

Comparative analysis of headtilt and forward head position during laptop use between females with postural induced headache and healthy controls

Peer-reviewed author version

MINGELS, Sarah; van Etten, Ludo; Dankaerts, Wim; GRANITZER, Marita & THIJS, Herbert (2015) Comparative analysis of headtilt and forward head position during laptop use between females with postural induced headache and healthy controls. In: *European journal of epidemiology*, 30(8), p. 970-970.

DOI: 10.1007/s10654-015-0072-z

Handle: <http://hdl.handle.net/1942/26027>

Comparative analysis of head tilt and forward head position during laptop use between females with postural induced headache and healthy controls

Sarah Mingels^{a*}, Wim Dankaerts^b, Ludo van Etten^c, Herbert Thijs^d and Marita Granitzer^e

a. Rehabilitation Sciences and Physiotherapy, Faculty of Medicine and Life Sciences, Hasselt University, Martelarenlaan 42, B-3500, Hasselt, Belgium, sarah.mingels@uhasselt.be

b. Musculoskeletal Research Unit, Department of Rehabilitation Sciences, Faculty of Kinesiology and Rehabilitation Sciences, Leuven University, Oude Markt 13, B-3000, Leuven, Belgium, wim.dankaerts@faber.kuleuven.be

c. Department of Biometrics, Zuyd University, Nieuw Eyckholt 300, NL-6419, Heerlen, The Netherlands, ludo.vanetten@zuyd.nl

d. I-BioStat, Interuniversity Institute for Biostatistics and statistical Bioinformatics, Hasselt University, Martelarenlaan 42, B-3500, Hasselt, Belgium, herbert.thijs@uhasselt.be

e. REVAL Rehabilitation Research Centre, Biomedical Research Institute, Faculty of Medicine and Life Sciences, Hasselt University, Martelarenlaan 42, B-3500, Hasselt, Belgium, marita.granitzer@uhasselt.be

**Corresponding author: Hasselt University, Faculty of Medicine and Life Sciences, Agoralaan, B-3590, Diepenbeek, Belgium.*

Tel.: +32-11-268509

Email: sarah.mingels@uhasselt.be

ABSTRACT

Objectives. To compare head tilt, forward head posture, the ratio between forward head posture and maximum (manually induced) head protraction between a postural induced headache group and healthy controls. To explore the evolution trends of head tilt and forward head posture during a laptop task and comparing this evolution between the two groups. To evaluate the correlation between the evolution of head tilt and forward head posture.

Methods. Angles for maximum head protraction and retraction, head tilt and forward head posture of 12 female students with postural induced headache and 12 female healthy controls were calculated from digital pictures within a cross-sectional design (while neutral sitting and performing a laptop task).

Results. Significant differences were found in maximum head protraction and in the ratio of forward head posture to the maximum head protraction between groups. Within the headache group biphasic head tilt and forward head posture profiles were observed during the laptop task. These profiles differed significantly between groups and seemed to be negatively correlated within groups. Head tilt and forward head posture variances were larger in the headache group.

Conclusion. During sitting the headache group showed a larger maximum passive head protraction while the habitual forward head position however was further located from the end range position.

During the laptop task forward head posture and head tilt behaved biphasically with a more static forward head posture pattern and a more dynamic head tilt pattern in the headache group.

Keywords. Headache, forward head posture, head tilt, laptop