World Academy of Science, Engineering and Technology
International Journal of Biomedical and Biological Engineering
Vol:8, No:02, 2014

Detection of Parkinsonian Freezing of Gait

Authors : Sang-Hoon Park, Yeji Ho, Gwang-Moon Eom

Abstract : Fast and accurate detection of Freezing of Gait (FOG) is desirable for appropriate application of cueing which has been shown to ameliorate FOG. Utilization of frequency spectrum of leg acceleration to derive the freeze index requires much calculation and it would lead to delayed cueing. We hypothesized that FOG can be reasonably detected from the time domain amplitude of foot acceleration. A time instant was recognized as FOG if the mean amplitude of the acceleration in the time window surrounding the time instant was in the specific FOG range. Parameters required in the FOG detection was optimized by simulated annealing. The suggested time domain methods showed performances comparable to those of frequency domain methods.

Keywords : freezing of gait, detection, Parkinson's disease, time-domain method
Conference Title : ICBBE 2014 : International Conference on Biomechanics and Biomedical Engineering
Conference Location : Kuala Lumpur, Malaysia
Conference Dates : February 13-14, 2014