Introduction to Cochrane and Cochrane Rehabilitation

Stefano Negrini

1. University of Brescia
2. IRCCS Fondazione Don Gnocchi, Milan
3. Cochrane Rehabilitation Director

Trusted evidence.
Informed decisions.
Better health.

Disclosure

ISICO (Italian Scientific Spine Institute): stock

Stefano Negrini

- 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 isn't. BMJ 1996; 312:71. doi: https://doi.org/10.1136/bmj.312.7023.71

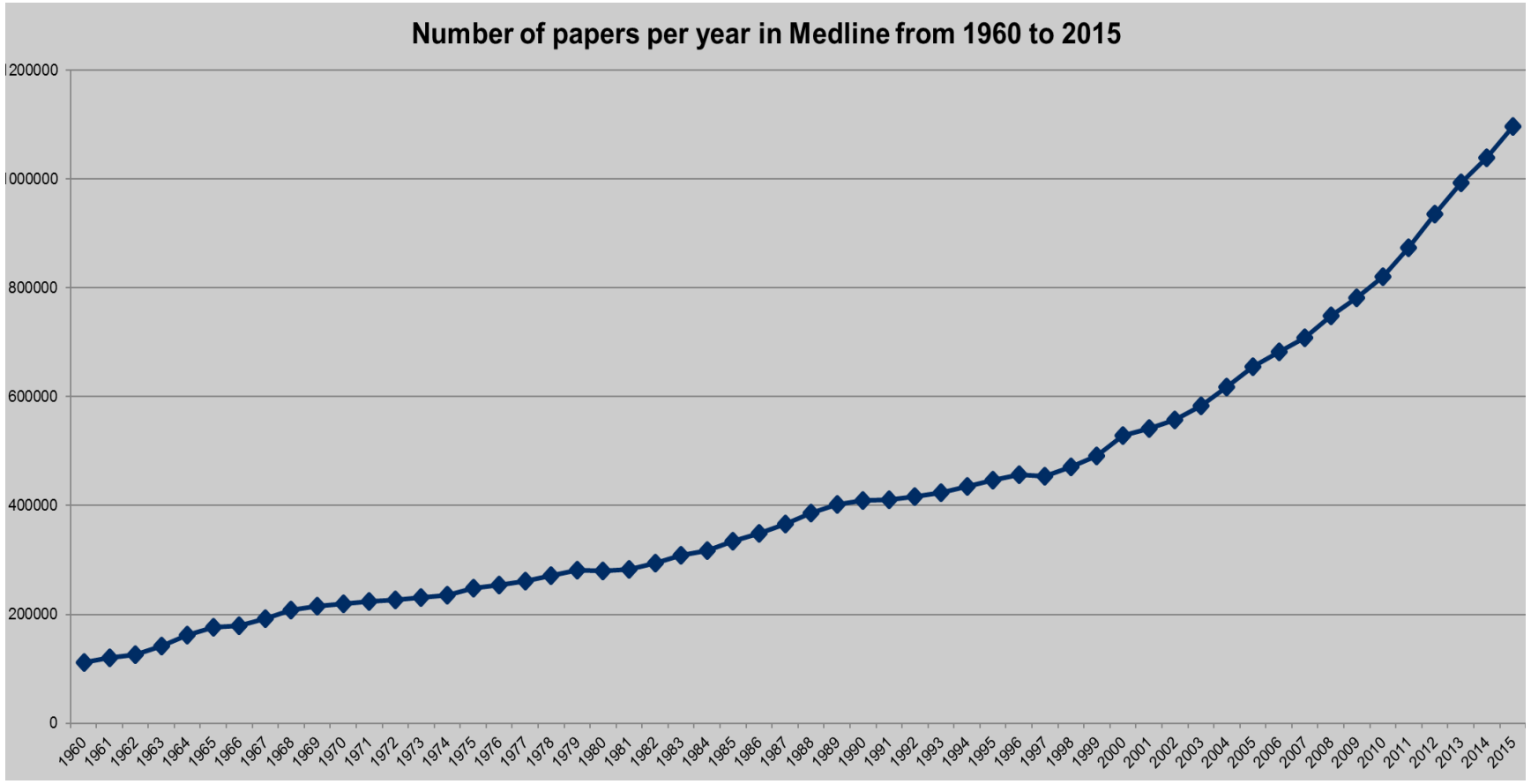
Evidence Based Clinical Practice

The integration of

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

Sackett DL et al. How to practice and teach EBM. Edinburgh: Churchill Livingstone (2000).

