



Implementation of sit-stand desks as a workplace health initiative: stakeholder views

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3 1 **Title:** Implementation of sit-stand desks as a workplace health initiative: stakeholder views
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6 2 **Abstract**
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8 3 **Purpose:** Prolonged workplace sitting can harm employee health. Sit-stand desks are
9 4 a potential workplace health initiative that might reduce and break up the time office-based
10 5 employees spend sitting in the workplace. However, little is known about the feasibility and
11 6 acceptability of providing sit-stand desks. **Approach:** The present study sought stakeholder
12 7 employee views surrounding sit-stand desk implementation within two UK-based non-profit
13 8 organisations with open-plan offices. This paper draws on qualitative semi-structured
14 9 interviews with twenty-six stakeholder employees and sixty-five days of participant
15 10 observations. Data were analysed using thematic analysis, and organisational cultural theory
16 11 framed the study. **Findings:** Stakeholders employees' positioning of sit-stand desks as a
17 12 workplace health initiative reflected their perceptions of the relationship between sit-stand
18 13 desk provision, employee health and organisational effectiveness. Perceptions were shaped
19 14 by the nature and context of the organisation and by occupation-specific processes. Relatively
20 15 fixed (e.g. organisational structure) and modifiable (e.g. selecting products compatible with
21 16 the environment) factors were found to restrict and facilitate the perceived feasibility of
22 17 implementing sit-stand desks. **Practical implications:** The findings offer several
23 18 recommendations for workplaces to improve stakeholder employee attitudes towards sit-
24 19 stand desk provision and to increase the ease and efficiency of implementation.
25 20 **Originality/Value:** Whilst extant literature has tended to examine *hypothetical* views related
26 21 to sit-stand desk provision, this study consulted relevant stakeholders following, and
27 22 regarding, the sit-stand desk *implementation process*.
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1.0 Introduction

Over 74 % of UK adults aged 16 – 64 are employed (Office for National Statistics, 2017), and a considerable policy effort is made by UK Government to support working-age adults into the workforce as reducing unemployment lessens strain on the welfare budget (e.g. Department for Work and Pensions, 2017). In addition, work can have significant benefits for the individual as it offers the chance of improved opportunities via remuneration and a sense of purpose (Institute of Health Equity, 2014). Throughout history, changing ideologies and workplace practices relating to organisational efficiency have implicated employee health and wellbeing, however contemporary approaches recognise that key to improving organisational efficiency is supporting employees' health and wellbeing (Browne, 2000). A healthy workplace has been defined by the World Health Organisation (2010) as “one in which workers and managers collaborate to use a continual improvement process to protect and promote the health, safety and wellbeing of all workers and the sustainability of the workplace” (p. 6). The political discourse positions the development of a healthy workplace as being beneficial for both individual employee health and organisational efficiency. Empirical literature supports a relationship between healthy workplaces, employee wellbeing, and organisational success (Dickson-Swift *et al.*, 2014; Karakolis and Callaghan, 2014).

Despite the positive contribution of work to societies and individuals, work-related factors or circumstances, such as autonomy, the physical environment, and training opportunities, can be linked to poor health and wellbeing for employees (Institute of Health Equity, 2014; Smith *et al.*, 2012). Work environments and cultures that encourage prolonged sitting and physical inactivity can harm employees' physical and mental health and wellbeing (Dunstan *et al.*, 2012). Observational studies have consistently shown that office-workers sit for over two-thirds of the working day (e.g. Smith *et al.*, 2015), and a recent study of over 600 desk-based workers indicated a preference for spending less time seated at work (53.8% of the work day; Wallman-Sperlich, Chau and Froboese, 2017). In order to prevent the negative health consequences associated with prolonged workplace sitting and inactivity, and positively influence organisational success, workplaces might implement strategies that permit employees to reduce or break up prolonged workplace sitting. Sit-stand desks, i.e. height-adjustable desks allowing employees a choice of desk-based working positions, are commercially available and thus represent a potential workplace health initiative to facilitate reduced workplace sitting via regular postural change.

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3 57 Sit-stand desks are amongst the most efficacious strategies to reduce workplace sitting
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5 58 amongst office-based employees (Shrestha *et al.*, 2016), and have potential to improve
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7 59 employee health. A recent scoping review of studies investigating the health outcomes
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9 60 associated with sit-stand desk use, reported positive, significant results for cardiovascular
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11 61 outcomes in 61% of the 14 included studies, and positive, significant results for reduced
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13 62 discomfort in 43% of the 22 included studies (Chambers, Robertson and Baker, 2019).
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15 63 However, a cross-sectional study of 680 desk-based employees found that only 16% of the
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17 64 employees have access to a sit-stand desk, and of these employees, only 50% use the sit-stand
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19 65 function regularly (Wallman-Sperlich *et al.*, 2017). The feasibility and acceptability of
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21 66 workplace sit-stand desk provision is largely influenced by the views of the employer and key
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23 67 stakeholders. Gilson *et al.* (2012) and Hadgraft *et al.* (2016) reported employer and
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25 68 practitioner hypothetical perceptions of sit-stand desks as part of exploratory studies focused
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27 69 on reducing workplace sitting time. However, examining the feasibility and acceptability of
28
29 70 installing sit-stand desks *alongside sit-stand desk provision* is necessary to understand the
30
31 71 potential for the wider adoption of sit-stand desks across organisations (Wijk and Mathiassen,
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33 72 2011). The perceptions of organisational employees whose roles and responsibilities are
34
35 73 implicated in sit-stand desk provision e.g. health and safety, human resources - herein
36
37 74 described as ‘stakeholder employees’ – are important in understanding issues related to
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39 75 feasibility and acceptability.

