International Centre for Allied Health Evidence

University of South Australia

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iCAHE

A member of the Sansom Institute

*i*CAHE JC Critical Appraisal Summary

Journal Club Details

Journal Club location	**Hampstead BIU**
JC Facilitator	**Michael Snigg**
JC Discipline	**Occupational Therapy**

Question

The question was asked about the effectiveness of casting and specifically soft casting to improve spasticity and function with brain injured population. I know there was systematic review quite a few years ago but we were interested to know if there was any more recent articles on this topic.

Review Question/PICO/PACO

P: TBI/ABI – subacute/ community

I: Soft casting (or just casting if none specifically say soft) to improve spasticity and function in upper limb

C: No casting. Muscle exercises. Just engaging in daily tasks.

O: To have better understanding around what is current evidence supporting casting of upper limb with brain injured population

Article/Paper

N.A. Lannin, I. Novak, A. Cusick 2007, 'A systematic review of upper extremity casting for children and adults with central nervous system motor disorders',vol. 21, no. 11, pp. 963-976

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

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

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Adelaide SA 5001
Australia

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Ques No.	Yes	Can't Tell	No	Comments
1	✓			**Did the review address a clearly focused question?** To summarize evidence on the use of upper extremity casting designed to achieve reductions in contracture, tone, pain, function, oedema or spasticity in the elbow, wrist or hand of adults and children with neurological conditions
2	✓			**Did the authors look for the appropriate sort of papers?** The literature search was limited to published studies, full-text available in English and included the following electronic databases: MEDLINE (1956 through August 2006), CINAHL (1983 through August 2006), EMBASE (1980 to August 2006), Database of Reviews of Effectiveness (DARE), The Physiotherapy Evidence Database (PEDro), Cochrane Database of Systematic Reviews (2006), OTSeeker and Google Scholar. Reference lists of retrieved studies and review articles were also hand searched to identify sources. Relevant studies known to the investigators through previous research work were also screened. exp Cerebrovascular Accident OR exp Brain Injuries OR exp Cerebral Palsy OR exp Hemiplegia OR exp Craniocerebral Trauma OR exp Central Nervous System Diseases OR (stroke or tia or brain or cerebro* or cerebral*) OR (intracranial* or concussion* or confusion* or coma*) OR cerebral palsy or Little* disease or (spastic near diplegia*) or (spastic near quadriplegia*) AND Casts Surgical OR Cast* OR Plaster OR Orthos* OR Orthotic* OR Upper Extremity OR Arm OR Upper Limb OR Hand OR Finger OR Thumb OR Elbow OR Forearm **Is it worth continuing?** **YES**

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3	✓			**Do you think the important, relevant studies were included?** English language studies of the effects of casting that fulfilled the following criteria were included in the review: • Type of study: studies which generated level IV evidence or higher. • Type of intervention: studies that involved the administration of upper extremity casting programmes for children or adults following upper motor neuron damage. For the purpose of this review, casts were defined as any non-removable, external device made from plaster or casting tape applied with the intention of modifying the structural or functional characteristics of the neuromuscular system. • Types of subjects: studies that explicitly involved human subjects in which more than 50% of the participants were children or adults who had experienced a brain injury, cerebral palsy or a stroke and received a cast to the wrist, hand or elbow. • Types of outcome measures: studies that included a measure of functional hand use, joint range of motion (for contracture estimation), tone, spasticity, oedema, or pain. Studies were excluded from the review if: • diagnostic, prognostic or other study, • less than 50% of the casts were applied to the wrist, hand or elbow, • a second publication of the same study presented the same results.
4	✓			**Did the review's authors do enough to assess the quality of the included studies?** The methodological quality of included trials was assessed independently by three raters using the PEDro scale. The PEDro scale has established reliability and provides a score out of 10. The intention was to conduct a meta-analysis if there was sufficient clinical and statistical homogeneity.
5	✓			**If the results of the review have been combined, was it reasonable to do so?** Results were combined narratively due to lack of heterogeneity.
6				**What are the overall results of the reviews?** Thirty-one papers were retrieved and 23 studies appraised: three were randomized controlled trials and four were systematic reviews. Over three-quarters of the studies, excluding systematic reviews, were lower level evidence (n= 4 level V; n = 4 level IV; n =1 level III). Methodological quality of randomized controlled trials was high (PEDro 8, 8 and 9) and there were modest positive short-term outcomes for two trials, although they did not include no-stretch comparison conditions. Safety issues typically included pain or skin breakdown; two adverse events were not cast related. While theoretical rationales suggest upper limb casting should be effective there is insufficient high-quality evidence regarding impact or long-term effects to either support or abandon this practice. High variability in casting protocols indicates little consistency or consensus in practice. As maximum or low-load stretch are rationales for cast application, the absence of no-stretch conditions in existing trials is a major weakness in current evidence.
7				**How precise are the results?** 95% confidence intervals and P values for included studies were reported in narrative analysis however not otherwise analyzed.

8	Journal Club to discuss	**Can the results be applied to the local population?** **CONTEXT ASSESSMENT (please refer to attached document)** – *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		**Were all important outcomes considered?**
10		**Are the benefits worth the harms and costs?**
11		**What do the study findings mean to practice (i.e. clinical practice, systems or processes)?**
12		**What are your next steps?** ***ADOPT, CONTEXTUALISE, ADAPT*** **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.)**
13		**What is required to implement these next steps?**

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