Using Systematic review to make clinical decision

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Trusted evidence.
Informed decisions.
Better health.

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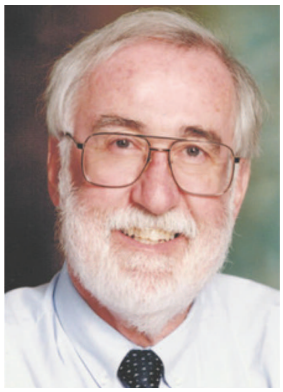
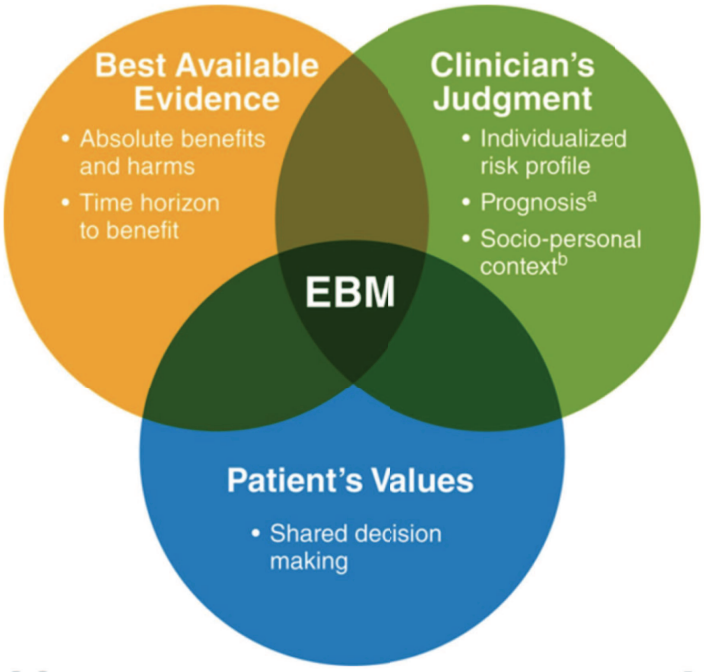
Evidence Based Medicine

"Evidence-based medicine is the integration of best *research evidence* with *clinical expertise* and *patient values*"

David Sackett





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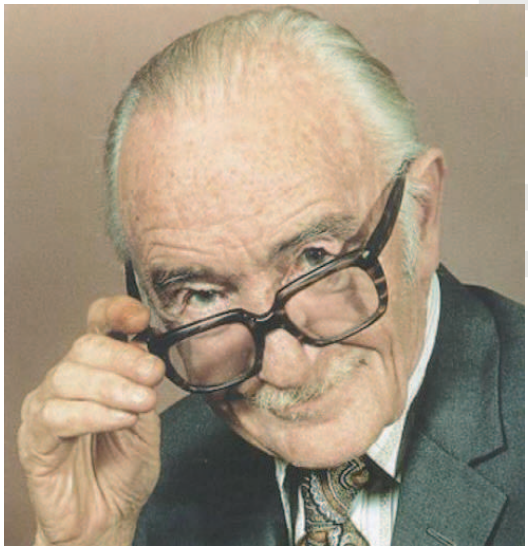
The idea behind weighting of evidence…

Resources will always be limited: they should be used to provide health care which has been shown in properly designed evaluations to be effective (Cochrane, 1972)



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The EBM cycle

Clinicians perspective

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Level of evidence (depends on your question)

Level	Treatment	Prognosis	Diagnosis
I	*Systematic Review of …*	*Systematic Review of …*	*Systematic Review of …*
II	Randomised trial	Inception Cohort	Cross sectional
III			

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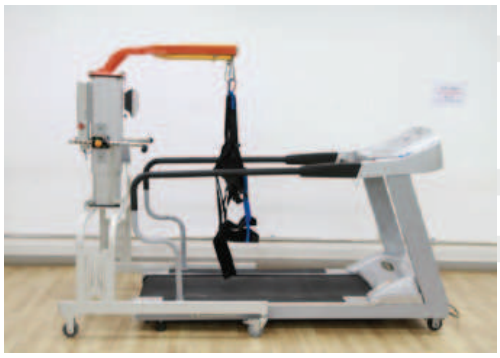
Lets start with a clinical decision making problem..