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37 76 Proponents of realistic evaluation posit that whether an intervention ‘works’ is not an
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39 77 inherent property of the intervention, but rather depends on an interaction between
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41 78 mechanisms – the intervention under study and stakeholders’ responses – and the delivery
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43 79 context (Dalkin *et al.*, 2015; Pawson and Tilley, 2004). Extent literature has highlighted that
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45 80 organisational cultural factors can facilitate or restrict the implementation of workplace
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47 81 health initiatives (Spence, 2015). Organisational culture guides how people think, feel, and
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49 82 act, by offering an “interpretation of an institution’s history that members can use to decipher
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51 83 how they will be expected to behave” (Martin and Siehl, 1983, p. 52). Culture is manifest in
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53 84 the values and behaviours of groups, including organisations; it resides in relations between
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55 85 people (Alvesson, 2002, pp. 1-6) and is developed through shared and contested values; it is
56
57 86 the context within which organisational interpretations are formed (Mannion *et al.*, 2008).
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59 87 Such and Mutrie (2016) explored the influence of organisational culture on workplace
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61 88 sedentary behaviour in an in-depth, qualitative study. However, there is a dearth of literature
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63 89 examining the role of organisational culture and context in shaping the feasibility and

90 acceptability of sit-stand desk provision in workplaces. The aim of the present study was to
91 evaluate the cultural and contextual processes influencing the feasibility and acceptability of
92 sit-stand desk provision alongside, and in relation to, a sit-stand desk installation process.

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94 **2.0 Methods**

95 2.1 Background to the study

96 *(a) The wider work:* This study was part of a larger project involving a 12-month pilot
97 randomised controlled trial (RCT) and process evaluation of a multi-component workplace
98 sit-stand desk intervention within the office-based workplaces of two non-profit
99 organisations. The pilot RCT examined the efficacy of the intervention on reducing sitting
100 and increasing standing and physical activity **using objective activity monitors (ActivPAL3™
101 and Actigraph GT3X+) at five time-points: baseline, 2-weeks, 3-months, 6-months, and 12-
102 months.** There were three arms to the pilot RCT: (1) a multi-component sit-stand intervention
103 including sit-stand desk provision, emails from managers endorsing reduced workplace
104 sitting, and motivational interviewing delivered over the phone, (2) sit-stand desk provision
105 only, and (3) control, i.e. no intervention. Participants in both intervention arms (n = 20) had
106 a choice between two models of desk (Ergotron Workfit-A or Workfit-D,
107 www.ergotron.com). At the time of installation, the price of the desks ranged between £300
108 (Workfit-A) and £600 (Workfit-D) depending on the retailer. All of the sit-stand desks were
109 installed over a period of three days in the open-plan office spaces of the two participating
110 organisations, at the place of the usual desk of the intervention participants. The desk
111 suppliers (**Workplace C**) organised for an external company to complete the install, at no cost
112 to the participating organisations, aside from assistance provided by a small number of
113 stakeholder employees leading up to, and on, the install day(s). The protocol for the wider
114 project is published in [author] et al. [date] **and see Supplementary File 1 for an intervention
115 delivery and evaluation timeline.** Ethical approval to conduct this research study was granted
116 by Brunel University London research ethics committee (RE45-13). All data collection took
117 place between May 2014 and January 2016.

118 *(b) The process evaluation:* The findings from the process evaluation, underpinned by
119 the Medical Research Council Guidelines for evaluating complex interventions (Craig et al.,
120 2008), are reported here. Process evaluations largely focus on issues surrounding
121 implementation and place emphasis on examining social processes to unpick how the

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3 122 intervention interacts with contextual factors to influence the delivery, acceptability and
4 123 success of the intervention (Moore et al., 2015). In the present study, a process evaluation
5 124 was undertaken to examine organisational attitudes related to the feasibility and acceptability
6 125 of sit-stand desks as a workplace health strategy. Feasibility was defined as the ease with
7 126 which sit-stand desk interventions can be implemented. Acceptability refers to whether
8 127 workplace stakeholders consider sit-stand desk interventions to be appropriate, possible and
9 128 permissible within their workplace context. A further characteristic of process evaluations is
10 129 that they work with, and aim to develop, theory to add explanatory value (Morgan-Trimmer
11 130 and Woods, 2016). The present study interweaved empiricism and theoretical reasoning to
12 131 deepen understanding of how and why people think and act and the impact this has on the
13 132 perceived organisational feasibility and acceptability of investing in sit-stand desks.

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23 133 To gain an understanding of how workplace cultural and contextual factors underpin
24 134 the feasibility and acceptability of sit-stand desk implementation, in-depth qualitative
25 135 methods involving observations within the participating workplaces, and semi-structured
26 136 interviews with stakeholder employees, were employed (Hawe *et al.*, 2009). Observational
27 137 methods permit the collection of data on behaviour, events and interactions as they occur
28 138 within the intervention delivery context (Morgan-Trimmer and Wood, 2016). The researcher
29 139 undertook a volunteer role within both workplaces to engage in observation whilst being a
30 140 ‘participant’ (employee) within the workplace. Engaging in behaviours appropriate to the
31 141 setting, rather than simply observing, can facilitate a more nuanced understanding of
32 142 meanings attached to behaviours (Spradley, 1980, p. 61). Whilst observations are embedded
33 143 in social settings, semi-structured interviews provide (artificial) space – outside of natural
34 144 interactions - for relevant stakeholders to reflect on personal, social, work and / or
35 145 occupational values, attitudes and behaviours related to sit-stand desk provision. It was
36 146 proposed that combining observation and interview methods would provide the most
37 147 complete and nuanced understanding of the processes influencing the feasibility and
38 148 acceptability of sit-stand desk provision (Watson, 2011).

