Introduction to Cochrane and Cochrane Rehabilitation

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2. IRCCS Fondazione Don Gnocchi, Milan
3. Cochrane Rehabilitation Director

Trusted evidence.
Informed decisions.
Better health.
Disclosure

ISICO (Italian Scientific Spine Institute): stock

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- Chair Physical & Rehabilitation Medicine, University of Brescia
- Scientific Director Rovato, IRCCS Don Gnocchi Milan
- Scientific Director ISICO (Italian Scientific Spine Institute), Milan
- Director Cochrane Rehabilitation
Outline

Evidence Based Medicine
How to judge the quality of research studies: the pyramid of evidence
What is a systematic review and a Cochrane Review
Cochrane and Cochrane Rehabilitation
Cochrane Review on bracing
Cochrane Review on PSSEs
Evidence Based Medicine

The explicit, conscientious, and judicious use of the current best evidence in making decisions about the care of individual patients (and populations)

Sackett DL et al. Evidence based medicine: what it is and what it is not. BMJ 1996; 312:71. doi: https://doi.org/10.1136/bmj.312.7023.71
Evidence Based Clinical Practice

The integration of

• best research evidence
• with clinical expertise
• and patient values

Growth of studies in PubMed
Classical pyramid of evidence
Risk of bias

- Systematic Reviews
- Randomized Controlled Trials
- Cohort Studies
- Case-Control Studies
- Case Series, Case Reports
- Editorials, Expert Opinion
Reliability of results

Risk of Bias

- Systematic Reviews
- Randomized Controlled Trials
- Cohort Studies
- Case-Control Studies
- Case Series, Case Reports
- Editorials, Expert Opinion
Classical pyramid of evidence
Systematic review

A systematic review attempts to collate all empirical evidence that fits pre-specified eligibility criteria in order to answer a specific research question (Antman 1992; Oxman 1993). Key characteristics:

- a clearly stated set of objectives with pre-defined eligibility criteria for studies;
- an explicit, reproducible methodology;
- a systematic search that attempts to identify all studies that meet the eligibility criteria;
- an assessment of the validity of the findings of the included studies, for example through the assessment of risk of bias; and
- a systematic presentation, and synthesis, of the characteristics and findings of the included studies.
The revised pyramid

Randomized Control Trials
Cohort Studies
Case Control Studies
Case Series/Reports

Systematic Review/Meta Analysis
Cochrane Rehabilitation

Cochrane


Our evidence  About us  Get involved  News and events

25th Anniversary

Cochrane Library

Search...
Cochrane vision

A world of improved health where decisions about health and health care are informed by high-quality, relevant and up-to-date synthesized research evidence.
What does Cochrane do?

Cochrane gathers and summarizes the best evidence from research producing **systematic reviews and meta-analysis** including only Randomized Controlled Trials (RCTs).

Cochrane **does not accept commercial or conflicted funding**.
Cochrane Reviews

Cochrane has developed a **rigorous approach** to the preparation of systematic reviews, with a **structured review model**.

These reviews **focus primarily on randomized studies** as the most robust research design for assessment of the effects of interventions. Where evidence is unlikely to be found in randomized studies, reviews include non-randomized studies.

Cochrane has recently developed **quality standards** for the conduct and reporting of reviews.

Meta-analysis

Meta-analysis is the use of statistical methods to summarize the results of independent studies (Glass 1976).

By combining information from all relevant studies, meta-analyses can provide more precise estimates of the effects of health care than those derived from the individual studies included within a review.

Why is Cochrane important? An example

A physiotherapist
Two very nice daughters with long, blond hair
Pediculosis – head lice got at school
They tried all known popular remedies, but no success
Last solution: totally cut their hair

Suddenly an IDEA – why not to try to check with Cochrane?
Problem solved

Cochrane Database of Systematic Reviews

Interventions for treating head lice

Johannes C van der Wouden, Tim Klootwijk, Laurence Le Cleach, Giao Do, Robert Vander Stichele, Arie Knuistingh Neven, Just AH Eekhof

First published: 5 October 2011
Editorial Group: Cochrane Infectious Diseases Group
DOI: 10.1002/14651858.CD009321 View/save citation

Now he is the author of 2 systematic reviews in his field of competence
Interventions to prevent hypothermia at birth in preterm and/or low birth weight infants
Emma M McCall, Fiona Alderdice, Henry L Halliday, Sunita Vohra, Linda Johnston
12 February 2018
Cochrane

Our evidence  About us  Join Cochrane  News and events

Cochrane Library

Come to Cochrane - our world is now wider

Cochrane Colloquium
Edinburgh, 16-18 Sep 2018

What is Cochrane evidence and how can it help you?

