularity, internal or external motivation (all $p>0.05$). No significant differences were seen between the three conditions for State Body Image ($F(2,168) = 1.003$, $p = .369$), Drive for Muscularity ($F(2,168) = .759$, $p = .470$), Autonomous Motivation ($F(2,168) = 2.830$, $p = .062$) or Controlled Motivation ($F(2,168) = .408$, $p = .666$.

Mean and standard deviation scores for the pre and post test scores for each condition can be seen in Table 7.2.

Table 7.2

Pre- and Post-Test Scores for State Body Image, Drive for Muscularity and Exercise Motivation

	Aesthetic *M* (*SD*)	Functional *M* (*SD*)	Control *M* (*SD*)
Body State Pre	32.22 (9.53)	32.78 (7.23)	30.51 (9.60)
Body State Post	31.25 (10.73)	32.14 (7.79)	30.89 (9.87)
DM Pre	26.15 (8.09)	25.75 (7.67)	27.60 (9.20)
DM Post	26.22 (8.58)	25.30 (8.42)	26.89 (9.49)
Autonomous Mtvn Pre	47.98 (9.37)	48.07 (10.54)	48.07 (10.54)
Autonomous Mtvn Post	48.32 (11.11)	47.19 (11.88)	47.19 (11.88)
Controlled Mtvn Pre	19.97 (4.82)	19.49 (4.87)	19.16 (4.64)
Controlled Mtvn Post	19.83 (5.54)	18.74 (5.79)	19.00 (4.66)

Note: Mtvn = Motivation, M= Mean, SD = Standard Deviation

7.3.3 ANCOVAs exploring the difference between groups in pre- vs post-test questionnaire scores

To test whether the exposure to images had significantly different effects between groups (Aesthetic, Functional and Control) on state body image, Drive for Muscularity, autonomous exercise motivation and controlled motivation, a series of one-way ANCOVAs were conducted. ANCOVA was used as this allowed to control for differences in the pretest scores between groups. This has previously been identified as a suitable method when using randomly selected groups that are not naturally occurring (Jamieson, 2004), as used in this study. This method of analysis has also been used in previous studies examining the effects of exposure to social media on body image (Tang et al., 2022), and specifically in randomised groups of men exposed to three different types of social media images (Tiggemann & Anderberg, 2020). The results of these are reported below.

The one-way ANCOVA investigating State Body Image found no significant effect of condition on Body Image State Scale scores when controlling for pre-test scores F (2,168) = 1.291, p = .278, η^2 = .015

The one-way ANCOVA investigating Drive for Muscularity found no significant effect of condition on Drive for Muscularity scores when controlling for pre-test scores F (2,168) = 1.521, p = .221, η^2 = .018

The one-way ANCOVA investigating Autonomous Motivation found no significant effect of condition on Autonomous Motivation scores when controlling for pre-test scores F (2,168) = 1.785, p = .171, η^2 = .021

The one-way ANCOVA investigating Controlled Motivation found no significant effect of condition on Controlled Motivation scores was detected when controlling for pre-test scores F (2,168) = 0.808, p = .447, η^2 = .010

7.3.4 Qualitative Analysis

Analysis of the comments made underneath each image was able add further data that helps to explain and support the quantitative findings. These are presented below through four themes:

1. Men showed frequent admiration for the physical characteristics of the bodies in both intervention groups
2. Men were frequently critical of the bodies in the aesthetic, and to a lesser extent in the functional group
3. Aesthetic and functionality focused posts led men to think about exercise and training in different ways, but neither were deemed motivational or inspirational

4. Men were critical of the authenticity and trustworthiness of both sets of posts

Theme 1: Men showed frequent admiration for the physical characteristics of the bodies in both groups

Many men frequently expressed their admiration for the bodies presented in the aesthetic condition, particularly image 1 (Aesthetic), for example: “He's got a nice, athletic body with great proportions”. Whilst image 1 (Aesthetic) attracted the most positive comments about physiques, all of the images included some comments alluding to their admiration of the bodies on display, often describing the bodies presented as being ideal in nature: “A pretty much perfected male physique” (Image 3 (Aesthetic)), “Amazing, beautiful body (Image 5 (Aesthetic)); “Perfection” (Image 1 (Aesthetic)).

A number of men also expressed the desire to look like the men in the aesthetic posts and achieve bodies like theirs: “Well shaped body, not too muscled, which is how I’d like to be” (Image 1 (Aesthetic)) ; “This is more how I’d like to be, good muscle level” (Image 3 (Aesthetic)); “Would love his upper body” (Image 5 (Aesthetic)).

Men in the functional group also expressed feelings of admiration toward the physiques in the images, albeit less frequently than in the aesthetic group, for example: “Impressive physique” (Image 6 (Functional)); “Really nice physique, in shape and proportion” (Image 8 (Functional)). These comments sometimes focused on specific body parts, “Nice biceps” (Image 8 (Functional); “Good back with muscle definition” (Image 6 (Functional)).

Theme 2: Men were frequently critical of the bodies in the aesthetic, and to a lesser extent, in the functional group

In contrast to the numerous comments made in admiration of the bodies displayed in the aesthetic group, several men were also critical of these bodies. The most frequent criticism was that some of the bodies displayed in the images were too extreme, which was most commonly cited for image 2 (Aesthetic): “OTT, looks weird and impractical”; “Muscled body. Maybe too much, I don’t need that”. Some comments expressed an association between this physique and poor mental health and wellbeing: “Way too much for me. Diet and exercise and commitment, depression”; “Pushed too far, I'd genuinely worry about his wellbeing.”.

Another frequent comment was that some of the men looked as if they were steroid users: “My initial reaction was "he's probably on steroids given his shoulders" (Image 1); “Nice face but his body

is over the top. Too much steroids. Unnatural" (Image 2); "Taking steroids, not even that impressive" (Image 5 (Aesthetic)).

Many men deemed the physiques in the posts as unrealistic or unachievable: "This is unrealistic and I hate that I feel I have to compete with this for work." (Image 2); "This one is straight up not realistic. This guy is/was a pro bodybuilder. I'd say with confidence that he's taking PED's." (Image 5 (Aesthetic)). Others elaborated by explaining that they believed these physiques were only obtainable with the assistance of steroids "Combination of size and leanness, visible veins, make me assume unrealistic without steroids etc" (Image 5 (Aesthetic)) or an extreme lifestyle: "This is not realistic (level of leanness, proportions, and muscle size). Striving to achieve this requires a lifestyle I want nothing of. Don't feel envious of this guy." (Image 2 (Aesthetic))

Whilst men less often critiqued the bodies of the men in the functional group, this did still occur. These comments followed similar themes to those in the aesthetic group with men commenting some of the men were "too muscly" (Image 6 (Functional)), or "Steroid user, would typically skip a post like this because it's not in line with my values" (Image 7 (Functional)).

Theme 3: The two sets of posts led men to think about exercise and training in different ways, but neither were deemed motivational or inspirational

A frequent comment in the aesthetic group referred to the training, lifestyle and overall work that must have been put in to achieve the physiques displayed. For example: "The man in the photo has clearly worked hard for his physical appearance" (Image 1 (Aethetic)); "This shows a lot of power of will as it is not easy to be consistent on the exercise and nutrition habits." (Image 4 (Aesthetic)); "Trains hard and can tell diet is strict." (Image 2 (Aesthetic)). For some men this led to anxieties around what they would need to do to achieve this "It shows a lot of work but too much for me. It gives me a little anxiety to think about the process to getting there." (Image 2 (Aesthetic)).

In the functional group, men more often commented on the usefulness of the posts regarding their explanations of exercise: "Informative. Always helpful to be reminded of good technique" (Image 6 (Functional)); "Quick and easy to read with good detail. Clear pictures of correct and incorrect posture" (Image 8 (Functional)). Men also sometimes related this back to their own exercise and how it might apply both positively: "I can totally recognise the mistake I usually make when bench pressing." (Image 6 (Functional)) and negatively "I engage my last more on single arm rows so do it differently so won't take much notice of that" (Image 8 (Functional)).

Men rarely mentioned the images were inspirational or motivational for them in either condition. In a few isolated comments men made comments explicitly stating the opposite, for example: "…I don't feel this is a healthy body to aspire towards" (Image 5 (Aesthetic)); "Not inspiring to me as too big." (Image 8 (Functional)).

Theme 4: Men were critical of the authenticity and trustworthiness of both sets of posts

Whilst criticism of the bodies themselves was discussed in theme 2, men were also frequently critical of the validity of the posts, their authenticity and the way they were presented.

In the aesthetic group, scepticism was often expressed about the pictures and the use of edits, filters and careful curation in their presentation, for example, when commenting on Image 3 (Aesthetic), one man commented: "Is he breathing in? Looks ridiculous." The transformation post (Image 4 (Aesthetic)) came under particular scrutiny regarding the presentation of the images, for example: "Lol. Slight laughable transformation - bad lighting, unhappy guy to an oiled up, shiny, perfectly lit pic. The attention grabbing headline would never make me click it.". Image 5 (Aesthetic) was also frequently criticised for similar reasons, for example:

> "This fella looks like a pepperami that's burst out of its skin in a hot pan imo. Good on him for putting the work in but again, there are clearly lighting and editing as well as the angle of the photograph all carefully chosen and I don't feel this is a healthy body to aspire towards."

Criticism on the functional posts was also common, but more typically took the form of criticising the way the information was presented: "Too much to read for a social media ad to get attention. Spelling mistakes and incorrect wording is a put off in regards to "do they know what they are talking about?"" (Image 6 (Functional)), or criticism of the information itself:

> "Butt back is not what I focus on & worry that could cause people injury. Deadlift is too easy to get wrong & cause injury. Also, the degree of leg bend for squats can vary for good reasons. This leaves a lot to be desired" (Image 9 (Functional)).

Some men were also unwilling to accept advice from content creators without knowing their qualifications: "Don't know the person's credentials so would likely ignore" (Image 6 (Functional)).

7.4 Discussion

This study aimed to investigate the effects of different types of fitness social media imagery (aesthetic vs function focused) on men's body image and exercise motivation. It was the first to investigate this topic in this way and used a mixed methods approach including quantitative questionnaire scores and written comments to investigate this in detail. Quantitative findings showed no significant differences were found between groups for pre and post exposure scores for body image, drive for muscularity, internal or external motivation. Analysis of the comments made under posts showed that whilst men in the aesthetic group were often in admiration of the bodies displayed, they were also heavily critical of these bodies and the way they were presented in the posts. This was also evident in the functional group, in addition to some complimenting the utility of these posts whilst others criticised the advice and the ways it was presented. These results will be discussed in more detail below.

7.4.1 Aesthetic & Function Focused Fitness Social Media & Men's Body Image

There was no significant difference in body image scores for the pre and post-tests between groups, suggesting acute exposure to social media posts in all groups were not influencing men's body image in the short term. There are several potential reasons for this finding. Firstly, the protocol itself provided limitations given its short-term nature and limited exposure of 5 images. Whilst participants were asked to write about each image to provide qualitative data and ensure they had viewed the images in detail, it is possible that this limited exposure was not enough to induce significant changes in their perceptions of their bodies and motivations to exercise. It may also reflect findings from Chapter 4 that showed passive social media use was not associated with appearance valence. Despite this, other studies have used a similar procedure and found significant differences between groups. This may reflect the sample size, the nature of the images, the limited volume and time of exposure, or the older demographic included in this study. For example, Tiggemann & Anderberg (2020) had 3 groups of men looking at shirtless fitness males, fashion males and a control condition and conducted a similar analysis. Their study contained 14 images but did not require participants to write anything about each image. Their sample was also larger at 300 and contained a younger demographic of undergraduate participants.

Mulgrew et al. (2014) conducted a similar study to the present but using magazine images with what they termed "Body as Object", "Body as Process" and control conditions. They used a smaller sample of 125 men randomly assigned to each condition and found significant negative effects of the body

as process images on measures of body image when compared to the other groups. These images were taken from fitness magazines and were not from social media. In the 9 years since this study was conducted, men have become more frequently exposed to idealised body imagery through channels such as social media (Gültzow et al., 2020). The number of Instagram users has risen from around 200 million in 2014 to over 2 billion by the end of 2021 (Statista, 2023). The frequent exposure to idealised male bodies may have desensitized men to their presence, thus leading to less prominent effects on their body image (Schreurs & Vandenbosch, 2020) which may have contributed to the findings in the present study. Some men did comment that they often saw posts including muscular male bodies whilst on social media, which would add support to this hypothesis. This increased experience of social media has also led to an increase in critical skills when dealing social media content that research has shown to be protective against body image threats (Paxton et al., 2022). The sample in the present study were predominantly over thirty, having lived with social media for over fifteen years, and frequently made critical comments about the bodies and the ways they were presented in the posts they were presented with. Previous studies such as those by Paxton et al. (2022) and Mulgrew et al. (2014) have used younger populations of men in their late teens and early twenties. This is significant as previous research has shown social comparison tends to decrease with age (Callan et al., 2015). Differences in results for different age groups were not assessed in this study, but this could be explored more explicitly in further research to examine whether age or other variables (e.g. education, self-perceptions) play a significant role in making social comparisons.

The lack of association between either condition and body image in the present study may have several explanations. Whilst research examining the effects of a variety of types of social media on female body image has often found it has significant negative effects on body image, research in men is less prevalent and more mixed (Rodgers & Rousseau, 2022). In addition, other studies have shown that men tend to compare themselves more favourably when presented with ideal bodies, thus bolstering their own body image and self-esteem (Voges et al., 2019). Men have also been found to display more “self-hopeful” attitudes when presented by idealised body image threats, often evaluating themselves on their potential rather than their present state to reduce the negative impact of such imagery (Franzoi et al., 2012). This may further help to explain the lack of differences in pre and post-test body image scores in the present study as it is possible men did not believe the bodies presented to be desirable or unobtainable, something reflected in some of the comments provided.

The older demographic of the present study may also help to explain the lack of quantitative differences seen within and between groups, with younger men having been shown previously to have greater body dissatisfaction, and in particular muscle dissatisfaction, than older men (Murray & Lewis, 2014). In addition, older adults tend to show lower levels of social comparison (Callan et al., 2015), also providing a further potential reason for these findings. Finally, previous work by Veldhuis et al. (2017) found that "self-improvement" messaging alongside idealised body imagery improved body satisfaction in young men and women. The images included in the present study could be interpreted this way with captions such as "Trust the process" accompanying the images. This may also help to explain the lack of expected negative effects on body image seen.

7.4.2 Aesthetic & Function Focused Fitness Social Media & Men's Drive for Muscularity

No significant differences were seen for pre and post test scores for drive for muscularity between groups, suggesting the images were not influencing men's drive for muscularity. To the author's knowledge, this was the first study to experimentally investigate the impact of different types of social media content on men's drive for muscularity. There are a number of potential explanations for this finding. Images were chosen to reflect typical male fitness social media content, and the images included were of muscular and lean men. Previous research has shown that men who regularly engage in fitness and gym usage often see muscular ideal bodies as consistent with their own and their body pursuits, reinforcing their own body image positively (Halliwell et al., 2007). The present sample was recruited through a professional fitness Instagram site and in gyms, with many participants likely to have been gym users. Analysis of the comments showed that many men did not find the images aspirational, thus limiting the differences in pre and post test scores for body image and drive for muscularity. This was reflected in the analysis of the comments made by participants regarding images. Previous research has shown that higher levels of social media literacy and critical thinking applied to social media content is protective against body image threats for men (Paxton et al., 2022; Stiff & Cutts, 2024). This was seen in the present study with participants frequently citing lighting, camera angles, filters and even the idea that images could be AI generated.

Furthermore, men were frequently critical of the bodies presented in the aesthetic condition and to a lesser extent in the functional condition. This may in part be explained by the finding in previous studies (Voges et al., 2019) that men are often able to self-enhance (evaluate oneself positively) when presented with "ideal" bodies, thus leading to criticisms of such imagery. This was reflected in several comments that the men in the images were "too much", "too big", or "too muscly". The

present findings also echo those found by Murnen & College (2019) who found men were most likely to make counter arguments against hyper muscular male images (when compared to “athletic” or “thin” images). Participants frequently made comments that the most muscular body images were “too much” and often mentioned steroid or “PED” (Performance enhancing drugs) usage. For some participants in the present study, when given the option to write any thoughts and feelings about an image, the only thing they wrote was suspected steroid use. These results contrast somewhat with suggestions in previous research that men believe ideal bodies to be obtainable (Tamplin et al., 2018), with men in the present study frequently commenting that pictures were “unrealistic” or “unattainable”. This combination of a lack of desirability and perception of unrealistic ideals may help to explain the lack of quantitative differences seen before and after exposure regarding both drive for muscularity and body image.

Whilst there was no statistically significant difference between the before and after scores of the groups, there were a wide range of individual responses suggesting some individuals were being affected in different ways by these images. A minority of men did express negative emotion and feelings of anxiety and insecurity in response to viewing the images, particularly in the aesthetic condition. The perceived taboo that exists amongst men regarding body image dissatisfaction (Stapleton et al., 2016) means it is possible that a larger number of participants may have experienced these types of emotions. Even taking the number of men who expressed feelings of negative emotion in the present study at face value, this still represents a notable proportion of the sample. Whilst the present study’s quantitative results do not suggest that fitness social media content is influencing male body image or drive for muscularity on average, analysis of the comments suggest that it is having a negative effect on a minority of men by causing them to feel anxious and unhappy with their own bodies, driven by upward social comparisons.

