

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

Abstract

Fitness-based social media is growing in popularity, however its effects on exercise motivation and behaviour are underexplored in men. A cross-sectional design was used to investigate this in 224 male social media users (M Age =32.76, range = 18-50, 81.8% White) in the UK. Questionnaires on social media use, (Overall, Platform and Fitness Social Media Use) and exercise (Motivation, Frequency and History) were completed. Results showed that Fitness Social Media Use was significantly positively associated with Exercise Frequency (number of exercise sessions per week) but not Exercise History (length of time consistently exercised for). Overall Social Media Use was significantly negatively associated with Exercise History. Fitness Social Media Use was more strongly associated with autonomous motivations (rather than controlled). Findings suggest fitness social media use may be associated with short-term, but not long-term exercise behaviour, but its links to exercise motivation are complex and likely bidirectional.

Keywords: Social Media, Motivation, Exercise, Men, Self Determination Theory

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 and 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 and Ekkekakis, 2019), but one crucial aspect is motivation (Teixeira et al., 2012). 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.

Exercise Motivation and Self Determination Theory

SDT is a leading theory of human motivation (Ryan and Deci, 2017) and has been used extensively in the context of physical activity, sport and exercise (Teixeira et al., 2012). The central tenet 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 and 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 (Teixeira 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).

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 e.g. exercising for enjoyment) 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 e.g. exercising for health reasons) 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 and Deci., 2017).

Identified (e.g. exercising for health reasons) and integrated (e.g. exercising out of habit) regulation are extrinsic but autonomous forms of motivation that originate from the individual (Ryan and Deci, 2017). A dose responsive relationship between the extent to which exercise activities have been internalised, 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 to avoid guilt, shame and other negative emotions e.g. exercising to avoid feelings of guilt), 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 and Ryan, 2017 p210). External regulation (whereby behaviour is enacted upon as a direct result of external instruction e.g. exercising to gain a reward), is the most external form of motivation in the continuum and has shown negative associations with exercise participation in a range of studies (Ingledeew and 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 and 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.

Figure 1 shows a model of the spectrum of motivations included in SDT (Ryan and Deci, 2017: p179).

As one moves from left to right, motivations become more internal and autonomous.

Figure 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			

Social Media

Social media has grown rapidly over the past two decades, and research has begun to examine its associations with exercise motivation (Johnston and 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 and 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 and 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).

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 and Zaccardo, 2018). Fitness social media is a broad ranging term that encapsulates social media

that focuses on sport and exercise (Wood and 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 and Zaccardo, 2018), less has been devoted to the effects of fitness social media on exercise behaviour and motivation (Robinson et al., 2017).

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 and Watson, 2023). Raggatt et al. (2018) found 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 and 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 and 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 and Zaccardo, 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. Other platforms such as Snapchat and TikTok have also received little research attention 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 and 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.

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, most 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.

Method

Participants & Procedure

The study used a cross-sectional design. 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. In total, 224 participants were recruited between January and March 2021, (M age = 32.76; SD: 7.57; range = 18-50). 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 professional Instagram and Facebook accounts and using targeted paid advertising and snowball sampling. No incentives were offered for participation. All participants provided informed consent to take part in the study and ethical approval was given by the Ethics Committee of the lead institution.

Measures

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 (deliberate physical activity lasting at least 30 minutes in duration) 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 and Gerson, 2019), social media use was also collected using original questions. Frequency of Social Media Use is a commonly measured variable in social media research (Bekalu et al., 2023) and 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. These are the most used platforms by the demographic included in this study (Dixon, 2023), and these likert-type scales have been used in several previous studies examining social media’s relationship with health and wellbeing (Bekalu et al., 2023). Fitness content from peers and from fitness specific companies and influencers may have differing impacts on individual’s motivation (Durau et al., 2022). Fitness Social Media use was thus 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 Fitness Social Media Use score comprising the two added together.

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).

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, tests for normality of residuals (P-P plot) and homoscedasticity were conducted and assumptions were met, and 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.

