Sensor-based objective assessment of motion disorders

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Summary

The problem of current research in the field of treatment and natural development of movement disorders in neurology and rehabilitation is the low reproducibility of clinical results due to high intra- and inter-individual variability. A possible solution is the use of low-energy biosensors with the aim of early diagnosis, continuous monitoring of therapy effect and early response to sudden deterioration. Long-term monitoring of an individual in the natural environment provides an alternative to current method of observation, which is limited to a single examination in unnatural conditions of medical facility. The advantage is the possibility of revealing hidden dependencies of measured quantities, objective view of functioning in common daily activities and subsequent optimalization of treatment. The combination of multiple parameters in real time allows more accurate modeling of human movement and its impairment in natural environment. It eliminates the influence of interpersonal interactions on the observed quantities and variability among evaluators, which ensures objective measurements. The reader will find a summary of current possibilities of physical activity recording, processing of obtained data, analysis using machine learning methods and current applications in clinical practice.