

INTERACTIONS OF BIOMECHANICS AND PSYCHOSOCIAL STRESSORS IN RELATION TO THE DEVELOPMENT OF MSDS IN THE MODERN OFFICE: THE 'PROOF' STUDY PROTOCOL

EIJCKELHOF B.H.W.^{1,2}, HUYSMANS M.A.^{1,2}, BLATTER B.M.^{2,3}, BRUNO J.L.⁴, JOHNSON P.W.⁵, VAN DER BEEK A.J.^{1,2}, VAN DIEËN J.H.⁶, DENNERLEIN J.T.⁴

¹ Department of Public and Occupational Health, EMGO Institute for Health and Care Research, VU University Medical Center, Amsterdam, The Netherlands - ² Body@Work, Research Center on Physical Activity, Work and Health TNO-VU/VUmc, The Netherlands - ³ TNO Quality of Life, Hoofddorp, The Netherlands - ⁴ Harvard School of Public Health, Department of Environmental Health, Boston, USA - ⁵ University of Washington, Seattle WA, USA - ⁶ Research Institute MOVE, Faculty of Human Movement Sciences, VU University Amsterdam, Amsterdam, The Netherlands.

Aims:

Until now, most research in computer workers focuses either on experimental studies measuring detailed biomechanics in the laboratory or on large scale epidemiological studies investigating exposure and the occurrence of symptoms using self-reports. Combining biomechanical exposure assessment with large scale epidemiology is important and challenging.

The aims of the present study are to investigate 1) whether biomechanical exposures and computer use differ in computer workers with different psychosocial profiles while measured at work, and 2) whether biomechanical exposures and psychosocial factors are related to an increased risk of upper extremity MSDs.

Methods:

In the PROOF (PRedicting Occupational biomechanics in OFFice workers) study 120 office workers will be categorized in one of four defined profiles of psychosocial work environment, based on the amount of "Reward" one receives at work and their reported level of "Overcommitment" (both collected through a questionnaire). Biomechanical exposures (i.e. forces on keyboard and mouse, postural dynamics, and EMG of Trapezius and wrist extensors) and computer usage will be continuously and synchronously measured for two hours during a workday at participants' own work station. These biomechanical factors will be compared across the four psychosocial profiles.

With these data a task-based exposure model will be developed to estimate the average and cumulative biomechanical exposures within different psychosocial work environments adjusted for individual factors. This model will be applied to a cohort of about 1000 office workers, of whom computer usage was assessed objectively and health outcome was self-reported in a two-year longitudinal study (PROMO). In this way, we will be able to relate biomechanical exposure to the development of MSDs measured in a large epidemiological study.

Results:

Data collection started in January 2010. No results are available yet.

Conclusion:

The obvious strength of this study is that we will be able to test for relationships between psychosocial factors and physical factors assumed to increase the biomechanical loads on the tissues, both measured in the field within the workers' own working environment. In addition, based on these measurements on 120 workers, relationships between the physical factors estimated from these biomechanical measurements and the incidence of upper extremity MSDs in larger population of office workers will be assessed. Potential weaknesses may be lack of representativeness with regard to the psychosocial status of the participants and their computer usage, due to the fact that they will be measured only once.

Keywords: Postures, physical exposure, computer work, psychosocial factors

