Postural Changes in Office Environments – Do they really affect user performance?

Bernhard Schwartz\textsuperscript{1,3}, Schrempf Andreas\textsuperscript{1}, Probst Kathrin\textsuperscript{2}, Michael Haller\textsuperscript{2}

\textsuperscript{1}Department of Medical Engineering, University of Applied Sciences Upper Austria, Linz, AUSTRIA
\textsuperscript{2}Media Interactive Lab, University of Applied Sciences Upper Austria, Hagenberg, AUSTRIA
\textsuperscript{3}Department of Sport Science, University of Vienna, Vienna, AUSTRIA

\textbf{Introduction:} Movement on a regular basis is essential for a vital body and physical processes. However, the continuous increase in sedentary work over the last years resulted in a higher risk of hypertension, overweight, obesity and diabetes. One promising possibility to decrease the amount of sedentary time is the implementation of height-adjustable desks to enable postural changes between the sitting and standing posture. Due to fears and reservations against the usage of height-adjustable desks, especially with respect to loss of performance caused by postural changes, these desks are rarely used in common workspaces.

\textbf{Method:} In this work, we investigate the mental effects caused by the aforementioned postural changes in office environments. In a short- and long-term study we measure cognitive function, movement pattern, cardiac rhythm, physical activity and workload in laboratory conditions. As both studies are still ongoing, we report preliminary findings about the mental short-term effects.

\textbf{Results:} So far, 38 of 45 students (22.2 ± 1.9 years) have undergone a two-stage measuring routine in either sitting or alternating postures in a one-week interval between the stages. While we found no difference in concentration performance, reaction time and text editing speed, we observed a significant difference in self-reported workload for subjects working in alternating postures (p<0.05).

\textbf{Discussion:} Preliminary study results show that the concerns about a drop of performance caused by postural changes are baseless. Although postural changes may influence the performance perception of subjects, they do not affect their cognitive function. The complete results of the short-term study, which will be available early next year and therefore in time for the full paper deadline, will provide further insights about the cognitive changes.

\textbf{Keywords:} Sedentary work, office environment, postural changes, height-adjustable desks

\textbf{Biography:}

Bernhard Schwartz finished his Master Degree in Medical Engineering and is currently working on his PhD thesis in Sport Science at the University of Vienna in Austria. He is a research associate at the department of medical engineering at the University of Applied Sciences Upper Austria. In the course of this, he is leading two clinical studies concerning postural changes in office environments. His research interests include physical activity, biomechanics, ergonomics and performance diagnostics.