Mr Lee, a 60 years-old man who suffered a stroke **6 months ago** requested you to refer him for **body weight supported treadmill training (BWSTT).**
He has right hemiplegia, and is currently walking independently without walking aids. He is unhappy with his current walking ability and want to know if BWSTT therapy could make him walk faster and for further distance.
His insurance does not cover such therapy but he is willing to pay out-of-pocket. He is currently undergoing conventional gait training.



What are you going to tell him?
How are you going to make this decision?

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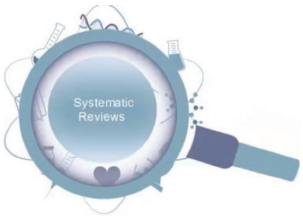
Cochrane Library

Cochrane Database of Systematic Reviews



Treadmill training and body weight support for walking after stroke (Review)

Mehrholz J, Thomas S, Elsner B

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Questions to ask when reading a systematic review

- **Will this review answer my question?**
- Is the review well conducted?
- What are the results of the review?
- How do I use the results to make a decision?

Critical appraisal….

…is like being a detective.

You need the skills to think broadly and detect the flaws that might distract you from finding the true answer.

Why appraise?

Critically appraise the evidence for:

- Relevance
- Validity
- Impact (size of the benefit)
- Applicability

- Detect bias
- Other patient features/causal factors, apart from the intervention, that can affect the outcome of the study.

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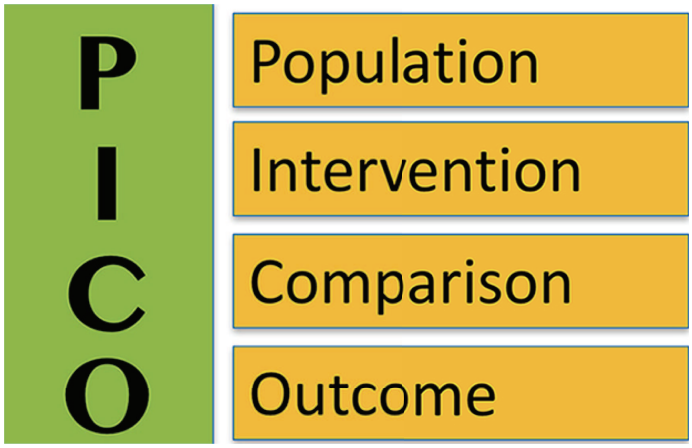
Examine the PICO



Stroke patients

Body Weight supported treadmill training therapy

Conventional walking therapy

Walking ability

In a person with stroke, will training with BWSTT compared to conventional therapy improve walking ability?

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This article

Try to locate the information in the article

Types of participants

We included trials of adults who had suffered a stroke and exhibited an abnormal gait pattern. We used the World Health Organization's (WHO) definition of stroke: "rapidly developing clinical

Types of interventions

The primary question was whether treadmill training and body weight support, individually or in combination, could improve walking compared with other gait-training methods, placebo or no treatment. We therefore included any trial that attempted to

Primary outcomes

The primary analyses focused on the ability to walk, both at the end of the treatment period (that is, immediate or short-term effects) and at the end of the scheduled follow-up (that is, long-term effects). We examined the ability to walk using dichotomous and continuous variables.

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Questions to ask when reading a systematic review

- Will this review answer my question?
- **Is the review well conducted?**
- What are the results of the review?
- How do the results from this review apply to my patients?

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Is the systematic review well conducted?
Is the result valid?
Majority of information should be available in Methodology section

Pay attention to the rigour of the methods
Always look at how the SR is conducted before accepting the results.

When the review is valid or of good quality that you can trust the results
Only then you read the results

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Is this review well conducted?

- Comprehensive search of literature
- Specification of trial selection: Inclusion and exclusion criteria
- Were the trials selected by two authors independently?
- How was the data extraction process
- Assessment of bias / quality of selected studies

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Is the systematic review well conducted?