Growth of studies in PubMed



Classical pyramid of evidence

Risk of bias

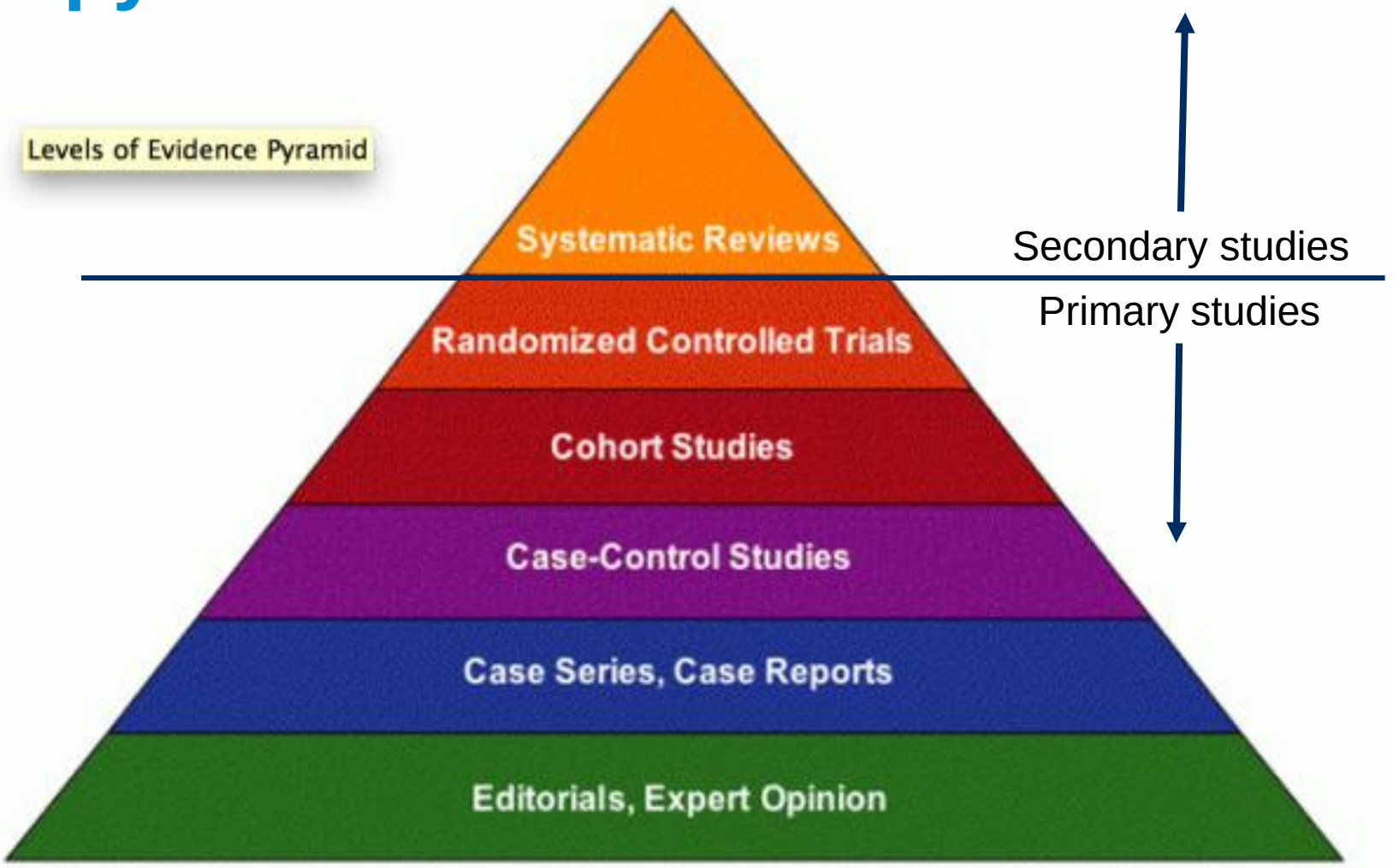
Risk of Bias

Reliability of results

Risk of Bias

Reliability

Classical pyramid of evidence



Systematic review

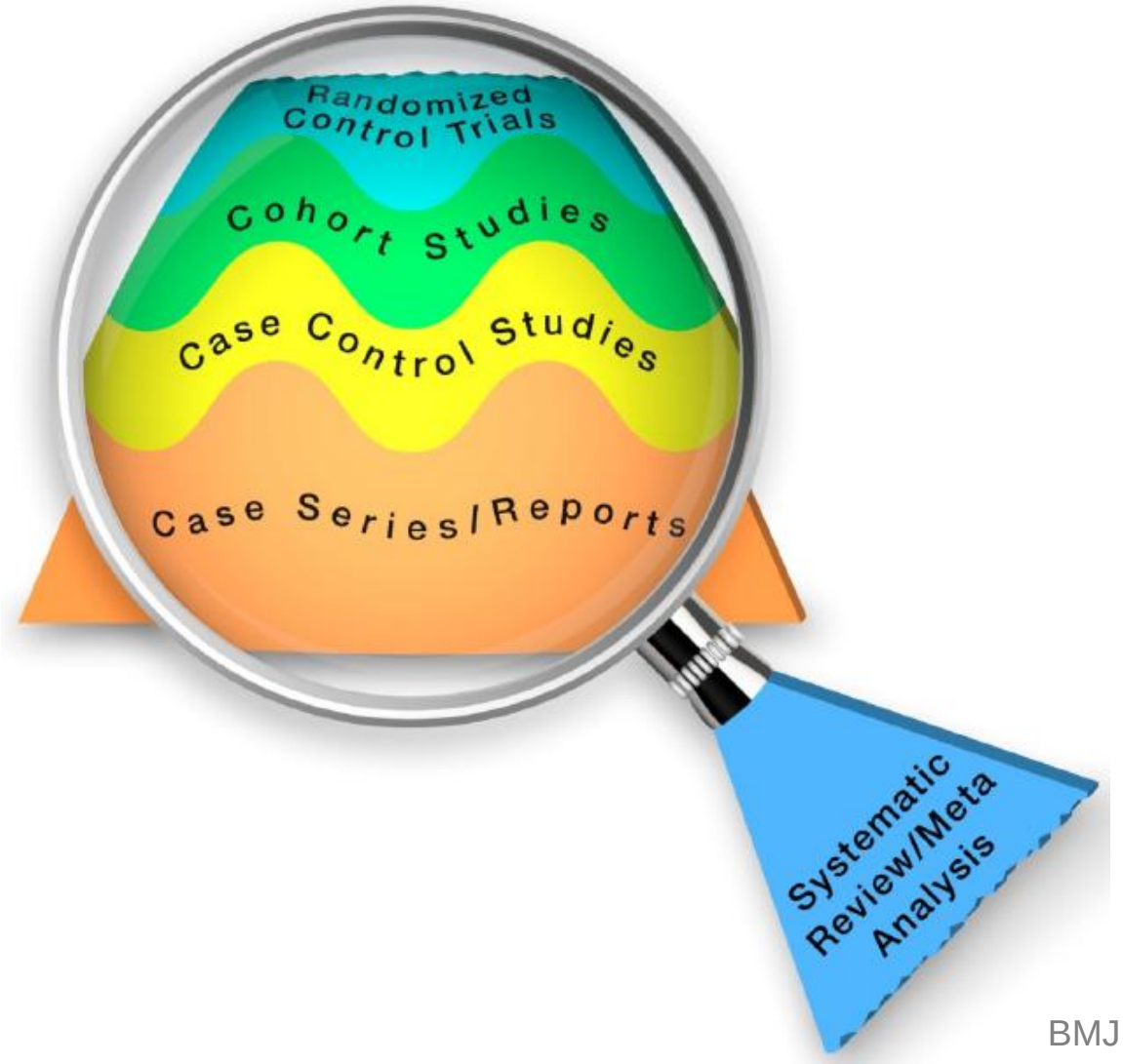
A systematic review attempts to collate **all empirical evidence that fits pre-specified eligibility criteria** in order to answer a specific research question (Antman 1992; Oxman 1993). Key characteristics:

- 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.

Higgins JPT, Churchill R, Chandler J, Cumpston MS (editors), Cochrane Handbook for Systematic Reviews of Interventions Version 5.2.0 (updated February 2017), Cochrane, 2017. Available from Cochrane Community.