51 149 2.2 Participating organisations and employees

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53 150 Two UK-based organisations volunteered to take part in the research, and consent was
54 151 obtained from senior management within both organisations. Workplace A is an established
55 152 health charity. The workplace is split over several floors and is the base for over 900
56 153 employees. Workplace B is a national health-related Governmental organisation. The

154 workplace setting was a high specification office building that was the base for over 1000
155 employees. Organisational restructuring was ongoing in both organisations throughout their
156 participation in the research. Semi-structured interviews took place with stakeholder
157 employees – whose roles and responsibilities may be implicated in sit-stand desk provision –
158 from Workplaces A, B and C. Interviewees were identified via brainstorming potentially
159 relevant employees with a key contact within each organisation. This resulted in twenty-six
160 interviews being conducted with 10 stakeholders from Workplace A, 14 from Workplace B
161 and two from Workplace C. Stakeholders' roles and responsibilities varied, however
162 interviewees were categorised as to whether their role was operational (e.g. facilities,
163 procurement), managerial (e.g. director, programme lead) or workplace wellbeing related
164 (e.g. human resources advisor, workplace wellbeing champion); see Table (i). All
165 participants received a participant information sheet and provided written informed consent
166 prior to any data collection taking place.

167 2.3 Data collection and analysis

168 Observations involved three formal phases within workplace: prior to the sit-stand
169 desk installation, and at approximately 4 months and 10 months following sit-stand desk
170 installation. Each phase consisted of 9-13 working days (approximately 09:00 – 17:00). The
171 researcher observed within work spaces and departments of employee stakeholders and
172 employees that were participating in the pilot RCT, being situated within three to four
173 separate departments during each formal observation phase. Departments were selected
174 across different floors, based on the type of work conducted, and according to the number of
175 sit-stand desks within the immediate work space, to capture a range of views and behaviours.
176 Initial, more general observations of the workplace setting and context shaped more detailed
177 and specific observations of organisational cultural and contextual processes impacting on the
178 sit-stand desk intervention implementation, as the data collection progressed. The researcher
179 would make condensed notes or prompts throughout the day and expand the notes at the end
180 of the working day (Spradley, 1980, pp. 69-70). Informal observations and interactions were
181 also recorded throughout the duration of the interaction with the organisations. In total,
182 147,616 words of field notes based on the formal observation phases, and 37, 750 words of
183 field notes based on informal observations and interactions were recorded.

184 Interview guides were theoretically and empirically informed; organisational cultural
185 theory shaped questions and prompts relating to organisational policies, procedures,

186 initiatives, and norms related to workplace sitting. Three pilot stakeholder interviews were
187 conducted with a Workplace Wellness Manager, a Health and Safety Manager and a senior
188 leader from a separate organisation (Brunel University London). The interview guides were
189 modified following the pilot interviews to include the addition of questions regarding sit-
190 stand desks, productivity, and organisational effectiveness. The guides were then tailored to
191 the interviewees' specific organisational role, and specific questions were added for some
192 stakeholders to unpick previously observed events or interactions. **See supplementary file 1**
193 **for an example interview guide.** All interviews took place approximately two months
194 following sit-stand desk installation. The interviews were 42 minutes long on average,
195 ranging from 18 to 64 minutes. All interviews were audio recorded and transcribed and
196 identifiable information was removed, including assigning all stakeholder interviewees with
197 pseudonyms. All observations and interviews were conducted by one researcher (JH). **See**
198 **Supplementary file 2 for an illustration of the observation and stakeholder interview data**
199 **collection timelines, including how they fit within the wider pilot RCT work.**

200 A thematic analysis was utilised to collectively analyse the interview and field-note
201 **(observation)** data across both organisations. The analysis process outlined by Braun and
202 Clark (2013) was followed which includes: (a) data familiarisation i.e. reading and re-reading
203 field-notes and interview transcripts, (b) the generation of initial codes, (c) interpreting codes
204 to develop themes, and (d) reviewing, refining and defining themes. When generating and
205 interpreting codes it was important to look beyond what participants said to understand the
206 context within which the participants spoke and acted (Perryman, 2012) which allowed for a
207 more process-oriented understanding of interviewees' accounts. **Whilst coding was initially**
208 **inductive, realistic evaluation principles also guided the conduct of the analysis. The**
209 **researcher openly sought to identify the interplay between contextual factors and mechanisms**
210 **on the feasibility and acceptability of sit-stand desk provision and implementation**
211 **(Cruickshank, 2012, p. 14; Pawson and Tilley, 2004).** One researcher (JH) reviewed and
212 coded all raw data and another researcher (LM) independently reviewed and coded
213 approximately 20% of the raw data; codes were compared, and discrepancies were resolved
214 through discussions. Coding was completed using NVivo 10.0 software. One researcher (JH)
215 interpreted the codes to develop three themes addressing the feasibility and acceptability of
216 investing in sit-stand desks, which were reviewed, refined and agreed by all researchers (JH,
217 LM, TK, AM). These themes, including illustrative quotes and field-note extracts provided to
218 support the analysis, are presented as findings.

219

3.0 Findings

Three main themes related to the feasibility and acceptability of investing in sit-stand desks were generated and are presented here. The themes pertain to (1) factors influencing the perceived viability of implementing sit-stand desks, (2) organisational factors and outcomes influencing attitudes towards sit-stand desks, and (3) ethical considerations related to sit-stand desk provision.

3.1 The viable thing to do? Factors influencing sit-stand desk implementation

This theme describes factors influencing stakeholder employees' commitment to sit-stand desk implementation, including role capacity, and organisational structure and restructuring (3.1.1), and the compatibility of sit-stand desks with the workplace environment (3.1.2) which both shape perceived sit-stand desk installation feasibility.

