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Overselling Sit-Stand Desks: News Coverage of Workplace Sitting Guidelines

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ABSTRACT

The first quantitative, specific recommendations for sitting time at work were released in June 2015. This paper examines the implications of news coverage received by this position statement. Media reports about statement published May, 31–June, 29, 2015 were analyzed according to five recommendations and three caveats extracted from the guidelines' press release. Information about how physical activity was framed and mentions of conflicts of interest were recorded. Of 58 news reports, nine reported all five recommendations in the position paper. The topline recommendation (two hours daily of standing and light activity) was reported in all articles. Alleviating musculoskeletal discomfort by sitting less was not reported by 72% of reports. Physical activity was mentioned in 32 reports: 69% said physical activity did not attenuate the risks of prolonged sitting. No reports mentioned any potential conflicts of interest despite co-author links to sit-stand desk industry. These results demonstrate the need to balance public and market demands for public health guidance around sitting; and could encourage more accurate communication of research outcomes. The physical activity component of the “move more and sit less” message requires greater efforts to raise its public salience.

Introduction

Sedentary behavior, or prolonged sitting, as distinct from a lack of moderate-to-vigorous physical activity, is a risk factor for non-communicable diseases such as type 2 diabetes, heart disease, and premature mortality (Bauman, Chau, Ding, & Bennie, 2013). Recent updates to national physical activity guidelines (Australian Government Department of Health, 2014; Garber et al., 2011; UK Department of Health, 2011) provide generic recommendations that adults should limit prolonged sitting time and break up prolonged periods of sitting as much as possible (“move more, sit less”). These updated guidelines are based on extensive literature reviews and technical reports conducted by experts (Biddle et al., 2010; Bull & the Expert Working Groups, 2010; Brown, Bauman, Bull, & Burton, 2012; Garber et al., 2011; Kesäniemi, Riddoch, Reeder, Blair, & Sørensen, 2010; Okely et al., 2012), yet they do not provide specific guidance about the quantity or duration of sitting time that is harmful to health.

On June 1, 2015, Public Health England and the Active Working Community Interest Company (CIC), UK, released a position paper with specific, quantitative guidance about the amount of time adults should spend sitting and moving at work (Buckley et al., 2015). Hailed as a first, it recommended that workers in mainly desk-based jobs should aim to stand up and move around frequently throughout the workday, starting at 2 h/day and building up to 4 h/day of non-sitting time. The authors cited caveats around the limited quality of evidence informing their recommendations and declared that these were meant to stimulate discussion and awareness and “provide primary guidance.”

The authors originally state they were “invited” by a UK government public health agency (Public Health England) and Active Working CIC, a UK community interest company, to produce the report (Buckley et al., 2015). The word “invite” does not appear in revised versions of the statement (published June 30 and November 1; British Journal of Sports Medicine, 2015). In the original “online first” versions dated June 1 and 17, links between Active Working CIC and the Furniture Industry Research Association (FIRA) are not disclosed, nor that co-author Gavin Bradley was “100% owner of a website that sells sit-stand work products called ‘Sit-Stand Trading Limited’” and a director of Active Working CIC, UK Ltd. The changes to the statement suggest the journal that published the guidelines, the British Journal of Sports Medicine, was keen to ensure a clear distinction between guidelines originating from, or influenced by industry-linked sources and those based solely on research evidence and independent expert consensus.

These industry connections to companies selling sit-stand desks pose potential conflicts of interest in the commissioning and development of the guidelines and should be fully disclosed *ab initio*. Financial conflicts could lead to bias in the interpretation of the evidence underpinning these recommendations (Lesser, Ebbeling, Goozner, Wypij, & Ludwig, 2007; Lexchin, Bero, Djulbegovic, & Clark, 2003). Industry involvement in research is common and it is essential that these connections are transparent and disclosed: industry groups may seek to influence perceptions of health issues by funding, publishing, and disseminating research that supports their stance (Bero, 2005); and they may create community or expert groups that

act as direct or indirect third-party advocates for their positions and communicate messages ultimately supporting their business interests (Mindell, Reynolds, Cohen, & McKee, 2012).