The present results are similar to those found by Pritchard & Button (2023) who showed no differences in pre and post-test measures of body satisfaction when exposed to idealised body imagery. Participants in that study were also asked how they felt about their bodies after viewing idealised body images, and results showed many spoke of dissatisfaction about certain body parts. During the present study, men frequently expressed a desire to have certain body parts that looked like those in the images, with a minority expressing direct anxiety from seeing such physiques.

7.4.3 Aesthetic and Function Focused Fitness Social Media & Men's Exercise Motivation

This was the first study to experimentally examine the effects of fitness social media on exercise motivation using SDT. No significant difference in pre and post measures were seen within or between groups for autonomous and controlled motivations towards exercise. Other research has found similar results using experimental conditions (Arigo et al., 2021) but this has more often been measured in more rudimentary ways. Intention or motivation to exercise has been measured with a single question (Arigo et al., 2021) or using an immediate measure of exercise behaviour post exposure (Robinson et al., 2017). This is the first study to the author's knowledge to measure the effects of social media imagery on exercise motivation in a more complex and theory driven way, using the BREQ-3 and clearly defining controlled and autonomous exercise motives. The lack of significant effects on exercise motivation was reflected by the qualitative comments provided for images regarding inspiration. Very few comments alluded to the images being inspiring or motivating in either group, with a similar number of comments expressing the opposite, that they were not inspiring or motivating. This may tie in with men's attitudes towards the bodies and presentations of the posts, with frequent criticisms of the physiques and the exercises and explanations further reducing the motivational power of the posts.

7.4.4 Strengths and Limitations

The present study contains a number of strengths and novel aspects. The inclusion of a sample of community dwelling men with a range of ages (18-50) differs from the vast majority of research in this field which is conducted using undergraduate students in their late teens and early twenties. In addition, the use of the BREQ-3 allowed for a more complex measure of exercise motivation when compared to previous research that often used a singular question. This is important as motivation is a complex phenomenon, with different types of motivation having different effects on health and wellbeing (Hagger et al., 2014). The mixed methods approach using quantitative and qualitative data allowed for a deeper and more comprehensive exploration of the findings. This is important as the qualitative findings were able to explain the quantitative results and the mix of methods allowed for findings to represent both group and individual effects and responses to fitness social media imagery.

Whilst the Body Image States Scale is a state measure, Drive for Muscularity Attitude and the BREQ-3 are not designed specifically as state measures and thus this limitation may have affected the lack of differences seen pre and post-test. It is possible that state versions of these questionnaires may have

been more sensitive to state changes. The design of the study, administering pre and post-test measures either side of exposure to 5 images also has limitations, only allowing for detection of short term effects. It is also possible that this length of exposure may not have been enough to elicit changes in men's state body image, and longer exposure times may show greater changes in this regard. Further longitudinal studies are encouraged to gain a better understanding of the effects of consistent exposure to fitness social media imagery on men's body image and motivation to exercise. It is possible that by consistently exposing participants to certain types of imagery over a period of weeks or months may better represent a "real world" experience in addition to having a larger effect on body image and exercise motivation. Additionally, with this type of engagement being "passive" in nature, having participants actively engage in social media content (through likes and comments that are communicated to the creator) may be another area that future research could examine.

7.5 Conclusion

Little is known about the differing effects of aesthetic focused and functionality focused fitness social media on men's body image and exercise motivation. This study found no significant differences between groups (aesthetic bodies, functional bodies and control) for pre and post-tests of body image, drive for muscularity or exercise motivation after exposure to 5 images. Analysis of qualitative comments showed that men were frequently critical of the bodies and exercises presented in the posts and did not find the posts motivational. A minority of men also expressed explicit feelings of anxiety and insecurity from seeing muscular men in both aesthetic and functional presentations. These results suggest that whilst fitness social media does not appear to affect men's body image and exercise motivation in an acute dose, many men use critical skills and counter arguments to buffer the threats to their body image that idealised body images may pose.

Chapter 8- Discussion & Conclusion

8.1 Introduction

This final chapter will draw together the results from the four data chapters covered throughout this thesis and discuss these findings. It will also reflect upon the different methodologies used and consider how the findings situate in relation to other research and the real-world implications that can be derived from them. Finally, limitations of this research will be discussed alongside recommendations for future research that may be conducted to build on the findings here, and on the body of literature available up to the present date.

The overarching research question of this thesis was "How does fitness social media influence men's body image and motivation to exercise?". To answer this question, the thesis took a mixed methods approach, applying quantitative, qualitative and experimental mixed methods to tackle this question from different perspectives, with each phase building on the previous.

8.1.1 Overview of study findings

This section will provide an overview of the findings of the four data chapters (Chapters 4-7) included in this thesis. Further critical analysis and interpretation of these findings in relation to literature and the research questions follows this section in parts 8.2, 8.3 and 8.4.

Chapters 4 and 5 took a cross-sectional approach by investigating the associations between different types of social media use and body image and exercise motivation in a sample of community dwelling adult men aged 18-50. Given the overwhelming dominance of using undergraduate samples in previous research into this topic (Fatt et al., 2019; Arigo et al., 2021; Robinson et al., 2017), this research was novel in investigating these associations with a sample of adult men who were not predominantly university students. The inclusion of detailed measures of social media use (specific measures of active and passive use, different platform use, and fitness social media use) in addition to the detailed examination of exercise motivation using the BREQ-3 added further novelty and extra detail when compared to previous research (Fatt et al., 2019; Arigo et al., 2021; Robinson et al., 2017). Chapters 4 and 5 used data from the same round of data collection. Due to the volume of data collected it was presented as two chapters with different foci. Chapter 4 examined the link between social media use, body image and drive for muscularity and Chapter 5, social media use and exercise motivation and behaviour.

Chapter 4 sought to answer the question: How are active and passive social media use related to body image in physically active men? Results from Chapter 4(social media, body image, and drive for muscularity) showed that active social media use, and more specifically engaging in likes and comments on social media was associated with lower appearance satisfaction. Contrary to the hypotheses, passive social media use showed no direct associations with appearance satisfaction. Appearance salience was more consistently associated with both active and passive social media use, and drive for muscularity showed the strongest associations with both active and passive social use. This suggests that social media use was associated with men's drive for muscularity and making them more aware of their appearance. It also suggests that engaging in liking and commenting on social media may be linked to lower appearance satisfaction. The direction of causation using this type of methodology is difficult to ascertain however, as is what type of content on social media is linked to body image and muscularity in men. This will be discussed in more detail in section 7.2.

The research question for Chapter 5 was: How are fitness social media use and different platform use related to exercise motivation and behaviour in physically active adult men? Results from Chapter 5 (social media and exercise motivation and behaviour) found, contrary to hypotheses, that fitness social media was more consistently positively associated with autonomous rather than controlled motivations to exercise. Overall, social media use negatively predicted long term exercise behaviour, and Facebook was the only platform that showed a positive association with any exercise behaviour, acting as a significant predictor of current exercise frequency. Consistent with the tenets of SDT (Hagger & Chatzisarantis, 2007), autonomous motivations were associated with short- and long-term exercise behaviour. These results suggest that a higher frequency of engagement with fitness social media content was associated with autonomous motives to exercise and demonstrated the importance of autonomous motivation for long-term commitment to exercise. Whether social media was leading men to be more autonomously motivated to exercise, or whether men who already had more autonomous motivation to exercise used more fitness based social media was unclear and required further exploration.

This thesis began with a cross sectional, quantitative study in order to gain novel insights into physically active, men's social media use and how it may be related to body image and exercise using novel assessment tools and an understudied demographic. Whilst this first phase of studies (Chapters 4 & 5) allowed links to be drawn between different types of social media use and body image and exercise motivation in adult men, several questions remained that were unable to be answered using a cross-sectional quantitative design. Research exploring male body image has been

predominantly quantitative, with a need for more high-quality qualitative research to examine the details and complexities of this subject (Lennon & Johnson, 2020). An understanding of what type of content men are engaging with on social media and how this affects them was still largely unknown from the findings of Chapters 4 and 5 In addition, it was deemed important to gain an understanding of men's experience of exercise, body image, and the relation to social media . To gain insights into men's experiences, a qualitative methodology was required. Given the lack of qualitative research attending to social media, body image and exercise in men, this also adds a novel methodology to this topic (Lennon & Johnson, 2021; Harriger et al., 2023).

Chapter 6 aimed to explore men's experiences of social media, body image and exercise. More specifically, it sought to answer the following research questions: (RQ1) What are men's experiences of using social media in relation to their body image? (RQ2) What are men's experiences of using social media in relation to their exercise motivations and behaviours? (RQ3) What active role do men play in using social media? The first theme from the qualitative study (Chapter 6) showed that most men did not find fitness social media to be motivational or inspirational with some men actively stating the opposite. A minority of men did derive motivation from social media, but this was often driven by idealised bodies and upward social comparisons (i.e., controlled motives). Social media was more commonly used as a practical tool for learning new exercises and a place for education regarding self-development. The second theme showed that men frequently made upward social comparisons with the bodies they saw on social media which led to body image, and other mental health concerns in some men. Men also felt a pressure from social media and wider society to be muscular and lean and the topic of steroids was frequently discussed. The final theme showed ways in which men were able to combat these negative influences on their body image and help to foster a more positive view of their bodies. This included being critical of body presentations on social media, understanding the sacrifices and risks of developing "idealised" bodies, and using exercise for non-appearance related motivations. This helped to add crucial detail and insight into men's experience of fitness-based social media and how they perceived it and its impact on their lives. It also helped to explain some of the findings from Chapters 4 and 5, showing that men's critical attitude to idealised body content was protective of body image threats (adding explanation to the lack of association seen between appearance valence and social media use in Chapter 4). Additionally, the lack of motivation men described as deriving from social media may also help to explain the lack of difference seen between autonomous and controlled motivation and fitness social media use in Chapter 5. Men who were already active also discussed using social media for

educational purposes regarding exercise, and this may also help to explain some of the links seen between fitness social media use and autonomous motivation seen in Chapter 5.

An investigation into the effects of social media on men's body image and exercise motivation in experimental conditions was presented in Chapter 7. The previous research up to this point had been able to establish links between social media and exercise motivation and body image in a quantitative fashion and then add further detail, nuance and complexity using a qualitative interview design. The research questions for this Chapter were: RQ1: Do aesthetic focused and functionality focused fitness social media images have different effects on men's body image and exercise motivation? RQ2: How do men think and feel about aesthetic and functionality focused fitness social media images? One finding from the qualitative phase (Chapter 5) was that men tended to evaluate their bodies more positively from a functional point of view than an aesthetic point of view. It was also found that a focus on functionality over aesthetics tended to be associated with more autonomous motivations to exercise and better body image. These results corroborate with recent findings supporting the role of body functionality in supporting better body image (Alleva & Tylka, 2021). Given fitness social media contains a mixture of aesthetic and function focused content, it was decided to investigate experimentally whether these different types of fitness social media content had different effects on men's body image and motivation to exercise.

Results from this study showed no significant differences in body image or exercise motivation after men were exposed to aesthetic focused, function focused, or landscape (control) imagery. Thematic analysis of the comments made by men underneath the images revealed that whilst men frequently showed admiration for the physiques seen in both groups (aesthetic focused and function focused images), they were also highly critical of these bodies and the ways they were presented. Whilst men spoke of exercise in different ways upon viewing aesthetic vs. functional focused images, neither drew many inspirational or motivational comments from them. Finally, men were highly critical of the authenticity and trustworthiness of the images in both groups, showing a high degree of critical thought when evaluating the images.

Taken together, the results from the 4 data chapters have been able to shed new light on how social media affects men's body image and motivation to exercise, how they actively engage in the process, and how the outcomes from engaging with this content vary dependent on a range of factors. This thesis found that social media use is frequently linked to higher drive for muscularity in adult men, but its relationship with men's perceptions of their bodies is more varied. This is partly due to men frequently applying critical skills when dealing with fitness social media content that may act as a

protective factor against body image threats. Regarding motivation, men who already have an interest in fitness, tend to consume fitness based social media but this content does not appear to influence their motivation to exercise. Fitness social media demonstrated most utility for this population as an educational tool for learning about fitness and exercise. These findings are novel in that they were found in a demographic that use social media regularly but have previously not been investigated in this detail. Additionally, the application of SDT to investigate motivation in a complex way was also something not previously used in this subject with this demographic. The findings from the data Chapters in this thesis will now be analysed critically and with reference to prior research. This has been structured in the context of the three overarching research questions for this thesis:

RQ1: How is social media related to body image in physically active men?

RQ2: How is social media related to exercise motivation and behaviour in physically active men?

RQ3: What is men's experience of social media in relation to body image and exercise?

8.2 Research Question 1: How is social media related to body image in physically active men?

Overall, the studies contained in this thesis found that social media and fitness social media showed mixed relationships with body image in men. When examined quantitatively, social media appeared to have little impact on men's evaluation of their bodies and appearance. When examined qualitatively, some men echoed these findings, suggesting social media did not have a bearing on their body image, whilst others discussed the negative impact they felt that social media had had on their body image. Social media was more consistently associated with men's awareness of their appearance (appearance salience), and drive for muscularity. These results will be explored more critically below.

Chapter 4 (cross sectional) showed that engaging in likes and comments on social media was associated with lower appearance satisfaction in men. Despite this, no other assessed areas of social media use were associated with appearance satisfaction. This adds to the growing body of research suggesting that social media's effects on body image are not as simple as being positive or negative but are affected by the way users engage with content (Kim & Chock., 2015; Saiphoo & Vahedi., 2019; Sumter et al., 2022). Whilst this study showed no other associations between social media use and appearance satisfaction, this reflected the mean scores in the sample, and individual experiences were not assessed. This is of note, as different findings emerged when individual experiences of

social media and body image were explored in Chapters 6 (qualitative) and 7 (experimental), with some men expressing negative impacts on their body image from the consumption of certain types of social media. Other cross-sectional survey research, examining social media and body image, such as that from Bowles et al. (2021), have found fitness social media use to be associated with worse body image. That study, along with the vast majority in this field, used undergraduate and mostly female participants and measured body image with a single question. In contrast to these previously used demographics, the present thesis used exclusively male samples, not drawing from undergraduate courses, with participants ages ranging from 18 up to 50 years old. This provided a novel demographic being used to examine these subject areas, and this will be considered throughout this discussion.

Individual links between fitness social media content and body image were explored in more detail in Chapter 6 (qualitative), where a minority of men expressed explicit negative emotion and body image difficulties because of exposure to idealised body imagery on social media. This finding was reinforced in Chapter 7 (experimental) where again, a minority of men expressed feelings of anxiety or insecurity when exposed to idealised body images in an experimental setting. Whilst most men in Chapter 6 (qualitative) discussed negative implications to varying degrees of social media on their body image, Chapter 7 (experimental) did not find most men to be negatively affected by acute exposure to idealised male bodies. This paints a complex picture of social media's effects on men's body image and contrasts with most of the previous research that has found portrayals of fit bodies having a negative impact on men's body image (e.g., Fioravanti et al., 2022). This must be considered in light of the limitations of the acute exposure method used in Chapter 7 (experimental), which may simply not have been enough of an exposure to significantly impact body image in most men. Additionally, the contrived nature of this study design may also have led demand characteristics (Orne, 2017) to have influenced participant's responses. Taken as a whole, the quantitative results from this thesis do not indicate a mean negative effect of fitness social media on men's body image, the reasons for which will be discussed in more detail below.

Whilst most men were not experiencing negative consequences on their body image from social media use when assessed quantitatively, men did display concerns, when assessed qualitatively. Findings from Sumter et al. (2022) may help to add explanation for these mixed findings. Using an experimental design exposing men to images with varying levels of muscularity and sexualisation, they found that certain types of Instagram imagery did have a small but significant negative effect on men's body image. This was dependant on individual differences of the viewer. The differences

assessed in that study were sexual orientation, traits of hyper masculinity, and trait social comparison, variables that were not investigated in this thesis. Other studies have shown that social comparison is a key component driving body image concerns in men, particularly when presented with idealised social media images (Fatt et al., 2019; Yee et al., 2020). Social comparison was discussed by several participants in Chapter 6 (qualitative), and was often directly linked to negative emotions, perceived pressure, and poorer body image in these men. Social comparison is most likely to occur in situations where one feels unsure of themselves (Suls et al., 2002). They are also more likely to occur when the subject matter (in this instance, physical appearance) is salient to the individual (Strahan et al., 2006). This combination was evident in Chapter 6 (qualitative), with many of the men who discussed making frequent social comparisons, also discussing how appearance was an important concern for them and something they were often preoccupied with, and insecure about.