3.1.1 Commitment to support sit-stand desk implementation

Stakeholder employees' accounts revealed that the feasibility of sit-stand desk provision depends on the organisation having a dedicated staff member with capacity and commitment to lead the installation, supported by employees from relevant teams:

Where would be the natural home?... Which team would be most appropriate to deliver and support this? So, it doesn't become a Pilates ball - an expensive Pilates ball - pushed in the corner (Violet, Workplace B)

Stakeholder interviewees' accounts revealed that the perceived capacity to dedicate time to sit-stand desk installation influenced attitudes related to assisting with the delivery of the project. Katie stated that the proportion of her work hours that she dedicated to the project was "between a fifth and a quarter... it hasn't been *too* much" (Katie, Workplace A). Her commentary indicated that the incorporation of the project into her job role enabled her to prioritise the installation of the sit-stand desks. Conversely, those with less capacity were more likely to express frustration regarding installation-related tasks:

I thought 'What? I'm ordering leads? Really? How daft!... those sorts of things are seemingly petty... but for us... it's about how easy is it for an organisation to include these [sit-stand desks], well actually it is quite difficult because you need to think about all these other bits and pieces (Faye, Workplace B)

249 Organisational restructuring influenced commitment of employees to support the
250 project. Many employees involved in the installation could not offer *sustained* commitment
251 due to fluctuating responsibilities because of ongoing restructuring processes: “Key staff in
252 the installation process keep getting re-deployed so the contact person is changing
253 constantly...” (Research notes, 5 Sept 2015), which also hindered communication between
254 parties. In addition, the extent of centralisation within the organisation shaped employees’
255 commitment to the installation of the sit-stand desks:

256 *[At Workplace B] there were four or five people that needed to be making the*
257 *decisions whereas, at Workplace A, it felt like once we'd got... the higher-level people*
258 *on board it was just handed down.... And I guess one person is easier to deal with*
259 *than multiple (Ben, Workplace C)*

260 Workplace A has a less centralised structure than Workplace B, as continued and extensive
261 involvement with technical aspects of the installation was required by fewer employees from
262 different teams, which enabled one key employee to commit to assisting the delivery of the
263 project.

264 Observations revealed that employee time required to support the installation of sit-
265 stand desks depended on the degree of formalisation. Workplace B has a formalised
266 organisational structure; procedural necessities challenged the efficiency of the sit-stand desk
267 planning and installation processes. For example, form-filling requirements almost led to the
268 postponement of the installation:

269 *Workplace B told us last week that we have to complete a RAMS (Risk and Method*
270 *Statement) form... The install is due to take place next week, and if [Workplace C] are*
271 *unable to complete all elements of the form by then... [team] at Workplace B have*
272 *said that no work can take place on site (Research notes, 11th Jan. 2015)*

273 A higher level of formalisation at Workplace B was found to impede the efficiency with
274 which tasks connected to the sit-stand installation, a non-standard situation, could be
275 completed. Limited decision-making discretion led employees to adhere to procedures which
276 may not be wholly necessary, or indeed adequate, for sit-stand desk installation. Whereas, a
277 less formalised structure at Workplace A enabled the swift completion of tasks related to the
278 project delivery, and positively influenced employees’ experiences of implementing sit-stand
279 desks within the workplace.

280 3.1.2 Sit-stand desk workplace compatibility

281 The compatibility of the sit-stand desks with the office environment influenced the
282 feasibility of sit-stand desk provision. For example, the installation of some sit-stand desks
283 required adaptations to be made to the organisation's standard equipment, such as "sawing a
284 curve into two desks to enable the sit-stand desk to be securely attached" (Research notes, 25
285 Oct. 2014). The lack of compatibility of certain aspects of the sit-stand desks with the
286 workplace environment led to some unexpected costs for the organisation, which restricted
287 the feasibility of the sit-stand desk installation. For example, it was necessary for the
288 organisations to purchase longer cables to ensure that desk equipment could be powered
289 when the desk was raised. Compatibility issues also led to unexpected time demands being
290 placed on operational employees when sit-stand desk users required their desk to be
291 relocated; "when I asked [Susan] if she'd had chance to have a look at moving Steph's sit-
292 stand desk to her new location, she said not yet, that she'd been "bloody busy this week to be
293 honest" (Research notes, 20 Feb. 2015). The need to make adaptations to organisational
294 equipment to accommodate the sit-stand desks negatively influenced interviewees' attitudes:

295 *... it seemed as though they [Workplace C] thought that Workplace B should adapt to*
296 *be able to use that desk, rather than the desk working for us ... and I think that is*
297 *something that needs some thinking about, otherwise you are going to start off with*
298 *already some negative thinking...*" (Faye, Workplace B)

299 This theme revealed that organisational contextual factors can impede or facilitate the
300 sit-stand desk implementation process, and consequently, stakeholder employees' perceptions
301 of the feasibility of sit-stand desk provision. The viability of sit-stand desk provision is likely
302 to vary between organisations depending on the organisations' context, structure, and
303 physical workplace environment.

304 3.2 The smart thing to do? Organisational factors and outcomes

305 This theme links sit-stand desk provision to employee health and organisational
306 outcomes. Firstly, the perceived organisational benefits of investing in sit-stand desks are
307 described (3.2.1). Organisational factors influencing perceptions of the importance of
308 supporting employee health (3.2.2) and the relationship between supporting employee health
309 via sit-stand desk provision and organisational outcomes (3.2.3) are presented.

310 3.2.1 Organisational benefits of investing in sit-stand desks

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3 311 Employees voiced that the pursuit of organisational success guides business
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5 312 operations and decisions, including whether to invest in employee health initiatives. For
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7 313 example, Jill reasoned that “*if our y'know, reason for being is to help improve the lives of*
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9 314 *everyone living with [health condition] then if we can i-you have improved physical health...*
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11 315 *you will also be more productive. If you are absent from work, then obviously, you are not*
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13 316 *productive. But even if you are in work and you're not well then you will be less productive*
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15 317 *than someone else who is feeling great (Finn, Workplace B)*

16 318 Interviewees perceived that employees seek out job opportunities that offer benefits including
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18 319 staff wellbeing initiatives:

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20 320 *...but you know actually bringing it into the workplace and having specially adapted*
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22 321 *desks, you know I was pleased that we were doing something that felt a little bit ahead*
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24 322 *of maybe our competitors (Jayne, Workplace A)*

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26 323 Sit-stand desks were positioned as an aspect of competitive advantage. Employees also
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28 324 identified a need for the organisation to ‘practice what they preach’:

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30 325 *We need to make sure that we are exemplar health and wellbeing employers for our*
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32 326 *own staff, because otherwise why on earth would anybody listen to us when we say*
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34 327 *this is best practice... (Richard, Workplace B)*

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36 328 The organisations’ external programmes of work are oriented around improving peoples’
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38 329 health and wellbeing. Thus, interviewees perceived that it is necessary to support staff health
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40 330 and wellbeing internally, to appear a credible source of information to stakeholders including
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42 331 the public. The health-focused nature of the participating organisations garnered additional
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44 332 support for investing in sit-stand desks. Sit-stand desks were described as a visible and
45
46 333 forward-thinking representation of the organisations’ commitment to developing a healthy
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48 334 workplace.