It is important to examine how this guidance for sitting/standing in office workers was reported by media outlets. Media reports wield significant influence on people's knowledge, attitudes, and subsequent health behaviors (Hayes et al., 2007). The community, and many professionals are more likely to be exposed to news media coverage of health research than they are to read original research studies or health agency prepared content. Health-focused news media makes up a significant portion of all news media content (Pew Research Center: Journalism and Media Staff, 2009). As this content is increasingly read and sought through online channels, analysis must also include digital content. In the US, 37% of online adults say "health and medicine" is among the topics they find most interesting (Kennedy & Funk, 2015). Ensuring high quality health research reporting will enhance health literacy and aid the public in adopting appropriate health advice. Moreover, news reports highlight some aspects of reality and neglect others in ways which promote "a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation" (Entman, 1993: 52). Analysing news coverage of health issues can reveal frames and counter frames advanced by competing interests (Elliot & Chapman, 2000).

The accuracy of news coverage of health issues is heavily influenced by the content of the original media release. Inaccuracies can quickly become "fact", perpetuated by media reporting (MacKenzie & Freeman, 2010). It is easy to blame journalists and media outlets for sensationalist or overstated reporting of health research, but often the original, researcher approved, media release is either missing key limitations of the research or contains overinflated conclusions (Sumner et al., 2014). Examining the content of the original press release can be useful in understanding the way in which a health news story is subsequently reported.

This study examines the quality of news coverage given to the Buckley et al. position statement about sitting at work, including how the recommendations were reported, the extent to which caveats were mentioned, and how physical activity was portrayed as part of the "move more and sit less" public health message. We also examine whether potential conflicts of interest are mentioned in coverage of the Buckley et al. statement. The implications of this position statement and the associated media coverage are discussed in relation to physical activity discourse and subsequent public health policy.

Methods

Search strategy

We searched Factiva (www.factiva.com) and Google News (<http://news.google.com>) for stories about the position statement over the period spanning May 31 and June 29, 2015 (one day before and four weeks after the press release). The search strategy consisted of searching for articles featuring one or more of the authors of the position paper in conjunction with the term "sit." The Factiva search was limited to newspapers with duplications (print or digital) removed. The Google News search

Table 1. Inter-rater agreement for whether recommendations and caveats were fully, partially, or not reported using 10% of sample ($n = 7$ items).

Recommendations	Agreement		
	n	%	Kappa
1. Two hours daily of standing and light activity (light walking) during working hours, eventually progressing to a total of four hours for all office workers whose jobs are predominantly desk based	5	71.4	*
2. Regularly breaking up seated based work with standing based work, with the use of adjustable sit-stand desks/work stations	4	57.1	0.344
3. Avoidance of prolonged static standing, which may be as harmful as prolonged sitting	6	85.7	*
4. Altering posture/light walking to alleviate possible musculoskeletal pain and fatigue as part of the adaptive process	7	100.0	^
5. As well as encouraging staff to embrace other healthy behaviors, such as cutting down on drinking and smoking, eating a nutritious diet, and alleviating stress, employers should also warn their staff about the potential dangers of too much time spent sitting down either at work or at home	7	100.0	^
Caveats	Agreement		
	n	%	Kappa
6. Recommendations based on the current evidence	6	85.7	0.588
7. The authors acknowledge that much of the evidence they draw on for their recommendations is based on observational and retrospective studies, which make it difficult to prove direct cause and effect	7	100.0	^
8. While longer term intervention studies are required, the level of consistent evidence accumulated to date, and the public health context of rising chronic diseases, suggest initial guidelines are justified	7	100.0	^

* Kappa could not be calculated as one rater coded all items the same (i.e., variable is a constant).

^ Kappa could not be calculated as both raters coded all items the same (100% agreement).

looked for online news stories and did not include blogs; separate searches were run for each author and "sit" individually.

