

# **Safety Issues Regarding Human Robot Interaction in Robotic Assisted Rehabilitation**

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## **Abstract**

Robotic rehabilitation, as pointed out in MAR-2020 and SRA-2020, is field of research that expands rapidly, slowly transforming into a necessity due to the rapid growth of the aging population which the medical system will be unable to handle.

Currently exist a consistent number of available devices and new ones are developed each year. However a clear standardization of robotic rehabilitation and assessment protocols along with supervised and non-supervised usage has not been defined yet, all this causing multiple issues in safety and medical effectiveness.

An overview of the current safety issues in the human robot interaction implemented in robotic rehabilitation systems for the upper limb is presented. The potential benefits of the existing approaches with respect to the post-stroke stage of the patient are illustrated. Medical protocols for the rehabilitation of post-stroke patients are proposed in correlation with the latest studies and trials. Using several human body anthropometric models and experimental data collected from a group of patients the motion types and amplitudes, limb segment lengths and weights are calculated. The experimental and calculated data represent a critical point in the preliminary development of new conceptual structures for robotic assisted rehabilitation to ensure an efficient and safe recovery of the post-stroke patients.

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