

**Meanings of sitting in the context of chronic disease: A critical reflection on sedentary
behaviour, health, choice and enjoyment**

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The trial was funded by research facilitation funds from Loughborough University

26 Abstract

27 Reducing sedentary behaviour or sitting is a new public health focus. Emerging research has,
28 however, found that sedentary activities may be associated with health and mental health
29 benefits for older adults. This article reports findings of the qualitative arm of a feasibility
30 trial to reduce sedentary behaviour among patients with Chronic Obstructive Pulmonary
31 Disease (COPD). From interviews (n=21) conducted prior to the intervention we identified
32 three themes: (i) participants sat to *enable* them to perform activities, such as housework, (ii)
33 sitting, such as watching TV or fishing, was experienced as *enjoyable*, and (iii) the most ill
34 participants experienced sitting in terms of *sadness*, as the only thing they could do. Our
35 observations draw attention to three issues. First, our participants did not always sit out of
36 choice, they had to rest between activities and sat due to breathlessness and mournfulness.
37 Second, the intrinsic value of enjoyment associated with sedentary activities comes into sharp
38 relief in the context of progressive chronic disease, which makes it increasingly difficult to
39 enjoy any activity or life. Third, trials, predicated on trying out a pre-defined solution, are
40 particularly challenging for mixed methods qualitative research seeking to trouble categories,
41 such as choice, health and enjoyment. In conclusion we concur with research that has
42 highlighted that sedentary activities may also have benefits, however, we would make a
43 stronger case for appreciating alternative values, such as enjoyment of life, rather than just
44 health, when appropriate, in research and in practice.

45

46 Key words:

47 COPD; sedentary behaviour, qualitative research methods

48

49 **Introduction**

50 This study was grounded in a mixed methods feasibility trial, which sought to reduce
51 sedentary behaviour (SB) among older adult patients with Chronic obstructive pulmonary
52 disease (COPD). COPD is a lung ailment that is typically characterised by severe shortness of
53 breath, chronic coughing, wheezing, purulent sputum production and fatigue (Han,
54 Dransfield, and Martinec, Fernando 2017). Individuals with COPD have been observed to
55 avoid physical activity and spend the majority of their time sedentary (Matei et al., 2015, p2;
56 Pitta et al., 2005; Polkey, 2011). It has been reported that physical inactivity puts patients at
57 an increased risk of being admitted to hospital (Garcia-Aymerich et al. 2006), whereas
58 replacing SB with low-intensity activity has been associated with reduced risk of an acute
59 exacerbation (Donaire-Gonzalez et al. 2015) or a worsening of symptoms (Celli and Barnes
60 2007).

61 Our study was informed by observations that attempts to improve COPD patients' lifestyle-
62 embedded activity have had little success (Watz et al. 2014; Cindy Ng et al. 2012). Our
63 impetus, thus, was that reducing SB might provide a more gentle way of improving these
64 patients' health (Cavalheri et al. 2016; Hill et al. 2015).

65 Prior to the intervention we conducted qualitative interviews with the participants, asking
66 them a free association question of what sitting meant to them. We found that the majority
67 associated sitting with a rich variety of positive meanings. In trying to make sense of this
68 finding we consulted an emerging literature that has found that sitting or sedentary behaviour
69 can, indeed, also have beneficial health effects. For example, a consensus project has sought
70 to categorise different types of sedentary behaviour and discern diverse social, psychological
71 and environmental factors that affect it (Chastin, Schwarz, and Skelton, 2013). We consider
72 that attempts to come up with a more contextual approach to health and to distinguish

between beneficial and harmful sitting points a way forward from the one-dimensional or healthyist position that sees all inactivity as intrinsically negative. However, at the same time these attempts to categorise sitting are not necessarily reflexive about the values embedded in these categories. We note that the methodological positions adopted by scholars studying sedentary behaviour in public health contexts, both quantitative and qualitative, are conducive of focusing on physical or mental health inducing or “salutogenic” (Kikuchi et al. 2014) effects. We contend that the context of debilitating and progressive chronic disease reveals the focus on health benefits as problematic, as it downplays other values, such as enjoyment of life. Further, we contend that doing qualitative research within a trial is inherently contradictory, as trials are, by definition, driven by a goal, such as behaviour change. The critically reflexive qualitative research that we adopted, on the contrary, sought to open up and question goals and categories if needed.