Headlines of all news articles resulting from the two searches were scanned for acceptability and only articles specifically related to the expert statement were included in the analysis. Where there were exact duplicates, only one article was retained and where similar articles resulted from both searches, they were retained due to the different nature of print and online news. Eligible news articles were downloaded. All articles were read and coded by the second author, and 10% of articles ($n = 7$) were randomly selected and coded by the first author in order to determine inter-rater agreement (See Table 1). There was 100% agreement for 4 out of 8 recommendations and caveats coded, with the 57% to 86% agreement for the remaining items. Final decisions for discordant coding was reached through discussion between research team members.

News story coding

Journalists often rely on media releases when writing news stories (Schwitzer, 2014; Stryker, 2002; Sumner et al., 2014). In this study, we used the press release (BMJ Press and Publicity, 2015) produced by the British Journal of Sports Medicine, which published the paper, as the basis for our analysis. From the press release, we

Table 2. Recommendations and caveats presented in the Buckley et al. position paper press release and the degree to which each was reported in news articles between May 31 and June 30, 2015. (N = 58 articles).

Recommendations	Fully reported		Partially reported		Not reported	
	n	%	n	%	n	%
1. Two hours daily of standing and light activity (light walking) during working hours, eventually progressing to a total of four hours for all office workers whose jobs are predominantly desk based	45	77.6	13	22.4	0	0.0
2. Regularly breaking up seated based work with standing based work, with the use of adjustable sit-stand desks/work stations	28	48.3	8	13.8	22	37.9
3. Avoidance of prolonged static standing, which may be as harmful as prolonged sitting	12	20.7	6	10.3	40	69.0
4. Altering posture/light walking to alleviate possible musculoskeletal pain and fatigue as part of the adaptive process	9	15.5	7	12.1	42	72.4
5. As well as encouraging staff to embrace other healthy behaviors, such as cutting down on drinking and smoking, eating a nutritious diet, and alleviating stress, employers should also warn their staff about the potential dangers of too much time spent sitting down either at work or at home	10	17.2	4	6.9	44	75.9

Caveats	Yes		No	
	n	%	n	%
1. Recommendations based on the current evidence	10	17.2	48	82.8
2. The authors acknowledge that much of the evidence they draw on for their recommendations is based on observational and retrospective studies, which make it difficult to prove direct cause and effect	2	3.4	56	96.6
3. While longer term intervention studies are required, the level of consistent evidence accumulated to date, and the public health context of rising chronic diseases, suggest initial guidelines are justified	7	12.1	51	87.9

extracted five recommendations about sitting less and moving more at work, as well as three caveats underlining these recommendations (see Table 2). Reference to each of the five recommendations was coded as “fully”, “partially” or “not” reported; and each recommendation was deconstructed and the components reported were recorded. Mentions of each of the three caveats were coded as either “yes” or “no.” Any acknowledgement of potential conflicts of interest and comments from other experts in the field were recorded, as well as other general comments, including physical activity related comments.

Results

We found 58 newspaper articles about this position statement (Figure 1); and 63.8% (n = 37) were published exclusively online. Three articles (5.2%) identified by Factiva were also found by Google News.

Coverage of recommendations and caveats

Of 58 articles, nine (15.5%) reported all five recommendations cited in the position paper (fully or partially), and 0 (0%), 15 (25.9%), 18 (31.0%), and 16 (27.6%) articles reported four, three, two and one recommendation(s), respectively (Table 2). All

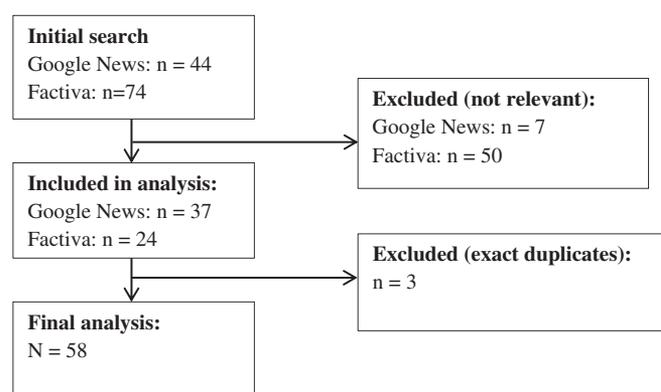


Figure 1. Flowchart for identification of relevant news items.

