

## The effect of using a laptopstation compared to using a standard laptop PC on the cervical spine torque, perceived strain and productivity.

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### Summary

The objective of this study was to assess the effect of using a laptopstation and a laptop PC and how this difference in work set-up affected the mechanical load on the neck (C7-Th1 segment), the subjective evaluation of strain on the neck and productivity. 10 healthy male students at Umeå University, Sweden with an average of 10 years of PC work experience and an average of 18 months of laptop PC work experience participated in the study. For each research subject measurements were divided into two parts; sitting working using a laptop holder (Ergo-Q, BakkerElkhuizen), and sitting working at a conventional laptop PC. Each part took 4 hours and was scheduled on two consecutive days. Photography and biomechanical analysis was used to calculate the torque at neck. To examine comfort the Borg Scale was used and to assess performance a productivity score was calculated.

The results demonstrated a significant ( $P < 0.05$ ) difference between the two test conditions. Using the laptop holder resulted in a 32% decrease in mechanical load (torque) at the C7-Th1 level, a 21% greater comfort score and a 17% higher productivity score when compared with the test condition without laptop holder.

The authors concluded that the results of the study confirm the importance of adjustable work tools that recognize anthropometric differences and biomechanics to meet the needs of individual customers during continuous VDT work.



Figure 2. Test situation A



Figure 3. Test situation B