This paper then makes two arguments and contributions to discussions on sedentary behaviour. First, it critically reflects on the methodologies underpinned by specific values in research on sedentary behaviour—even when they try to understand why sitting may be beneficial—and argues for a qualitative research that would critically reflect on those values and categories. Second, it presents findings of our research with older adults with COPD who associated sitting with laziness, ability, enjoyment and sadness—and what this might teach us about attempts to reduce sitting and specifically about the importance to appreciate other values besides health, such as enjoyment of life, which may be particularly important in the context of progressive chronic disease. In what follows we will first discuss the literature on sedentary behaviour from a critical methodological angle and then move on to describing our methods and discussing our findings.

97 *Classifying sedentary behaviour*

98 Research on sedentary behaviour, for our methodological purposes, can be divided into
99 roughly three approaches. First, quantitative research has sought to establish how sedentary
100 behaviour is associated with adverse health outcomes and how certain categories of sedentary
101 behaviour (e.g. watching television) have more significant negative effects than others.
102 Second, quantitative research has sought to establish whether some types of sedentary
103 behaviour may have not only negative but also positive effects on, for example, mood. Third,
104 qualitative research has focused on barriers and facilitators to reducing sedentary behaviour
105 as well as individuals' perceptions and experiences of sitting.

106 An example of the first kind of quantitative research is a recent systematic review that
107 demonstrated that SB is associated with harmful effects on biomarkers for cardiovascular
108 disease and metabolic syndrome, especially for people aged over 60 years (Wirth et al. 2016).
109 Hamer & Stamatakis (2014) examined the association between popular sedentary behaviour
110 activities (TV viewing, internet use, reading) and mental health. They did not find an increase
111 in depressive symptoms from baseline to follow-up, but a longer period of TV watching was
112 associated with higher depressive symptoms. Internet browsing and reading were associated
113 with lower depressive symptoms, thereby suggesting that different sedentary activities may
114 have different impacts on mental health.

115 The second type of quantitative research focuses specifically on differences between
116 different types of sedentary behaviour. O'Neil & Dogra, (2015) observed that especially
117 sedentary activities that were social or provided cognitive stimuli, such as computer use or
118 doing crosswords, were associated with self-reported psychosocial well-being in middle-aged
119 and older adults, such as mood. Similarly, Kikuchi et al. (2014) found that what was defined
120 as active sedentary activities, such as reading, were associated with higher physical activity

(PA) levels, whereas passive activities, such as watching TV, were associated with lower PA levels.

Qualitative studies have typically explored barriers and facilitators to reducing SB. Chastin et al., (2014) found that many older women considered sedentary activities, such as playing bingo or reading, as pleasurable and many did not see the benefits of standing more (Chastin et al. 2014). A qualitative study exploring barriers and facilitators to reducing sedentary behaviour among overweight and obese older adults after an intervention (a wearable sitting time monitor) also found that barriers included enjoying sedentary activities or being too ill. Participants were motivated to reduce their sitting to improve health, when they could do things they enjoyed, such as daily walking, or things that were easy to do in the physical environment, such as going up stairs (Greenwood-Hickman, Renz, and Rosenberg 2016).

In a focus group study Mcewan et al., (2016) found that older adults considered sitting to have cognitive, social and psychological benefits, for example, by keeping their minds active (when reading), by sitting and socialising with friends and by filling their time doing things such as watching television (Mcewan, Tam-Seto, and Dogra 2016). Pertinent to our study on individuals with chronic disease an interview study examined the experiences of sitting of those living with rheumatoid arthritis (RA) (Thomsen et al. 2015) . They found that participants were struggling between good and bad days and had to adapt to sitting down when they were tired or experienced pain, although some participants noted that their sitting had nothing to do with their RA but was a personal preference (pp.5-6).

Overall, these studies have observed that sedentary behaviour can have measurable beneficial effects on physical or mental health and that in qualitative studies participants often perceive sedentary activities as positive or beneficial. However, this situation presents a conundrum, as experiencing sedentary behaviour as positive creates a barrier to reducing it. Scholars have

sought to overcome this contradiction by, for example, suggesting making sedentary social activities more active (O’Neil & Dogra, 2015). We suggest, that fundamentally the contradiction reveals that there are multiple values or goods associated with sedentary behaviour besides health, such as enjoyment of life. We further contend that values, such as enjoyment of life, become particularly pertinent when studying individuals with progressive chronic disease, as it underlines the intrinsic importance of enjoying life in a situation where it becomes increasingly difficult.