articles reported some or all of the first recommendation (i.e., two hours daily of standing and light activity (light walking) during working hours, eventually progressing to a total of four hours of non-sitting behavior for all office workers whose jobs are predominantly desk based). All of the 13 (22%) partial reports of the first recommendation focused on standing 2–4 h/day only and did not mention light activity or walking. Twenty two (38%) articles did not report the second recommendation at all (i.e., regularly breaking up seated based work with standing based work, with the use of adjustable sit-stand desks/work stations), while eight (14%) reported the recommendation partially and only mentioned using sit-stand desks at work, overlooking the notion of regularly interrupting or breaking up seated work with standing. Forty (69%) articles did not report the third recommendation at all (i.e., avoidance of prolonged static standing, which may be as harmful as prolonged sitting). All partial reporting of this recommendation (n = 6 articles) only reported the need to avoid prolonged static standing and omitted that prolonged standing could be as harmful as prolonged sitting. Recommendation 4 (i.e., altering posture/light walking to alleviate possible musculoskeletal pain and fatigue as part of the adaptive process) and Recommendation 5 (i.e., as well as encouraging staff to embrace other healthy behaviors, such as reducing drinking and smoking, eating a healthy diet, and alleviating stress, employers should also warn their staff about the potential dangers of too much time spent sitting down either at work or at home) were not reported in three quarters of articles.

Forty-four articles (76%) did not mention any of the caveats provided, while five and nine articles mentioned two and one caveat(s), respectively. None of the articles reported all three caveats. Of the five articles that reported two caveats, all mentioned the third limitation that longer intervention studies are needed but based on the evidence available at the time of writing, the authors felt the initial quantitative guidelines are acceptable. The first caveat, that these recommendations were based on the current evidence, was reported by 10 (18%) articles but not further elaborated through reporting of the other two limitations, which acknowledged the weaknesses of the evidence base at the time of writing (Caveat 2) and stated the need for more longer term intervention studies (Caveat 3) (see Table 2).

Only two articles reported all five recommendations and the maximum two out of three caveats. One article was written by position paper co-author Prof. David Dunstan (Dunstan, 2015) and appeared in *The Conversation* (theconversation.com) a

not-for-profit online news publication featuring content by academics and researchers. The other article appeared in *The New Zealand Herald* (nzherald.co.nz) a daily newspaper published in Auckland, New Zealand, and was a reproduction of the article which originally appeared in *The Conversation*.

There was no mention of conflicts of interest in any of the media reports reviewed. However, the original “online first” version of the article (Buckley et al., 2015) and the press release from the British Journal of Sports Medicine did not include statements about funding or competing interests. The press release current at the time of this study did not include author names which would slow down efforts to identify competing interests (BMJ Press and Publicity, 2015). Only subsequent versions of the article (versions 2, 3, and 4) (British Journal of Sports Medicine, 2015) include corrections disclosing competing interests and funding.

Physical activity commentary

Thirty-two out of 58 news articles included comments about physical activity (Table 3). Two frames dominated the physical activity commentary: first, no matter how much physical activity (i.e., of moderate-to-vigorous intensity, or purposeful exercise) one does, it does not compensate for the harms of prolonged sitting; and second, not enough people meet physical activity recommendations, so reducing sitting or increasing standing is a more modest alternative. Only two articles featured expert comments reminding readers of the importance of being both physically active and less sedentary.

Discussion

Quality and implications of news coverage of position statement

This study examines the quality and implications of news coverage of the position statement that provided the first quantitative recommendations for reducing sitting time at work. While a key goal of including two hours of standing in the working day was

Table 3. Physical activity frames identified in newspaper articles reporting on first quantitative recommendations for reducing sitting time at work. ($N = 32$ articles).