Results

The following section will discuss the descriptive statistics, correlation analyses, and multiple linear regression analyses performed on the collected data.

Descriptive Statistics

Exercise History (M=4.37 SD= 1.13) and Frequency (M=3.86 SD=1.18) were scored on a range from 1-5. Instagram (M=3.47 SD=0.98), Facebook (M=2.78 SD=1.18), Twitter (M=2.31 SD=1.24), TikTok (M=1.52 SD=1.00) and Snapchat (M=1.48 SD=0.89) use were scored on a range of 1-4. Total Fitness Social Media (M=6.41 SD=2.10) was scored from 2-10. Autonomous Motivation (M=50.18 SD=8.27) had a range of 21-60 and Controlled Motivation (M=19.89 SD=5.03) had a range of 8-33.

Correlational Analysis

To establish links between Fitness Social Media Use and motivational orientations, Spearman correlations were conducted between Fitness Social Media Account exposure, Friend's Fitness Account exposure and a composite score, and motivational orientations. Significant positive correlations were found between all Autonomous forms of motivation (Intrinsic, Integrated and Identified) and all forms of Fitness Social Media Use (Fitness Accounts, Friend's Fitness Accounts and combined score) (all r_s values $\geq .186$; 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 r_s values $\geq .175$; both p values < 0.01), whilst engagement with Fitness Social Media accounts was significantly negatively correlated with Amotivation ($r_s = -.138$; $p < 0.05$). Spearman correlations were conducted for Exercise History, Exercise Frequency and Social Media Use. Significant negative correlations were found between Exercise History and Frequency of Social Media Use, Twitter, SnapChat and TikTok Use (all r_s values $\geq -.159$; 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 r_s values $\geq .180$; all p values < 0.05).

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 1 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 2 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 1

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

Variable	Autonomous Exercise Motivation						Controlled Exercise Motivation					
	Beta	SE	95% CI		β	p	Beta	SE	95% CI		β	p
			LL	UL					LL	UL		
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
	$R^2=.092$ $F=4.763$						$R^2=.058$ $F=2.210$					

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

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

Table 2

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

Variable	Exercise Frequency						Exercise History					
	Beta	SE	95% CI		β	p	Beta	SE	95% CI		β	p
			LL	UL					LL	UL		
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
	$R^2=.116$ $F=4.715$						$R^2=.053$ $F=1.986$					

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

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

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.

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 and 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 and Davis, 2019). The use of guilt in marketing, particularly for fitness and weight loss products has been widespread for several decades (Coulter and 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 and 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 autonomous 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 and 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.

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.

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, 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 and 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 and 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). Instagram was the most used platform by the men in this

study, however no significant associations were found between 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 and Anderberg, 2020), and other research has shown that idealised bodies on Instagram may be linked to maladaptive motives for exercise. (Wood and 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 and Lachman, 2021).

Strengths and Limitations

This study was novel in using a population of community dwelling adult men, where previous research in this field has been dominated by undergraduate samples. Additionally, inclusion of SDT as a framework for measuring motivation sets this work apart from much of the previous literature that has measured exercise motivation in a more simplistic way (e.g. using a single question to measure motivation). The novel demographic and complex measures of motivation are important, as fitness social media is growing in popularity and this study adds new knowledge to help understand its impact on men's exercise motivation and behaviour.

These results must be considered considering some limitations. The sample was highly active and highly educated and thus results may not be extrapolated to broader and sedentary populations. Convenience sampling through social media and snowball sampling is an added limitation of this sample. The cross-sectional methodology does not allow for cause and effect to be determined, and future experimental research would be needed to test the relationships discovered in this work. Additionally, the use of correlations and linear regressions investigated linear, direct relationships, but is not able to detect nonlinear and indirect relationships. This study did not examine specific types of fitness social media use (e.g. bodybuilding, yoga, outdoor exercise, sports specific) and future research may look examine the impact of these different content types on exercise motivation and behaviour.

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.

Data Availability Statement

The datasets analysed during the current study are available anonymously in the Figshare repository:

<https://figshare.com/s/f4342becf4edf1a9c125>

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