

TASK PRECISION AND TASK PERFORMANCE DURING A LOW INTENSITY PINCHING TASK

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Task precision has been identified as a risk factor for work related upper extremity musculoskeletal disorders. A possible mechanism that relates task precision to these disorders is that task precision implies a more constrained task performance leading to more monotonous muscle use. In this study the effects of precision on task performance and the relative contribution of the fingers during a low intensity pinching task were investigated.

Ten healthy female subjects participated in the study. The experiment comprised nine trials (three precision levels combined with three force levels (5%, 10% and 20% F-max)) of intermittent isometric pinching with the thumb opposing the index finger and middle finger. The task performance was calculated as the mean absolute difference between measured force and target force (F-delta). The relative contributions of the index finger force and the middle finger force to the pinch force were calculated.

Results show that at higher force levels, the task performance was relatively more precise.

In the most precise condition the relative contribution to the force of the index finger was higher compared to the least precise condition. This effect was most apparent at the low force level (59%, 62% and 64% at low, middle and high precision). There was no main effect of force on the relative force contribution of the fingers.

The higher contribution of the index finger during the higher precision demands reflects a more constrained task performance, which is most pronounced at low intensities.