The special case of COPD

To understand sedentary behaviour against the context of COPD it is useful to briefly review qualitative studies on the condition. Research has found that individuals with COPD often struggle to perform daily activities, such as walking or housework, and they often feel too tired to perform them and need to rest in between (Paap et al. 2014). Barnett (2005) reported that individuals with COPD considered caring for the self (washing, dressing) as difficult but that trying to perform them was important to preserve a sense of normality and independence (Barnett 2005). Harris, Hayter, & Allender (2008) observed that whilst COPD restricted participants’ ability, they tried to remain physically active within their own boundaries and capabilities as this gave them a sense of accomplishment (p707)(Harris, Hayter, and Allender 2008) . Thorpe, Kumar and Johnston’s (Thorpe, Kumar, and Johnston 2014) identified barriers to physical activity (PA) among individuals with COPD and found that the self (including age and oxygen therapy), health (comorbidities, COPD and physical health), and the environment (personal surrounding, finances and access to transport) impeded individuals from engaging in PA. Dobbels et al., (2014) also found that for COPD patients PA meant doing small amounts of walking, household tasks, self-care (dressing, cleaning), walking up

stairs and doing leisure activities, and that patients took breaks, paced themselves, used aids or gave up performing some activities in order to cope with their symptoms.

There have also been more general studies on patients with COPD. Marx et al., (2016) found that lack of mobility affected participants' normal daily activities, which eventually led to social isolation, fewer life opportunities and reduced independence leaving them feeling 'at the mercy of the disease' and their attempts to keep a sense of 'normality' became impossible (p3). Pinnock et al (2011) interviewed COPD patients over a period of 18 months to understand their experience as the illness progressed (Pinnock et al. 2011). The interviews described accepting the disruptive nature of the illness as 'a way of life' forming a 'chaos narrative' whereby activities and routines became increasingly challenging, even if many patients also normalised their illness as 'a result of old age' (p7).

As highlighted by these studies, COPD adds another dimension to sedentary behaviour.

Individuals with COPD may find performing normal daily activities, such as chores and self-care, difficult, these routines becoming a major part of their PA and needing to be paced to accommodate symptoms. The progressive illness also manifests itself in a loss of a sense of normality and a sense of chaos or being at the illness' mercy.

Methods

Recruitment and participants

Our qualitative study was nested within a feasibility trial seeking to reduce sedentary behaviour in COPD patients, who had been hospitalised following an acute exacerbation (for the protocol see (Authors, 2016) The study was conducted at a hospital in the UK Midlands between February and June 2016. Patients had to be between 40 and 85 and have a confirmed

diagnosis of COPD, with this being their primary reason for their admission to hospital.

Patients were invited to take part during their hospital stay by a study researcher and randomised into two interventions and one control arm, both of the intervention arms focused on reducing sedentary behaviour. In total, 111 patients were approached, and a total of 35 patients consented to be part of the study. The majority of patients were female (15 of 33) and over the age of 60 (15). Three patients in the sample were on home oxygen.

We interviewed the 21 participants, who agreed to take part and were randomised into one of the two intervention arms. The participants were interviewed before the intervention was introduced.

The aim of the trial was to assess the feasibility and acceptability of using an educational booklet and a self-tracking device in individuals with COPD to reduce sedentary behaviour. The education group received written and verbal information about reducing sitting, such as top tips to sit less. The feedback and education groups were additionally given a self-tracking device to be worn around the waist (LUMO). The participants were also invited for two interviews, before and after the study. This article focuses on the first interviews.

Interviews

The interviews were conducted by a trained qualitative researcher at the hospital. An interview guide was developed collaboratively amongst the research team. The patients were asked to describe their daily lives, good days and bad days, physical activity, sitting and how they managed their COPD; they were also asked a free association question of what came to their mind when mentioned the word ‘sitting’ (Holloway and Jefferson 2000). Interviews lasted between 10 and 70 minutes, the average being 36 minutes.

The mean age of the participants was 67 years (ranging 52-81 years). Fifteen of the participants were female and six were male; five of the participants were on home oxygen (a proxy for the severity of their COPD). Table 1 details the characteristics of the participants.

Table 1: Characteristics of participants

Characteristic	Frequency
Gender	
Male	6
Female	15
Age (years)	
51-60	6
61-70	5
71+	10
Home oxygen use	
Yes	3
No	18

Analysis of Interviews

All interviews were audio-recorded and transcribed. Interviews were analysed thematically, and a constant comparative method was used to compare new codes with existing codes, and to investigate new codes against all data extracts (Glaser 2008; Glaser and Strauss 2009). Interview data was facilitated by Nvivo 10 qualitative software. Initial coding was done by AB, in conversation with BB and CC, a selection of interviews was inter-rater checked by BB and CC (Armstrong et al. 1997)(Denzin, N 1978), and the whole team discussed emerging

226 themes. Our analysis focused on ‘meanings’ patients associated with sitting (Wilkinson
227 1998).

