

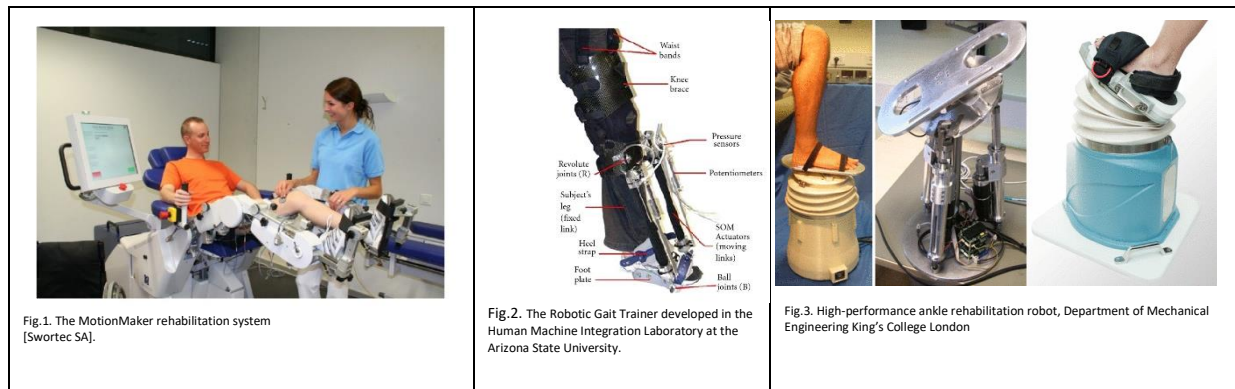
Aufgabenbeschreibung

Bachelorarbeit /Studienarbeit

Ankle Rehabilitation Robotic System: Literature Review and Challenges

The Institut für Medizingerätetechnik is investigating a literature review of ankle rehabilitation robotic systems (ARRS) and their challenges to evaluate their practicality either for clinical or home-care use. It is an undeniable fact that robotics has had a tremendous effect on medical practices, especially for the past decade. This triggered the emergence of Rehabilitation Robotics for lower limbs, among which numerous ARRS have been developed. These robots were designed in a way to mimic the abilities of an expert physiotherapist to apply rehabilitation. Yet, the practicality and feasibility of such devices raise questions that are still to be answered. This ambiguity limits the ARRS from being publicly known. In spite of the potential of these robotic devices in rehabilitation, few of them have been commercialized. Therefore, this project is focused on presenting a comprehensive review of the ARRS, and proposing a suggested ARRS, free of the existing drawbacks.

Below you will see some Rehabilitation Robotic Systems:



The aim of this project is as follows:

- to summarize the recent progress and research in the field of Ankle Rehabilitation Robotics, to overview the contemporary findings, and determine the actual state of the art.
- to classify several types of rehabilitation robots based on their architecture and design features that enabled them to present a certain number of movements and exercises.
- to collect technical data such as degrees of freedom, range of motion, forces, torques, etc.
- to analyze the most common challenges they are encountered.
- to highlight the drawbacks of existing systems and to suggest possible solutions.
- to propose a competitive intelligent robotic system for the rehabilitation of the ankle.

Supervision will be provided in English. Hence, the thesis should be written in English.

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