

iCAHE JC Critical Appraisal Summary

Journal Club Details

Journal Club location	Hampstead Rehabilitation
JC Facilitator	Michael Snigg
JC Discipline	Multi-D

Background

How effective is electrical stimulation with treating weak upper-limb in ABI population. In addition we are especially interested in information in the following area: What are the characteristics (e.g. duration, frequency, environmental conditions, combined with functional tasks) for effective E-stim programs with upper-limb

Clinical Scenario

N/A

Review Question/PICO/PACO

- P:** TBI/ABI – subacute/ community
- I:** Upper Limb Electrical stimulation
- C:** No electrical stimulation
- O:** Function, duration, frequency

Article/Paper

Eraifej, J., Clark, W., France, B., Desando, S. and Moore, D., 2017. Effectiveness of upper limb functional electrical stimulation after stroke for the improvement of activities of daily living and motor function: a systematic review and meta-analysis. *Systematic reviews*, 6(1), p.40.

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: **Systematic Review**

Click [here](#) to access critical appraisal tool



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CONTACTS

www.unisa.edu.au/cahe
 iCAHE@unisa.edu.au
 Telephone: +61 8 830 22099
 Fax: +61 8 830 22853

University of South Australia
 GPO Box 2471
 Adelaide SA 5001
 Australia

CRICOS Provider Number
 00121B



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Ques No.	Yes	Can't Tell	No	Comments
1	✓			<p>Did the review address a clearly focused question?</p> <p>This systematic review aims to evaluate the effectiveness of post-stroke upper limb FES on ADL and motor outcomes.</p>
2	✓			<p>Did the authors look for the appropriate sort of papers?</p> <p>Inclusion criteria: population: patients >18 years diagnosed with ischaemic or haemorrhagic stroke. Intervention: intervention group receive transcutaneous FES applied to the peripheral nervous system of the upper limb defined as (a) applied to the skin externally and (b) during voluntary movement in addition to standard post-stroke rehabilitative therapy. Comparator: control groups receive standard post-stroke rehabilitative therapy alone, no between group differences other than the stimulation. Outcomes: ADL/motor outcomes recorded. Study design: RCTs and cross-over studies (only if randomised and controlled, such that first phase is equivalent to an RCT).</p> <p>Exclusion criteria: (1) previous FES therapy in intervention or control group. (2) Other type of electrical stimulation used in intervention or control group. No other restrictions were placed on patient age, sex, ethnicity, time since stroke, baseline functional ability, publication date or language.</p> <p>Is it worth continuing? YES</p>
3	✓			<p>Do you think the important, relevant studies were included?</p> <p>A systematic search of MEDLINE (Ovid), PsychINFO (Ovid), EMBASE (Ovid) and Cochrane Central Register of Controlled Trials databases from inception to 06/09/2015 was undertaken using a combination of free text and index terms for stroke, FES and upper limb. The following ongoing trial databases were also searched: International Standard Randomized Controlled Trials Number Registry, WHO International Clinical Trials Registry Platform and ClinicalTrials.gov. Citation checking was carried out on studies included in this review and existing systematic reviews to identify any further studies. Authors were contacted twice by email for original data where published study data was insufficient as to allow data analysis. Non-English language articles were translated where possible.</p>
4	✓			<p>Did the review's authors do enough to assess the quality of the included studies?</p> <p>The Cochrane Collaboration's Tool for Assessing Risk of Bias was applied to all included studies by two reviewers independently; overall risk of bias judgement made based on most frequently cited risk across the seven categories. Quality assessment was performed using GRADE (Grading of Recommendations Assessment, Development and Evaluation) criteria. Risk of bias and quality assessment information was considered in interpretation of findings.</p>
5	✓			<p>If the results of the review have been combined, was it reasonable to do so?</p> <p>The I² was reported as a measure of heterogeneity. The I² statistic describes the percentage of variation across studies that is due to heterogeneity rather than chance. Each measure was checked for heterogeneous studies before being included as part of the meta-analysis.</p>

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6			<p>What are the overall results of the reviews?</p> <p>Twenty studies were included. No significant benefit of FES was found for objective ADL measures reported in six studies (standardized mean difference (SMD) 0.64; 95% Confidence Interval (CI) [-0.02, 1.30]; total participants in FES group (n) = 67); combination of all ADL measures was not possible. Analysis of three studies where FES was initiated on average within 2 months post-stroke showed a significant benefit of FES on ADL (SMD 1.24; CI [0.46, 2.03]; n = 32). In three studies where FES was initiated more than 1 year after stroke, no significant ADL improvements were seen (SMD -0.10; CI [-0.59, 0.38], n = 35). Quality assessment using GRADE found very low quality evidence in all analyses due to heterogeneity, low participant numbers and lack of blinding. FES is a promising therapy which could play a part in future stroke rehabilitation. This review found a statistically significant benefit from FES applied within 2 months of stroke on the primary outcome of ADL. However, due to the very low (GRADE) quality evidence of these analyses, firm conclusions cannot be drawn about the effectiveness of FES or its optimum therapeutic window. Hence, there is a need for high quality large-scale randomized controlled trials of upper limb FES after stroke.</p>
7			<p>How precise are the results?</p> <p>P values and 95% Confidence intervals are reported.</p>
8	Journal Club to discuss		<p>Can the results be applied to the local population?</p> <p>CONTEXT ASSESSMENT (please refer to attached document)</p> <ul style="list-style-type: none"> - Infrastructure - Available workforce (? Need for substitute workforce?) - Patient characteristics - Training and upskilling, accreditation, recognition - Ready access to information sources - Legislative, financial & systems support - Health service system, referral processes and decision-makers - Communication - Best ways of presenting information to different end-users - Availability of relevant equipment - Cultural acceptability of recommendations - Others
9			<p>Were all important outcomes considered?</p>
10			<p>Are the benefits worth the harms and costs?</p>
11			<p>What do the study findings mean to practice (i.e. clinical practice, systems or processes)?</p>
12			<p>What are your next steps?</p> <p>ADOPT, CONTEXTUALISE, ADAPT</p> <p>And then (e.g. evaluate clinical practice against evidence-based recommendations; organise the next four journal club meetings around this topic to build the evidence base; organize training for staff, etc.)</p>
13			<p>What is required to implement these next steps?</p>

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