Chapter 4 (cross sectional) found that appearance salience was significantly positively associated with several social media use variables and was also negatively correlated with appearance satisfaction. This suggests that social media was making appearance more salient to men, and that this was associated with feeling worse about one's body. Men in Chapters 6 and 7 (qualitative and experimental) used both upward and downward social comparisons to regulate their perception of their appearance, and this often occurred in environments where the body is salient, particularly in the gym and on social media. Upward social comparisons were discussed in conjunction with feelings of inadequacy and insecurity about one's appearance, but downward social comparisons were also usually caveated with the need to explain that these men still wanted to make further improvements to their physiques. These findings indicated that regardless of whether comparisons were upward or downward, making social comparisons was indicative of appearance being salient to men. Past research has noted that social media is often associated with lower self-esteem due to the frequency of upward social comparisons made, and the frequent opportunities made available by social media for such comparisons (Vogel et al., 2014). Previous research on the impact of downward social comparisons on body image is mixed, with some showing improved self-perceptions whilst others showing negative impacts (Andrason, 2016). Social comparisons in either direction tend to show short-term changes in affect without having a significant impact on more stable, underlying self-perceptions (Guyer & Vaughan-Johnston, 2020). The findings from the present thesis would suggest that both upward and downward social comparisons may be negatively associated with men's perceptions of their bodies, and that social media provides fertile ground for making these comparisons, often driving them. Men who made comparisons in either direction in Chapter 6

(qualitative) also expressed present or prior preoccupations with their appearance and concerns around their body image. This would support previous research suggesting that social comparison in any direction is often a reflection of an individual's insecurity and anxiety about what it is they are comparing (White et al., 2006). Social media provides a place where men are exposed to idealised and curated body presentations, which can drive social comparison and anxiety, particularly for men who have preexisting body image concerns (Aggarwal., 2020).

Several men in Chapter 7 (experimental), made both upward and downward body comparisons to regulate their self-perceptions in positive and negative ways. It has been found in a variety of settings that, whilst downward comparisons can have transient positive effects for those with low self-esteem, or with low levels of perceived control, it does not impact those with higher self-esteem or levels of perceived control (Gibbons & Gerard, 1989; Stewart et al., 2013). Both upward and downward comparisons can result in transient increases and decreases in wellbeing as they can both convey information that the individual can interpret as positive or negative (Suls et al., 2002). Tiggemann & Polivy (2010) found that the dimensions in which comparisons take place may be more important than the direction. In their study of the effects of idealised media images on women, they found comparisons around intelligence were less harmful than those on appearance, with appearance comparisons also typically reflecting a larger gulf between individuals' perception of themselves and the images. The present thesis would add support that men frequently make consequential social comparisons regarding their appearance and bodies. It is noticeable that men in Chapter 6 (qualitative) spoke much less about comparisons on other domains such as sports performance or achievements when discussing exercise. This would suggest that appearance comparisons may be more salient to men as well, which is of particular consequence, given the links seen between fitness based social media and appearance based social comparisons seen in this thesis and in prior research (Rounds & Stutts, 2021)

Chapter 7 (experimental) found that some men expressed feelings of insecurity and anxiety from viewing the social media images of lean and muscular men, suggesting it was influencing their body image in a negative way. Several participants expressed the feeling that these social media body presentations were representing unrealistic ideals and standards that men could not live up to. Whilst social media use showed mixed quantitative findings (null or negative associations) regarding its effects on appearance satisfaction in both Chapter 4 (quantitative) and Chapter 7 (experimental), the qualitative data showed there was evidence of some individuals experiencing body image concerns from consuming fitness based social media seen in Chapters 6 (qualitative) and 7

(experimental). Men in Chapter 6 (qualitative), frequently discussed using social media and seeing lean and muscular bodies in a mixture of functional, aesthetic, and health-focused posts – consistent with previous content analyses of male fitness social media (Gültzow et al., 2020). The current findings add some support to the previous body of research that has found social media to have a negative effect on male body image, although this is often small and indirect (Saiphoo & Vahedi, 2019). It must be noted that in the present thesis this negative impact showed limited evidence when measured quantitatively and was discussed by some, but not all men when assessed qualitatively. It also adds support for the need for multiple methods in this field, with qualitative and quantitative findings showing different but complimentary findings. Whilst important for establishing trends, quantitative methods sometimes failed to recognise the negative impact social media may be having on some men. This was evidenced in this thesis with quantitative methods producing results that reflected trends and mean scores of large sample sizes. When the subject area was assessed qualitatively, it became apparent that whilst many men did not appear to be affected by social media, some men were. This thesis added novelty by examining how men responded to different types of fitness based social media (Chapter 7 (experimental)), in addition to providing men with a platform to speak freely about their experiences of social media and body image (Chapter 6 (qualitative)), in ways that have not been used in previous research.

The associations between appearance valence, appearance salience, and social media have been discussed above, but it was drive for muscularity that was the most consistent body-related variable associated with social media use. In Chapter 4 (cross sectional), all measured aspects of social media use were significantly positively correlated with drive for muscularity. During Chapter 6 (qualitative), most men discussed pressures surrounding muscularity and the desire now, or when they were younger, to be more muscular, with a variety of consequences on their physical and mental health. Despite this, acute increases in drive for muscularity were not seen in Chapter 7 (experimental) for any of the three experimental conditions, but this may reflect the methodological limitations of this study design. Taken together, these findings support a growing body of literature linking fitness social media use with higher drives for muscularity in men (Seekis et al., 2021; Abu-Sneineh, 2021) and related muscularity concerns (Piatkowski et al., 2021; Flynn et al, 2020). It must be considered that the direction of causality is difficult to ascertain, with men's desire to be muscular leading to an increased consumption of fitness social media that would serve this interest (Seekis et al., 2021). Nevertheless, the results of the present thesis add support to the idea that social media was influencing men's drive for muscularity, with higher passive social media use predictive of higher

drive for muscularity in a linear regression model in Chapter 4 (cross sectional), and men frequently discussing the pressure felt from fitness social media on their muscularity in Chapter 6 (qualitative).

Previous literature has also found links between fitness social media use and more serious muscularity concerns, including muscle dysmorphia (Imperatori et al., 2022; Underwood & Olivardia 2023). Whilst the present thesis did not investigate muscle dysmorphia directly, very high scores were commonly seen on drive for muscularity questionnaires in Chapters 4 (cross sectional) and 7 (experimental), and the topic of muscle dysmorphia was raised by some participants in Chapter 6 (qualitative). Throughout Chapter 6 (qualitative), men regularly discussed pressures to increase muscle but also to decrease body fat, showing evidence for the dual pathway toward male body dissatisfaction documented in previous literature (Tylka, 2011; Schaefer et al., 2021) (this is discussed in more detail in Chapter 2, section 3.1.1). Men in the present thesis and in previous literature have discussed a range of unhealthy practices they had engaged with, in pursuit of more muscular and leaner physiques. These included highly controlled and disordered eating practices (Cunningham et al., 2021), steroid use (Kanayama et al., 2020), and unhealthy and excessive exercise behaviours (Dawson & Hammer, 2020). Whilst men did not state that social media was directly causing these behaviours, it was discussed in conjunction with them by some men. Men also openly discussed social media as one tool which did increase the pressure they felt to be more muscular. These discussions in Chapter 6 (qualitative), coupled with significant positive associations between drive for muscularity and fitness social media use in Chapter 4 (cross sectional) would suggest that fitness social media may be associated with muscularity concerns and unhealthy muscularity related practices in some men.

The results of the present thesis showed that whilst fitness social media and muscularity concerns were present for many men, for many others there was no association or discussion of this. Future research may seek to explore this further to help better understand what factors lead some men to be more negatively affected than others by frequent exposure to fitness based social media. Previous research has identified several risk factors associated with increased muscularity concerns in men including frustrated Basic Psychological Needs, and in particular relatedness (Selvi & Bozo, 2020). Several models have shown internalisation of the muscular ideal interacts with personality and environmental factors to increase the risk of muscle dysmorphia (Grunewald & Blashill, 2021). Personality factors including extraversion (Shenoy et al., 2015), lower self-esteem, perfectionism (Rodrigue et al., 2018) and narcissism (Kuennen & Waldron, 2007) have all been found to be associated with muscle dysmorphia and related eating and exercise issues in men. Certain types of

social media use have been linked with muscle dysmorphia in previous research. These include particularly higher levels of usage, and frequent exposure to muscular body content (Imperatori et al., 2022), in addition to training and social environments that encourage the pursuit of extreme muscularity (Sandgren et al., 2019).

8.3 Question 2: How is social media related to exercise motivation and behaviour in physically active men?

Taken as a whole, social media, and fitness social media specifically had a mixed relationship with exercise motivation and behaviour in this thesis. Fitness social media use was consistently related to exercise motivation and behaviour in Chapters 5 (cross sectional). Quantitative findings showed that fitness social media use was positively associated with autonomous and controlled forms of motivation in addition to current exercise behaviour. Despite this, no associations were seen between fitness social media use and long-term exercise behaviour, suggesting it was not a key factor in keeping men active in the long term. Chapter 7 (experimental) did not find any quantitative changes in exercise motivation before and after viewing any of the social media images, and qualitative results showed most men did not discuss exercise motivation or behaviour in conjunction with this content, whilst a minority did, which was similarly mirrored by the results of Chapter 6 (qualitative). These results will be critically evaluated here in relation to previous research on the topic.

Chapter 5 (cross sectional) showed consistent significant associations between autonomous motivations to exercise and fitness social media use. Associations with controlled motivational orientations were more limited with only introjected regulation showing a significant association with the browsing of fitness specific social media accounts. The significant relationship between fitness social media and autonomous exercise motivation may reflect the propensity for those who are already active and interested in fitness to then engage with this interest on social media. This interpretation is supported by Sokolova et al., (2021) who found that fitness-based YouTube engagement was only directly motivating to users who were already physically active, whilst those who were not derived other utility and enjoyment from this content, suggesting fitness-based YouTube was not directly motivating people to exercise, but rather more entangled with the lifestyles of those who already exercise. The results of the subsequent studies in the present thesis, (Chapters 5 (cross sectional), 6 (qualitative) and 7 (experimental)) discussed in due course, would also add

support to this statement, particularly given the inclusion of exclusively physically active men throughout the studies.

Chapter 5 (cross sectional) showed significant positive associations between fitness social media use and current exercise frequency, suggesting that engaging with fitness social media accounts and friend's fitness social media content was associated with exercising more frequently. This contrasts with a study from Bowles et al. (2021) who found in their predominantly female sample, that 'Fitspiration' content engagement was not associated with exercise frequency. However, their sample comprised of undergraduate students and represents a different demographic to adult men, with a mean age of over 30 as used in this thesis. In Chapter 5 (cross sectional), no associations were seen, however, between fitness social media use and long-term exercise behaviour, suggesting higher levels of fitness social media use were not associated with consistently exercising over long periods of time. Williams et al. (2014) conducted a systematic review of social media interventions to encourage exercise behaviours, with findings that echo those in the present thesis. The authors found that initial adherence to exercise programmes was often strong, but long-term behaviour change was not sustained. These results, along with those of Chapter 5 (cross sectional), contrast some findings that have shown no association or effect of fitness social media exposure on exercise behaviour (Arigo et al., 2021; Fatt et al., 2029).

No studies to the author's knowledge, including those conducted in this thesis, have shown a significant association between fitness social media and long-term exercise behaviour. Furthermore, Chapter 5 (cross sectional) showed a significant negative association between social media frequency of use and long-term exercise history. Additionally, SnapChat and TikTok use also showed significant negative associations with exercise history. Other studies have noted that social media can displace exercise time, with more time on social media leaving less time for exercise (Vaterlaus et al., 2015), particularly for young adults and teenagers (Sandercock et al., 2016). This may help to explain the negative associations seen in Chapter 5 (cross sectional) with SnapChat and TikTok usage and exercise behaviour. These are platforms that attract a younger demographic than other platforms such as Facebook which was positively associated with exercise behaviour (Statista, 2023), and it is possible that some of the time spent on these platforms may have been displacing time that could otherwise have been spent exercising.

The positive associations seen between fitness social media and higher exercise frequency in Chapter 5 (cross sectional) may also be the product of reverse causation, as suggested for the links found between fitness social media use and exercise motivation, discussed previously. Findings from

Chapter 6 (qualitative) would support this interpretation, with men discussing following fitness based social media that was relevant to the sports and exercise that they liked to partake in, rather than discussing how social media was the origin of their interest in these activities. Other research has demonstrated that those who have a preexisting interest use fitness based social media as it coincides with their interests (Chatzpoulou et al., 2020; Raggatt et al., 2022). Given the lack of association between fitness social media and exercise behaviour and motivation seen in other parts of this thesis and in previous research (Nuss et al., 2024), reverse causation may help to explain the links seen in Chapter 5 (cross sectional).

Most men in Chapter 6 (qualitative) did not cite social media as a source of exercise motivation, and some directly opposed this idea, stating it was not motivational, or even that they had attempted to use it in vain as a motivational tool. However, a smaller number of men did cite social media as being motivational and/or inspirational, with this motivation usually manifest as controlled, appearance-based motives. These findings are similar to those found by Wood & Watson (2023) in their sample of young female fitness social media users. Participants in this qualitative study also discussed how social media could be both motivating and de-motivating toward physical activity. Chatzopoulou et al. (2020) also found that young men derived appearance-based motivation from social media, and particularly Instagram, with the pursuit of an idealised muscular and lean male body having a mixture of positive and negative effects on their health and wellbeing.

Appearance based motivation being derived from social media exposure was also seen in Chapter 6 (qualitative); however, this study included a wider range of age groups than the aforementioned studies, with several men in their 30s and 40s. Many of these men spoke of how their motivations had changed as they had grown older, wanting to achieve more balance in their lives, with appearance becoming less important and health and wellbeing becoming more important to them. The finding that men and women tend to be more motivated by appearance when younger, and more motivated by health when older has been found in several studies (e.g., Vartanian et al., 2012; Lanoye et al., 2019), with this trend possibly being more pronounced in men (Stults-Kolehmainen, 2013). Whilst this is likely to represent changes in priorities over the lifespan, it may also reflect the changing societal pressures on men's appearance, thus leading to higher levels of appearance motivation in young men. McCabe & Ricciardelli (2004) found in their study 20 years ago, that whilst older men were more concerned with weight loss, younger men were equally divided between wanting to lose and gain weight. Men throughout the studies in this thesis showed a desire to limit or lose body fat and to increase muscularity, and differences in ages were not assessed. Some older

men in Chapter 6 (qualitative) discussed the idea that younger men were more concerned about their appearance, however these men also discussed placing some importance on appearance in themselves.

Men in Chapter 6 (qualitative) discussed a range of motivations for exercise with mental health, physical health, and enjoyment —all frequently cited autonomous motivations. However, none of these motivations were discussed in the context of social media, with social media being more commonly cited as a practical tool to help support exercise by learning new exercises. As discussed above in section 7.2 "How does social media affect men's body image?", fitness social media and exposure to idealised bodies drove social comparison and preoccupation with one's physique. This in turn did influence men's short term exercise behaviour and motivation, usually through guilt and the avoidance of negative emotion, which would be characterised as introjected regulation in SDT (Nam et al., 2023). Introjected regulation has a complex relationship with exercise motivation and behaviour, often being associated with consistent exercise behaviour (Gillison et al., 2009) but showing null or negative associations with exercise enjoyment (Vlachopoulos & Karageorghis, 2005). Introjected regulation has shown mixed findings regarding medium- to long-term exercise behaviour, but it has more consistently been associated with poorer psychological wellbeing (Teixeira et al., 2012). It has also been associated with perfectionism and exercise dependence (Biggs et al., 2022), excessive exercise behaviour, and poorer body image (Fortier, 2009). Several men in Chapter 6 (qualitative) described experiences where they felt pressure to maintain and achieve more muscular and leaner physiques (through controlled motivations) and how this has been influenced by social media and, in some cases led to disordered eating, steroid use, body image concerns and poorer mental health. Furthermore, whilst exercise has frequently been shown to have positive effects on body image (Hausenblas et al., 2006; Gualdi-Russo et al., 2022), crucially, appearance-based exercise motivation blunts this positive effect and can have a negative impact on body image (Homan & Tylka, 2014).

During Chapter 6 (qualitative), most participants did not identify social media as being a motivating or inspirational tool for their exercise behaviour. What was more commonly cited was the use of social media for practical advice, learning about fitness and exercise, and getting ideas for new exercises and how to perform them. This type of fitness social media content and usage has become more popular since the Covid-19 pandemic when exercise options were limited and exercise demonstrations and virtual classes were more attractive options (Cugusi et al., 2021). Several studies have shown that people found exercise videos to be helpful in maintaining a more active lifestyle

during this time (Goodyear et al., 2021; Hayes, 2022). In addition to this, several successful interventions have used social media-based interventions to have a beneficial impact on individual's physical activity and eating habits (Goodyear et al., 2021). These studies highlighted the social aspect of social media, using support networks to support reinforcing healthy habits. This benefit of social media has been seen using both quantitative and qualitative research designs (Divine et al., 2019) suggesting the social aspect of social media can be harnessed to promote healthy behaviours.

Whilst using social media for education and practical information has been found to be useful in the present thesis, and in previous research, it does present some limitations and difficulties. With anyone able to broadcast advice, without the need for qualifications or expertise to be verified (Sidhu, 2018), it can be difficult for individuals to discriminate between which sources of information are useful and those which are not, particularly if they are not experts in the field. Further to this, verification aspects of social media such as blue check marks are merely confirmations of identity rather than of the content broadcasted (Dumas, 2021) and can be misleading in this regard. During Chapters 6 (qualitative) and 7 (experimental), some participants alluded to checking the qualifications and credentials of influencers as a means of critiquing their efficacy, a strategy seen in previous research on this topic (Freeman et al., 2023). Whilst this strategy is likely to help individuals make better decisions regarding which advice to follow on social media, other strategies may be less helpful. Research has shown people often trust accounts with higher numbers of followers more, particularly regarding health and fitness advice (Janssen et al., 2022), however, this was not something mentioned directly by participants in this thesis. Using follower count as a measure of credibility does not consider credentials, qualifications, and genuine expertise, with some research even finding that follower count can be inversely correlated with academic qualifications (Marocolo et al., 2021).

