

Validation of Software-based Measures of Keystroke Durations with External USB-based Logger

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Computer-related musculoskeletal disorders (MSDs) are a major concern and software tools have been developed to explore whether there is an exposure-response relationship between the intensity of computer use and MSDs. Previous studies have shown that keystroke durations change as finger muscles fatigue, and detecting these early changes may be used to prevent MSDs. Software programs are used to measure keystroke durations and the accuracy of these programs may be influenced by Operating Systems (OS). Therefore, the performance of these OS-dependant software programs needs to be verified. A laboratory experiment was conducted to determine whether there were any differences in keystroke durations measured by a software program and those collected using external hardware (USB analyzer, gold standard). 12971 keystrokes were collected and the mean keystroke durations from the software program and USB analyzer were 85.07 ± 24.44 ms and 89.72 ± 19.50 ms respectively ($p < 0.05$). Given the underestimation of keystroke durations and the larger variation in the software collected data, the software-based data collection may be suitable for field studies. However, given the greater accuracy and lower variability with the external hardware, the USB Analyzer may be better suited for lab-based studies.

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