

Reducing Perceived Musculoskeletal Discomfort in Office Employees through Anthropometric Computer Workstation Design

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ABSTRACT Numerous office employees who work with computer workstations endure various musculoskeletal discomforts every day. This study intends to reduce musculoskeletal discomfort caused by desktop computer workstations, which causes productivity losses and several medical costs. A survey was distributed to 42 participants who use desktop computer workstations for at least 6 hours per day. Specific anthropometric measurements were collected to design an optimized computer workstation. Ten respondents were randomly selected to participate in an electromyogram (EMG) experiment to determine muscular impulse differences between standard and optimized desktop computer workstations. The EMG results indicated that discomforts are pronounced in shoulder, neck, lower and upper back and hand-wrist regions. The risk assessment model showed that experiencing troubles in the neck ($p=0.022$), shoulder ($p=0.023$), and wrist/hands ($p=0.020$) within 12 months were the significant factors. ANOVA results proved that the optimized design of a computer workstation causes less muscular pressure on the muscles at each measured body region.