Chapter 7 (experimental) showed no significant differences between pre and post scores for exercise motivation after exposure to aesthetic-focused or function-focused fitness social media imagery. In addition to this, men frequently made comments refuting the idea that these images were inspirational or motivational. In contrast to this, a small number of men did discuss feelings of motivation and inspiration from viewing fitness social media images but most men did not. This followed on from Chapter 6 (qualitative), finding that whilst most men do not find this type of content motivational, a minority of them did. Unsurprisingly, motivated comments on aesthetic imagery were dominated by appearance motivations, whilst responses to functional imagery were more practical in their nature. Whilst not reported directly in Chapter 7(experimental), men

frequently made comments in the control condition (landscapes) that they would like to hike in these surroundings. Previous research has shown that motivations for exercising in gym environments are different to motivations for exercising in nature, with the desire to experience nature (autonomous motivation) often driving exercise in these settings when contrasted with health (autonomous motivation) and appearance concerns (controlled motivation) driving gym-based exercise (Calogiuri & Elliott, 2017). Future research may look to investigate the impact of social media content that involves exercising in natural settings and how this impacts exercise motivation.

Some men in Chapter 6 (qualitative) discussed deriving controlling, appearance-based motivation from seeing fit male bodies on social media. Discussing this further, some spoke of how they followed the lifestyles of attractive fitness influencers and believed that by imitating their lifestyle they could achieve a more muscular and lean physique, as well as other social benefits that would come along with this. Influencer attractiveness has been found to drive engagement, trust, and purchasing behaviour in some prior studies (Chekima et al., 2020). Attractiveness has also been found to be a significant factor in influencing exercise motivation in viewers of fitness social media (Durau et al., 2022). It is possible that men may find attractive men aspirational and thus motivational to imitate their exercise behaviour to look more like them, as found in previous research (Durau et al., 2022). Other research has contested this view, finding perceived attractiveness does not affect motivation or trustworthiness (Madeira, 2023). Men did not discuss attractiveness in relation to trustworthiness in this thesis, yet it was mentioned as a motivator for following accounts, often that of fit men for gay men and women for heterosexual men.

This thesis used SDT as a conceptual framework for assessing motivation, and it has a number of findings that both corroborate and challenge previous research using this theory. Chapter 5 (cross sectional) showed that fitness social media use was more closely associated with autonomous rather than controlled motivations to exercise but was not associated with longer term exercise adherence. This result must be taken in the context of a sample that was physically active, with most participants exercising at least three times per week. Research has consistently shown autonomous motivations to exercise to be associated with longer term exercise adherence when compared with controlled motivations (Vartanian et al., 2012; Teixeira et al., 2012), with appearance-based motivations in particular associated with lower levels of long-term exercise adherence (Vartanian et al., 2012). One problem with assessing motivation in this way using SDT, is the unnatural segmentation of motivations toward a goal, as most pursuits are motivated by numerous motivating factors (Howard et al., 2020). In the analysis of Chapter 5 (cross sectional), whilst total scores for autonomous and

controlled motivation were used, a relative weighting of each was not, and this may have informed whether the influence of higher controlled motivation was a significant factor if autonomous motivation was also high (or vice versa). Furthermore, men discussed multiple motivations for exercising in Chapter 6, with appearance concerns being a factor that had contributed to some men exercising for many years. Taken together, these results show support for autonomous motivation as a key component of long-term exercise behaviour, and also lend support toward controlled motivations being associated with some negative wellbeing outcomes (e.g. poorer body image). The effect of autonomous and controlled motivations co-existing and the impact of this however, requires further research.

These findings also need to be considered in the context of basic psychological needs in impacting motivational regulation. Many of the men in Chapter 6 (qualitative), who discussed appearance based motives to exercise, did so in relation to receiving praise from others, attracting others and gaining a sense of belonging. This speaks to a desire to satisfy their needs for relatedness (Divine et al., 2019). This is also reflected in previous work that has frustrated relatedness needs to be associated with higher drives for muscularity, and higher risks of muscle dysmorphia (Edwards et al., 2016; Chaba et al., 2016). This is particularly likely in social contexts whereby certain appearances are praised, and some men in Chapter 6 (qualitative) also discussed this. Competence needs can also be satisfied through physical activity (Sheeran et al., 2021), but in the context of appearance-based motives, this competence satisfaction can become entangled in controlled motivations (Rodrigues et al., 2020). In these contexts, the satisfaction of relatedness and competence needs can be in conflict with autonomy (Vansteenkiste et al., 2022), which may help to explain the associations seen between controlled motivations and exercise behaviour in Chapter 5 (cross sectional).

Together, the results discussed above would suggest that whilst active individuals are more likely to engage in higher levels of fitness social media use, fitness social media itself is not an effective motivational tool for most men. Other research has also demonstrated a lack of significant effects of fitness social media (in these cases defined as “Fitspiration”) in men (Arigo et al., 2021). Similarly to Chapter 5 (cross sectional), previous cross-sectional research has shown higher levels of exercise motivation to be associated with higher levels of fitness social media use in women (Holland & Tiggemann, 2017; Graff & Czarnomska, 2019), but experimental research has failed to demonstrate a cause and effect relationship (Arigo et al., 2021; Robinson et al., 2017). A recent systematic review of research looking at the impact of “fitspiration” on physical activity by Nuss et al. (2024) also found little evidence that fitspiration influences physical activity. These results add further support to the

findings in the present thesis, that whilst fitness social media may be correlated with controlled and autonomous motivations to exercise, it is unlikely to act as a significant causal factor. This was evidenced in several places throughout the thesis. In Chapter 5 (cross sectional), no relationships were seen between fitness social media use and long-term exercise behaviour. In Chapter 7 (experimental), fitness social media exposure had no impact on exercise motivation on men when measured quantitatively. Additionally, the qualitative data from this thesis showed that whilst men used fitness social media for practical information and often in an attempt to motivate them, it was rarely spoken about as a meaningful motivational tool. This suggests that these correlational findings in cross sectional research may reflect reverse causation, whereby active individuals subsequently engage in higher levels of fitness social media use, rather than fitness social media driving individuals to becoming more active.

8.4 Question 3: What is men's experience of social media in relation to body image and exercise?

Throughout this thesis, men were frequent users of social media and fitness social media, and a range of experiences were discussed and assessed, in relation to their body image and exercise motivations and behaviours. Chapter 6 (qualitative) provided the richest insights into men's experiences with social media, and found that most men did not discuss fitness social media as being a motivational tool, whilst those that did, found this motivation was very appearance driven, often as a consequence of making upward social comparisons with the bodies seen on social media. Men discussed a range of experiences of social media in relation to their body image, with some stating that it did not affect them, and others discussing feelings of pressure and anxiety around their bodies because of social media, which in some cases had led to disordered eating practices and other mental health difficulties. Men's experience of social media in Chapters 6 (qualitative) and 7 (quantitative) was one of being an active user and not just a passive consumer of social media, critiquing the content they encountered and managing what they were exposed to on social media. Some of these experiences have been discussed and critiqued above in sections 7.2 (How is social media related to body image in physically active men?) and 7.3 (How is social media related to exercise motivation and behaviour in physically active men?), and this will not be repeated here. This section will focus on the other experiences men discussed around social media, body image and exercise motivation throughout this thesis.

Several men in Chapter 6 (qualitative) discussed their experiences of social media in relation to self-development and education concerning their bodies and exercise behaviour, with some stating that unless they were gaining something from time on social media then it was a waste of time. Men in Chapter 7 (experimental) often praised the educational content in the functional image group for being "useful", and frequently expressed admiration for the bodies of the men presented to them from social media, often discussing the "hard work" that it had taken to achieve this. These experiences showed similarities with previous qualitative work investigating men's experiences with fitness social media by Chatzopoulou et al., (2020) who found that young men used fitness social media to enhance their self-confidence, learn about fitness and for enhancing their feelings of masculinity. Masculinity was only explicitly discussed by a small number of men in Chapters 6 (qualitative) and 7 (experimental), but men did discuss several masculine ideas in conjunction with social media use including ideas of winning, self-control and the male body as an external expression of masculinity (Marshall et al., 2020; Garlick, 2016). In Chapter 7 (experimental) a number of men were unhappy with a comment on one photo that it depicted a "proper man" and displayed views concurrent with inclusive masculinity (Anderson & McCormak, 2018; Marshall et al., 2020) that there are many ways one can look and behave as a man. Some men in Chapter 6 (qualitative) shared experiences of more obsessive exercise and diet behaviours that had been driven by following influencers on social media. Previous research has documented the high prevalence of extreme bodies and behaviours portrayed on fitness social media (Araiza & Freitas, 2024; Piatkowski et al., 2021), and some men discussed engaging with this in Chapter 6 (qualitative). Whilst it was common to have encountered more extreme bodies on social media, most men did not discuss experiences of having engaged with this type of content in a meaningful way. The reasons for why some men were more vulnerable to more extreme forms of fitness social media are complex, but one personality trait that has frequently shown links to body image disturbances is perfectionism (Hicks et al., 2022).

Throughout Chapter 6 (qualitative), some men spoke of perfectionist tendencies and how social media played a role in perpetuating these tendencies, and how this was linked to issues around their body image, more obsessive exercise behaviours, and histories of disordered eating behaviours. Previous research has detailed consistent relationships between perfectionism and disordered eating in males and females (Barnes & Caltabiano, 2017). Socially prescribed perfectionism and pre-existing perfectionist attitudes have been found to contribute to eating disorder and muscle dysmorphia risk in men (Dryer et al., 2016). This was seen in Chapter 6 (qualitative), with men who discussed perfectionist tendencies describing how these attitudes were present from a young age, were reinforced by social settings, and by social media, and had extended into other areas of their life such

as work and education. This, combined with internalised social ideals of lean and muscular bodies, many of which had been seen on social media, had led to body image and disordered eating problems for these men. Perfectionist tendencies were motivated by a mixture of the desire to be perfect for oneself and the desire to appear perfect to others, something identified more recently in other literature (Grugan & Wright, 2023). Vicent et al. (2020) examined perfectionism in physical exercise using SDT as a conceptual framework. They found that perfectionism was most harmful when driven by controlling motivations (external and introjected regulation). The desire to appear perfect for others, often on social media, or to conform to societal expectations would fall under this category, with some men alluding to this in Chapter 6 (qualitative), along with some of the struggles they had experienced because of this drive.

Men's experience of social media in Chapters 6 (qualitative) and 7 (experimental) was not one of being a passive consumer, and men discussed ways in which they were critical users of social media, often critiquing social media content for its authenticity. They also discussed reasons why they did not want to emulate the bodies and lifestyles of high-profile fitness social media influencers, citing health concerns and desiring a life of balance. These experiences were corroborated by analysis of the comments made about the images used in Chapter 7 (experimental). Here men frequently critiqued the authenticity and desirability of the bodies shown to them and failed to express feelings of motivation upon viewing them.

All men in Chapter 6 (qualitative) alluded to having engaged in critical thinking when viewing social media images. In addition to this, Chapter 7 (experimental) showed that men were highly critical of both the social media bodies they were presented with, and the ways in which they were presented. Men's experiences of social media, detailed in Chapter 6 (qualitative) were of being active users of social media, whereby they critique content, and have a level of autonomy over the content they engage with and how they engage with it. This bi-directional relationship with social media has been highlighted in previous research (Andrews et al., 2020) and is important for understanding social media use. Quantitative research often treats users as passive consumers who are at the mercy of the content to which they are exposed (Harriger et al., 2023). The qualitative data from this thesis clearly showed that this was not men's experience, and they act both as consumers and active critics of social media content. This may help to explain some of the results from Chapter 4 (cross sectional) where there were consistent associations seen between social media use and appearance salience and drive for muscularity, but only one measurement of social media use was negatively associated

with appearance valence. Men's critical appraisal of the social media they consume may help to protect them from threats to their body image.

Other research has found that critical thinking strategies such as those discussed by men in Chapters 6 (qualitative) and 7 (experimental) may be protective against body image threats (Murnen & College 2019). The implementation of these strategies may also help to explain the lack of differences seen in the pre and post measures of body image for men viewing aesthetic focused images, functionality focused images or landscape images. Men in Chapter 6 (qualitative) frequently expressed scepticism over the body presentations they were seeing on social media, as well as acknowledging the sacrifice required to achieve some of the idealised physiques presented to them on social media. These sacrifices were not deemed worth making for most men who discussed wanting to have balance in their life, eat foods they like, drink alcohol, and spend time with family and friends. This also reflected an idea seen in previous literature that has shown men to often be "self-hopeful" when presented with idealised bodies, believing they could achieve them if they wanted to (Franzoi et al., 2012). This can allow men to feel more competent and view the discrepancy between their body and the idealised presentations as a choice they have made, rather than an impossible target (Musetti et al., 2021). Similarly, Voges et al., (2019) found that men engaged more readily than women in "self-enhancing" (favourably evaluate their own appearance against that of others) in the presence of idealised body imagery, again helping to bolster their body image and self-esteem. Participants' discussion in Chapters 6 (qualitative) and 7 (experimental) show support for men's strategy of "self-enhancing", with participants often explaining a lack of desirability for "idealised" body presentations for a variety of reasons, including health problems associated with them and the undesirable lifestyles required to achieve and maintain them.

In Chapter 6 (qualitative), many of the men also expressed concern about the dangers of striving for the types of ideal bodies seen on social media, both from a physical health and mental health perspective. This had led to many of them exercising their autonomy on social media by unfollowing accounts that presented these kinds of bodies. This attitude is consistent with other research that has found men to be most likely to make counter arguments against muscular male bodies (when compared to athletic or thin bodies) (Murnen & College, 2019). This can help to bolster their own positive feelings towards their bodies and reduce the impact of threats. This scepticism also represents an awareness of the unhealthy nature of many of these bodies, showing similarities with female responses in recent years to thin images of women (Murnen & College 2019). These critical thoughts and strategies may help to protect men from body image threats and unhealthy practices,

particularly in the pursuit of greater muscularity. This was seen throughout Chapters 6 (qualitative) and 7 (experimental), for example when presented with a picture of the well-known actor The Rock posing during a gym workout, many of the participants in Chapter 6 (qualitative) spoke of how his physique was “too big” or “too much” and not something they would desire, or that would be healthy to pursue.

Whilst these critical skills and counter arguments have been associated with protection against body image threats in previous literature (Murnen & College, 2019) and in Chapters 6 (qualitative) and 7 (experimental) of this thesis, they did not always work in this way. It was common for men in Chapter 7 (experimental) to simultaneously apply critical thinking and scepticism towards idealised bodies whilst being affected by them. For example, men would often comment that images were “too big” or “unhealthy”, whilst simultaneously expressing feelings of anxiety and/or upward social comparisons. There are several reasons for this, including the sheer prevalence of such presentations in media and social media, and the portrayal of certain physiques as being desirable, attractive, masculine and successful (Fardouly & Vartanian, 2016). This was also seen in Chapter 7 (experimental), where men frequently made comments that were highly critical of the muscular male bodies on display, whilst simultaneously expressing a desire to look like the men in the pictures and/or expressing feelings of anxiety or insecurity from viewing these images. As mentioned previously, prior research has also shown men to make counter arguments against idealised, and muscular images (Murnen & College, 2019), and counter arguments have been known to provide protection against body image threats for several years (Engeln–Maddox, 2005). However, less research has been dedicated to the limitations of counter arguments or critical comments against body image threats as noted in the current thesis, and this is an area that future research may be able to shed more light on. Emerging research has found that for young women, greater scepticism towards media messages (rejecting their realism, similarity or desirability) is linked to less body dissatisfaction, but greater critical thinking about media messages (understanding of the broader purposes of the media content) was linked to more dissatisfaction (Bennett et al., 2023). The authors hypothesised that critical thinking about social media content requires individuals to spend time engaging with, and thinking about social media content, making it more salient to them. In Chapter 4 (cross sectional), appearance salience was negatively associated with appearance satisfaction, supporting the idea that being more aware of one’s appearance is related to being less satisfied with it. These findings require further research however, and an exploration of the moderating factors between these relationships in men is not yet fully understood.

Some men in Chapter 6 (qualitative) described experiences of obsessive and unhealthy behaviours that had been promoted on social media, particularly when they were younger. These findings highlight the vulnerability men may have when exposed to idealised images on social media, without possessing the media literacy and other skills that have been found to reduce the impact of these threats to one's body image. This may be particularly problematic for younger age groups, with Bennett et al. (2023) noting that adolescent girls had lower rates of media literacy than young women. Paxton et al. (2022) found there is modest preliminary support for the idea that media literacy can be protective against body image threats on social media. However, almost all studies cited in this paper were in girls and young women and less is known about the effects of media literacy skills in protecting men from body image threats. This is pertinent as research has shown that social media literacy programmes for reducing body image issues have shown greater efficacy in female groups when compared to male (Gordon et al., 2021). The present thesis touches on the idea that media literacy and critical skills when using social media may have some protective benefit of body image and mental health concerns in men (see themes 2 and 4 in Chapter 7 (experimental)). Yet, this would require more direct research. This could involve providing a media literacy intervention and comparing the impact this has on responses to idealised body imagery in acute or longer-term experiments in comparison to control groups.