228 The analysis followed the basic principles of thematic analysis as outlined by Braun & Clarke
229 (2006), beginning with open coding, which were then distilled into thematic codes. The main
230 focus in the first interviews were meanings and experiences of sitting, triggered by the free
231 association question and follow-up questions. Four recurring themes were identified: (i)
232 participants underlining they were not *just* sitting, (ii) experiencing sitting as *enabling* one to
233 do activities, (iii) experiencing sitting as *enjoyable* or (iv) experiencing sitting as a *sad* state,
234 being unable to do anything else and looking mournfully into past active life. The four
235 themes will be discussed in more detail in what follows.

236

237 **Results**

238 *Not just sitting*

239 When asked to describe their sedentary behaviour, most of our participants emphasised that
240 they did not *just* sit, instead they did something meaningful to them whilst sitting down;

241 I’m not one for sitting down, and I can’t sit down and do nothing and that’s why I
242 read, I can’t just sit, I have to be reading or something (Gladis, female)

243 I’m not sitting too long... When I’m in the conservatory, I’ll stand in there watching
244 the TV. Especially to give your legs a rest, or some exercise. I don’t like sitting all
245 day like some folks do (Rick, Male)

246 Sometimes I have a little nap on the chair, but I need that cause I’m up early, and I
247 don’t sleep very well cause my husband has osteitis, and he’s tossing and turning and

248 up at the toilet all night. So what sleep I can catch up on, I do when I've done my bits.
 249 It's not because I'm lazy, but I just have to catch up so that doesn't really count (Joyce,
 250 female)

251 In these excerpts, similar to McEwan et al (2016) study, our participants associated sitting
 252 with negative connotations, such as 'doing nothing' and being 'lazy.' These descriptions
 253 highlighted the stigma associated with sitting, as something opposed to being entrepreneurial
 254 and active. Our participants did not associate their own sitting with these labels, seeing
 255 themselves as different, thereby deflecting the moral blame associated with sitting as
 256 potentially a sign of laziness or being unhealthy. This tendency to deflect blame by
 257 downplaying activities associated with unhealthy lifestyle has been observed by others
 258 studying sedentary behaviour (Greenwood-Hickman, Renz, and Rosenberg 2016).

259

260 However, most importantly the theme of not just sitting underlined the fact that people with
 261 COPD saw themselves doing activities that were meaningful and important to them whilst
 262 sitting. Thus, for them the important point about their behaviour was not sitting itself but
 263 what they were doing whilst sitting, which may be overlooked if one focuses on negative
 264 health consequences of SB.

265

266 *Sitting as enabling*

267 Many of our participants explained that since their diagnosis of COPD daily activities had
 268 become difficult, but that completing daily tasks allowed them to live a normal life. These
 269 activities included household chores, such as cooking, and self-care routines, such as dressing
 270 or washing one's self. Our participants explained that in order to *enable* them to complete

271 such activities they needed to sit and catch their breath or rest for a few minutes to be able to
272 continue the task, including self-care and walking:

273 To shower I have a perch to use. When preparing dinner I have to sit, and my husband
274 dishes up whilst I get my breath back (Iris, female)

275 I can't do it all without a break. I won't go anywhere, unless I know there are some
276 benches for me to sit down and get my breath back. I get scared of doing stuff, if I
277 don't have a seat around me, because I have my limits (Fran, Female)

278 Participants discussed sitting in terms of enabling them to do activities with reference to
279 household chores. This was more common among female participants, which underlines the
280 gendered nature of housework.

281 Sometimes I just stay in and tinkle about doing my ironing in stages, perhaps iron a
282 shirt and sit down (Kate, female)

283 I try to keep myself active doing things: moving around all day, cleaning, walking,
284 fetching papers, picking up after my husband, washing. Just general house stuff, the
285 things you have to do cause nobody else is going to do it for you. Well not in my case
286 (Joyce, Female)

287

288 Men did not describe doing household chores but also associated sitting with pacing an
289 activity, such as walking a dog:

290 When I walk the dog, I don't rush I walk stop, slow down, walk, sit down, walk, sit I
291 just take my time. Sometimes I sit on a wall for a minute, then I carry on (Steve,
292 male).