New learning opportunities in evidence-based health care for medical students in Sweden

Latest News and Events

No evidence to show whether removing nail polish and finger rings prevents wound infection after surgery

Steroids for the treatment of influenza
Cochrane Organization

**Review Groups**: systematic reviews

**Methods Groups**: development of methods for reviews

**Centres**: local knowledge translation

**Fields and Networks**: knowledge translation for a specific health community other than a condition
<table>
<thead>
<tr>
<th>No.</th>
<th>Group Name</th>
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<tbody>
<tr>
<td>1.</td>
<td>Acute Respiratory Infections Group</td>
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<td>2.</td>
<td>Airways Group</td>
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<td>3.</td>
<td>Anaesthesia, Critical and Emergency Care Group</td>
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<td>4.</td>
<td>Back and Neck Group</td>
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<td>Schizophrenia Group</td>
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<td>STI Group</td>
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<td>Tobacco Addiction Group</td>
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<td>55.</td>
<td>Work Group</td>
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<tr>
<td>56.</td>
<td>Wounds Group</td>
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</tbody>
</table>
4 with >20 reviews of Rehabilitation interest

1. Back and Neck
2. Bone, Joint and Muscle Trauma
3. Musculoskeletal
4. Stroke

28 with ≥ 1 reviews of Rehabilitation interest

1. Acute Respiratory Infections
2. Airways
3. Back and Neck
4. Bone, Joint and Muscle Trauma
5. Breast Cancer
6. Cystic Fibrosis and Genetic Disorders
7. Dementia and Cognitive Improvement
8. Developmental, Psychosocial and Learning Problems
9. Ear Nose and Throat disorders
10. Eyes and Vision
11. Gynaecological, Neuro-oncology and Orphan Cancer
12. Gynaecology and Fertility
13. Heart
14. HIV/AIDS
15. Incontinence
16. Injuries
17. Kidney and Transplant
18. Lung Cancer
19. Movement Disorders
20. Multiple Sclerosis and Rare Diseases of the CNS
21. Musculoskeletal
22. Neonatal
23. Neuromuscular
24. Pain, Palliative and Supportive Care
25. Pregnancy and Childbirth
26. Stroke
27. Vascular
28. Wounds

Role of Cochrane Fields

a bridge

-facilitate work of Cochrane Review Groups
-ensure that Cochrane reviews are both relevant and accessible to their fellow specialists and consumers

Rehabilitation stakeholders side

Cochrane Groups side
Vision

All rehabilitation professionals can apply Evidence Based Clinical Practice

Decision makers will be able to take decisions according to the best and most appropriate evidence
Mission

Allow all rehabilitation professionals to combine the best available evidence as gathered by high quality Cochrane systematic reviews, with their own clinical expertise and the values of patients.

Improve the methods for evidence synthesis, to make them coherent with the needs of disabled people and daily clinical practice in rehabilitation.
Cochrane News

- New learning opportunities in evidence-based health care for medical students in Sweden
- Cochrane seeks Knowledge Translation Project Manager - Flexible location
- Cochrane Sweden seeks Fellow - Lund, Sweden
- New National License Agreement Provides Brazil with Unlimited Access to the Cochrane Library
- New on the Cochrane Library: Best of 2017 Special Collection

Weekly Evidence in Rehabilitation

Latest News and Events

Updates on Cochrane

Cochrane Rehabilitation at

Tweets by @CochraneRehab

Cochrane seeks Knowledge Translation Project Manager - Flexible location

Cochrane Rehabilitation
Braces for idiopathic scoliosis in adolescents (Review)

1ISICO (Italian Scientific Spine Institute), Milan, Italy. 2Department of Epidemiology, ASL RM/E, Rome, Italy. 3School of Health and Social Care, University of Teeside, Middlesbrough, UK. 4Faculty of Health, Staffordshire University, Stoke on Trent, UK. 5Orthopaedic and Trauma Department, “Tzanio” General Hospital of Piraues, Piraues, Greece. 6Department of Pediatric Orthopedics and Traumatology, University of Medical Sciences, Poznan, Poland. 7Department of Orthopaedic Surgery, Saitama Medical University, Kawagoe, Japan. 8Thriasio General Hospital, Athens, Greece
1st Cochrane on bracing (Negrini 2010)

Date of search: July 2008

Included studies: 2

Total population: 329

Results:

- **Low quality evidence** from 1 QRCT that a brace curbed curve progression at the end of growth (success rate 74%), better than observation (success rate 34%) and electrical stimulation (success rate 33%)

- **Low quality evidence** from 1 RCT that a **rigid** brace is more successful than an **elastic** one with no differences in QoL
2nd Cochrane on bracing (Negrini 2015)

Date of search: February 2015

Included studies: 7

Total population: 662

Results:

- Bracing does not change QoL during treatment, and in the long term (16 years).
- All included papers consistently showed that bracing prevented curve progression.
- The high rate of failure of RCTs demonstrates the huge difficulties in performing RCTs in a field where parents reject randomization of their children.

