Can interventions for reducing sedentary behavior influence low back pain in office workers?

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Introduction: Sedentary behavior and low back pain are highly prevalent amongst the working-class population. Although their relation remains to be disputed, low back pain does increase whilst sitting over half a working day or when combined with awkward postures. Most sitting time is accumulated at work, making it the ideal, controlled setting for interventions to mediate behavioral change.

Purpose/Aim: To reduce sitting time and promote postural variability in sedentary office workers and hereby examining the effect on sedentary behavior and low back pain.

Materials and Methods: A single-blinded study was performed comparing three types of intervention. The 'individual' group (n= 10) received coaching including individual feedback on sedentary behavior, personal goal setting and follow-up calls. The 'organizational' group (n= 12) received social and environmental stimuli to interrupt sedentary behavior (nudging by managers, posters, and e-mails), whilst the control group (n= 14) received information regarding general health. Measurements were performed at baseline and after a ten-week intervention. Low back pain was assessed with the Oswestry Disability Index (ODI-2). Sedentary time and sit-stand transitions were measured using the ActivPal^{TM}. Descriptive data, within and between subject differences were analyzed.

Results: Sedentary time was significantly reduced within ($p= 0.004$) and between groups ($p= 0.024$), where the individual group sat significantly less compared to the organizational. A trend towards a significant interaction-effect of sedentary time and intervention group ($p= 0.068$) was found, although no difference for sit-stand transitions ($p= 0.309$). Likewise, no significant interaction-effect for the intervention group and ODI-2 total score ($p= 0.806$) was found.

Conclusion: The individual approach was most effective in reducing sedentary time, although it seemed insufficient to influence low back pain. Future research should focus not only on reducing sedentary time, but also on strategies to effectively promote sit-stand transitions and postural variability.

Keywords: low back pain, sedentary behavior, prevention