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Title	Gait asymmetry and foot regional analysis on spatiotemporal characteristics in stroke patients
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Abstract

Stroke is a neurological condition caused by damaged brain leading to the impairment of motor function, mental and perceptual disabilities. Gait asymmetry, less plantar pressure on one side of body, is a common disability in stroke patients. The purpose of this retrospective study was to assess the gait characteristics and spatiotemporal features in seven foot regions including hind foot, lateral midfoot, medial midfoot, lateral forefoot, medial forefoot, hallux and other toes. The data set of ten stroke patients was considered and analyzed. The finding indicated that stroke patients took longer time in double support phase and fewer time on single support phase on the affected side compared to healthy people. For spatiotemporal data, the cadence and swing time of affected side were significant higher when compared to non-affected side. Stance time of non-affected side was significant higher against to affected side. Higher symmetry indexes in all parameters underline a common characteristic that the asymmetric gait of the patients during walking. The contact area and contact time under the hind foot and lateral side of the foot region were higher. Peak plantar pressure of hind foot is greater than hallux. The results indicated that the stroke patients had a distinguishable character between affected and non-affected side in all gait parameters due to asymmetric walking. The findings of this study provided the useful information to develop more specific plan for gait rehabilitation to improve a gait of stroke patients.