## Risk of bias

<table>
<thead>
<tr>
<th>Study</th>
<th>Randomization</th>
<th>Allocation</th>
<th>Blinding</th>
<th>Full RCT</th>
<th>Blinding</th>
<th>Stratification</th>
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<th>Domain 2</th>
<th>Domain 3</th>
<th>Domain 4</th>
<th>Domain 5</th>
<th>Domain 6</th>
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<td>Lusini 2013</td>
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<td>Nachemson 1995</td>
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<td>Weinstein 2013a</td>
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<td>Weinstein 2013b</td>
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<td>Wong 2008</td>
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Implications for practice

According to the actual evidence, bracing is a viable treatment for adolescent idiopathic scoliosis: it reduces failures (low quality evidence), it curbs curve progression (very low quality evidence), and it helps in high degree curves above $45^\circ$ (very low quality evidence). In low degree curves, elastic bracing is effective in 15-30° (low quality evidence), but less effective than rigid bracing in 20-30° (very low quality evidence). Unfortunately the strength of the actual evidence is from low to very low, due to the methodological quality of the studies. The high rate of failure of RCTs demonstrates the big difficulties in performing RCTs in a field where parents reject randomization of their kids. Nevertheless, all papers retrieved were fairly coherent, even if it must be recognised that further research could change the actual results.
Cochrane on PSSEs (Romano 2012)

Date of search: March 2011

Included studies: 2

Total population: 154

Results:

• **Low quality evidence** from one RCT that exercises as an adjunctive to other conservative treatments increase the efficacy of these treatments.

• **Very low quality evidence** from a prospective CCT (QRCT) that scoliosis-specific exercises can reduce brace prescription as compared to usual physiotherapy.

<table>
<thead>
<tr>
<th>Author</th>
<th>Reference</th>
<th>°Cobb</th>
<th>Technique</th>
<th>Duration</th>
<th>Outcome</th>
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<tr>
<td>De Sousa Dantas D</td>
<td>J Phys Ther Sci, 2017</td>
<td>?</td>
<td>Klapp</td>
<td>1.5 mo</td>
<td>Strength, ATR</td>
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<tr>
<td>Diab AA</td>
<td>Clin Rehabil, 2012</td>
<td>10-30°</td>
<td>head positioning</td>
<td>2 mo</td>
<td>Surface measures</td>
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<tr>
<td>Kim G</td>
<td>J Phys Ther Sci, 2016</td>
<td>20-30°</td>
<td>Schroth vs Pilates</td>
<td>3 mo</td>
<td>°Cobb</td>
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<td>Kumar J</td>
<td>Clin Diagn Res, 2017</td>
<td>10-15°</td>
<td>task oriented</td>
<td>2 mo</td>
<td>°Cobb, function</td>
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<td>Kuru T</td>
<td>Clin Rehabil, 2014</td>
<td>10-20°</td>
<td>Schroth</td>
<td>1 year</td>
<td>°Cobb</td>
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<td>Monticone M</td>
<td>Eur Spine J, 2014</td>
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<td>SEAS</td>
<td>End of growth</td>
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<td>Schroth</td>
<td>6 mo</td>
<td>°Cobb</td>
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<td>Schroth</td>
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<td>QoL</td>
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<td>Zapata KA</td>
<td>Ped Phys Ther, 2015</td>
<td>10-45°</td>
<td>stabilization</td>
<td>2 mo</td>
<td>Pain, function</td>
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<tr>
<td>Zeng Y</td>
<td>Spine, 2017</td>
<td>25-40°</td>
<td>SEAS vs bracing</td>
<td>1 year</td>
<td>°Cobb</td>
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</tbody>
</table>
Take home messages

Quality of studies comes from their design (pyramid of evidence)

Systematic Reviews are not narrative reviews

Cochrane is the Gold Standard for Systematic Reviews

Cochrane Rehabilitation is a useful reference

Cochrane review on bracing (2015): there is evidence (low quality)
Cochrane review on PSSEs (2012): there is evidence (low quality)

• Both Cochrane reviews will be soon reviewed
Thank you

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Better health.