49 335 3.2.2 Organisational and occupational values influencing attitudes towards sit-stand desks

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51 336 Stakeholder attitudes related to sit-stand desk provision were shaped by the
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53 337 organisational (health) culture and employees’ occupational identities. The health-related
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55 338 nature of both organisations engendered taken-for-granted assumptions amongst interviewees
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57 339 about the importance of health and wellbeing:

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3 340 *We've got the tag line now, of protecting and improving the nation's health. It's*
4 *literally on every email you send... so it should be in your eye line *laughs* every*
5 *single day... this is who we are (Annabel, Workplace B)*
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9 343 Valuing health was embedded throughout the organisations and reflected in organisational
10 344 materials, which led to a shared understanding amongst employees that “healthy living are
11 345 [sic] generally better for you and you know, give you better outcomes” (Steph, Workplace
12 346 A). For employees in health-focused roles, e.g. human resources, their occupational identities
13 347 were consistent with and reinforced the dominant organisational values.

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16 348 However, some interviewees that were employed in operational, non-health-focused
17 349 occupations, for example estates and facilities, held negative perceptions regarding sit-stand
18 350 desks. For example, Dorothy questioned “what benefit there is, health wise? Standing for
19 351 long periods is not good, because you get stagnation of blood... varicose veins” (Dorothy,
20 352 Workplace B). In addition, some interviewees viewed sit-stand desks as a luxury rather than
21 353 as a preventative health measure that should be available to all employees:

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24 354 *I think it's quite different to something like, you know a laptop or an iPhone, which is*
25 355 *essential to conducting our business... [but] certainly if there was a physical issue or*
26 356 *health reason.... we would be supportive (Tarak, Workplace B)*
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31 357 Employee health and wellbeing are not always prioritised within non-health focused
32 358 occupations. This analysis indicates that organisational cultural contradictions can arise when
33 359 the occupational values of employees responsible for the management of office equipment
34 360 are not consistent with those of the organisation:

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37 361 *She [health-focused Workplace B employee] vented her frustrations regarding the*
38 362 *current procedure, saying ‘we have to have a [health] problem, a symptom, a*
39 363 *justification to request a sit-stand desk at Workplace B, which goes against all the*
40 364 *work we are trying to do nationally’ (Research notes, 19th Sept. 2014)*
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45 365 *Seated* desks as standard office equipment were symbolised by employees with health-related
46 366 occupations as inadequately investing in the health of their staff, which undermines the
47 367 organisations’ the dominant cultural value of preventative health.

48 368 3.2.3 Financial implications of investing in sit-stand desks

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369 Interviewees identified that evidence of cost-effectiveness and ROI would be required
370 to justify any future financial investment in sit-stand desks:

371 *There needs to be definite proof... that any investment internally [on sit-stand desks],*
372 *you'd get the money back eventually I guess (Samantha, Workplace A)*

373 Interviewees expressed concern regarding a potential negative reaction of employees and the
374 public to organisational spend on sit-stand desks. At Workplace B, this was influenced by the
375 organisational economic climate. The governmental stipulation to reduce organisational
376 spending incited restructuring, job losses and increased workload at Workplace B.

377 Organisational conditions fostered low need satisfaction, which engendered negative attitudes
378 towards formal employee health provision amongst employees:

379 *Employees see these [employee health] initiatives as 'add-ons', 'not getting at the*
380 *root cause', 'putting over a plaster' – so not solving the problems inherent within the*
381 *organisation – long hours, email culture, constant restructuring and job insecurity*
382 *(Researcher notes, Workplace B, 25th Nov. 2015)*

383 Spending money on employee health initiatives was perceived by some employees as a feeble
384 attempt to minimise negative impacts on staff wellbeing caused by organisational conditions,
385 which was recognised by interviewees:

386 *It would be quite difficult to weigh up if you went for a carte blanche and spent*
387 *thousands and thousands because... we're cutting staff.... so, it would be a delicate*
388 *balance for senior management to promote that.... in the current climate (Ivy,*
389 *Workplace B)*

390 Concern that substantial expenditure on sit-stand desks might exacerbate negative feelings
391 amongst employees towards employee health initiatives engendered a perception that
392 spending money on sit-stand desks is not justifiable. Interviewees expressed concern that
393 expenditure on sit-stand desks might negatively influence the organisations' image:

394 *You'd have to be accountable for spending public funds... and certainly as a taxpayer*
395 *I would be pretty annoyed (Dorothy, Workplace B)*

396 This theme indicates that the 'healthy workplace' rationale for investing in sit-stand
397 desks is strengthened due to the health-focused nature of the organisations, as appearing a
398 'credible source' is unlikely to be linked to organisational success for non-health-focused

399 organisations. However, views differ between individual employees due – in part – to
400 differing occupational identities, and financial concerns are likely exacerbated in public or
401 charitable organisations compared to private organisations. These findings highlight that
402 organisational contextual factors factor into, and complicate, the relationship between
403 employee health initiatives and organisational effectiveness, and influence stakeholder
404 employees' attitudes towards sit-stand desk provision.

