

## Detection of Parkinsonian Freezing of Gait

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**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

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