Example of a Systematic Review and its application to practice

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Trusted evidence.
Informed decisions.
Better health.

Disclosure

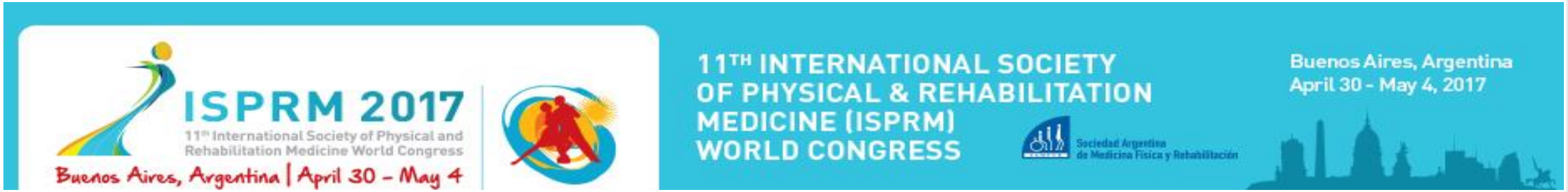
ISICO (Italian Scientific Spine Institute): stock

Director of Cochrane Rehabilitation

Medtronic: consultant

Janssen Pharmaceutical: advisory board

European Journal of Physical and Rehabilitation Medicine: congress expenses



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).

The Know-Do Gap

High quality evidence is not consistently applied in practice[1]

Examples in clinical practice:

- Statins decrease mortality and morbidity in post-stroke, but they are under-prescribed[2]
- Antibiotics are overprescribed in children with upper respiratory tract symptoms[3]

Examples in health system policies:

- Evidence is not frequently used by WHO[5]
- Out of 8 policymaking processes in Canada[4]
  - Only 1 was fully based on research
  - Other 3 were partially based on research

1. Majumdar SR et al. From knowledge to practice in chronic cardiovascular disease: a long and winding road. J Am Coll Cardiol. 2004; 43(10):1738-42
2. LaRosa JC et al. Effect of statins on the risk of coronary disease: a meta-analysis of randomized controlled trials. JAMA. 1999; 282(24): 2340-6
3. Arnold S et al. Interventions to improve antibiotic prescribing practices in ambulatory care. Cochrane Database Syst Rev. 2005: CD003539
4. Lavis J et al. Examining the role of health services research in public policy making. Milbank Q. 2002; 80(1): 125-54
5. Oxman A et al. Use of evidence in WHO recommendations. Lancet. 2007; 369(9576): 1883-9.

Why there is the Know-Do Gap ?

Evidence not focused on the end-users:[1]

- Epidemiologically and methodologically focused
- Missing details on interventions and settings

Lack of knowledge management skills and infrastructure[2]

- Individual health care professionals
  - Volume of, and access to research evidence
  - Time to read
  - Skills to appraise, understand and apply research evidence
- Health care teams (standards of care)
- Health care system and organization (finance and equipments)
- Patients (adherence and compliance)

1. Glenton C et al. Summaries of findings, descriptions of interventions, and information about adverse effects would make reviews more informative. J Clin Epidemiol 2006; 59: 770-8.
2. Grimshaw JM et al. Changhing physician's behavior: what works and thoughts on getting more things to work. J Contin Educ Health Prof. 2002, 22(4): 237-43

Knowledge Translation

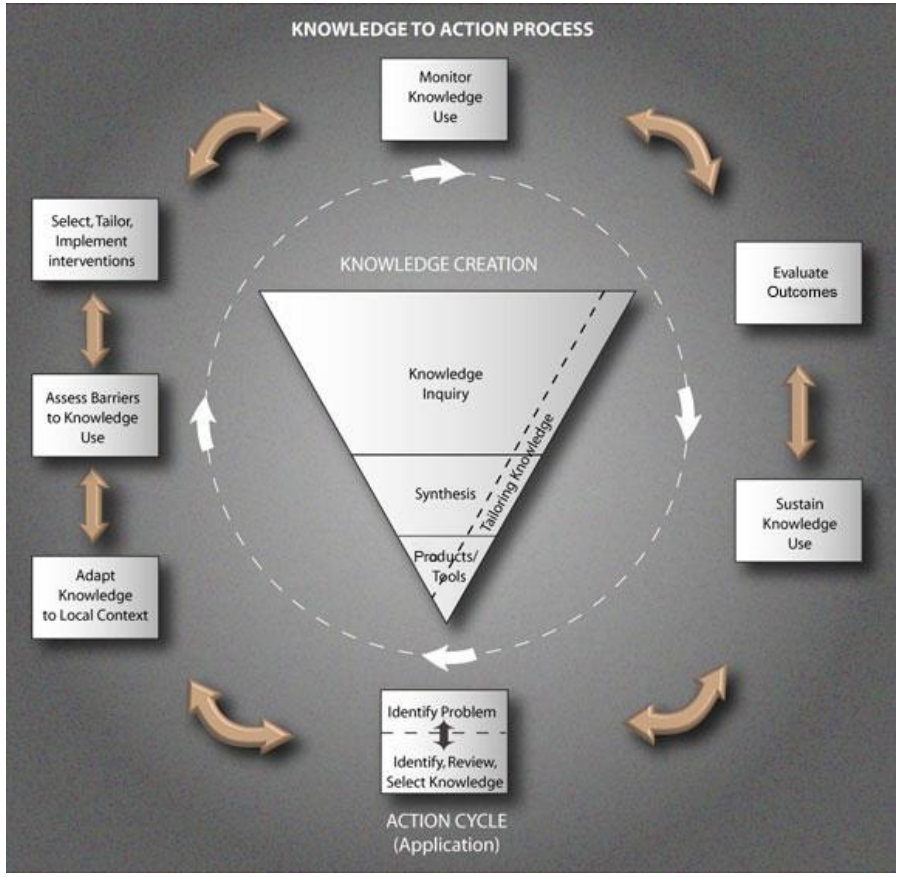
A dynamic and interactive process that includes the synthesis, dissemination, exchange, and ethically sound application of knowledge to improve health, provide more effective health services and products, and strengthen the health care system