293 Both female and male participants living alone and participants who lived with partners or
294 had carers discussed sitting to take a break to allow them to do things by themselves, giving
295 them a sense of independence:

296 I get myself dressed and showered, but it does take me a long time, and I have a seat
297 to help me. It's the only way I can do it myself. I step into the shower, and then I've
298 got this stool for when I come out, so I sit down and get my breathe back and wrap the
299 towel around me, gradually get myself dry. It takes me ages to get dressed, but I do it
300 myself (Kate, female)

301 I do sit a lot to help me, cause I mean my parents are too old to look after me. I've got
302 my little dog for company, but I'm on my own, so I've had to learn to do things by
303 myself (Helen, female)

304 Sometimes enabling sitting was referred to in more general terms as catching a breath to be
305 able to continue with usual activities:

306 I stop doing what I'm doing and basically just take a chill pill, sit and just try and take
307 some deep breaths (Helen, female)

308 I have to slow my own breathing down, so I do end up sitting down and resting a lot,
309 but I have to don't I (Valarie, female)

310 Thus, sitting for the participants with COPD was not associated with being physically
311 inactive but enabling them to be active by taking breaks in between activities from taking a
312 shower to walking the dogs. This type of pacing activities with breaks has been reported in
313 several studies on COPD patients (Dobbels et al. 2014; Pinnock et al. 2011). From the point
314 of view of efforts to reduce sedentary behaviour it is important to pay attention to this way of
315 approaching sitting among individuals with chronic diseases, associated with fatigue and

breathlessness, as any effort to reduce SB that interferes with pacing activities e.g. reduce rest periods could be experienced as disruptive. In this situation sedentary behaviour may even be a misnomer as it refers to resting to be able to perform activities. However, light physical activity is not the only or necessarily the most important issue at stake here. Being able to perform activities by resting at intervals also enabled our participants to continue taking care of themselves and their households, which helped them to live independently or with partners and gave them a sense of normality and accomplishment. Thus, sitting for these adults with chronic disease actually formed part of activity, enabling it; this activity being associated with benefits far beyond physical health, such as independence and sense of being able to live a normal life.

Sitting as enjoyable

Many of our participants also associated sitting with positive meanings; it was experienced as enjoyable in different ways.

Many participants associated sitting with relaxation, but with an emphasis on a need to recover or rest, similar to the previous theme of sitting as enabling. However, relaxing sitting could be described in elaborate terms of napping, reading the paper and snuggling with the dog, all of which were associated with the need to recharge and with pleasure or enjoyment:

In the afternoon I do get to the stage where I sleep for probably 20 minutes, maybe 40 minutes. I have a cat nap, I'm not asleep, I know what's going on. I'll lay on the seat and bring the chair up and the dog will jump up here and he'll go sleep on my armchair. I'll have a nod or might read the paper s and all you're doing is charging your batteries up (Steve, male).

339 Sitting was also often associated with simple enjoyable activities, such as watching soap
 340 operas, reading a book or going for lunch with friends:

341 I'm relaxed, totally relaxed. I don't get hecked up, it's safe. I quite enjoy sitting
 342 because it takes my mind of things (Kate, female)

343 Sitting to me is just sitting in my chair watching my telly for about 10-15 minutes. ...
 344 I do like watching my soaps (Joyce, female)

345 I go out for lunch with friends and that's sitting. I'll sit in the garden maybe with a
 346 book. I sit for the sake of it, sit for any reason really. I's not because I'm on my feet
 347 all day, I just enjoy it (Erica, female)

348 Others enjoyed sedentary activities that have been noted to be more mentally active or have
 349 cognitive benefits (refs), such as reading, and the participants also saw these activities as
 350 keeping their minds active:

351 I'm not really one for sitting down and doing nothing and that's why I read it's better
 352 than doing nothing but it's all I can do now really. Knit and sew, anything to keep my
 353 brain ticking really (Gladis, female)

354 I could sit with a good book for hours and I do frequently. And my painting I do that a
 355 lot and that's what I do most the time really. I find both really relaxing and I enjoy it
 356 but I can't just sit there and do nothing, I have to be doing something like that to keep
 357 my mind ticking you see, something to concentrate on (Gary, male)

358 A couple of the male participants discussed activities they enjoyed, noting that although they
 359 sat doing them, they were still being physically active, as also observed by Mcewan et al.,
 360 (2016):

I just go in the garage and build up dolls' houses and stuff. I'm standing up or sitting down, but I'm moving all the time. I'm not just sitting there unless it's something small and even then its exercise isn't it for the upper body (Steve, male)

I go fishing once a week and when it's nice I go every weekend too. I go on a couple of socials too with the guys who are part of the club, few cans of beer. It's not sitting, because it's exercise to fish, it can be hard work! (Rick, male)

The sedentary activities that our participants enjoyed have been categorised as active (reading, painting) or passive (watching television), social (having lunch with friends) or perhaps as incorporating light physical activity (fishing). Our participants, just like previous research in this area (Mcewan et al., 2016) saw these activities as having benefits in terms of maintaining cognitive ability or "mind ticking," which in the context of memory loss in old age can be framed as a health benefit. Similarly, socialising can be seen to have mental health benefits in terms of breaking isolation for everyone but, perhaps especially for older adults and those chronically ill. Also, hauling fishing equipment might be seen as light physical activity and therefore as having health benefits.