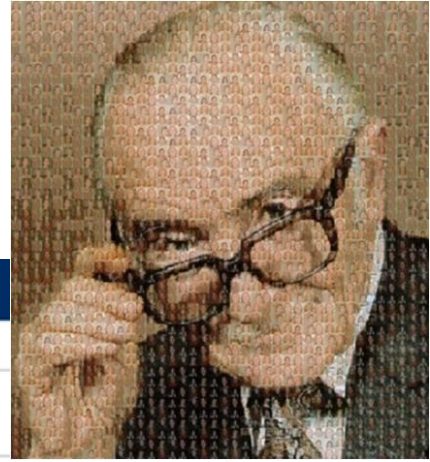
Cochrane Rehabilitation

The revised pyramid



Murad MH, Asi N, Alsawas M, et al New evidence pyramid
BMJ evidence-based medicine doi: 10.1136/ebmed-2016-110401

Cochrane Rehabilitation



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Cochrane vision

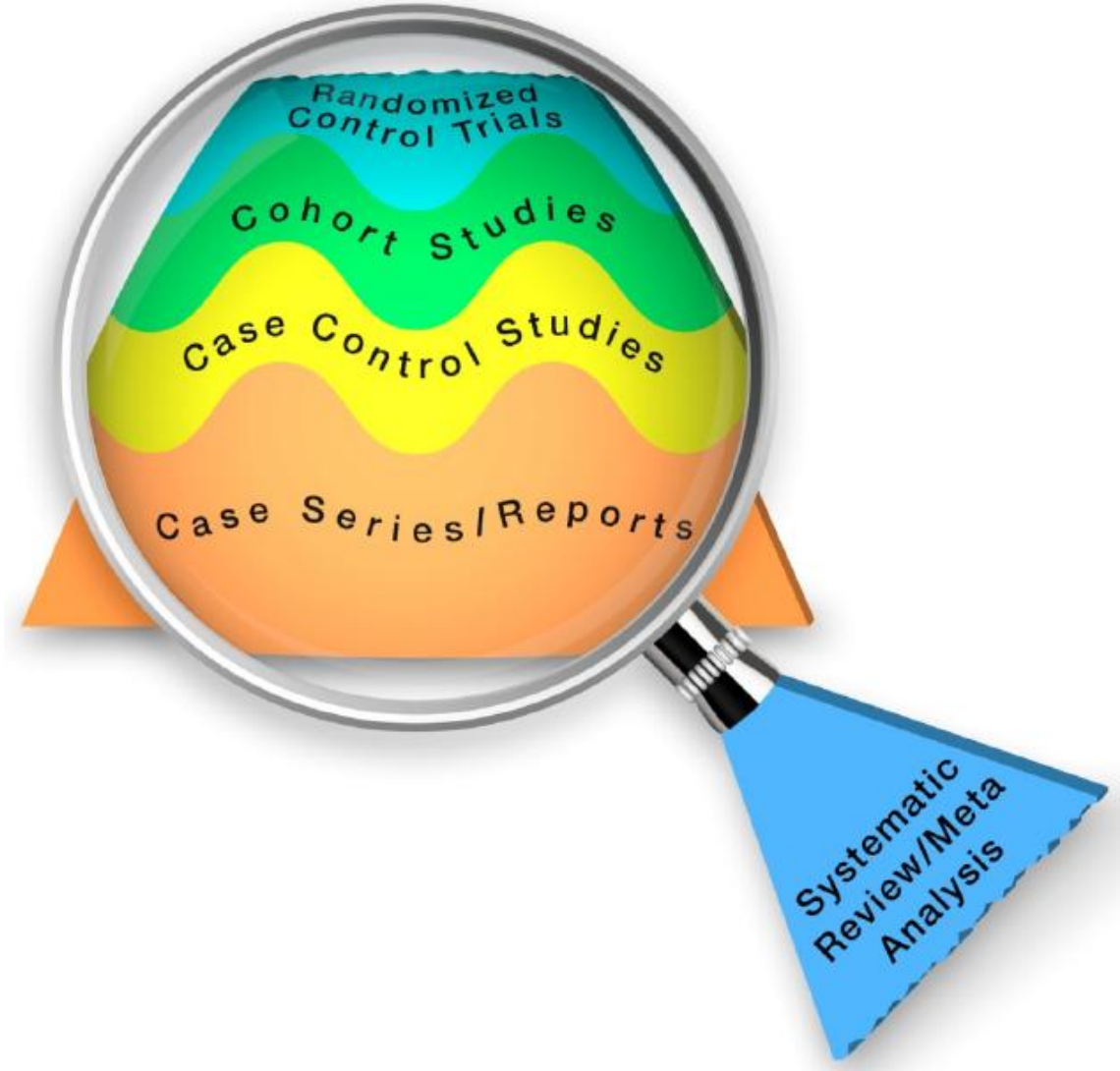
A world of improved health where decisions about health and health care are informed by high-quality, relevant and up-to-date synthesized research evidence.

Cochrane Rehabilitation

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



Murad MH, Asi N, Alsawas M, et al New evidence pyramid
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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.