A topic that was raised frequently by men when talking about body image and social media in both Chapters 6 (qualitative) and 7 (experimental), was that of steroids. Anabolic steroid use was not directly investigated in the present thesis, however some men discussed their opinions on them and usage of them in Chapter 6 (qualitative), in addition to frequent claims that the bodies on display in Chapter 7 (experimental), were the product of anabolic steroid usage. Hilkens et al. (2021) found a positive association between image-based social media use and anabolic steroid use in their sample of 2,269 Dutch men in their 20s, adding further evidence to the link between social media and unhealthy muscularity orientated behaviours. Chatzopoulou et al. (2020) found in their qualitative study of young men who regularly used fitness social media, that many of them experienced muscle dysmorphia symptoms including exercising when injured and taking steroids in conjunction with heightened anxiety and pressure from frequently engaging in fitness social media content and communities. These findings show overlap with the experiences of many men in the present thesis (see Chapters 6 (qualitative) and 7 (experimental)). Some men in Chapter 6 (qualitative) described their own experiences and the experiences of friend's who had used steroids, and how social media had played a role in perpetuating the idea that they would be necessary to achieve the bodies they desired. Previous literature has established links between image based social media and steroid use

in men (Hilkens et al., 2021), and the present thesis would add further support of the link between fitness social media use and unhealthy muscularity related behaviours in some men.

8.5 Social Media, Body Image & Exercise Motivation

This thesis sought to investigate the relationship between social media, body image and exercise motivation in physically active men. These relationships have been investigated separately in some sections and in a more integrated way in others. This section will examine these three areas together and discuss how the findings from this thesis can integrate these topics and provide an overarching framework to understand their relationship.

Throughout this thesis, fitness social media was found to be associated with both autonomous and controlled motivations to exercise. Body image concerns were often discussed in relation to viewing idealised bodies on social media, and with controlling forms of exercise motivation. Previous research has demonstrated that higher levels of self determination (more autonomous motivation) are protective of body image threats from media in women (Mask & Blanchard, 2011; Pelletier et al., 2004). Research in men is more limited but similar findings have been shown, suggesting that higher levels of autonomous motivation reduce the negative impacts of exposure to idealised and muscular bodies in men (Baker, 2017). Qualitative evidence from the present thesis would add support for the protective role of autonomy on body image threats for men from social media. A main theme from Chapter 6 was “Beyond appearance: strategies for fostering a positive body image” which highlighted the role of autonomous motivations in men developing a positive body image, including their use of social media. Men who cited more autonomous motivations for exercise, including health and enjoyment, discussed less pressure to change their appearance through exercise, discussed viewing less appearance focused social media and spoke of their relationships with their bodies in a more positive way. The quantitative analysis in this thesis analysed the concepts of exercise and body image separately, but this could have been analysed together using strategic equation modelling to

investigate the mediating role of autonomy in social media's relationship with body image. This possibility along with future directions for research in this field will be discussed in more detail in section 8.8.

Whilst autonomy can play a mediating role in the relationship between social media and body image, body image may also play a role in influencing social media engagement and exercise motivation. Research in adolescents has shown that better body image is associated with higher levels of autonomous motivation, which was strongest for intrinsic motivation (Markland & Ingledew, 2007). Exercising for appearance related concerns is characterised as a controlled motivation in SDT (Ryan & Deci, 2017), and men in Chapter 6 discussed exercising for appearance related concerns to be influenced by social pressure, whereas autonomous motives were not.

Whilst much research has been dedicated to the impact of social media on body image (Harriger et al., 2023), less has considered the role of preexisting body image concerns in influencing social media use. Some research has found that appearance anxiety in adolescent boys was predictive of problematic social media use, whilst this was not the case for girls (Boursier et al., 2020), highlighting the importance of further research in men's body image and social media use. Furthermore, physique anxiety has been found to act as a controlling motivation and often has a negative impact on exercise motivation and behaviour (Brunet & Sabiston, 2009). This may help to explain the findings that neither controlled motivation nor fitness social media use were associated with long term exercise behaviour in Chapter 5. Additionally, several men discussed feelings of anxiety of viewing idealised bodies in Chapters 6 and 7 and some discussed how this could be de motivating from an exercise perspective.

Taken together, these findings from the present study support the idea that social media, body image and exercise motivation all influence each other and often lead to feedback systems that reinforce preexisting behaviours and beliefs. This interaction of environment (social media), behaviour

(exercise and body related behaviours) and personal factors (levels of self-determination and body image) fits into the model proposed by Social Learning Theory (Bandura & Walters, 1977; Bandura, 2009). Research in this field has focused predominantly on the role of social media in influencing body image and exercise as it is the most modifiable of these factors (Harriger et al., 2023; Fatt et al; 2019). Whilst research should continue to investigate this, it is important to consider the role of preexisting body image and self-determination when examining their relationships with social media use.

8.6 Practical Applications

This section will discuss how the findings from this thesis may be useful in applied settings including health interventions, promoting improved body image, healthy motivation and physical activity on social media. Most of the research up to the present date in social media and body image and/or exercise motivation has been conducted in adolescents and convenience samples of undergraduate students (Harriger et al., 2023; Fatt et al., 2019; Arigo et al., 2021), which is troubling as social media use is very common in all adult age groups, and particularly those aged 20-50 (Statista, 2023). The present thesis has shown that males in this age group are impacted by social media in several ways, and that it is linked to changes in their body image, drive for muscularity, exercise motivation, and behaviour. These findings have implications for the design of future interventions looking to reduce the harmful effects of social media on body image and the promotion of healthy exercise behaviours. Firstly, more interventions that include adult men are needed, and with a focus on the specific areas men are vulnerable (e.g. muscularity and body fat concerns). This thesis has shown that this group have different habits, priorities and issues around body image and exercise when compared to female or undergraduate demographics. Secondly, it is possible that interventions aimed at younger age groups (e.g. teenagers) may help to prevent the development of body image issues in men, however this requires further research. This could take the form of educational classes and courses in schools, helping to build critical thinking and scepticism of social media imagery, and focus on autonomous motivations. Longitudinal research examining the impact of body image interventions at a young age on adulthood would require much time and resources but could be an invaluable tool for preventing the development of body image problems in men, which are commonplace and growing. Ideally, the implementation of education and group or 1-1 meetings that help with social

media, body image and autonomous motivation could be compared to a control group and efficacy could be tracked over several years

For promoting physical activity and autonomous motivation, the inclusion of educational content, exercise specific content and messaging around autonomous motives should be included, with controlling motivations (e.g. guilt, ego) and aesthetic focused idealised bodies avoided. Social media content that is educational directly helps to boost the autonomy of users (West et al., 2023) and for physical activity this can take the form of how to perform certain exercises in addition to the benefits of physical activity (mental and physical health improvements, enjoyment).

Finally, the importance of critical skills when evaluating media, and particularly media's presentations of bodies can also be a useful tool for future interventions. Interventions that educate about the use of filters, lighting, staging, editing, unhealthy substance and supplement use and unhealthy dietary practices may help to provide individuals with an enhanced set of tools to combat content that may threaten their body image. These interventions could be implemented in schools and for younger people, but also to adults and this could take the form of online courses or in person workshops. This may include critiquing the authenticity of posts, the aim of posts, the usage of filters, lighting, photoshop and other alterations, and the unhealthy practices that are required for extreme body types (e.g. disordered eating practices and steroid use).

Findings of this thesis indicate that exposure to idealised bodies on social media has varying effects on men, however these are unlikely to be positive, with some men not affected and others being negatively affected by this type of content. They suggest that more practical content focusing on education and how to perform different exercises may be the most useful type of content for supporting an individual's exercise behaviour. This is informative for content creators who wish to promote physical activity and healthy motivation on social media. However, this type of content still may not be sufficient for increasing motivation to exercise in those who are not already active (Sokolova et al., 2021). Interventions aimed at increasing exercise motivation and behaviour using social media may look to support autonomous forms of motivation (e.g. promoting enjoyment, mental and physical health benefits and improvement), as these have been found to predict longer term exercise behaviour both in the present thesis and in prior research (Silva et al., 2011; Mossman et al., 2022). Previous interventions that focus on autonomous motivations bolstered by harnessing the social aspect of social media have shown promising findings (Divine et al., 2019). They have often taken the form of using social support groups to help build communities that support each other in being physically active, in addition to providing educational content within these groups (Divine et

al., 2019; Hayes, 2022). Social media provides an ample place for social support that is not subject to geographical limitations, and previous research has found that social support groups that provide education, community and frequent communication can benefit mental and physical health and wider wellbeing (Gilmour et al., 2020). Many social media interventions promoting physical activity have placed an emphasis on the social aspect of social media (avoiding excessive passive use), maintaining active relationships with others in the support groups and focusing on private communication over public posting (Gilmour et al., 2020). The present study supported this by finding men drew positive outcomes from social support on social media. Future interventions could include groups or pages that specifically promote areas of health and wellbeing, that seek to form a community where members/followers support each other and have opportunities for private communication in addition to public interactions. Facebook provides an excellent platform for this but is less popular with younger demographics than other platforms such as Instagram (Statista, 2023), which was also the most popular platform used by participants in Chapter 5. Whilst Instagram provides an excellent platform for distributing information in short form, it is more difficult to foster groups and communities when compared to some other platforms. WhatsApp provides a better platform for building communities and relatedness but requires people to use their phone numbers which presents some privacy issues. A combination of these platforms could also be used to maximise the strengths of each of them.

The present thesis also found support for the importance of social media literacy and education around health and extreme body types. An awareness of the artificial, highly curated, and unrealistic portrayals on social media appeared to reduce the negative impact of idealised body content from social media on men's body image. In addition to this, an awareness of the risks and harms from certain practices associated with many of these bodies, including steroid use and unhealthy dietary and exercise practices also appeared to weaken the negative effects of idealised body content on men's body image. These findings would support the implementation of education for men on social media literacy and the risks from unhealthy exercise and dietary practices and very high levels of muscularity. Additionally, tighter regulation from social media platforms themselves on dangerous "fitness" content would also help to reduce the frequency and volume of dangerous content exposure to users. An example from recent history is the banning of the hashtag "thinspiration" and "thinspo" by Instagram as it can encourage self-injury (which includes eating disorders) (Hogue et al., 2023). Companies should consider how this type of regulation could be expanded to content promoting extreme diet and exercise behaviours and unhealthy behaviours such as steroid use.

In addition to this, content creators, brands, and influencers on social media may look to use these findings to support providing content that is responsible and supports healthy, sustainable exercise motivations and habits. This poses difficulties as body centric fitness social media content is highly popular (Limniou et al., 2021) and profitable (Koontz, 2018). In addition to this, the use of controlling motivational strategies in marketing is equally popular and profitable (Kruger et al., 2015), yet research has repeatedly shown that fitness-based social media that focuses on appearance and controlling motivations has negative impacts on user's body image and wider wellbeing (Raggatt et al., 2015; Rounsefell et al., 2020; Tiggemann & Anderberg, 2020). This represents a key challenge for fitness-based social media creators moving forward, to balance ethical responsibility with success and profitability. It also represents a challenge to the ethos of much of the global fitness industry that makes money from advertising methods, products and services that are often based on a lack of scientific evidence (Tiller, 2020). Fitness industry media also shows a clear preference for certain body shapes and sizes (Ross, 2023), often shaming those that do not conform to these bodies in an attempt to pay for "fitness" products and services (Singh & Sharma, 2022). The emergence and growing popularity of body positivity on social media (Fardouly et al., 2023) is a promising sign that fitness content that does not objectify and push certain body types can be popular and impactful.

In addition to the aforementioned applications of these findings, they also have implications for men's broader mental and physical health. Men discussed issues around anxiety, depression, muscle dysmorphia, steroid use, and disordered eating in conjunction with social pressures to achieve lean and muscular body types. Fitness based social media that was body-focused was one driver of these negative attitudes and behaviours. Interventions, courses and educational material looking into men's mental health issues, and particularly those linked to muscularity and bodies should consider the impact fitness based social media is having on this and seek to further explore why some individuals are so badly affected whereas others remain relatively unharmed.

It is important to note that social media and fitness based social media can have positive effects on individuals as well as negative. In this instance, content that focuses on education, how to perform exercises or improve sport and exercise skills can help to develop men's interest and participation in sports and exercise and should be encouraged by interventions and content creators for this purpose. The social aspects of social media, and digital media more broadly, also provide benefits for building communities, satisfying relatedness needs and encouraging connection. When digital communities are built around positive subject matters (i.e. healthy sport and exercise rather than extreme diet and exercise behaviours or appearance concerns), social media can be a force for good.

8.7 Reflection on Methodology

The purpose of this section is to reflect on the various methodologies used throughout this thesis. This thesis followed a mixed method, explanatory sequential structure (Toyon, 2021) for the first three data chapters (Chapters 4 & 5 being quantitative and Chapter 6 being qualitative), concluding with a mixed methods experimental study (Chapter 7). This allowed for the research question to be examined using multiple methods underpinned by a pragmatist philosophy, whilst using the findings from each stage to better inform the design, structure, and detail of the following stage. This allowed for a broader exploration of the impact of social media on men's body image and exercise motivation than using a singular study design (Clark, 2019). The thesis began with a cross-sectional study as the demographic of physically active males is an under-researched population in this area. It was important to gain this information in the first study as social media usage trends are fast-moving (Nilsson et al., 2022) and using previous studies as a foundation may not have provided sufficiently up to date and specific data for this demographic. Additionally, using different measurement tools in a previously understudied demographic also offered novel insights into men's social media use, exercise motivation and body image. Following this, Chapter 6 (qualitative) presented a qualitative study that aimed to explore the prior quantitative findings in greater detail and allow men to speak about their personal experience without having their thoughts, feelings, and behaviours reduced to numbers (Toyon, 2021). Chapter 7 (experimental) drew on the findings from these first two phases and used an experimental design to test how different types of social media content would influence men's body image and exercise motivation, which allowed for the testing of cause and effect and to see how men responded to fitness social medi content. Experimental research is lacking in body image research when compared to cross sectional studies (Harriger et al., 2023).

The limitations of the methods used will be discussed in the following section, whilst the strengths will be discussed here. A major strength of this thesis was the use of multiple types of methodology, each containing strengths and novel aspects. The population used in this study included men aged 18-50. They are a demographic who heavily use social media (Statista, 2023), but have received little research attention thus far, particularly men over the age of 30 (Harriger et al., 2023). Chapter 5 (cross sectional) assessed exercise motivation and male body image in more detail than previous studies on the topic, with multiple measures capturing these concepts in a range of ways. Previous research has often used singular questions or more limited questions (e.g. Robinson et al., 2017; Fatt et al., 2019; Arigo et al., 2021). For example, this study employed a unique combination of measures (Using appearance valence, salience and drive for muscularity to measure body image, the BREQ-3 to

measure motivation, and measures to capture short and long term exercise behaviour) in order to more rigorously test how concepts associated with SDT (controlled and autonomous motivational orientations) can help explain the impact of social media use on exercise behaviours, exercise motivations and body image in a previously understudied demographic of men. The combination proved to be effective as it was able to demonstrate differing relationships between social media and different measures of body image, exercise motivation and behaviour. This is a valuable contribution as it is the first to show that social media may have short term but not long term relationships with men's exercise behaviour, and that it is more closely related to men's drive for muscularity and appearance salience, when compared to their evaluations of their appearance in a positive or negative way.

Chapter 6 (qualitative) was again novel in examining the subject matter of social media, body image and exercise motivation in a sample of adult men aged from 21-46 and to my knowledge this is the first qualitative study to examine this combination of factors in this demographic. It also used SDT as a conceptual framework for examining motivation, a theory that has a large body of quantitative research but much less qualitative (Linch et al., 2020). It was therefore able to differentiate between different motivational orientations based on men's discussions of motivation. It has also been noted in previous literature that research into male body image has been dominated by quantitative methods, and more qualitative research detailing men's experience from their perspective is required (Lennon & Johnson, 2020). During the qualitative research, my positionality (further discussed in Chapter 3 (Methodology)), as an "insider", as a man who fit the inclusion criteria and has personal experience with many of the topics discussed, may be considered a strength. This helped me to empathise with participants, be able to speak to them in the language associated with the topic area and to be able to ask relevant follow-up questions within interviews (Gair, 2012). By employing an explanatory sequential structure (Toyon, 2021), this study (Chapter 6 (qualitative)) was also informed directly by the results of Chapters 4 and 5 (cross sectional) and was able to build on and expand the understanding of them. This is important and novel because it allowed for an exploration of men's experiences of social media in relation to body image and exercise at the "big picture" level as well as the individual, and using two methodological approaches for this demographic in this topic has not been previously implemented in this demographic. Previous mixed methods research has been used to investigate body image using mixed methods, however this field is dominated by female and young (<30 year old) samples (Rounsefell et al., 2020), and the inclusion of exercise motivation in addition to body image in a mixed methods design is novel.