405 3.3 The right thing to do? Challenging the ethics of the healthy workplace model

406 The data in this theme considers issues surrounding the corporate social responsibility
407 of organisations with office-based workplaces to provide sit-stand desks for their employees.

408 Interviewees spoke of an ethical responsibility of the employer for supporting
409 employee health, in part due to the nature of their organisation:

410 *I think a responsible employer... their core philosophy has to be look[ing] after their*
411 *employees.... we are [Workplace B]... it would be wrong... if we were generating*
412 *overworked, stressed out people just about to break (Bridget, Workplace B)*

413 The data highlights a view that employers have a responsibility not to *contribute* to reduced
414 employee health and wellbeing via physical or psychosocial working conditions. Positioning
415 the provision of sit-stand desks as a *responsibility* of office-based organisations, to offset the
416 health risks incited by prolonged workplace sitting, increases the acceptability of sit-stand
417 desks within such organisations. However, deeper analysis of interview and observation data
418 illustrate that employees would not expect their organisation to support their health without
419 there also being benefits for the organisation. For example, Cath commented that sit-stand
420 desks are “the *right* thing to do” yet later remarked that “businesses are businesses, and they
421 look at the bottom line” (Cath, Workplace A).

422 Interviewees recognised that employee health initiatives can be used in ethically
423 dubious ways. For example, Finn described attempts of “tech[nology] companies” to, in his
424 view, overtly regulate the behaviour of their employees. Discussing a recent visit to one such
425 technology company, Finn described how “everything you need is within the building, so you
426 never need to leave. They have a gym, they have breakfast, they have everything. Food all
427 day basically. So, they keep them there.... terrible” (Finn, Workplace B, workplace wellbeing
428 stakeholder). There was a feeling amongst interviewees that *imposing* health behaviours on
429 employees represents an abuse of the organisations' power. Regarding employee eating

1
2
3 430 habits, Jayne remarked “why should we be prescriptive with people about what they do...
4 431 what they put in their mouth... we haven’t got a right to do that” (Jayne, Workplace A).
5
6 432 Interviewees expressed a belief that the organisation should be supportive of health by not
7
8 433 restricting, but equally not enforcing, health behaviours amongst employees. Annabel
9
10 434 envisaged this involving “putting things out on a plate that’s right in front of people, so if you
11
12 435 are up for it, then it’s really easy for them, but if they don’t want to, that’s okay too”
13
14 436 (Annabel, Workplace B). This suggests that employees should be given a choice regarding
15
16 437 their desk (i.e. whether it is a conventional seated desk or a sit-stand desk) if the organisation
17
18 438 does provide sit-stand desks for employees.

19
20 439 This theme demonstrates the ethical complexities surrounding workplace health
21
22 440 initiatives such as sit-stand desk provision, linked to the normative power that organisations
23
24 441 have over their employees.

25 442

27 443 **4.0 Discussion**

29
30 444 This study examined the feasibility and acceptability of implementing sit-stand desks
31
32 445 in office-based workplaces by conducting observations and interviewing key stakeholders
33
34 446 within two workplaces taking part in a **pilot** RCT of a workplace sit-stand desk intervention.
35
36 447 Factors related to the sit-stand desk implementation process, perceived organisational
37
38 448 benefits and costs, and ethical issues linked to supporting employee health were illustrated as
39
40 449 being instrumental in shaping views regarding sit-stand desk provision.

41 450 *Sit-stand desk provision and implementation: mediating causal mechanisms*

42
43 451 *Mediating mechanisms relate to components of an intervention and how it is*
44
45 452 *implemented that have an influence on outcomes, e.g. how sit-stand desk provision is*
46
47 453 *perceived, and the ease of implementation (Dalkin et al., 2015). Whilst the two workplaces*
48
49 454 *that delivered the intervention were both health-focused, non-profit organisations, and*
50
51 455 *mediating mechanisms interact with context to influence outcomes, the analysis pointed to*
52
53 456 *modifiable factors that might influence the feasibility and acceptability of sit-stand desk*
54
55 457 *provision and implementation across organisations more generally.*

56 458 *Positive attitudes related to providing sit-stand desks were consistent with the healthy*
57
58 459 *workplace discourse - which posits that reduced absenteeism and presenteeism, and increased*
59
60 460 *work motivation, increase productivity via improved employee health and wellbeing*

1
2
3 461 (Wadsworth *et al.*, 2010) - as a rationale for investing in sit-stand desks. Indeed, extant
4
5 462 literature is supportive of a relationship between using a sit-stand desk and employee health
6
7 463 benefits, including improved musculoskeletal comfort and cardiovascular outcomes
8
9 464 (Chambers, Robertson and Baker, 2019). The pursuit of productivity and organisational
10
11 465 success is a taken-for-granted priority, which guides organisational operations (Such and
12
13 466 Mutrie, 2016). Thus, positioning sit-stand desk provision as a strategy to increase
14
15 467 organisational effectiveness – via improved employee health – is likely to increase
16
17 468 organisations' receptibility towards supplying sit-stand desks for employees. Additionally,
18
19 469 highlighting the consistency between sit-stand desk provision and the occupational values of
20
21 470 key organisational decision-makers is likely to increase acceptability. However, the findings
22
23 471 indicate that employees are wary of organisations supporting employee health for underlying
24
25 472 corporate motives; such motives question the positioning of workplace health initiatives as
26
27 473 socially responsible (Holmqvist *et al.*, 2009), as they represent a means for the organisation
28
29 474 to - wittingly or unwittingly - manipulate and control employees' health-related attitudes and
30
31 475 behaviour (Vander Schee, 2008). Offering employees the choice of a sit-stand desk or seated
32
33 476 desk was considered an appropriate strategy, as interviewees felt that such an approach
34
35 477 increases employees' capacity for agency over their health behaviours at work. Such a
36
37 478 strategy might increase the acceptability of sit-stand desk provision amongst employees and
38
39 479 across organisations more broadly. However, placing value on employee health can lead to
40
41 480 the development of a normative power which may compel individuals to partake in healthy
42
43 481 behaviours and workplace initiatives (Zoller, 2003), even when participation is construed as
44
45 482 voluntary by the organisation, given the moral connotations of, and virtues (e.g. discipline,
46
47 483 self-responsibility) connected to, health behaviours (Verdonk *et al.*, 2010).