Frame (n, %)	Example
Being physically active cannot mitigate the health risks of prolonged sitting, no matter how much you exercise (n = 22, 68.8%)	<i>The experts note they're not talking about the usual exhortation to exercise more, as some recent studies have shown people who exercise regularly may not be getting much benefit from it if they spend the rest of their day rooted to a chair in front of a desk. Even better, individuals should be exercising moderately for 150 min/week, but so few people are meeting this goal that the panel ... instead offered the more modest goal of simply getting people up out of their seats for a few hours.</i>
Not enough people meet physical activity guidelines, reducing prolonged sitting/promoting standing is an alternative (n = 5, 15.6%)	<i>It is important that people know that improving health is not only about sitting less at work, but also about exercising during other times of the day.</i>
People should be physically active and sit less for health benefits (n = 2, 6.3%)	

carried by three quarters of the media reports, the overall quality of reporting of the Buckley et al. position statement was less than ideal. We observed a pattern of reporting where the sit-stand aspects of recommendations appeared to be the most newsworthy and the recommendation of light-intensity activity less so. Potential harms of prolonged standing were largely not reported; and neither was the guidance related to altering posture and light walking to alleviate possible musculoskeletal discomfort while adapting to sitting less at work. Other health behaviors relevant to promoting better health in employees outlined in the fifth recommendation were also largely ignored.

The quality of a scientific journal press release is associated with the content of subsequent newspaper stories (Schwartz, Woloshin, Andrews, & Stukel, 2012; Woloshin & Schwartz, 2002). It was encouraging to see indicators of quality present in the press release associated with this position statement produced by the publishing medical journal (e.g., limitations of the research informing the recommendations, potential risks and harms of prolonged standing). Nonetheless, our study shows that many media reports omitted these technical details from the press release. It is likely that the Buckley et al. position statement put forth too many recommendations and caveats and this constrained journalists' ability to report them comprehensively (Conley & Lamb, 2006). It is also potentially confusing for readers that there are four versions of this paper available online from the publishing journal, three versions with corrected content (Buckley et al., 2015). It is unlikely that journalists, researchers, or practitioners would revisit a journal to check for corrections and so any updated content since the “online first” publication is probably not going to be seen nor communicated.

One way to improve quality of reporting is that researchers could be more proactive and disseminate their research themselves through news publications and other online news portals. This will assist in ensuring the full scope of the research and its limitations are reported. In this study, we found only one news article reported all the recommendations and most of the caveats and this was written by position paper co-author Dunstan for *The Conversation*. It is possible that not all news articles covering this position statement was captured by our search strategy, particularly very short articles that did not mention the authors' names nor the journal. However, the present search strategy was decided following preliminary testing and deemed optimal.

Nonetheless, our findings are limited by the mixed inter-coder agreement for determining the full or partial reporting of the different recommendations and caveats. In particular, the recommendation to regularly breaking up seated based work with standing based work, with the use of adjustable sit-stand desks/work stations, showed poor inter-coder agreement and should be viewed with caution. Future content analyses with small samples of articles should double code at least 20% of the sample to better determine inter-coder agreement.

Potential influence of commercial interests

On the one hand, it may be that the advice to work standing up is the most unexpected aspect and so satisfies the news value of novelty, hence the greater attention given to sitting less/standing more at work and using sit-stand desks; on the other hand, the

FIRA, which groups office furniture and sit-stand desk suppliers and dealers, are official supporters of the Active Working CIC, one of the groups which commissioned this position statement, raising potential conflicts of interest for consideration. We found no mentions of any potential conflicts of interest in the news reports examined, probably due to the lack of potential conflicts disclosed in the original consensus statement and associated press release. It was only in subsequent revised versions of the consensus statement (June 17 and 30) that co-author Bradley's competing interests and disclosures were added (British Journal of Sports Medicine, 2015). News stories published later in June could have included the updated conflicts of interest information, but this was not observed. The revisions also note that while Public Health England made a financial contribution this did not constitute an endorsement "nor an official opinion of Public Health England".

The potential for bias within the sitting/standing guidelines was not disclosed in the original "online first" position statement, the press release, or in any of the news media reporting. The joint release of these guidelines with Public Health England, imbues the position statement with public health authority, but the authors' initial failure to declare their potential conflicts of interest obfuscates their commercial interests in promoting sitting/standing time recommendations for office workers (Bero, 2005; Mindell et al., 2012) and reduces the scientific independence of these recommendations.

Is this guidance about sitting at work premature?

