

iCAHE JC Critical Appraisal Summary

Journal Club Details

Journal Club	AHRRTS 1
JC Facilitator	Keith Layton
JC Discipline	Physiotherapy

Clinical Scenario

What is the effect of robot-assisted motor therapy on gait or upper/lower limb function in patients post-stroke?

Review Question/PICO/PECO

P	patients post-stroke
I	robot-assisted motor therapy
C	traditional physiotherapy
O	gait; motor function of upper or lower limb

Article/Paper

Lo A, Guarino P, Richards L, et al (2010) 'Robot-assisted therapy for long term upper limb impairment after stroke' *N Engl J Med* 362: 1772-1783.

Please note: due to copyright regulations CAHE is unable to supply a copy of the critically appraised paper/article. If you are an employee of the South Australian government you can obtain a copy of articles from the [DOHSA librarian](#).

Article Methodology: Randomised Controlled Trial

Journal Club Meeting on: 20 June 2012



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Ques No.	Yes	Can't Tell	No	Comments
1	√			<p>Did the study ask a clearly focused question?</p> <p>Aim – To compare the effects of a robot-assisted upper extremity rehabilitation (using the MIT-Manus) with conventional rehabilitative techniques or usual care in veterans with chronic stroke</p> <p>Population – veterans from Veterans Affairs medical centers who were 18 years of age or older and had long term, moderate-to-severe motor impairment of an upper limb from a stroke that had occurred at least 6 months before the study</p> <p>Intervention</p> <ul style="list-style-type: none"> • Robot-assisted therapy: consisted of four modules-shoulder-elbow unit, anti-gravity unit, wrist unit and a grasp-hand unit; modules were used separately and in combination to perform task-oriented movements; training targeted isolated proximal, distal and integrated movements of the upper limb; robot provided assistance if patients were unable to initiate or completed a movement independently • Intensive comparison therapy: use of conventional rehabilitation techniques such as assisted stretching, shoulder stabilization activities, arm exercises, and functional reaching tasks • Usual care: medical management, clinic visits as needed, and in some cases rehabilitation services <p>Outcome measure used – Fugl-Meyer score was the primary outcome; Wolf Motor Function Test, Stroke Impact Scale as secondary outcomes</p>
2	√			<p>Was this a randomised controlled trial and was it appropriately so?</p> <p>The study used a randomised controlled trial design, which is appropriate to the objectives of the research.</p> <p>Is it worth continuing?</p> <p>Yes</p>
3	√			<p>Were participants appropriately allocated to intervention and control groups?</p> <p>Eligible participants were randomised to 1 of the 3 treatment groups, stratified by site.</p> <p>The baseline characteristics of the three groups were similar, except for the time from the index stroke to randomization. As such, further analyses was undertaken to determine if there is a relationship between the findings and this variable.</p>

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4	√		<p>Were participants, staff and study personnel ‘blind’ to participants study group?</p> <p>The participants and those who administered the therapy could not be blinded to treatment allocation but the evaluators who performed the outcome assessments were blinded to treatment assignment.</p>
5		√	<p>Were all of the participants who entered the trial accounted for at its conclusion?</p> <p>In the robot-assisted therapy, two participants were excluded from the analysis; four were excluded from the intensive comparison group and one from usual care group –due to lack of follow-up data.</p>
6	√		<p>Were the participants in all groups followed and data collected in the same way?</p> <p>Outcomes were measured and collected in the same way for all participants.</p>
7		√	<p>Did the study have enough participants to minimise the play of chance?</p> <p>Power calculation was done. Based on this, the study required a total of 158 participants---66 for robot therapy, 66 for intensive comparison group, and 26 for usual care.</p>
8			<p>How are the results presented and what is the main result?</p> <p>Results were presented using means, SDs and confidence intervals.</p> <p>Bottom line result</p> <ul style="list-style-type: none"> At 12 weeks, there was no significant difference in primary and secondary outcomes between robot therapy and intensive comparison therapy/usual care, except for Stroke Impact Scale (SIS). Significant improvements in SIS were found for robot therapy compared with usual care. At 36 weeks, robot therapy improved outcomes (Fugl-Meyer score and time on Wolf Motor Function Test) compared with usual care but not with intensive therapy.
9			<p>How precise are these results?</p> <p>Precision of results can be determined based on confidence intervals.</p> <p><i>* The confidence interval describes the uncertainty inherent in the effect estimate, and describes a range of values within which one can be reasonably sure that the true effect actually lies. If the confidence interval is relatively narrow (e.g. 0.70 to 0.80), the effect size is known precisely. If the interval is wider (e.g. 0.60 to 0.93) the uncertainty is greater, although there may still be enough precision to make decisions about the utility of the intervention. Intervals that are very wide (e.g. 0.50 to 1.10) indicate that we have little knowledge about the effect, and that further information is needed.</i></p> <p><i>*If a confidence interval crosses or includes zero (e.g. -0.23 – 3.28), the result is not statistically significant.</i></p>

10				<p>Were all important outcomes considered so the results can be applied?</p> <p>Journal club to answer</p>
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