484
485 The analysis identified various modifiable factors related to the implementation
486
487 process that influenced views related the feasibility and acceptability of sit-stand desk
488
489 implementation. Factors that might improve the ease of implementation of sit-stand desks
490
491 include: designating a lead employee with overall responsibility for sit-stand desk provision,
492
493 assembling small project support team consisting of employees from key relevant
494
495 departments including (but not limited to) health and safety, internal communications,
496
497 facilities, and human resources, a clear internal communication plan, having a budget for
498
499 unexpected costs, and choosing models of sit-stand desks that are compatible with the
500
501 workplace environment.

502
503 *Sit-stand desk provision and implementation: moderating causal mechanisms (context)*

1
2
3 494 The analysis unpicked various factors linked to the culture and context of the
4 participating organisations that influenced stakeholder views related to sit-stand desk
5 495 provision and implementation. For example, the findings reveal nuanced and context-specific
6 496 processes by which supporting employee health might be connected to organisational
7 497 outcomes. The health-focused nature of the participating organisations led to a perception
8 498 that supporting employee health would enhance the organisations' credibility. Conversely,
9 499 spending *charity or public* money on sit-stand desks might damage the organisations'
10 500 reputation; there can be increased scrutiny of spend, and a greater sense of accountability to
11 501 external stakeholders, in non-profit organisations compared to private organisations
12 502 (Dhanani, 2009). Financial concerns linked with the current dearth of ROI evidence (Buckley
13 503 *et al.*, 2015) limited the possibility of wider adoption of sit-stand desks within the
14 504 participating organisations. The healthy workplace model should recognise how complex
15 505 organisational contextual factors such as the nature of the organisation and employees'
16 506 occupations can influence the processes that underpin, and the type and strength of the
17 507 relationship between employee health initiatives and organisational success.
18 508

19 509 Organisational contextual factors that impeded or facilitated the sit-stand desk
20 510 implementation process were identified. For example, higher organisational structural
21 511 formalisation – which refers to the presence of rules, policies and procedures that stipulate
22 512 organisational operations and decisions (Pertusa-Ortega, Zaragoza-Sáez, & Claver-Cortés,
23 513 2010) – restricted implementation. The feasibility of *initial* sit-stand desk installation may be
24 514 reduced in organisations with highly formalised structures as rules and processes designed to
25 515 increase efficiency can contribute to *inefficiency* in new or non-standard situations (Bozeman
26 516 and Scott, 1996, p. 3). However, routine sit-stand desk provision might trigger the adaptation
27 517 of current procedures or development of new policies suited to the task to increase the
28 518 efficiency of sit-stand desk implementation (DeHart-Davis *et al.*, 2013).

29 519 *Strengths and limitations*

30 520 Whilst extant literature has investigated managers' and practitioners' attitudes
31 521 towards *hypothetical* sit-stand desk provision (Gilson *et al.*, 2012; Hadgraft *et al.*, 2016) this
32 522 study consulted relevant stakeholders following, and regarding, the sit-stand desk
33 523 *implementation process*. Conducting observations was particularly valuable for examining
34 524 organisational culture and contextualising interview data, as it involves the collection of data
35 525 within the naturalistic setting and enables direct access to organisational processes and
36

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2
3 526 employee interactions (Morgan-Trimmer and Wood, 2016). However, the generalisability of
4
5 527 the findings is uncertain as they are based on a study of only two workplaces. Investigation
6
7 528 into organisational contextual factors that impede and restrict the sit-stand desk
8
9 529 implementation process within varied organisational settings would help strengthen and
10
11 530 extend the evidence generated in this study. A detailed map of relevant organisational
12
13 531 contextual factors and the processes that link them to the ease of implementation would
14
15 532 permit an assessment of how feasible sit-stand desk implementation is likely to be for a given
16
17 533 organisation. This study contributed to methodological advancement of approaches to
18
19 534 conducting process evaluations of workplace sit-stand desk interventions by combining
20
21 535 interviews with participant observation.

21 536 *Conclusion*

23 537 The present study sought stakeholder employee views of sit-stand desks as a
24
25 538 workplace health initiative alongside the implementation of a sit-stand desk intervention
26
27 539 within two UK office-based workplaces. This approach permitted the examination of
28
29 540 organisational contextual and structural factors that influence sit-stand desk implementation
30
31 541 feasibility and acceptability, which may assist organisations in selecting appropriate
32
33 542 workplace health interventions and improve the ease and acceptability of sit-stand desk
34
35 543 provision; see Figure (ii) for workplace recommendations. **Identified modifiable factors**
36
37 544 **influencing feasibility and acceptability – such as developing an appropriate communication**
38
39 545 **strategy - can assist organisations in improving the process of implementing sit-stand desks.**
40
41 546 **However, various factors related to the organisational culture and context were found to**
42
43 547 **moderate attitudes related to the sit-stand desk provision and implementation.** Given the
44
45 548 relatively fixed nature of organisations, employers should carefully consider the suitability of
46
47 549 sit-stand desks as a workplace health strategy within the context of their organisation – taking
48
49 550 into consideration the **moderating** factors influencing feasibility and acceptability identified
50
51 551 in this study linked to the nature, structure, and values of organisations.

