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WORACHAT CHURDCHOMJAN : COMPARISON OF GAIT CHARACTERISTICS BETWEEN HEMIPLEGIC PATIENTS AND NORMAL SUBJECTS. THESIS ADVISORS : SURASAK SRISUK B.Sc. (PHYSIOTHERAPY), ROONGTIWA VACHALATHITI Ph.D. (PHYSIOTHERAPY) 137 p. ISBN 974-662-528-8

The purposes of this study were to compare gait characteristics between the affected and sound sides of hemiplegic patients, and between the right side of normal subjects and the affected side and the sound side of hemiplegic patients. Fifteen normal subjects and fifteen hemiplegic patients were recruited in this study. Age, weight and height were similar for both groups. Two dimensional videographic technique was used to measure gait characteristics during walking. The parameters were hip, knee and ankle angles in the sagittal plane; pelvic, hip and foot angles in the frontal plane; and temporodistance variables. Modified pressure switches were used to identify gait events. Twenty flat circular markers were attached to the left and right sides of the body. Subjects were asked to walk along a 10-meter walkway. Three trials of preferred speed walking were collected by two videocameras in the sagittal and frontal planes separately. Data were processed by personal computer with VideoBlaster card and PhotoStyler programme.

The results demonstrated statistically significant differences in the joint angles of ankle and foot at initial contact and midstance; knee and ankle at initial swing; and hip, knee and ankle at midswing; and temporodistance variables between the affected and sound sides ($p < 0.05$). Comparison between the right side of normal subject and the affected and sound sides of hemiplegic patients, showed some statistically significant differences in the joint angles ($p < 0.05$) and temporodistance variables ($p < 0.01$) between normal and hemiplegic subjects. Hemiplegic patients exhibited a variety of joint patterns during walking. The consistent differences between normal subjects and hemiplegic patients were temporodistance variables. Hemiplegic patients had significantly slower walking speed, less cadence, shorter stride length and longer duration of gait cycle time than normal subjects.

The results of this study provided quantitative data regarding the differences of gait characteristics between hemiplegic patients and normal subjects. The quantitative data of compensatory movement in hemiplegic patients can be applied as a guideline for gait rehabilitation. In addition, the gait analysis technique used in this study was reliable, simple and low cost. This technique, therefore, could be used as an efficient evaluation tool in clinics.