The final study employed an experimental methodology to examine the differing effects of aesthetic- and functionality-focused fitness social media content on men. This study also used a mixed methods design using data from questionnaires completed pre and post exposure in addition to written comments in response to the images completed by participants. To the author's knowledge, no previous research has sought to investigate the effects of aesthetic- and function-focused social media imagery on men's body image and exercise motivation. Additionally, the use of a mixed methods design enabled this experimental exposure to be examined more broadly than in other similar studies that have only used comments or pre- and post-test measures (Murnen & College, 2019; Arigo et al., 2021; Mulgrew et al., 2014). The comments provided insightful data on how men felt about the types of imagery they were exposed to and provided support and added detail to the quantitative findings.

8.8 Limitations and Future Directions

Whilst this thesis used three different methodological approaches to investigate the influence of fitness based social media on men's body image and motivation to exercise, several limitations must be noted. Chapters 4 and 5 were cross sectional in nature and were thus only able to draw associations between social media use and body image and exercise motivation. It was not possible using this design to draw any cause-and-effect conclusions, only to highlight the associations of certain types of social media usage with indices of body image and exercise motivation. Future research could employ longitudinal, experimental designs to better determine cause and effect between different types of social media and body image and exercise motivation.

The inclusion of novel questions for social media use was positive from a novelty perspective but also lacks validation and thus serves as another limitation of this research. The lack of validated questionnaires in the field of social media research is a problem but is difficult as social media is constantly changing, and research has struggled to produce universal questionnaires that can be modified across platforms (Kaye, 2021). Nevertheless, it is possible that more validated social media use questionnaires will become available in future that focus on certain platforms (e.g. Instagram, TikTok, Facebook), and/or focus on specific types of usage on these platforms.

The sample used in Chapter 5 (cross sectional) were highly active, with most exercising at least four times per week and had been doing so for over three years. They may not thus be representative of the general male population in this age group. Being physically active was part of the inclusion criteria for Chapters 4,5 and 6, and thus it is not known if the results seen here would be similar in a

sedentary or mixed sedentary/active population. This was also the case for some social media variables, which may have limited the results derived from the use of these variables.

The data generated from the first study of this thesis was written up as two Chapters with one focusing on social media and body image (Chapter 4) and one focusing on social media and exercise motivation and behaviour (Chapter 5). This approach was taken as it allowed for a more detailed analysis and exploration of social media's relationship with each of these areas in this thesis. This approach does have limitations however and reduced the degree of integration that was possible for social media, body image and exercise motivation and behaviour. These areas were further integrated in Chapters 6,7 and 8 but a combined analysis of Chapters 4 and 5 may have added further detail about the impact of body image on social media and exercise, and the impact of motivational orientations on social media and body image. Little is known about the role motivations play in the relationship between body image and social media, or the role body image plays in the relationship between exercise motivation and social media. Integrating these variables and using a different type of analysis such as structural equation modelling would have allowed for an analysis that could have examined the mediating role of motivation quality in social media's impact on body image. Likewise, the mediating role of body image in social media's relationship with exercise motivation and behaviour could also be investigated with this type of analysis. This has not been investigated in previous research, but similar mediation models have been created, for example: social media, drive for muscularity and objectification in men (Seekis et al., 2021) and social media, body image and social comparison in adolescents (Jarman et al., 2021). Future research may seek to synthesise data around social media, body image and exercise motivation and create mediation models to build on the findings from this thesis.

Whilst my aforementioned insider positionality in Chapter 6 (qualitative) provided a number of strengths (as discussed in Chapter 3 (Methodology)), it also presents challenges and I may have been quicker to make assumptions and interpret information in a less "objective" fashion than if I were coming from an outsider perspective (Saidin, 2016). Whilst this bias was discussed and removed where possible from interview scripts (for more information see Chapter 3 (Methodology)), it is possible that when discussing topics such as fitness social media, gym based exercise and body image, I may have brought assumptions that may have influenced the direction of some discussions. Through using recommended strategies such as maintaining an open and inquisitive approach to participant's experiences, and engaging in reflexivity and reflecting on what my assumptions and biases may have been (Greene, 2014), I accounted for this bias where possible.

Chapter 7 used an acute exposure method as it was not able to replicate the "real world" usage of social media which would entail repeated exposures to different types of content over prolonged periods of time. This also limited Chapter 7 by providing a contrived setting in which men were being exposed to certain kinds of imagery and given pre and post-test questionnaires. This may have affected the results and contributed to the lack of significant difference in the quantitative findings despite the inclusion of a control group, used to control for these procedural limitations. Finally, the "functional" images in this study were still taken from gym environments and the men in them were lean and muscular which may have blurred the lines between aesthetic and function focus. This was done deliberately so as to represent an authentic presentation of "functional" imagery in the context of fitness social media, and also to control for the effect of participants seeing different types of bodies (thus making the function/aesthetic focus the point of difference).

Participants were sampled through snowball sampling, advertising on social media, and advertising in a gym in Southwest London. Whilst there were a variety of ages and other demographic factors, most participants were white and British, with the mean age in all studies between 32 and 34. Therefore, the results must be considered with this in mind and may not be representative of other nationalities, ethnic groups, or age groups. Participants also took part through their own choice and thus the voluntary response bias (Nield & Nordstrom, 2016) may have influenced the results. Previous research has shown that voluntary samples tend to have better mental and physical health, and less difficulties associated with the subjects being investigated when compared to mandatory samples (Cheung et al., 2017), which may have influenced the findings in this thesis. Additionally, it is likely these participants would have had a stronger interest in the topic area (body image, physical activity, social media) than the general population, which may also have had an influence on the results generated.

Differences in age, with respect to social media use, body image or exercise motivation were not analysed in this study and further research may look to examine the impact of age on these variables, particularly as social media has become more ubiquitous across a wider range of age groups (Lei et al., 2024). Previous literature has tended to show that body image improves throughout the life span (Tiggemann, 2004), and that men become less concerned about muscularity and more concerned with body fat, in part due to health concerns, as they age (McCabe et al., 2004; Hockey et al., 2021). This is also reflected in changes in exercise motivation throughout the lifespan, with health motives typically becoming more salient with age (Box et al., 2021), with appearance concerns becoming less prevalent (Gavin et al., 2014). From a SDT perspective, this would reflect

motivations becoming less controlled and more autonomous (Ryan & Deci, 2008), however evidence has also shown that exercising for enjoyment and social motives decreases with age (Box et al., 2021), demonstrating a decrease in intrinsic motivation, which may help to explain in part the decline in physical activity rates in older adults (Katzmarzyk et al., 2017). It is possible that social media may have a significant role to play in these relationships, however this would require further study.

8.9 Future Research

There are several ways in which future research can look to build on the work presented within this thesis. With the necessary time and resources available, this thesis would have concluded with a longitudinal intervention study. This would have entailed exposing men to different types of social media content over a more prolonged period of several months and subsequently examining changes in their perceptions of their bodies, their exercise motivation, and behaviour. This would better allow us to understand relationships between frequent social media use and body image and exercise motivation. In this vein, more experimental, longitudinal research is required in general in the field of social media and body image research (Harriger et al., 2023), and there is a particular dearth of such research having been conducted in male samples. It is important that this type of research in men uses body image measurement tools that are gender neutral and/or male specific and attend to the specific issues that affect men.

This thesis demonstrated the strengths and limitations of qualitative and quantitative research in investigating body image, exercise motivation and social media use. More mixed and multi-methods research is required to make sure that trends are established, but also that individual experiences and details are gained that cannot be established with just quantitative methods. To this end, longitudinal research that uses both quantitative (surveys and measurement tools) and qualitative (long form written or spoken data) methods, which are currently lacking, would help to examine these subjects as comprehensively as possible.

Similarly with exercise motivation and behaviour, longitudinal research providing consistent exposure to autonomous motivation messaging, community support groups and practical exercise content would help to determine the efficacy of different types of social media use and content and its effects on exercise motivation and behaviour. Future research should also seek to examine coexisting exercise motivations as the present thesis and other previous work using SDT has tended to evaluate

exercise motivations in segmented categories (e.g. autonomous and controlled). The effects of co-existing motivations, their influence on each other and on exercise behaviour requires further study. Additionally, whilst this thesis touched on Basic Psychological Needs, and there have been a small number of previous studies examining the relationship between Basic Psychological Needs and body image in men (Selvi & Bozo, 2020), this is a field that also requires further research.

Research that has used interventions to improve body image in young people have shown more promising results in girls than boys (Bell et al., 2021), often (but not exclusively) because they have a focus more heavily on social ideals of thinness, without considering muscularity, which, as explored throughout this thesis, is a highly salient factor for men and their body image. In addition to this, these interventions often use female centric measurement tools which have a similar problem focusing on thinness without a regard for muscularity. Furthermore, interventions that have specifically targeted men in promoting positive body image have been less effective than those in women (Guest et al., 2019), highlighting the need for more male specific work to be conducted in this field to better understand what types of intervention work best for men. The work in this thesis alongside other important recent work on male body image should encourage future research interventions using males, to use male specific measurement tools and male specific intervention materials that consider both body fat and muscularity. It is often more difficult to recruit male participants than female participants for this type of research, and novel recruitment methods (e.g. targeting male specific social media or places of work and leisure time, or using referral strategies) may be required (Ryan et al., 2019). Research interventions aimed at boys and teenage males are also lacking, with few having been conducted, and those that have showing limited effectiveness, often when they are combined in mixed gender samples (Ahuja et al., 2024). This further stresses the need for male specific interventions that focus on the specific issues that affect men.

8.10 Final Conclusions

Taken as a whole, this thesis breaks new ground in investigating the impact social media has on adult men's body image and motivation to exercise. There are several novel aspects of this work including using an older demographic of men, using a combination of quantitative and qualitative methods to investigate the topic and investigating the effect of different types of social media content experimentally. Findings show that fitness-based social media was frequently linked with increased drive for muscularity and muscularity concerns in men. Social media's relationship with body image and exercise motivation was complex, with fitness social media use associated with autonomous and controlled exercise motivations and some aspects of social media use associated with poorer body

image. Despite this, it was not seen as a motivating force by most men, but it was often deemed useful for learning practical information about exercise. A minority of men discussed external, appearance-based motivation in conjunction with fitness social media, although this was also discussed alongside negative wellbeing outcomes. Fitness social media had mixed effects on the way men felt about their bodies. For some, frequent exposure to idealised bodies led to them feeling worse about their bodies, whilst for others they appear relatively unaffected. This is in part due to the strategies men employ, to protect their body image from threats, including thinking critically about social media body presentations and desiring balance in their life that does not require extreme sacrifices for extreme body types. The implications of these findings show the importance of education and critical thinking for men when using fitness based social media. They also demonstrate the utility of social media for being an educating tool but show it has limited utility as a motivational force. These findings may be used to help with the design of interventions and policies, and by content creators who wish to provide content that promotes physical activity without putting user's body image at risk.

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Appendices

Appendix 1 – Questionnaire for Study 1 (Chapters 3 & 4)

Questionnaire

1. Age:

2. Ethnicity

3. Sexual Orientation

4. Education (highest level)

5. Occupation

Exercise Behaviour

6. How often do you usually exercise (this includes anything of a moderate intensity or above and includes sport and exercise such as running and using the gym) (choose option: 1x per week or less, 2x per week, 3x per week, 4x per week, 5x per week or more)

7. How long have you been exercising regularly for (without a break of 3 months or more)? (less than 3 months, 3-12 months, 1-3 years, 3+ years)

8. What type of exercise do you do and how often?

Social Media Use

9. How often do you usually use/check Social Media? (less than once per day, 1-2 times per day, every few hours, every hour or more)

10. Which social media platforms do you use? (Instagram, Facebook, Twitter, TikTok, Snapchat, Youtube, other (please specify) (daily, occasionally, rarely, never option for each)

11. How often do you engage in the following behaviour on social media? (Never, rarely, sometimes, often, very often option for each) (Browsing the profiles of friends, Browsing the profiles of influencers/celebrities etc, Browsing my own newsfeed, Browsing search/explore)

12. How often do you engage in the following behaviour on social media? (Never, rarely, sometimes, often, very often option for each) (Messaging others, Sharing content, Engaging with other's content through features such as likes and comments)

13. Please indicate how often you view or engage with the following on social media (never, rarely, sometimes, often, very frequently): (Fitness Accounts, Friends/peers who post about fitness/their body, Friends Accounts (general/other), Other (please specify))

Exercise Motivation (BREQ-3)

(Likert Scale 5 points not true—sometimes true—very true for me make a note that the term "exercise" includes resistance training)

14. It's important for me to exercise regularly

15. I don't see why I should have to exercise

16. I exercise because its fun

17. I feel guilty when I don't exercise

18. I exercise because it is consistent with my life goals

19. I exercise because other people say I should

20. I value the benefits of exercise

21. I can't see why I should bother exercising

22. I enjoy my exercise sessions

23. I feel ashamed when I miss an exercise session

24. I consider exercise part of my identity

25. I take part in exercise because my friends/family/partner say I should

26. I think it is important to make the effort to exercise regularly

27. I don't see the point in exercising

28. I find exercise a pleasurable activity

29. I feel like a failure when I haven't exercised in a while

30. I consider exercise a fundamental part of who I am

31. I exercise because others will not be pleased with me if I don't

32. I get restless if I don't exercise regularly

33. I think exercising is a waste of time

34. I get pleasure and satisfaction from participating in exercise

35. I would feel bad about myself if I was not making time to exercise

36. I consider exercise consistent with my values

37. I feel under pressure from my friends/family to exercise

The Basic Psychological Needs in Exercise Scale (BPNES) (Vlachopoulos, S.P. and Michailidou)

(Answers on a 5 point Likert Scale from "I don't agree at all" to "I completely agree"

38. I feel I have made a lot of progress in relation to the goal I want to achieve.

39. The way I exercise is in agreement with my choices and interests.

40. I feel I perform successfully the activities of my exercise programme.

41. My relationships with the people I exercise with are very friendly.

42. I feel that the way I exercise is the way I want to.

43. I feel exercise is an activity which I do very well.

44. I feel I have excellent communication with the people I exercise with.

45. I feel that the way I exercise is a true expression of who I am.

46. I am able to meet the requirements of my exercise programme.

47. My relationships with the people I exercise with are close.

48. I feel that I have the opportunity to make choices with regard to the way I exercise.

Appearance Salience (The Centre for Appearance Research Salience Scale CARSAL)

(All answers on Likert Scale 1-6 Strongly disagree to strongly agree)

49. For me appearance is an important part of who I am

50. I am often aware of the way I look to other people

51. In most situations, I find myself aware of the way my face and body look

52. I often think about the impression that the appearance of my face and body make

53. I am usually conscious of my appearance

Body Satisfaction (Centre for Appearance Research Valence Scale CARVAL)

(All answers on Likert Scale 1-6 Strongly disagree to strongly agree)

54. I am satisfied with my physical appearance

55. I don’t like the way I look

56. The way I look makes me feel good about myself

57. The way I look makes me unattractive

58. My body and face look pretty much the way I would like

59. I like the way I look

60. My appearance makes me feel attractive

Drive for Muscularity (Drive for Muscularity Questionnaire (McCreary, 2000)

(All answers on Likert scale: Always, very often, often, sometimes, rarely, never)

61. I wish that I were more muscular

62. I lift weights to build up muscle (B)

63. I use protein or energy supplements (B)

64. I drink weight gain or protein shakes (B)

65. I try to consume as many calories as I can in a day (B)

66. I feel guilty if I miss a weight training session (B)

67. I think I would feel more confident if I had more muscle mass

68. Other people think I work out with weights too often (B)

69. I think I would look better if I gained ten pounds in bulk

70. I think about taking anabolic steroids

71. I think that I would feel stronger if I gained a little more muscle mass

72. I think that my weight training schedule interferes with other aspects of my life (B)

73. I think that my arms are not muscular enough

74. I think that my chest is not muscular enough

75. I think that my legs are not muscular enough

Bodyweight/Body Fat

(Likert scale 1-6 Strongly agree to strongly disagree)

76. I am satisfied with my current level of body fat.

77. I am satisfied with my current weight/overall size

Appendix 2 – Draft Interview Script, Framework & Photo elicitation images for Study 2 (Chapter 5)

Interview Questions:

1. **Can you confirm your:**

a. Age

b. Occupation

c. Sexual Orientation

c. City/Area you live in

d. Highest education level

2. What is your experience of exercise?

a. How frequently do you exercise?

b. How long have you consistently exercised for?

c. What do and have you done for exercise? (any gym based?)

3. Why do you exercise?

a. What is your motivation? (think through lens of sdt orientations)

b. Where does your motivation come from? (think external and internal)

4. What is your experience of social media?

a. What platforms do you use?

b. How often do you use them?

c. What do you do on social media? (Videos, images, messaging, active/passive use)

d. What content do you engage with (and can you provide some examples)?

5. How do you feel about your body?

a. Does anything affect the way you feel about your body?

b. What do you think about these images? (Visual images shown)

c. How do they make you feel about your body? (social media specific too)

d. How does this image impact your motivation (if at all)?

This framework below is for the interviewers use. It highlights the main themes that will be discussed during the interview.

Framework

Planned progression of topics: Exercise Behaviour and Motivation → Social Media Use → Body Image and Muscularity

Information to be gathered (for the purposes of the researcher):

<u>Exercise History and Frequency:</u>

- How often do you exercise and for how long?

<u>What types of exercise are being engaged in (and why):</u>

- What type of exercise do you do? (Find out if any is gym based too)
- Distinctions between aesthetic/ functional, intrinsic and extrinsic motivations.

<u>General and Exercise Motivational orientations:</u>

- Why do you exercise?
- How long have they been exercising for?