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Pseudonym	Role	Job category	Workplace
Simon	Director (Corporate Resources)	Senior / middle management	A
Jade	Programme Lead	Senior / middle management	A
Cath	Programme Lead	Senior / middle management	A
Craig	Consultant (Public Health)	Senior / middle management	B
Samantha	Human Resources Advisor	Workplace wellbeing	A
Jill	Human Resources Manager	Workplace wellbeing	A
Violet	Communications officer	Workplace wellbeing	B
Fiona	Equality and Diversity Lead	Workplace wellbeing	B
Faye	Staff Wellbeing Lead	Workplace wellbeing	B
Finn	Staff Wellbeing Lead	Workplace wellbeing	B
Annabel	Workplace Wellbeing champion	Workplace wellbeing	B
Chloe	Research Manager	Workplace wellbeing	C
Jim	Facilities Manager	Operational	A
David	Health and Safety Advisor	Operational	A
Katie	Project Officer	Operational	A
Alexandra	Business and Performance Manager	Operational	B
Ivy	Estates and Facilities Manager	Operational	B
Barbara	Procurement Manager	Operational	B
Aiden	Procurement Manager	Operational	B
Harry	Project Sponsor (Estates)	Operational	B
Ben	Account Manager	Operational	C
Richard	Human Resource Director	Senior / middle management, Workplace wellbeing	A
Olivia	Consultant (Occupational Health)	Senior / middle management, Workplace wellbeing	B
Jayne	Human Resources Director	Senior / middle management, Workplace wellbeing	B
Drew	Head of Procurement	Senior / middle management, Operational	A
Tarak	Deputy Director (Corporate Risk)	Senior / middle management, Operational	B

SIT-STAND DESKS AS AN EMPLOYEE HEALTH STRATEGY: RECOMMENDATIONS FOR WORKPLACES

To increase acceptability of sit-stand desk provision:

- Employees in health-related roles should champion sit-stand desks to convince employees in non-health-related roles of the benefits of supporting employee health
- Employees in health-related roles (for example, human resources) should work alongside facilities employees in the procurement of desk-based equipment, to increase the likelihood of employee health considerations being incorporated into desk selection
- Develop a communication strategy to inform employees and external stakeholders of why sit-stand desks are a positive investment, to reduce the likelihood of reputational damage and negative employee attitudes
- Consider potential cost-saving options, e.g. investing when a refurbishment is required, investing in a small number of sit-stand desks, seeking sit-stand desk donations or explore external funding avenues
- If only investing in a small number of sit-stand desks, consider which employees should receive them. Provide sit-stand desks for employees that want one, focusing on alternate strategies for reducing sitting for employees who express negative attitudes towards sit-stand desks

To increase the ease of sit-stand desk implementation:

- Provide leadership by a relevant department; and form a project team to support the implementation, involving employees from other relevant departments including health and safety, IT, facilities, communications, etc. The project team should be small to facilitate open and close communication
- Incorporate sit-stand desk provision into the job role of at least one employee, to increase capacity for investing time into sit-stand desk provision
- Allocate an agreed budget for sit-stand desk provision and monitor budget over time
- Extensively research sit-stand desk options and select models that are compatible with the workplace environment, and conduct a site survey with potential sit-stand desk suppliers to recognise the specific requirements of the organisation for successfully installing sit-stand desks
- Develop organisation-specific policies and processes for sit-stand desk provision, based on the organisational context and early experiences of sit-stand desk provision, to improve the efficiency of sit-stand desk provision over time

Time line	Sit-stand desk only (SS-O)	Multi-component sit-stand desk (SS-MC)	Seated desk control (CG)
Randomisation			
-2 weeks	Measurement of outcomes		
-4 to -1 weeks	Participant observation		
Baseline (time 0)		(a)	
2 weeks		b	
3 weeks	c d	c d	
4 weeks	Measurement of outcomes		
5 weeks		(a)	
8 weeks		b	
6-10 weeks	Stakeholder interviews		
12 weeks		(a)	
14 weeks	Measurement of outcomes		
16 weeks		b	
16-20 weeks	Participant observation		
21 weeks		(a)	
6 months		b	
	Measurement of outcomes		
7-8 months	Pilot RCT participant interviews		
10 months	Participant observation		
12 months	Measurement of outcomes		
(a)	'Motivational interviewing' phone call to support participants to use their sit-stand desk to reduce sitting and increase PA		
b	Emails from organisation managers sent to participants to express organisational support for the intervention		
	Sit-stand desk provision		
d	Verbal instruction on correct ergonomic posture for sitting and standing		

Example stakeholder interview guide (health and safety staff member)

Part A: Job role

- What is your role within the organisation?
 - (PROMPTS: how does it fit into organisation aims, what do you do day-to-day)
- How does your job role relate to the sit-stand project?
 - (PROMPTS: Do you see it as having an impact on your work stream? Do you have any specific roles or responsibilities as part of this project?)

Part B: Understanding the culture of the organisation in relation to sit-stand desks and workplace health

- Are there any H&S policies/training related to sitting, standing and moving?
 - (PROMPTS: restricting or encouraging movement/activity)
- Do you feel that employees have opportunities to reduce sitting and increase activity in the workplace?
- Does the sit-stand desk intervention fit with [Workplace A's] health, safety and wellbeing approach?
 - (PROMPTS: Will any amendments need to be made to current policy / guidelines to accommodate sit-stand working? Have you learnt anything so far from your experience with sit-stand working? Does the management style/priorities of senior leaders influence your role in delivering health, safety and wellbeing programmes?)

Part C: Responsibility of the organisation

- Do you feel there is a desire within the organisation to promote health of employees?
 - (PROMPTS: How much of a priority is it? Does [Workplace A] have a responsibility to employees to promote their health? If so, why? (e.g. organisational benefits, nature of organisation, ethically) What about reducing sitting specifically?)

Part D: Planning and implementation of sit-stand project

- What do you think went well in the planning phases of this project? What could we have done better? How could we have done it better?
- Can you anticipate any challenges over the next year?
- What do you think would need to happen for [Workplace A] to consider a wider adoption of sit-stand desks?
 - (PROMPTS: Would there be any special considerations from a health and safety perspective?)