

Effectiveness of robot-assisted arm therapy in stroke rehabilitation: An overview of systematic reviews

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Abstract: BACKGROUND: Robot-assisted arm therapy (RAT) has been used mainly in stroke rehabilitation in the last 20 years with rising expectations and growing evidence summarized in systematic reviews (SRs). OBJECTIVE: The aim of this study is to provide an overview of SRs about the effectiveness, within the ICF domains, and safety of RAT in the rehabilitation of adult with stroke compared to other treatments. METHODS: The search strategy was conducted using search strings adapted explicitly for each database. A

screening base on title and abstract was realized to find all the potentially relevant studies. The methodological quality of the included SRs was assessed using AMSTAR-2. A pre-determined standardized form was used to realize the data extraction. RESULTS:18 SRs were included in this overview. Generally, positive effects from the RAT were found for motor function and muscle strength, whereas there is no agreement for muscle tone effects. No effect was found for pain, and only a SR reported the positive impact of RAT in daily living activity. CONCLUSION:RAT can be considered a valuable option to increase motor function and muscle strength after stroke. However, the poor quality of most of the included SRs could limit the certainty around the results.

Keywords: Stroke, arm rehabilitation, robot-assisted arm therapy, end-effector devices, exoskeleton devices

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