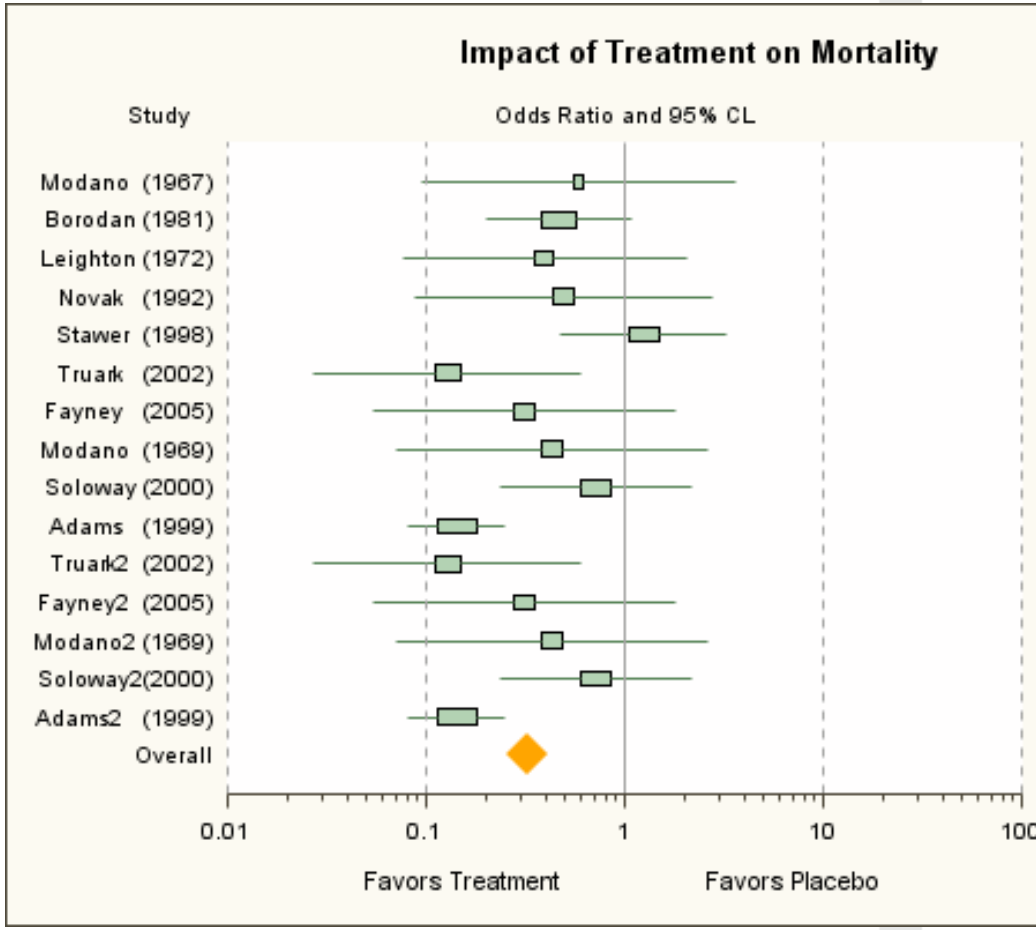
Cochrane has recently developed **quality standards** for the conduct and reporting of reviews.

Higgins JPT, Churchill R, Chandler J, Cumpston MS (editors), Cochrane Handbook for Systematic Reviews of Interventions Version 5.2.0 (updated February 2017), Cochrane, 2017. Available from Cochrane Community.

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.



Higgins JPT, Churchill R, Chandler J, Cumpston MS (editors), Cochrane Handbook for Systematic Reviews of Interventions Version 5.2.0 (updated February 2017), Cochrane, 2017. Available from Cochrane Community.

Why is Cochrane important ? An example

A physiotherapist

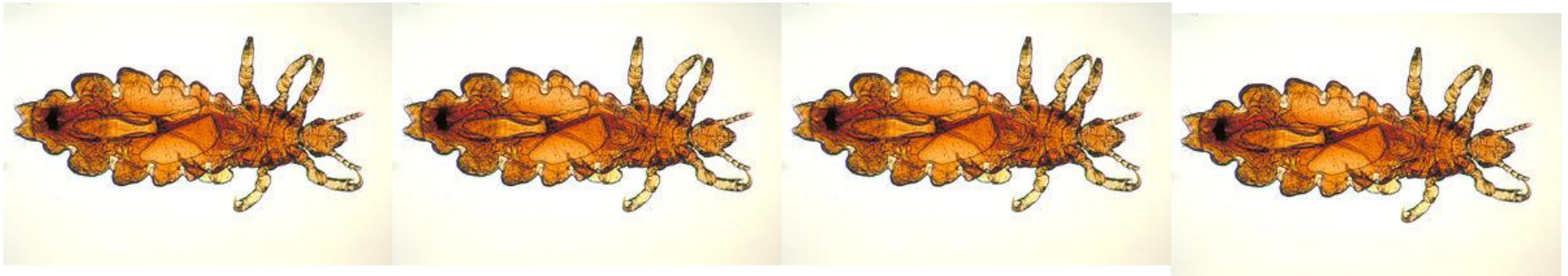
Two very nice daughters with long, blond hair

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 ?