Comprehensive search of the literature

- Electronic databases
- Trials with positive effects will give an over – optimistic estimate of how well The treatment works
- Limitations by language, type of publication, date,
- Search for trials not yet published in clinicaltrials.gov, trial registries
- Results from published and unpublished trials

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This article

Have the authors searched enough?

Electronic searches

We searched the Cochrane Stroke Group Trials Register (last searched 14 February 2017) and the following electronic bibliographic databases:

- Cochrane Central Register o (CENTRAL; 2017, Issue 4) in th 10 April 2017) (Appendix 1);
- MEDLINE Ovid (1966 to 1 2);
- Embase Ovid (1980 to 14 F
- CINAHL EBSCO (Cumula Allied Health Literature; 1982 to 4);
- AMED Ovid (Allied and C to 14 February 2017) (Appendix
- SPORTDiscus EBSCO (1949 to 14 February 2017)

We identified and searched the following ongoing trials and research registers:

- International Standard Randomised Controlled Trial Number Register (www.isrctn.com; searched 9 March 2017);
- US National Institutes of Health Ongoing Trials Register ClinicalTrials.gov (www.clinicaltrials.gov; searched 9 March 2017) (Appendix 7);
- Stroke Trials Register (www.strokecenter.org; searched 9 March 2017); and
- World Health Organization (WHO) International Clinical Trials Registry Platform (ICTRP) (searched 9 March 2017) (Appendix 8).

- World Congress of NeuroRehabilitation (2006 to 2016);
- ss of Physical Medicine and 2015);
- ss of Physical Therapy (2007 to 2015);
- llschaft für Neurotraumatologie und ation (2005 to 2016);
- llschaft für Neurologie (2005 to 2016);
- llschaft für Neurorehabilitation (2005

Conference of Physical and 2016);

sts of all relevant articles; and

- contacted trialists, experts, and researchers in our field of study.

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Is the systematic review well conducted?

Trials inclusion / trials selection

- **Specification of trial inclusion / exclusion**

Types of studies

We included truly randomised and quasi-randomised controlled trials (including cross-over trials) in the review. We considered procedures such as coin tossing and dice rolling as random. Quasi-random allocation procedures included allocation by hospital record number or birth date, or alternation. We only included the first arm of the data from cross-over trials. We assessed concealment, blinding, and the number of withdrawals for all trials, but we did not use these data as inclusion or exclusion criteria.

Treadmill training and body weight support, individually or in combination, must have been implemented in one of the experimental conditions. We were looking for trials that made one of the following comparisons:

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Is the systematic review well conducted?

Trials inclusion / trials selection

- **Were the trials selected by two authors independently?**

Selection of studies

For this update, two review authors (BE and JM) and abstracts of the records identified from the elec and eliminated obviously irrelevant studies. We re texts of the remaining studies and two review au JM) ranked the studies as relevant, possibly relevar according to our inclusion criteria (types of studie aims of interventions). Two review authors (JM, S ined whether the relevant and possibly relevant pub the population, intervention, comparison, outcome egy of our study question. We resolved disagreeme sion with all authors. If we needed further information, we contacted trial authors.

We excluded studies that did not match our inclusion criteria regarding the type of study, participants or type of interventions and those that were not RCTs.

Data extraction and management

For this update, two review authors (BE, JM) independently extracted trial and outcome data from the selected trials. If one of the review authors was involved in an included trial, another review author extracted the trial and outcome data from that trial. In accordance with the 'Risk of bias' tool described in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011), we used checklists to independently assess:

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- methods of random sequence generation;
- methods of allocation concealment;
- blinding of assessors;
- blinding of participants;
- adverse effects and dropouts;
- important imbalances in prognostic factors at baseline;

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Is the systematic review well conducted?

Assessment for risk of bias

- Were the included trials assessed for bias?
- Were the risk of bias assessed by two authors independently?

Assessment of risk of bias in included studies

For this update of the review, two authors (BE and JM) independently assessed the risk of bias in the included trials in accordance with the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011). We described the agreement between authors during the assessment of risk of bias and we resolved disagreement by reaching consensus through discussion. We contacted trialists for clarification and to request missing information.

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