- What are their motivations behind exercising? (SDT groupings for researcher)

- Basic Psychological Needs (in Exercise) – are these being satisfied or frustrated?

Social Media's role in motivating exercise:

- What is their experience and usage of social media?

- Does social media have an impact on their exercise motivation?

More detail around exactly what sort of Social Media content is being engaged with:

- Visual Methods..

- Show posts/images

- Ask them to provide examples of social media content (preferably fitness based) they regularly engage with and discuss

-

Social Media's role in influencing body image:

- Visual Methods..

- How do these images make you feel about your body?

- Do they think it is having an effect?

- How do they feel about muscularity and leanness?

-

Other influences on body image:

- Do they feel any influence or pressure from friends/family/partners with regard to their body?

- Do they feel any influence from wider media on their body?

Opinions on what is desirable/attractive/masculine:

- Visual Methods to stimulate discussion
- Asked directly are there certain body types you would deem to be more attractive?

Drive for Muscularity Attitude and Behaviour:

- Are they lifting weights, engaging with diet and supplementation to gain muscle?
- What is their attitude to muscularity, do they wish for it?

Images to prompt discussions

Below are some examples images that will be used during the interview to facilitate discussions about body image and social media. Example Images have been deliberately selected to stimulate discussion for a range of conditions.

These are designed to reflect the images seen on social media using search terms such as “fitness” and reflects the overwhelming display of overly muscular physiques seen, noted in research (E.g. Chatzopoulou et al., 2020; Gültzow et al., 2020; Jien and Nie, 2022). A content analysis of “fitspiration” content on Instagram by Tiggemann and Zaccardo (2018) found 91% of images had visible or high levels of muscularity with 60% showing high levels of muscularity. In addition, 70% of the images involved posing with 27% were images of men performing exercises. Carrotte et al (2017) found similar results with the majority of men in “fitspiration” posts being muscular or hyper muscular.

The inclusion of a “before and after body transformation” seeks to explore the idea that lean and muscular is good and more “normal” bodies are not and the idea that we must

always strive for more, with, in this instance, more being the pre determined idealised body type of the time (Bosco, 2021).

(Images from next page)

Muscular/Hyper Muscular posing (340 million followers, liked over 1 million times)

Before and After

Muscular but not hyper muscular posing (most followed Instagram account in the world)

Popular Influencer posing with athletic physique

Popular hypermuscular Influencer exercising

References

Bosco, M. C. L. (2021). Social media, beauty standards and the discriminatory bias in body transformation practices: a commentary on why posthuman thinking matters. Interface-Comunicação, Saúde, Educação, 25.

Chatzopoulou, E., Filieri, R., & Dogruyol, S. A. (2020). Instagram and body image: Motivation to conform to the "Instabod" and consequences on young male wellbeing. Journal of Consumer Affairs, 54(4), 1270-1297.

Gültzow, T., Guidry, J. P., Schneider, F., & Hoving, C. (2020). Male body image portrayals on instagram. Cyberpsychology, Behavior, and Social Networking, 23(5), 281-289.

JIEN, L. W., & NIE, K. S. (2022). Fitness-Related Content Consumption on Instagram and Body Dysmorphia among Male Youth Community in Klang Valley. Higher Education and Oriental Studies, 2(4).

Tiggemann, M., & Zaccardo, M. (2018). 'Strong is the new skinny': A content analysis of# fitspiration images on Instagram. Journal of health psychology, 23(8), 1003-1011.

Appendix 3 – Questionnaire and Images for Study 3 (Chapter 6)

1. Age:

2. Ethnicity:

3: Sexual Orientation:

For each of the items below, check the box beside the one statement that best describes how you feel RIGHT NOW AT THIS VERY MOMENT. Read the items carefully to be sure the statement you choose accurately and honestly describes how you feel right now.

4: Right now I feel . . .

Extremely dissatisfied with my physical appearance

Mostly dissatisfied with my physical appearance

Moderately dissatisfied with my physical appearance

Slightly dissatisfied with my physical appearance

Neither dissatisfied nor satisfied with my physical appearance

Slightly satisfied with my physical appearance

Moderately satisfied with my physical appearance

Mostly satisfied with my physical appearance

Extremely satisfied with my physical appearance

5: Right now I feel . . .

Extremely satisfied with my body size and shape

Mostly satisfied with my body size and shape

Moderately satisfied with my body size and shape

Slightly satisfied with my body size and shape

Neither dissatisfied nor satisfied with my body size and shape

Slightly dissatisfied with my body size and shape

Moderately dissatisfied with my body size and shape

Mostly dissatisfied with my body size and shape

Extremely dissatisfied with my body size and shape

6: Right now I feel . . .

Extremely satisfied with my weight

Mostly dissatisfied with my weight

Moderately dissatisfied with my weight

Slightly dissatisfied with my weight

Neither dissatisfied nor satisfied with my weight

Slightly satisfied with my weight

Moderately satisfied with my weight

Mostly satisfied with my weight

Extremely satisfied with my weight

7: Right now I feel . . .

Extremely physically attractive

Very physically attractive

Moderately physically attractive

Slightly physically attractive

Neither attractive nor unattractive

Slightly physically unattractive

Moderately physically unattractive

Very physically unattractive

Extremely physically unattractive

8: Right now I feel . . .

A great deal worse about my looks than I usually feel

Much worse about my looks than I usually feel

Somewhat worse about my looks than I usually feel

Just slightly worse about my looks than I usually feel

About the same about my looks as usual

Just slightly better about my looks than I usually feel

Somewhat better about my looks than I usually feel

Much better about my looks than I usually feel

A great deal better about my looks than I usually feel

9: Right now I feel that I look . . .

A great deal better than the average person looks

Much better than the average person looks

Somewhat better than the average person looks

Just slightly better than the average person looks

About the same as the average person looks

Just slightly worse than the average person looks

Somewhat worse than the average person looks

Much worse than the average person looks

A great deal worse than the average person looks

The following should be answered on a scale of 1: Always 2: Very Often 3: Often 4: Sometimes 5: Rarely 6: Never

10: I wish that I were more muscular

11: (I life weights to build up muscle)

12: (I use protein or energy supplements)

13: (I drink weight gain or protein shakes)

14: (I try to consume as many calories as I can in a day)

15: (I feel guilty if I miss weight training session)

16: I think I would feel more confident if I had more muscle mass

17: (Other people think I work out with weights too often)

18: I think that I would look better if I gained 10 pounds in bulk

19: I think about taking anabolic steroids

20: I think that I would feel stronger if I gained a little more muscle mass

21: (I think that my weight training schedule interferes with other aspects of my life)

22: I think that my arms are not muscular enough

23: I think that my chest is not muscular enough

24: I think that my legs are not muscular enough

The following should be answered on a scale of 0 (Not true for me) to 5 (Very true for me)

25: It's important to me to exercise regularly

26: don’t see why I should have to exercise

27: I exercise because it’s fun

28: I feel guilty when I don’t exercise

29: I exercise because it is consistent with my life goals

30: I exercise because other people say I should

31: I value the benefits of exercise

32: I can’t see why I should bother exercising

33: I enjoy my exercise sessions

34: I feel ashamed when I miss an exercise session

35: I consider exercise part of my identity

36: I take part in exercise because my friends/family/partner say I should

37: I think it is important to make the effort to exercise regularly

38: I don’t see the point in exercising

39: I find exercise a pleasurable activity

40: I feel like a failure when I haven’t exercised in a while

41: I consider exercise a fundamental part of who I am

42: I exercise because others will not be pleased with me if I don’t

43: I get restless if I don’t exercise regularly

44: I think exercising is a waste of time

45: I get pleasure and satisfaction from participating in exercise

46: I would feel bad about myself if I was not making time to exercise

47: I consider exercise consistent with my values

48: I feel under pressure from my friends/family to exercise

Please study the following 5 images carefully and write a brief description along with any thoughts and/or feelings you have about the images.

(Images will appear here with a text box below each image)

Questions 4-48 then repeat after exposure

Aesthetic focused images

bjarnson_fitness • Follow

bjarnson_fitness Turning more into a 🔻as the days go on. 22 days out from men's physique nationals 💪😈
-
@youngla code JASON
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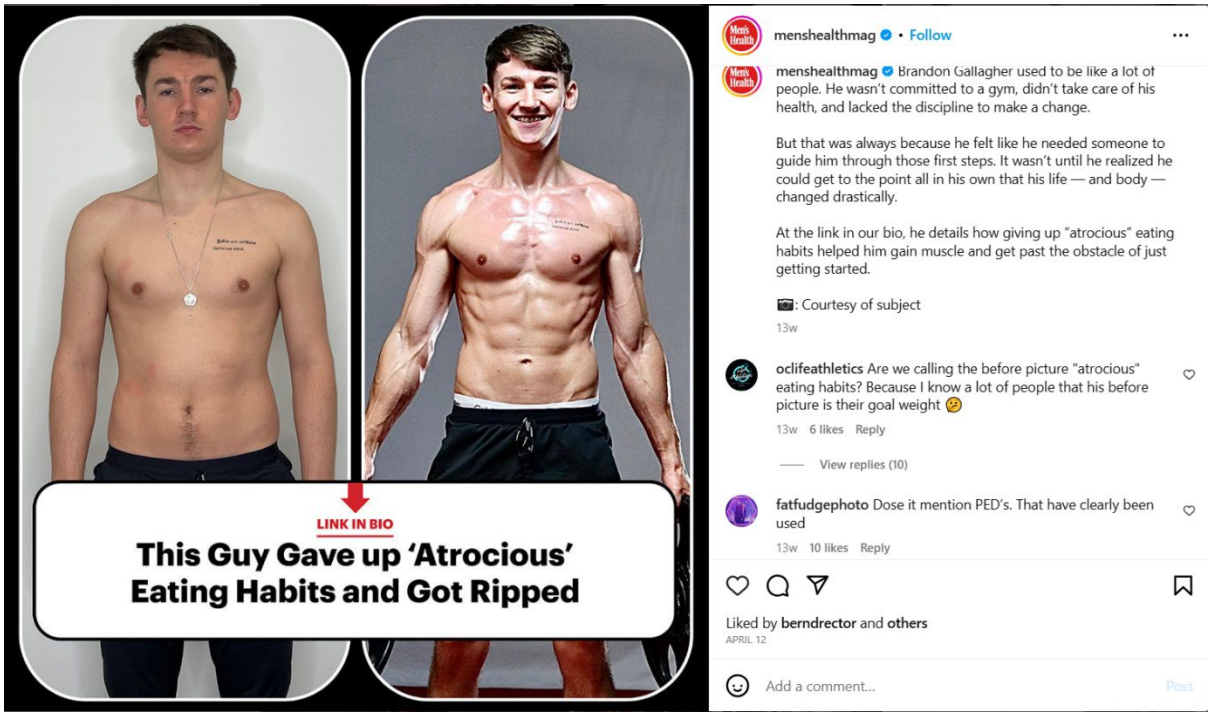
31,826 likes
2 DAYS AGO

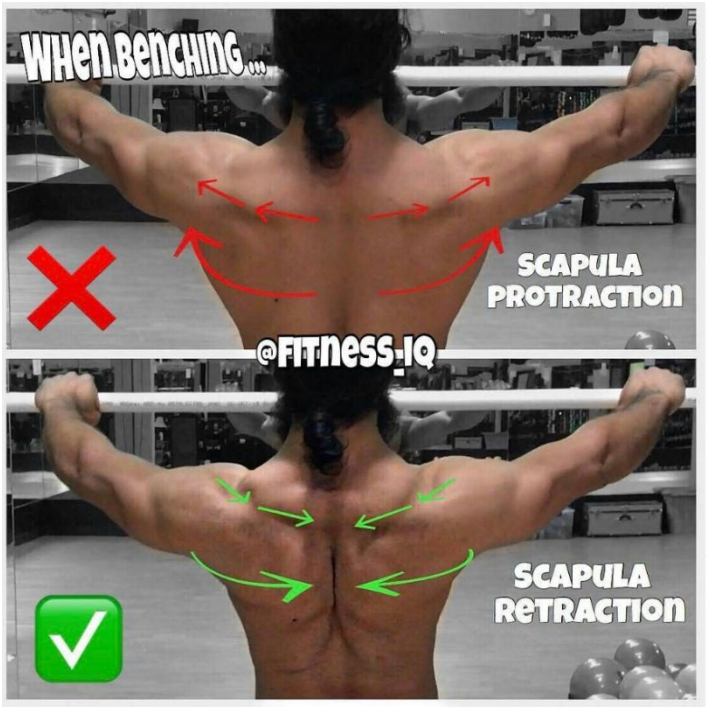
Add a comment... Post


lazar_angelov_official • Follow
lazar_angelov_official Trust the Process. Do the work and the results will handle themselves 💪
Work for what you deserve, commit your whole self and enjoy the journey 🐂 You are in control, no one else.
Are you ready to start over and strive for the greatness in you? Click the link in my bio @lazar_angelov_official for your custom meal and workout plan 💪🏈
#Lazar #striveforprogress #lazarangelov #worout #fitness #training #motivation #abs #absworkout #fitnessmotivation #bodybuilding #lifestyle #gym #gains #excercise #excerciseguide #workouttips #workoutplan #trusttheprocess
48 w
ngreen700 Handsome sexy man
2 w Reply
abdulimanov Do koncaaaaa
8 w Reply
verse.ilaban An icon, inspiration and aesthetics ❤️💪🔥
20 w Reply
21,279 likes
AUGUST 2, 2022
Add a comment...
Post


LINK IN BIO
This Guy Gave up 'Atrocious' Eating Habits and Got Ripped
menshealthmag • Follow
menshealthmag Brandon Gallagher used to be like a lot of people. He wasn't committed to a gym, didn't take care of his health, and lacked the discipline to make a change.
But that was always because he felt like he needed someone to guide him through those first steps. It wasn't until he realized he could get to the point all in his own that his life — and body — changed drastically.
At the link in our bio, he details how giving up "atrocious" eating habits helped him gain muscle and get past the obstacle of just getting started.
📷: Courtesy of subject
13w
oclifeathletics Are we calling the before picture "atrocious" eating habits? Because I know a lot of people that his before picture is their goal weight 🤔
13w 6 likes Reply
View replies (10)
fatfudgephoto Dose it mention PED's. That have clearly been used
13w 10 likes Reply
Liked by berndrector and others
APRIL 12
Add a comment...
Post


fitnessguysoninsta • Follow
fitnessguysoninsta @michaeldean2.0 soaking up some sun
#fitlife #malemodel #musclemodel #malefit #malefitness
#sixpack #bodybuilding #abs
163w
dreamsurfn Love that he's just enjoying the sun!
52w Reply
alan.nat Yessurrrr
60w 1 like Reply
senseileolas I'm surprised his pecs didn't provide full shade coverage for his abs even despite the angle of the sun.
61w 1 like Reply
savior002022
Japanese sexy undies!
It's the latest bikini from Gx3,
375 likes
MAY 24, 2020
Add a comment...
Post

Function Focused Images



imcoach_weng • Follow

imcoach_weng 🏋️HOW TO BENCH PRESS🏋️
Bench press is the most common exercise when come to upper body strength.The right form and technique to execute this exercise is very important. 🚩 Scapula Retraction for a stronger/ more efficient and safer bench.
✓SCAPULA RETRACTION =Shoulder should stay on the bench
✕SCAPULA PROTRACTION=Shoulder lifted up during concentration.
.
A key factor of being able to bench effectively/efficiently especially for competitive powerlifters is retracting the scapula or pinching the shoulder blades together➡️⬅️.
.
You can also depress it⬇️⬇️, elevate it⬆️⬆️, or keep it neutral↕️. Find what feels more comfortable for you. I personally depress it, but regardless of your preference just make sure you're retracting it➡️⬅️.
.
The bottom picture is how your upper back should look like when you're laying on the bench getting ready to un-rack the load and through your the entirety of the movement. Think about pinching a pencil✏️ between your shoulder blades and DON'T let it fall out.
.
This will dramatically increase your shoulder stability and decrease the range of motion since the active retraction of the shoulders puts them further back in the socket.

40 likes
MARCH 1, 2017

Add a comment... Post

westsidebarbellofficial • Follow

For athletes, having a solid set of shoulders is highly beneficial for shoulder health and overall upper body strength. In order to build strong shoulders you must choose the right exercises that yield the most results with minimal wear and tear of the joint.

Here are some shoulder variations you can add into your training.