Cochrane Rehabilitation

Problem solved

Cochrane Database of Systematic Reviews

Interventions for treating head lice

Protocol | Intervention

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

Cited by: 2 articles Refresh Citing literature

Now he is the author of 2 systematic reviews in his field of competence

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Cochrane Colloquium
Edinburgh, 16-18 Sep 2018

What is Cochrane evidence and how can it help you?

Latest Cochrane evidence | Top 10

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

Steroids for the treatment of influenza

Latest News and Events

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00:52
15/02/2018

Cochrane Rehabilitation

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

Cochrane Rehabilitation

56 Cochrane Review Groups

1. Acute Respiratory Infections Group
2. Airways Group
3. Anaesthesia, Critical and Emergency Care Group
4. Back and Neck Group
5. Bone, Joint and Muscle Trauma Group
6. Breast Cancer Group
7. Childhood Cancer Group
8. Cochrane Response
9. Colorectal Cancer Group
10. Common Mental Disorders Group
11. Consumers and Communication Group
12. Covidence Review Group
13. Cystic Fibrosis and Genetic Disorders Group
14. Dementia and Cognitive Improvement Group
15. Developmental, Psychosocial and Learning Problems Group
16. Drugs and Alcohol Group
17. Effective Practice and Organisation of Care Group
18. ENT Group
19. Epilepsy Group
20. Eyes and Vision Group
21. Fertility Regulation Group
22. Gynaecological, Neuro-oncology and Orphan Cancer Group
23. Gynaecology and Fertility Group
24. Haematological Malignancies Group
25. Heart Group
26. Hepato-Biliary Group
27. HIV/AIDS Group
28. Hypertension Group
29. IBD Group
30. Incontinence Group
31. Infectious Diseases Group
32. Injuries Group
33. Kidney and Transplant Group
34. Lung Cancer Group
35. Metabolic and Endocrine Disorders Group
36. Methodology Review Group
37. Movement Disorders Group
38. Multiple Sclerosis and Rare Diseases of the CNS Group
39. Musculoskeletal Group
40. Neonatal Group
41. Neuromuscular Group
42. Oral Health Group
43. Pain, Palliative and Supportive Care Group
44. Pregnancy and Childbirth Group
45. Public Health Group
46. Schizophrenia Group
47. Skin Group
48. STI Group
49. Stroke Group
50. Test CRG
51. Tobacco Addiction Group
52. Upper GI and Pancreatic Diseases Group
53. Urology Group
54. Vascular Group
55. Work Group
56. Wounds Group

4 with >20 reviews of Rehabilitation interest

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

Zaina F, Negrini S. EJPRM systematic continuous update on Cochrane reviews in rehabilitation: news from December 2011 to February 2012. Eur J Phys Rehabil Med. 2012 Mar;48(1):57-70.

