

Tremor quantification and its measurements using shimmer

ABSTRACT

This study aimed to provide a quantitative assessment of parkinsonian tremor through the precise measurement of tremor among Parkinson patients while taking into consideration specific parameters including acceleration, velocity, and displacement. The parameters were obtained by using transducers. For this assessment, three-axis accelerometer and three axis gyroscopic transducers embed in one device called shimmer. In this present paper, sensitivity assessment was used to measure the severity of hand tremors in two positions; resting and postural. Besides, the researchers obtained rotational movement along with tremors' acceleration movements. The amplitude and frequency was taken from Parkinson patients' hand. Shimmer sensor showed excellent correspondence of amplitude and frequency measurement with rotational transducer. The frequency of the patient's hand tremor occurred between 1.594 Hz and 4.813 Hz. However, the accelerometer showed poorer correspondence compared to gyroscope measurement. At the end, gyroscope responses are more remarkable because of the low level of muscle activity required in the task for precise tremor measurements to appear in high sensitivity to this impairment tremor.

Keyword: Parkinson; Parkinsonian tremor; Shimmer