SEX DIFFERENCES IN MUSCULAR LOAD AMONG HOUSE PAINTERS PERFORMING IDENTICAL WORK TASKS

Objective The aim of the present study was to estimate possible differences in upper body muscular load between male and female house painters performing identical work tasks. Sex-related differences in muscular activity may help explain why female house painters, and females in general, have more musculoskeletal complaints and disorders than men do.

Methods In a laboratory-setting, 16 male and 16 female house painters performed nine standardised work tasks common to house painters. Unilateral EMG recordings were obtained from the supraspinatus muscle by intramuscular electrodes and from the trapezius-, extensor- and flexor carpi radialis muscles by surface electrodes. Maximum voluntary contractions were performed, and both relative muscular load in %EMGmax as well as exerted force in Newton were assessed. APDF curves were obtained for each subject, and load distributions were characterised by the 10th, 50th and 90th percentiles; sex differences were tested using a mixed model approach.

Results Women were exposed to a significantly (P = 0.05) higher relative muscular load than men in the supraspinatus and forearm muscles in all tasks. Men exerted significantly (P = 0.05) more absolute force in the trapezius muscle at the 50th percentile in all tasks, and in a single task also at the 10th percentile. The differences between men and women were independent of tasks.

Conclusion Female house painters had a higher relative muscular load than their male colleagues, even though the men exerted more absolute force compared to the women. The effects of a higher relative muscular load, accumulated over years of work, may in part explain why musculoskeletal complaints and disorders in the upper body occurs more frequently among female than male house painters.