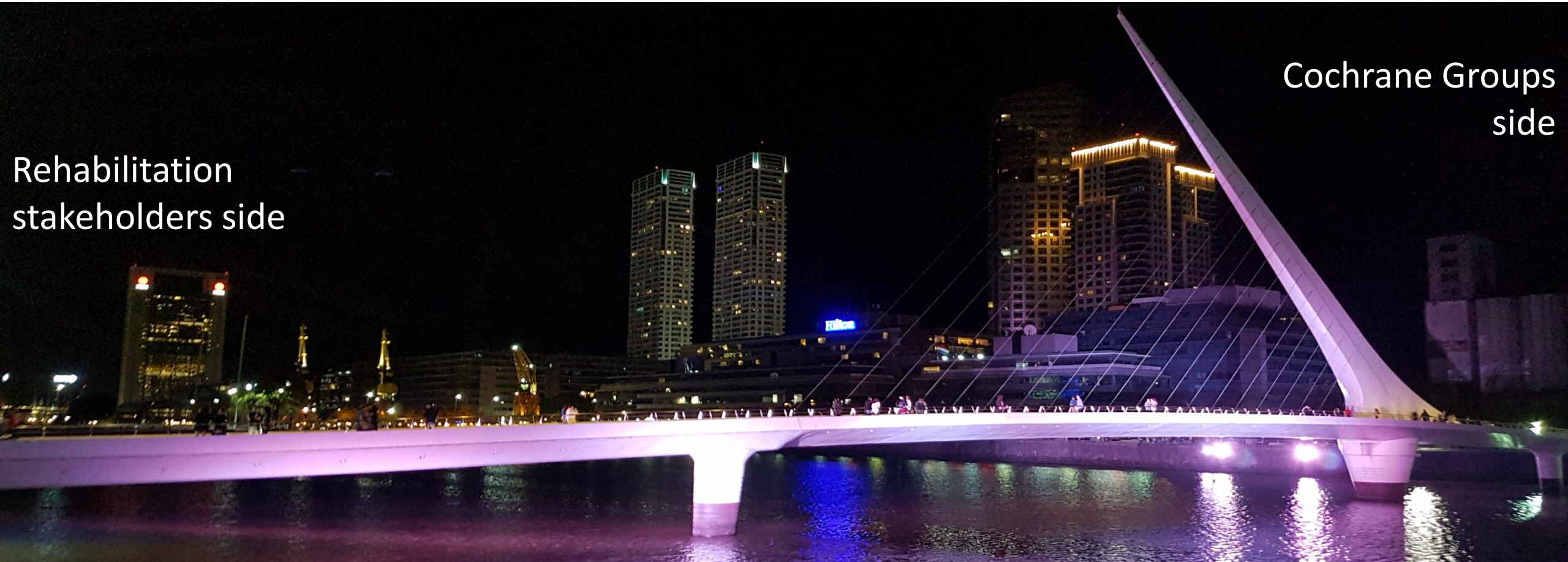
28 with ≥ 1 reviews of Rehabilitation interest

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

Zaina F, Negrini S. EJPRM systematic continuous update on Cochrane reviews in rehabilitation: news from December 2011 to February 2012. Eur J Phys Rehabil Med. 2012 Mar;48(1):57-70.

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



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.

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- 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
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- New on the Cochrane Library: Best of 2017 Special Collection

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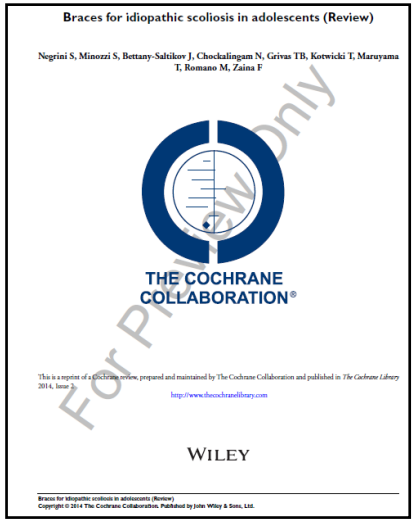
Cochrane Rehabilitation

First Cochrane Review

Back & Neck Group
Published in 2010


Braces for idiopathic scoliosis in adolescents (Review)

Negrini S, Minozzi S, Bettany-Saltikov J, Chockalingam N, Grivas TB, Kotwicki T, Maruyama T, Romano M, Zaina F

THE COCHRANE COLLABORATION®

This is a reprint of a Cochrane review, prepared and maintained by The Cochrane Collaboration and published in *The Cochrane Library* 2014, Issue 2.

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Braces for idiopathic scoliosis in adolescents (Review)
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Braces for idiopathic scoliosis in adolescents (Review)

Negrini S, Minozzi S, Bettany-Saltikov J, Zaina F, Chockalingam N, Grivas TB, Kotwicki T, Maruyama T, Romano M, Vasiliadis ES

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

Negrini S, Minozzi S, Bettany-Saltikov J, Zaina F, Chockalingam N, Grivas TB, Kotwicki T, Maruyama T, Romano M, Vasiliadis ES. Braces for idiopathic scoliosis in adolescents. Cochrane Database Syst Rev. 2010 Jan 20;(1):CD006850. doi:10.1002/14651858.CD006850.pub2

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

Negrini S, Minozzi S, Bettany-Saltikov J, Zaina F, Chockalingam N, Grivas TB, Kotwicki T, Maruyama T, Romano M, Vasiliadis ES. Braces for idiopathic scoliosis in adolescents. Cochrane Database Syst Rev. 2010 Jan 20;(1):CD006850. doi:10.1002/14651858.CD006850.pub2.

