Should we recommend people to stand more than sit at work?

Maggie Graf\textsuperscript{a}, Ralph Krieger\textsuperscript{a}, Thomas Läubli\textsuperscript{b}, Bernard Martin\textsuperscript{d}

\textsuperscript{a,b} Department of Labour, State Secretariat for Economic Affairs SECO, Bern, SWITZERLAND, \textsuperscript{c} Sensory-Motor Systems Laboratory, Swiss Federal Institute of Technology ETH, Zurich, SWITZERLAND, \textsuperscript{b} Department of Industrial and Operations Engineering, University of Michigan, Ann Arbor, USA

1. Background

Although it is generally known that long periods of standing are associated with discomfort, emphasis in ergonomic recommendations over the last decades has tended to be towards recommending people to sit less and little attention has been paid to the problem of prolonged standing at work. This is surprising, as standing at work is the most common physical risk in European workplaces according to the results of The European Working Conditions Survey 2010 (Parent-Thirion et al., 2012). This survey is carried out every five years by the European Foundation for the Improvement of Living and Working Conditions. In 2010 it covered 34 countries in Europe and almost 44'000 workers were interviewed face-to-face. The survey included questions on the amount of time spent standing at work, back pain and pain in the legs, which were analysed for this paper. The analysis was conducted using only the responses given by full-time employees – 27'403 in total – excluding self-employed people.

2. Frequency of standing at work

The survey shows that long periods of standing at work are very common, although this depends on the industry and also varies widely between countries, possibly due to industry structures. 46.4% of employees stand at work for more than three quarters of their working time (Figure 1). The most commonly affected industries are hotels and restaurants, agriculture, building and construction, retail, health services and manufacturing.

![Figure 1. Reported time spent standing at work of full-time employees in Europe.](image)

3. Relationship of standing at work with discomfort and pain

Long periods of standing at work were found to be associated with reports of working in tiring or painful postures (Pearson Chi-square 2192, P < .005), backache (Pearson Chi-square 288, P <.005) and of “muscular pains in the lower limbs” (Pearson Chi-square 1365, P < .005). Figures 2, 3 and 4 illustrate these relationships respectively. All three of these measures increase with time spent standing. Around one third of the workers who stand for more than \(\frac{3}{4}\) of the time report working in tiring or painful postures and this is more than twice as frequent as workers who stand for less of the time.
Figure 2. The proportion of full-time employees who say they work in painful or tiring postures (around 3/4 of the time or longer) as a function of time spent standing at work.

Figure 3. Frequency of reports of backache within the last 12 months according to time spent standing at work.

Figure 4. Frequency of reports of “muscular pain in the lower limbs” within the last 12 months according to time spent standing at work.
A significant interaction was found between age and both backache and “muscular pains in the lower limbs” (p<.005 for both interactions). Older workers report both types of pain more frequently than younger workers in all age groups, but the difference increases in the groups that stand for longer periods of time.

Figure 5. Frequency of “back pain” according to length of time standing at work and age.

![Chart showing frequency of back pain by age and time standing.]

Figure 6. Frequency of “muscular pains in lower limbs” according to length of time standing at work and age.

![Chart showing frequency of muscular pains by age and time standing.]

4. Conclusions
As prolonged sitting has also been suggested by some authors to be related to the development of back pain, the question of an appropriate balance between sitting and standing is essential for the work of practitioners attempting to reduce the risk of musculoskeletal disorders. The results show that standing ¼ to ½ of the working day seems to be optimal for full-time employees in regard to these health risks.

The questionnaire did not include any questions in regard to how much walking about the standing work involves: Such information may be crucial to the rate of tiring and the development of pain.
The interaction of age and standing duration on pain development indicates that older workers need to be given more frequent opportunities to sit than younger workers, when the work requires long periods of standing.

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References