The feasibility of Buckley and colleagues' recommendations appear to be low, based on the current evidence. Meta-analytic reviews, from intervention trials with highly educated and motivated volunteers, suggest that the effect size for interventions to reduce adult sedentary/sitting time range from minus 24 min/day for lifestyle interventions (Martin et al., 2015) to minus 77 min/8 h workday for interventions with activity permissive workstations (Neuhaus et al., 2014). This is far smaller an effect size than the population-wide recommendation of a minimum 2 h/workday suggested in the position statement. Additionally, expert reports conducted to inform the recent updates of national physical activity guidelines found insufficient evidence for quantitative guidance regarding the amount of daily sitting time that is harmful to health (Australian Government Department of Health, 2014; Garber et al., 2011; UK Department of Health, 2011). Buckley and colleagues state that their guidelines were produced in response to a perceived demand for specific quantitative recommendations about sitting at work. While they do acknowledge the rapidly changing nature of the evidence and state that these recommendations are only a starting point with continual revision required as evidence grows, the reporting in newspapers show that the caveats underlying their guidelines were mostly omitted from newspaper reports. Research into communication of health benefits and risks shows that inconsistent health advice in the media may lead to public confusion and the perception that scientists are "always changing their minds" (Lupton & Chapman, 1995; Nagler, 2014). Subsequently, people may mistrust health recommendations and become less inclined to engage in healthy behaviors (Nagler, 2014). This position statement may have been

premature and ultimately may have led to confusion in the community and in workplaces with changing guidelines in the future.

Portrayal of physical activity in related news coverage

While 55% of articles included comments about health-enhancing physical activity, almost all of this commentary minimized the unique health benefits of moderate-to-vigorous physical activity. Two-thirds of these comments said engagement in physical activity did not matter for those who sat for prolonged periods, and 16% said promoting less sitting and more standing was a more realistic goal for population health in light of the low prevalence of adults meeting current physical activity guidelines (i.e., 150 min/week). These claims are contradicted by scientific evidence showing that the risks of adverse health outcomes associated with sedentary behavior may be ameliorated by high levels of physical activity: the risks are greatest for adults with high sitting time and low physical activity, and lowest for those with low sitting time and high physical activity (Pavey, Peeters, & Brown, 2015; Petersen, Bauman, & Tolstrup, 2016; Van der Ploeg, Chey, Korda, Banks, & Bauman, 2012). This media coverage demonstrates a tendency to view different intensity levels across the physical activity spectrum (sedentary–light–moderate–vigorous) as interchangeable (Ding, Gebel, Freeman, & Bauman, 2015), that one may simply sit less instead of doing regular exercise for health benefits. This misconception highlights an urgent need for physical activity advocates to reinforce the unique and substantial health benefits of moderate-to-vigorous physical activity because the "move more" part of the "move more and sit less" message is missing. Public health experts must promote both messages: adults should first engage in moderate-to-vigorous physical activity on most days of the week and then limit prolonged sitting time whenever possible.

Conclusions

This study demonstrates the importance for scientists to balance perceived public demands and media pressure for specific guidance around a health issue compared to the state of knowledge about that health issue. The scientific integrity of these guidelines is compromised by undisclosed commercial connections of one of the position statement's commissioning bodies. Competing interest disclosures appeared late, and were not present in the original press release. It is possible that the release of this specific guidance about sitting time at work is premature and could lead to confusion and lower engagement in the community as the guidelines change. The feasibility of real-world office workers achieving the minimum recommended 2 h/workday reduction in sitting time seems unlikely based on current intervention effects. This study shows that newspaper coverage of the first specific guidance about reducing prolonged sitting in office workers focused on the sitting/standing component of the recommendations with less attention given to the components related to light walking, harms of prolonged standing, and other health-related behaviors. The analysis provided in this paper could be used by sedentary behavior and physical activity researchers and advocates to better shape their communications and disseminate their work more accurately in the future. In particular, the physical activity ("move more") component of the "move more and sit less" message needs to be

more clearly communicated and positioned as a health priority. Competing interests of the authors of the guidelines should be declared in a timely fashion, particularly when it is acknowledged the guidelines have commercial implications.

Disclosure of potential conflicts of interest

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