However, the question remains whether watching soap operas on television should account as having health benefits? Kikuchi et al., (2014) have categorised television watching as particularly detrimental or passive form of sitting in terms of being negatively associated with PA and mental health, as opposed to active forms of sitting, such as using a computer. These associations are interesting. However, for a communication scholar the distinctions between active and passive sitting vis a vis media use connects to a long-standing scholarship in this area filled with problems. In the early 20th century the Frankfurt School Marxists distinguished between popular music, such as jazz, seen as pacifying mass culture, as opposed to classical music enhancing critical thinking (Adorno, 2001).

385 Later scholarship criticised these distinctions for fairly obvious class, gender and race based
 386 biases (Huyssen, 1986).

387 So, the question remains to what extent these categories reflect old associations between
 388 television and passive low or mass culture, seen as requiring less mental processing, which
 389 have criticised for being shot through with classist, sexist and racist underpinnings.

390 Being reflective of the categories we use or are take for granted is one of the key goals of
 391 qualitative research that seeks to be open to new vistas and foreground neglected or silenced
 392 experiences and realities (Lather, 1993). Therefore, rather than classify our participants’
 393 television viewing merely as a barrier to reducing sedentary behaviour, we suggest taking our
 394 participants comments at face value and appreciate that it is intrinsically enjoyable. So, we
 395 contend that television watching in this instance need not be evaluated vis a vis health, as
 396 having potentially negative consequences or as potentially having positive health or mental
 397 health consequences, such as mood or sense of belonging (O’Neil & Dogra, 2015). However,
 398 rather than subsume all values under one master value (‘health’) we should be open to
 399 multiplicity of values that may be contradictory (Lather, 1993). So, our participants’
 400 experience of enjoying television watching should be considered just that, as articulating the
 401 intrinsic value of enjoyment in life, which does not necessarily have to have anything to do
 402 with health, even if it may. It may also be that the value of enjoyment of life is particularly
 403 pertinent in the context of chronic progressive disease, as will be discussed next.

404

405 ***Mournful sitting***

406 Some of our participants felt that their COPD had taken over or overwhelmed their lives. For
 407 these participants sitting became a way of life, which they did not associate with positive

408 meanings. They felt they 'had to' sit, as otherwise they would get too breathless or tired, and
 409 often mourned a previous, active and happy life:

410 What was a happy life at one time becomes a sad life because you're stuck in that
 411 bloody arm chair and your arm chair becomes your safe guard as it were (Patrick,
 412 male)

413 Some days I just dread getting off the settee because while I'm sat there I'm
 414 breathing fine. When I've gotta get up to do something, well I have to build me self-
 415 up for it (Valarie, female)

416 Many participants discussed feelings of resignation:

417 I sit and watch telly most of the time, cuz at the moment; I just can't be bothered,
 418 can't be bothered to get ready and can't be bothered to make an effort anymore. I've
 419 sort of given up. So I just sit and watch the world go by (Glenda, female)

420 My whole life has changed. Everything's just gone out the window. I've got nothing
 421 left (Valarie, female)

422 Some participants discussed feelings of isolation and a general resentment about their illness,
 423 which prevents them for living a fulfilled life:

424 It's a very lonely disease, because you can't keep up with friends, it's impossible.

425 Sometimes it's impossible to walk, it separates you from your family, because I hold
 426 them back and so you miss out on a great deal in life. It can become very solitary
 427 (Patrick, male)

428 All participants using home oxygen discussed how being on oxygen made them give up on
 429 many aspects of their life:

430 I'm lucky if I can get out my armchair and get to the loo and back... I can't cook
 431 cause it's difficult with an oxygen tubes hanging out your nose. What else can I do
 432 but sit in my armchair? Sometimes I sleep there at night, because it's near the loo and
 433 I worry about moving. Sitting is relief to me because, I can't fall over, I won't turn
 434 dizzy, and I'm just safe and resting. I don't particularly enjoy it, it's just a necessity
 435 (Ann, female)

