Tremor scores

Tremor scores are assessments or scales used by medical professionals to quantify and evaluate the severity of tremors in individuals. These scores help in diagnosing and monitoring conditions that involve tremors, such as essential tremors, Parkinson's disease, or other neurological disorders.

Clinical rating scales for tremors have significant limitations due to low resolution, high rater dependency, and lack of applicability in outpatient settings. Reliable, quantitative approaches for assessing tremor severity are warranted, especially evaluating treatment effects, e.g., of deep brain stimulation (DBS).

Common tremor scoring systems

Fahn-Tolosa-Marín Tremor Rating Scale (FTMTRS): This widely used scale assesses tremor severity in patients with Parkinson's disease. It evaluates tremors in various body parts, including the head, voice, upper limbs, and lower limbs. Each body part is scored separately to provide an overall assessment of tremor severity.

Essential Tremor Rating Assessment Scale (TETRAS): TETRAS is designed to assess essential tremor, a common neurological disorder characterized by postural and kinetic tremors. It evaluates tremor amplitude, frequency, and disability across multiple body parts.

Unified Parkinson's Disease Rating Scale (UPDRS): While UPDRS is a comprehensive scale used to assess various aspects of Parkinson's disease, including non-motor symptoms, it also includes a section for assessing tremor. This section evaluates the severity of rest and postural tremor in different body parts.

Bain and Findley's Clinical Tremor Rating Scale

Tremor Visual Analogue Scale (T-VAS)

Global Tremor Score: Some clinicians may use a simple global score to assess tremor severity, taking into account various factors, including amplitude, frequency, and impact on daily activities.

Washington Heights-Inwood Genetic Study of Essential Tremor Rating Scale

Tremor Research Group Essential Tremor Rating Assessment Scale

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see Tremor12

Van der Linden et al. aimed to investigate how different accelerometry metrics can objectively classify tremor amplitude of Essential Tremor (ET) and tremor in Parkinson's Disease (PD). They assessed 860 resting and postural tremor trials in 16 patients with ET and 25 patients with PD under different DBS settings. Clinical ratings were compared to different metrics, based on either spectral components in the tremorband or pure acceleration, derived from simultaneous triaxial accelerometry captured at the index finger and wrist. Nonlinear regression was applied to a training dataset to determine the relationship between accelerometry and clinical ratings, which was then evaluated in a holdout dataset. All of the investigated accelerometry metrics could predict clinical tremor ratings with a high concordance (>70%) and substantial interrater reliability (Cohen's weighted Kappa > 0.7) in out-of-sample data. Finger-worn accelerometry performed slightly better than wrist-worn accelerometry. They conclude that triaxial accelerometry reliably quantifies resting and postural tremor amplitude in ET and PD patients. A full release of the dataset and software allows for the implementation, development, training, and validation of novel methods [1].

Van der Linden et al.'s study represents a valuable contribution to the field of tremor assessment and monitoring using accelerometry. The results show promise in the use of accelerometry metrics for objectively classifying tremor amplitude. However, like any research, the study has limitations, and the practical implications and generalizability of their findings should be further explored and validated by the scientific community. The release of the dataset and software is a commendable step toward fostering collaboration and advancing the field of tremor research.

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van der Linden C, Berger T, Brandt GA, Strelow JN, Jergas H, Baldermann JC, Visser-Vandewalle V, Fink GR, Barbe MT, Petry-Schmelzer JN, Dembek TA. Accelerometric Classification of Resting and Postural Tremor Amplitude. Sensors (Basel). 2023 Oct 21;23(20):8621. doi: 10.3390/s23208621. PMID: 37896714.