

Abstract

According to the World Health Organization, stroke is the second leading cause of death globally (in 2019) making it a highly prevalent health concern. Up to 85% of stroke survivors suffer from motor-sensory impairment of the upper limbs immediately after the incident, ranging between 55-75% of survivors experience limitations to their function even 3 to 6 months later (Levin et al., 2009). Fugl-Meyer Assessment has been developed to examine motor function and balance impairments caused by hemiparesis due to cerebrovascular injury (Fugl-Meyer et al, 1975). The assessment includes examining motor function and balance, some sensational qualities, passive range of motion, and the occurrence of joint pain. Previous studies used 3D motion capture systems for stroke rehabilitation testing and were able to successfully classify affected individuals from healthy ones with Fugl-Meyer Assessment (Eichler et al., 2018).

The current study used a sample of 6 healthy subjects (n = 6). The subjects were asked to perform upper-body motor examination procedures taken from the Fugl-Meyer Assessment. The subjects performed 10 items on each limb from the volcanic movement group and one item from the coordination and speed group. Each participant wore 15 reflectors: 1-nose, 2- ears, 2 - shoulders, 2- elbows, 2-index fingers, 2 for each side of the wrist, and one for each knee.

The goal of this study is to record the normal motor movement of healthy subjects, and evaluate the fitness of the motion capture system for the Fugl Meyer Assessment. Each recorded item will be examined separately to estimate the average, variance, and standard deviation for all subjects depending on the factors determining successful performance such as range of motion and speed of motion. It is expected that the differences between subjects' scores will not be significant as all of them were identified as healthy.

Keywords: Stroke, rehabilitation, motion capture, upper limb mobility, Fugl-Meyer assessment

Sources:

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