436 These participants often experienced feelings of sadness and resignation associated with their
 437 COPD. They expressed fear of getting up and standing, and often talked about waiting to die,
 438 or it not mattering if they did. They had lost a lot of their independence and were unable to do
 439 things they used to do. As such the participants felt resigned to their COPD and sitting was
 440 the only thing they felt they could do, even if it was not perceived as positive. Whilst some
 441 of these participants also engaged in activities whilst sitting, for example watching television,
 442 they discussed these activities and sitting in more negative terms as opposed to the
 443 participants who spoke about enjoying those activities. Thus, for these participants sitting was
 444 not enjoyable, it was a predicament bestowed upon them by their illness, as they were not
 445 capable of doing other things or basically to enjoy life anymore. A significant feature of these
 446 interviews was a tendency to look back on good, active life, which is why we termed them
 447 mournful sitters, as their time horizon was focused on the past which they yearned for,
 448 feeling sad about not being able to take part in activities with family and friends and feeling
 449 they were a burden to them.

450 Studies on sedentary behaviour have observed that feeling tired or ill is a barrier to reducing
 451 SB among older adults (Chastin et al. 2014; Greenwood-Hickman, Renz, and Rosenberg
 452 2016) and those suffering from arthritis (Thomsen et al. 2015). Furthermore, being too ill
 453 and breathless was also a barrier for PA among COPD patients (Paap et al. 2014).

Furthermore, the experiences of loss and isolation (Ek & Ternestedt 2008), of limited opportunities, particularly when on oxygen (Marx et al 2016)) and being resigned to their condition (Ek and Ternestedt 2008) (Marx et al. 2016) reported in the literature on COPD patients, resonate with our findings.

The participants who associated their sitting with sadness and mournfulness were more severely ill than the others, all the three participants on oxygen discussed sitting in terms of sadness. One could simply say that being too ill is a barrier to reducing SB in this context, which is true. However, there is much more to our interviews with these people than this. In the context of the end stages of progressive chronic illness, such as COPD, framing sitting as a choice, which is often the presumption in behaviour change interventions, is not appropriate. Our participants did not experience their sitting as a choice, rather they underlined how they would rather be active but were confined to their chair due to breathlessness and inability to stand up, even sleeping on the chair during nights for fear of not being able to get up from bed. Further, the severely ill participants did not discuss sedentary activities, including television watching, in terms of enjoyment. Rather they considered them the only thing they could do, a predicament rather than pleasure. Against this we contend that the enjoyment attached to sedentary activities should be understood as an intrinsic value in and of itself, rather than as a derivative of health effects, either negative or positive. The importance of being able to enjoy life, or *joie de vivre*, comes into particularly stark relief in the context of progressive chronic disease, where patients increasingly become unable to enjoy life or consider their lives worth living.

Discussion

Health is increasingly understood to encompass not just physical health or the absence of disease but a broader state of “physical, mental and social well-being” (WHO, 2018). The recent discussions on sedentary behaviour and its potential beneficial effects embrace this broader definition and are moving research in this area to a more nuanced direction, away from the simplistic “move more and sit less” messages (Phoenix & Bell, 2018).

Quantitative and qualitative research on sedentary behaviour has reported that sedentary activities, such as socialising, media use and hobbies, can benefit the psychosocial wellbeing of older adults and be associated with better mood, sense of belonging and perceived as enjoyable (Greenwood-Hickman, Renz, and Rosenberg 2016; O’Neil & Dogra, 2015).

Research on barriers to reducing sedentary behaviour or increasing light physical activity include feeling ill, pain, infrastructural issues, such as transport, and enjoying sedentary activities (Chastin et al., 2014; Greenwood-Hickman, Renz, and Rosenberg 2016).

These are all valuable observations but keep coming back to the question of how to acknowledge benefits of sedentary activities and that enjoying these activities is one of the major barriers to reduce sedentary behaviour. Our study gives some answers to this question from the point of view of chronic disease, which highlights three issues: (i) individuals have different abilities to reduce sedentary behaviour, (ii) we should acknowledge the independent value of enjoying (sedentary) activities, rather than reduce them to health and (iii) mixed methods research in the context of trials runs into contradictions.

We will discuss these three points in what follows. But before proceeding we will encapsulate the findings of our trial to set the discussion in its context. The mixed methods feasibility trial had modest results in terms of recruitment and retention of participants.

501 However, the small group who did complete the intervention reduced their sedentary time.
502 The qualitative follow-up interviews revealed that participants stood up when it fitted with
503 the flow of their everyday activities but refused to stand up when the self-monitor prompted
504 them, if it interrupted activities perceived as important and enjoyable, such as watching an
505 interesting television programme or enjoying a catnap with pets. The most severely ill
506 participants, which in the initial interview associated sitting with sadness all dropped out of
507 the study citing ill health (Authors, 2018).

