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Efficacy of Robots-Assisted Therapy in Patients With Stroke: A Meta-analysis Update
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Abstract

Background Robot-assisted therapy (RAT) could address an unmet need to relieve the strain on healthcare providers and intensify treatment in the context of an increasing stroke incidence. A comprehensive meta-analysis could provide firmer data about the topic by considering methodology limitations discovered in previous reviews and providing more rigorous evidence. Objective This meta-analysis study identifies RAT's efficacy for patients with stroke. Methods A systematic search of the 7 databases from January 10 to February 1, 2022, located relevant publications. We used the updated Cochrane risk-of-bias checklist for 52 trials to assess the methodologic quality of the included studies. The efficacy of RAT for patients with stroke was estimated using a pooled random-effects model in the Stata 16 software application. Results The final analysis included 2774 patients with stroke from 52 trials. In those patients, RAT was proven to improve quality of movement (mean difference, 0.15; 95% confidence interval, 0.03-0.28) and to reduce balance disturbances (mean difference, -1.28; 95% confidence interval, -2.48 to -0.09) and pain (standardized mean difference, -0.34; 95% confidence interval, -0.58 to -0.09). Conclusions Robot-assisted therapy seems to improve the quality of mobility and reduce balance disturbances and pain for patients with stroke. These findings will help develop advanced rehabilitation robots and could improve health outcomes by facilitating health services for healthcare providers and patients with stroke. © 2023 Wolters Kluwer Health, Inc. All rights reserved.

Author Keywords

meta-analysis; robot-assisted therapy (RAT); robot-enhanced procedures; stroke rehabilitation

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