

ABSTRACT

Carpal Tunnel Syndrome (CTS) is one of the most common neuropathies which occurs due to repetitive activity of hand using non-neutral wrist posture whether in flexion, extension, or ulnar and radial. Even though this posture may be inevitable, however it should be confined in the ergonomic maximum range. Thus, it is necessary to develop the allowable of maximum deviation of wrist. Objective of this study is to determine the maximum range of wrist postures in such four motions with evaluating the muscle contraction at wrist. A case study applied is to type a manuscript using computer. Experimental study was conducted by using electromyograph to identify Maximum Voluntary Contraction (MVC) on Flexor Digitorum Superficialis (FDS) and Abductor Pollicis Brevis (APB), two of muscles which moves the finger and innervated by Median Nerve, the only nerve through Carpal Tunnel. Fourteen healthy university students (7 females, 7 males) participated in the study with age between 20 to 23. They fulfilled the requirements as study participants which are proficient in operating computers and had no evidence of CTS and wrist musculoskeletal disorders. The statistical analysis was conducted to test the hypothesis. Result of this study shows that as the angle inclination increases in both extension, flexion, ulnar, and radial wrists motion, the muscle contraction were increasing and typing performance which showed WPM were decreasing. Based on %MVC as well as statistical analysis, the suggested maximum wrist posture range is not greater than 30° extension, 20° flexion, 20° ulnar, and 10° radial, although the neutral posture of 0° was highly suggested. This guideline is proven to be valid for both male and female.

Keywords: Wrist posture, Typing, Electromyography, Flexor Digitorum Superficialis, Abductor Pollicis Brevis