508 Against this background our findings confound the general premise underpinning behaviour
509 change interventions that reducing sedentary behaviour is always a choice, related to factors,
510 such as knowledge, motivations and preferences. It has been noted that pain and disability
511 can hinder ability to exercise and should not be downplayed (Williams et al, 2017), similarly
512 it has been noted that barriers to PA among COPD patients need addressing (Thorpe, Kumar,
513 and Johnston 2014). In our study participants who sat in order to enable activity highlight the
514 importance to consider the abilities and limits of participants. In the case of these participants,
515 attempts to reduce sedentary behaviour would need to respect participants' pacing and any
516 interventions in this respect would be well advised to consider resting between activities not
517 as a barrier but as a facilitator. Participants associating sitting with sadness is a case in point,
518 as they simply felt they could not stand more due to their illness. One of the inclusion criteria
519 for our trial was an assessment by a COPD specialist nurse that the patient was capable of
520 light PA, however, the life world experience of our participants indicated that they felt too ill,
521 too sad and struggled too much with everyday life and their emotions to engage with self-
522 monitoring or education. Based on our observations an altogether different intervention may
523 have been needed to improve the quality of life of these participants. Further, as also pointed
524 out by Williams et al (2017) vis a vis individuals with arthritis and spinal cord injury,
525 attempts to increase activity need to take care not to induce a sense of personal failure in

526 vulnerable participants, which may be especially an issue with individualistic interventions,
527 such as self-monitoring.

528 Further, the value of enjoying sedentary activities, or any activities for that matter, came to
529 particularly sharp relief in contrast with the experience of our participants who no longer
530 enjoyed activities, feeling they were simply forced to sit by their illness. So, the fairly
531 ordinary descriptions of enjoying watching soap operas or building doll's house illustrate the
532 importance of pleasure, of being able to enjoy life, which the most ill and resigned COPD
533 patients could no longer do. Therefore, rather than demonise activities that may seem the
534 wrong choice, detrimental to health or inducing physical and mental passivity, one may need
535 to appreciate their intrinsic value of offering enjoyment to any people but especially for those
536 with life-limiting, progressive illnesses, who may not have so many sources of pleasure
537 available to them. It may be that the idea of intruding upon these activities (one of the top tips
538 was to get up at regular intervals whilst watching television) may not be appropriate, and it
539 did not always work so well in our study. It could be that a better idea would be to start from
540 the opposite end and rather than disrupt pleasurable activities ask the participants what they
541 find pleasurable to find out a way to enhance pleasurable light activity. As has been noted
542 (Williams et al, 2017) the issue may be that taking care of health is framed as work or a chore
543 rather than as something that gives one enjoyment, which may miss one of the most potent
544 activity inducing motivations of having fun. The reverse of that in our study would be to
545 make sure that enjoyable activities are not framed as the problem.

546 The final observation of our study is that the mixed methods design within a randomised
547 controlled trial (RCT) is particularly challenging. RCTs are predicated on a research driven
548 goal, often articulating technological possibilities, needs of the healthcare system and
549 prevailing social ethos, such as changing behaviour to reduce sedentary time. In this
550 framework qualitative research is often delegated to secondary role (Hesse-Biber, 2010), to

find out processes that may enhance or impede participants' engagement with the intervention. This design goes against the basic principles of qualitative research, which is to generate rather than test hypotheses. In particular, the RCT design goes against the grain of interpretivist and post-structuralist or post-positivist approaches in qualitative research, which seek to foreground the standpoints of often silenced groups, such as patients, and to be willing to disrupt achieved wisdom and categories (Lather, 1993, Saukko, 2003). Whilst we have learnt a great deal both substantively and methodologically by engaging with a feasibility trial, the qualitative researchers also found it difficult to fit the findings into the format of reporting trial results, where viewpoints that do not support the premises of the trial always seem a bit of an embarrassment. It could be that a different design would be more feasible for a more egalitarian collaboration between qualitative and quantitative research. One possibility could be fronting interventions with a coproduction phase where the potential participants or users, including patients and staff, could co-create ideas to improve the problem at hand, such as the health and wellbeing of COPD patients.

573 **Decleration of interest**

574 No potential conflict of interest was reported by the authors.

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786 **Notes:**

787 **Abbreviations:** COPD, chronic obstructive pulmonary disease; SB, sedentary behaviour.