2nd Cochrane on bracing (Negrini 2015)

Date of **search**: February 2015

Included studies: 7

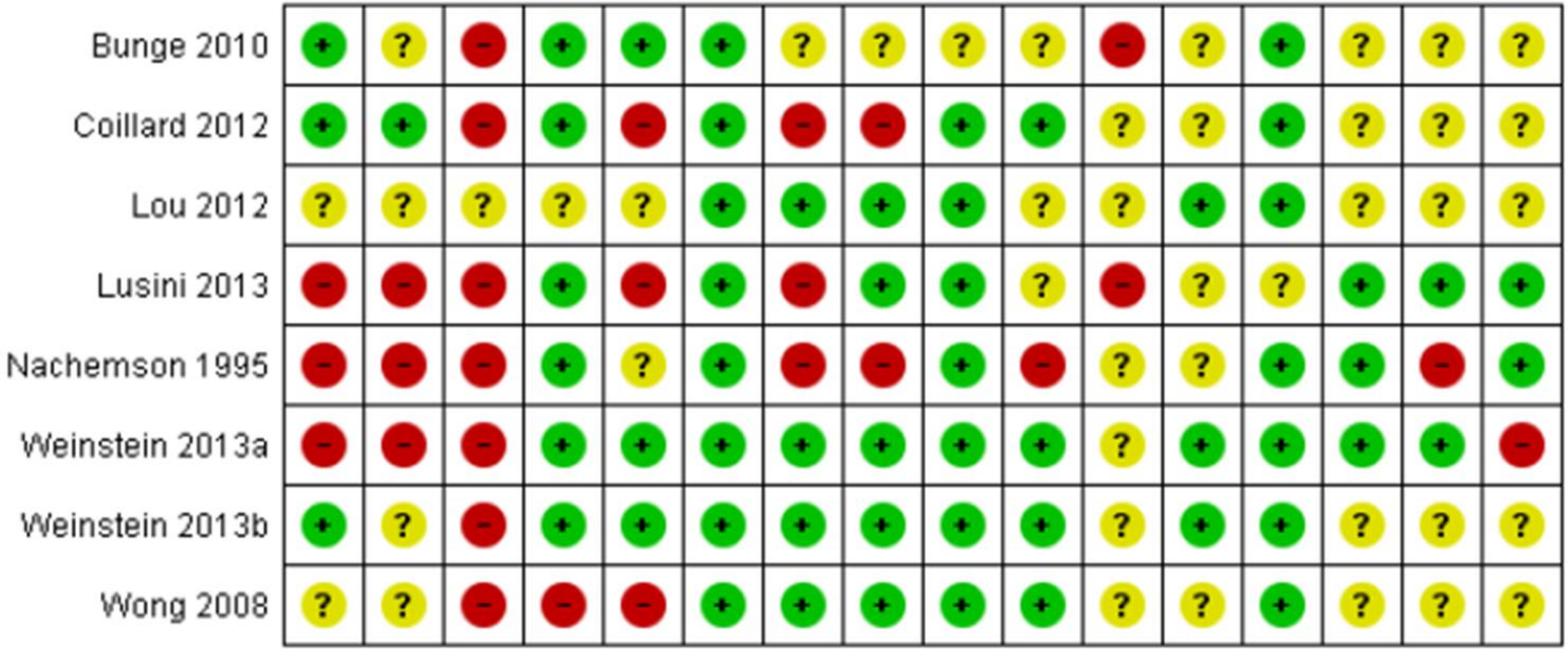
Total **population**: 662

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

Negrini S, Minozzi S, Bettany-Saltikov J, Chockalingam N, Grivas TB, Kotwicki T, Maruyama T, Romano M, Zaina F. Braces for idiopathic scoliosis in adolescents. Cochrane Database Syst Rev. 2015 Jun 18;(6):CD006850. doi:10.1002/14651858.CD006850.pub3

Risk of bias


Bunge 2010
Coillard 2012
Lou 2012
Lusini 2013
Nachemson 1995
Weinstein 2013a
Weinstein 2013b
Wong 2008

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° (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

Romano M, Minozzi S, Bettany-Saltikov J, Zaina F, Chockalingam N, Kotwicki T, Maier-Hennes A, Negrini S. Exercises for adolescent idiopathic scoliosis. Cochrane Database Syst Rev. 2012 Aug 15;(8):CD007837. doi:10.1002/14651858.CD007837.pub2

Last RCTs (new Cochrane by Romano)

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

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

stefano.negrini@unibs.it
@ProfNegrini
www.dongnocchi.it - www.unibs.it

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