

Progress of telerehabilitation after application of machine learning for patients with injuries of the lower extremities

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Abstract

Objectives: The use of artificial intelligence (AI) has a major role in the implementation of telemedicine technology. The overarching theme of this paper is to discuss implementation of the telemedicine technology with machine learning algorithm for rehabilitation of patients with injuries of the lower extremities. Consecutive patients were recruited over a four-year period.

Methods: A total of 148 subjects with lower extremity injuries were enrolled in the study. 52 patients from the control group underwent traditional rehabilitation procedures for a 3-week period after injury. A total of 96 subjects were enrolled in the telerehabilitation group for a 3-week study period after injury and were trained with a set of exercises for home use. Home remote monitoring for the 96 test subjects included use of a Prototype device with Axis-sensor, temperature and pulse-oximetry sensors, that were fixed to the injured limb.

Results: During the telemonitoring, the physician controls the adequacy of execution of each stage of rehabilitation exercises and has the ability to adjust the load in real time depending on the functional state of the limb. The orthopedic surgeon during telerehabilitation took significantly less time to consult patients (1.9 minutes, SD:0.5) than the traditional rehabilitation (15.2 minutes, SD:2.7). Patient satisfaction was higher for the telerehabilitation with machine learning algorithm (78.3%, SD:12.6) than for the orthopedic surgeon's traditional rehabilitation (36.7%, SD:7.3).

Biography:

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