🔺

Push Press

Standing Dumbbell Overhead Press

Static Overhead Earthquake bar vs kbs

Seated Overhead Pin Press

839 likes
APRIL 30

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strong.as.fulat • Follow
Max & Aegle

🏆DUMBBELL ROW BENEFITS
1. Improve back hypertrophy and strength.
2. Great for balancing potential back asymmetries.
3. Easy to perform anytime and anywhere.
4. Awesome movement for every fitness level.
.
As simple as this exercise is, many people perform it incorrectly. 😕
So here are some of my top tips on how to perform the dumbbell row the proper way, and mistakes to avoid.
.
❌ Pulling elbow straight up to the ceiling
✅ Initiate the row with the lat, similar to how you would start a lawnmower (elbow towards your pocket). Set the

5,296 likes
NOVEMBER 15, 2020

Add a comment... Post

Landscape controls


earthlustandtravel • Follow
Nature
earthlustandtravel Beautiful nature 💚.
156 w
businessclass.travel Amazing capture 😍
156 w 1 like Reply
eleena755 Pretty beautiful 💚
156 w 1 like Reply
pickipedia 😍😍😍😍😍
156 w 1 like Reply
pipiolo56 😍😍😍
156 w 1 like Reply
nicol19131968 ♥♥♥
156 w 1 like Reply
ag.289 😍😍😍
156 w 1 like Reply
566 likes
JULY 8, 2020
Add a comment...
Post


salonenteijo • Follow
Särkijärvi
salonenteijo Kesäillan näkymä särkijärvelle 😍🥰😊 ps.tänään taas lentokoneita kuvaan turku airshow tapahtumaan,hyvää lauantaita kaikille 😍🥰😊 #landscape #luontoon #igworldclub_nature #suomi #luonto #loves_united_scandinavia #nature_shooters #loves_united_finland #tampere #beautifulnature #finnishmoments #naturepics #loves_united_scandinavia #naturelovers #thisisfinland #nature_perfection #finland4seasons #nature_brilliance #loves_united_finland #nature_addict #finland_photolovers #ulkonaperillä #naturephotography #thebestoffinland #discoverfinland #fiftyshades_of_nature #visittampere #outdoorfinland #ig_amazingnature #9gag
3 w See Translation
barbrosall Fantastiskt vackert Finland 🇫🇮💙♡💙♡
3 w 1 like Reply See Translation
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3 w 1 like Reply
paiviroitto Kaunis kuva 🔥🔥🔥😍
3 w Reply See Translation
19,177 likes
JUNE 17
Add a comment...
Post

mr.hunzai • Follow
Fairy Meadows & Nanga Purbat

mr.hunzai It feels so close to the Creator when admiring and standing among the beautiful nature.
.
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.
.
#mrhunzai
206 w

mf_1789 Wow
197 w Reply

mooshithedog @etm.mona
200 w Reply

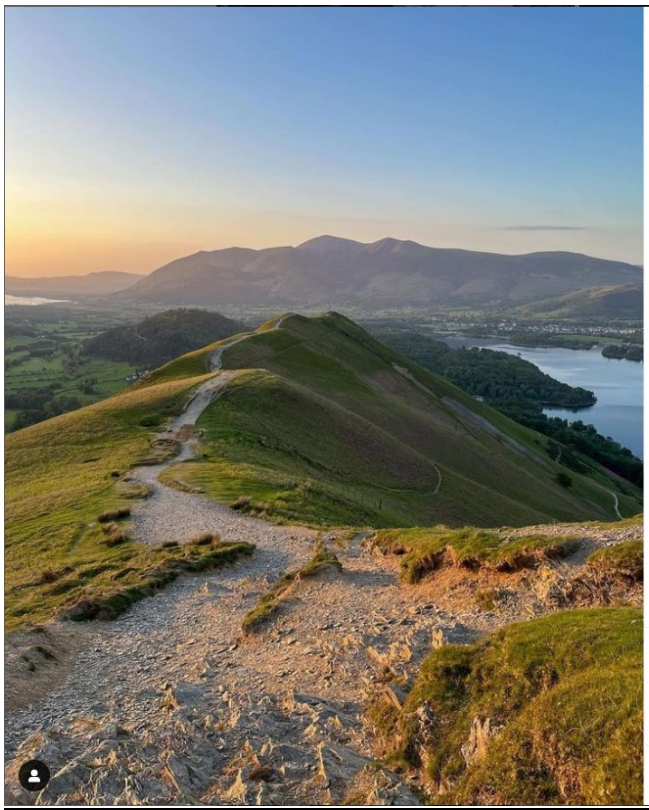
harkalay Is it the real name? Fairy Meadows? Just wondering 😊 btw beautiful picture 🔥❤️
204 w Reply

holidaysterminal Great work @mr.hunzai 👏🙌
206 w 1 like Reply

View replies (1)

1,037 likes
JULY 24, 2019

Add a comment... Post



hike_britain • Follow
Catbells, Derwentwater

hike_britain Sometimes we get asked which hike is a good first one to do in the Lake District and we would recommend the hike up to Catbells. Not only is it a manageable fell for those with children, it is the first fell on a route known as the Newlands Watershed, which means you can play things by ear and link on additional peaks if you feel up to it.

For the more experienced among you, you can choose to take on the full Newlands Watershed and triumph over all 10 Wainwright fells along the way.

Regardless of how far you end up hiking, you're guaranteed some spectacular views on a clear day!

📸 @mf_dslr_photography
📍 Catbells, Lake District
🥾 @weekend_hiker

Tag your posts #hikebritain and follow us to be featured!

#catbells #lakedistrict #thelakes #lakeland #cumbria #sunset #hills #mountains #hikingculture #exploremore #getoutside #chasethemoment #timetogetout #neverstopexploring #thegreatoutdoors #theplacetobe #hikingadventures #hikefurther #weekend_hiker #hb_mf_dslr_photography

Liked by ajvtms and 2,972 others
JUNE 11

Add a comment... Post

Appendix 4 – Participant Information Sheets

College of Health, Medicine and Life Sciences

Department of Life Sciences

PARTICIPANT INFORMATION SHEET

Study title

An investigation into the effects of social media on male body image and exercise motivation.

Invitation Paragraph

You are kindly invited to take part in this research survey that aims to explore the links between social media, body image and exercise motivation in adult males. Before deciding to take part, it is important that you understand the study, what is required of you and any risks involved. Please take the time to read this information sheet before deciding to proceed and if you have any questions at all please feel free to contact Chris (contact details at the bottom of this form). This research forms part of a PhD.

What is the purpose of the study?

The purpose of this study is to further our understanding of how social media use and in particular fitness based social media use effects body image and exercise motivation in males. This study will be completed at the start of 2022 and will form part of PhD due for completion in December 2023.

Why have I been invited to participate?

You have been invited along with around 200 others as somebody who fits the inclusion criteria as a male (aged between 18 and 50) social media user who also exercises (this includes any deliberate physical activity of a moderate intensity (difficulty 6/10) or above and includes sport and exercise such as running, swimming, cycling and using the gym) at least once per week. Please take the time to read through this information sheet and discuss it with others or myself if you wish, before commencing your involvement with the study. My contact details can be found towards the end of this form.

Do I have to take part?

There is no obligation to take part in this project and you are free to withdraw at any stage, including after you have signed the consent form. Given the nature of this anonymised survey, once your data has been submitted, you will be unable to withdraw from the study.

What will happen to me if I take part?

You will be asked to complete an online questionnaire addressing the aforementioned topics that will take approximately 15-20 minutes to complete. You will be asked to complete all questions and answer them truthfully and thoughtfully. There are no further expectations from you once you have completed the survey.

Are there any lifestyle restrictions?

There are not any restrictions that apply in this study.

What are the possible disadvantages and risks of taking part?

Some of the questions address personal topics such as body image and may cause some emotional and/or psychological distress. You are reminded that you are free to withdraw at any stage before the submission of your survey. If you find yourself affected by any of the topics here there are specialist services you can contact:

Mind – for mental health services and support:

Phone: 0300 123 3393

Email: info@mind.org.uk

CALM- Male specific mental health support:

Phone: 0800 58 58 58

Website: https://www.thecalmzone.net/

What are the possible benefits of taking part?

In addition to contributing to a growing , important and currently understudied research area, the questions involved may help you to reflect on these interesting and consequential areas of your life.

What if something goes wrong?

There are no serious risks involved in this particular study but if you have any complaints, issues or problems please contact the Chair of the College of Health, Medicine and Life

Sciences Research Ethics Committee Professor Louise Mansfield (Louise.Mansfield@brunel.ac.uk).

Will my taking part in this study be kept confidential?

Yes, all data will be completely anonymised with raw data stored securely and destroyed upon completion of this research. All information which is collected about you during the course of the research will be kept strictly confidential. Any information about you which leaves the University will have all your identifying information removed. With your permission, anonymised data will be stored and may be used in future research – you can indicate whether or not you give permission for this by way of the Consent Form. Data will be retained for at least ten years in line with university guidance.

Will I be recorded, and how will the recording be used?

Only questionnaire responses are to be collected in this study.

What will happen to the results of the research study?

The results of this study will form part of a PhD and may be published in books, academic journals and conferences. If you would like a copy of the results upon completion, please contact Chris (email below).

Who is organising and funding the research?

The research is being organised by Chris Bell in conjunction with Brunel University with no external funding involved.

What are the indemnity arrangements?

Brunel University London provides appropriate insurance cover for research which has received ethical approval.

Who has reviewed the study?

The study has been reviewed by College of Health, Medicine and Life Sciences Research Ethics Committee

Research Integrity

Brunel University London is committed to compliance with the Universities UK Research Integrity Concordat. You are entitled to expect the highest level of integrity from our researchers during the course of their research.

Contact for further information and complaints

For complaints, Chair of the College of Health, Medicine and Life Sciences Research Ethics Committee: Professor Louise Mansfield (Louise.Mansfield@brunel.ac.uk)

Researcher name and details:

Chris Bell, email: chris.bell2@brunel.ac.uk

Supervisor name and details:

Charlotte Kerner: charlotte.kerner@brunel.ac.uk

College of Health, Medicine and Life Sciences

Department of Life Sciences

PARTICIPANT INFORMATION SHEET

Study title

Male Body Image, Social Media and Exercise Motivation - A Qualitative study

Invitation Paragraph

You are kindly invited to take part in this interview research that aims to explore the links between social media, body image and exercise motivation in adult males. Before deciding to take part, it is important that you understand the study, what is required of you and any risks involved. Please take the time to read this information sheet before deciding to proceed and if you have any questions at all please feel free to contact Chris (contact details at the bottom of this form). This research forms part of a PhD.

What is the purpose of the study?

The purpose of this study is to further our understanding of how social media use and in particular fitness based social media use effects body image and exercise motivation in physically active males. This study will be completed at the end of 2022 and will form part of PhD due for completion in December 2023.

Why have I been invited to participate?

You have been invited along with around 20 others as somebody who fits the inclusion criteria as a male (aged between 18 and 50) social media user who also exercises (this includes any deliberate physical activity and includes sport and exercise such as running, swimming, cycling and using the gym) at least once per week. Please take the time to read through this information sheet and discuss it with others or myself if you wish, before commencing your involvement with the study. My contact details can be found towards the end of this form.

Do I have to take part?

There is no obligation to take part in this project and you are free to withdraw at any stage, including after you have signed the consent form.

What will happen to me if I take part?

You will be asked to take part in an interview that will involve a semi structured discussion using verbal questions and discussions of imagery either online or in a physical space convenient for you that will last approximately 60 minutes. There are no further expectations from you once you have completed the interview.

Are there any lifestyle restrictions?

There are not any restrictions that apply in this study.

What are the possible disadvantages and risks of taking part?

Some of the questions address personal topics such as body image and may cause some emotional and/or psychological distress. You are reminded that you are free to withdraw at any stage. If you find yourself affected by any of the topics here there are specialist services you can contact:

Mind – for mental health services and support:

Phone: 0300 123 3393

Email: info@mind.org.uk

CALM- Male specific mental health support:

Phone: 0800 58 58 58

Website: https://www.thecalmzone.net/

What are the possible benefits of taking part?

In addition to contributing to a growing , important and currently understudied research area, the questions involved may help you to reflect on these interesting and meaningful aspects of your life.

What if something goes wrong?

There are no serious risks involved in this particular study but if you have any complaints, issues or problems please contact the Chair of the College of Health, Medicine and Life Sciences Research Ethics Committee Professor Louise Mansfield (Louise.Mansfield@brunel.ac.uk).

Will my taking part in this study be kept confidential?

Yes, all data will be completely anonymised with raw data stored securely and destroyed upon completion of this research. All information which is collected about you during the course of the research will be kept strictly confidential. Any information about you which leaves the University will have all your identifying information removed. With your permission, anonymised data will be stored and may be used in future research – you can indicate whether or not you give permission for this by way of the Consent Form. Data will be retained for at least ten years in line with university guidance.

Will I be recorded, and how will the recording be used?

Interviews will be recorded using a Dictaphone and transcribed in order to be analysed and themes identified which will then be used in the final research. These recordings will be anonymised and pseudonyms will be used in any published research. Recordings will be deleted as soon as transcripts have been derived from them, the transcripts will be held for at least 10 years in accordance with with the Brunel University Research Data Management Policy.

What will happen to the results of the research study?

The results of this study will form part of a PhD and may be published in books, academic journals and conferences. If you would like a copy of the results upon completion, please contact Chris (email below).

Who is organising and funding the research?

The research is being organised by Chris Bell in conjunction with Brunel University with no external funding involved.

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Research Integrity Concordat. You are entitled to expect the highest level of integrity

from our researchers during the course of their research.

Contact for further information and complaints

For complaints, Chair of the College of Health, Medicine and Life Sciences Research Ethics Committee: Professor Louise Mansfield (Louise.Mansfield@brunel.ac.uk)

Researcher name and details:

Chris Bell, email: chris.bell2@brunel.ac.uk

Supervisor name and details:

Charlotte Kerner: charlotte.kerner@brunel.ac.uk

PARTICIPANT INFORMATION SHEET

Study title

The impact of functional vs aesthetic social media images on men's body image and exercise motivation

Invitation Paragraph

You are kindly invited to take part in this experimental research that aims to investigate the links between social media, body image and exercise motivation in adult males. Before deciding to take part, it is important that you understand the study, what is required of you and any risks involved. Please take the time to read this information sheet before deciding to proceed and if you have any questions at all please feel free to contact Chris (contact details at the bottom of this form). This research forms part of a PhD.

What is the purpose of the study?

The purpose of this study is to further our understanding of how social media use and in particular fitness based social media use effects body image and exercise motivation in physically active males. This study will take place between August and September 2023 and will form part of PhD tat begun in January 2021, due for completion in December 2023.

Why have I been invited to participate?

You have been invited along with around 90 others as somebody who fits the inclusion criteria as a male (aged between 18 and 50) social media user who also exercises (this includes any deliberate physical activity and includes sport and exercise such as running, swimming, cycling and using the gym) at least once per week. Please take the time to read through this information sheet and discuss it with others or myself if you wish, before commencing your involvement with the study. My contact details can be found towards the end of this form.

Do I have to take part?

There is no obligation to take part in this project and you are free to withdraw at any stage, including after you have signed the consent form. You can may withdraw simply by closing the web browser without submitting answers. You can withdraw any data you have provided for the study up to the 30/09/23.

What will happen to me if I take part?

You will be asked to take part in a study that involves completing some questionnaires, viewing and commenting on some images and finishing with some further questionnaires. The procedure should take around 15 minutes to complete.

Are there any lifestyle restrictions?

There are not any restrictions that apply in this study.

What are the possible disadvantages and risks of taking part?

Some of the questions address personal topics such as body image and may cause some emotional and/or psychological distress. You are reminded that you are free to withdraw at any stage. If you find yourself affected by any of the topics here there are specialist services you can contact:

Mind – for mental health services and support:

Phone: 0300 123 3393

Email: info@mind.org.uk

CALM- Male specific mental health support:

Phone: 0800 58 58 58

Website: https://www.thecalmzone.net/

What are the possible benefits of taking part?

In addition to contributing to a growing, important and currently understudied research area, the questions involved may help you to reflect on these interesting and meaningful aspects of your life.

What if something goes wrong?

There are no serious risks involved in this particular study but if you have issues first please contact Chris Bell at 2042065@brunel.ac.uk or Charlotte Kerner at charlotte.kerner@brunel.ac.uk For complaints, please contact the Chair of the College of Health, Medicine and Life Sciences Research Ethics Committee Professor Louise Mansfield (Louise.Mansfield@brunel.ac.uk).

Will my taking part in this study be kept confidential?

Yes, all data will be completely anonymised with raw data stored securely and destroyed upon completion of this research. All information which is collected about you during the course of the research will be kept strictly confidential. Any information about you which leaves the University will have all your identifying information removed. With your permission, anonymised data will be stored and may be used in future research – you can indicate whether or not you give permission for this by way of the Consent Form. Data will be retained for at least ten years in line with university guidance.

Will I be recorded, and how will the recording be used?

You will not be recorded, all data will be collection via selecting multiple choice answers and some short written sections.

What will happen to the results of the research study?

The results of this study will form part of a PhD and may be published in books, academic journals and conferences. If you would like a copy of the results upon completion, please contact Chris (email below).

Who is organising and funding the research?

The research is being organised by Chris Bell in conjunction with Brunel University with no external funding involved.

What are the indemnity arrangements?
Brunel University London provides appropriate insurance cover for research which has received ethical approval.

Who has reviewed the study?
This study has been reviewed by the College of Health, Medicine and Life Sciences Research Ethics Committee.

Research Integrity
Brunel University London is committed to compliance with the Universities UK Research Integrity Concordat. You are entitled to expect the highest level of integrity from the researchers during the course of this research. For more information see: https://www.universitiesuk.ac.uk/topics/research-and-innovation/concordat-support-research-integrity

Contact for further information and complaints
For general information
Researcher name: Chris Bell (email: 2042065@brunel.ac.uk)

Supervisor name: Charlotte Kerner (email: charlotte.kerner@brunel.ac.uk)

For complaints and questions about the conduct of the Research
Professor Louise Mansfield, Chair College of Health, Medicine and Life Sciences Research Ethics Committee Louise.Mansfield@brunel.ac.uk