Canadian Institute of Health Research[1]

Dissemination and implementation, implementation science, research use, knowledge transfer and uptake/exchange[2]

1. Mc Kibbon KA et al. A cross sectional study of the number and frequency of terms used to refer to knowledge translation in a body of health literature in 2006: a tower of Babel ? Impl Sci. 2010; 5:16.
2. www.cihr-irsc.gc.ca/e/29418.html.

Knowledge to action framework



Graham ID et al. Lost in knowledge translation: time for a map ? J Contin Ed Health Prof. 2006; 26(11):13-24.

Knowledge creation

Knowledge inquiry

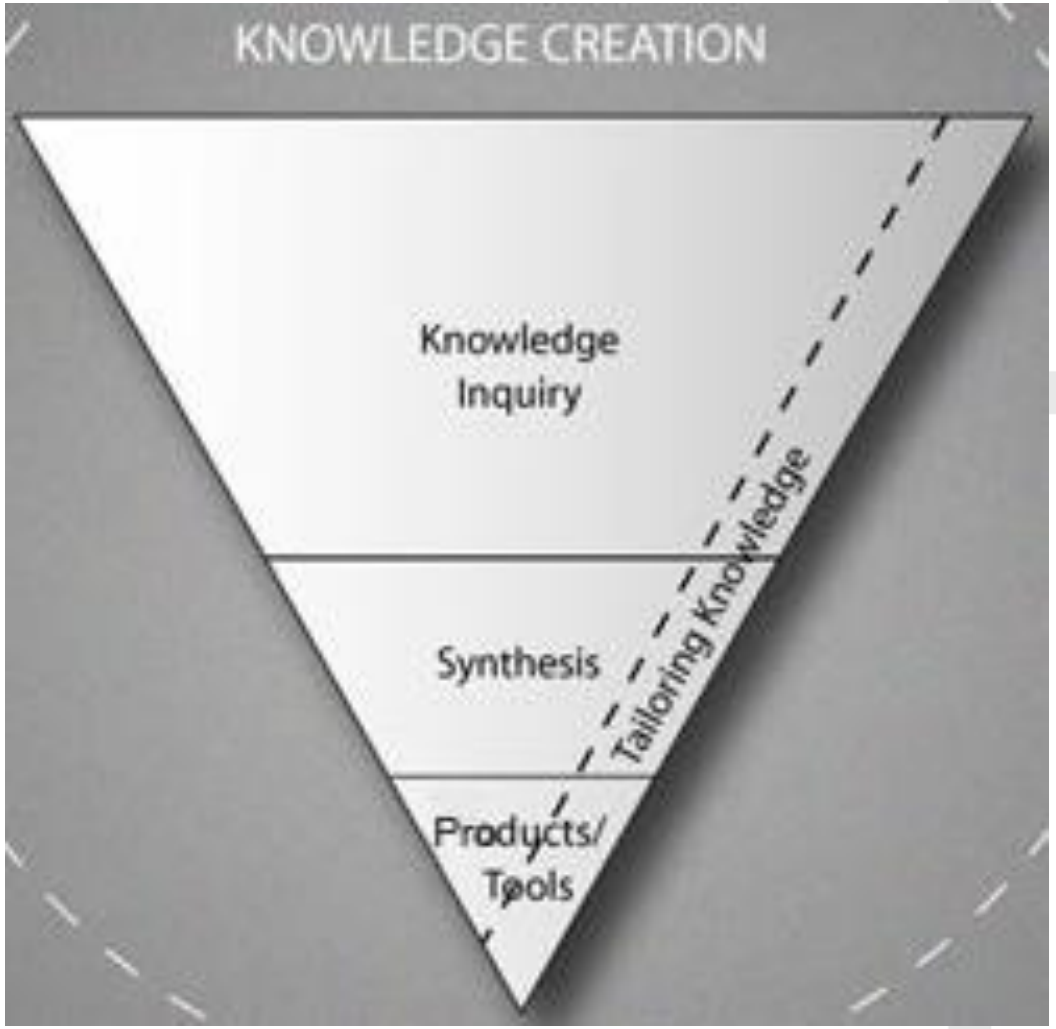
- Primary research studies

Knowledge synthesis

- Secondary research studies (systematic reviews)

Knowledge Tools/products

- Guidelines
- Algorithms
- Messages for end-users



Graham ID et al. Lost in knowledge translation: time for a map ? J Contin Ed Health Prof. 2006; 26(11):13-24.

The Action Cycle (application)

Identify problem; identify, review, select knowledge

Adapt knowledge to local context

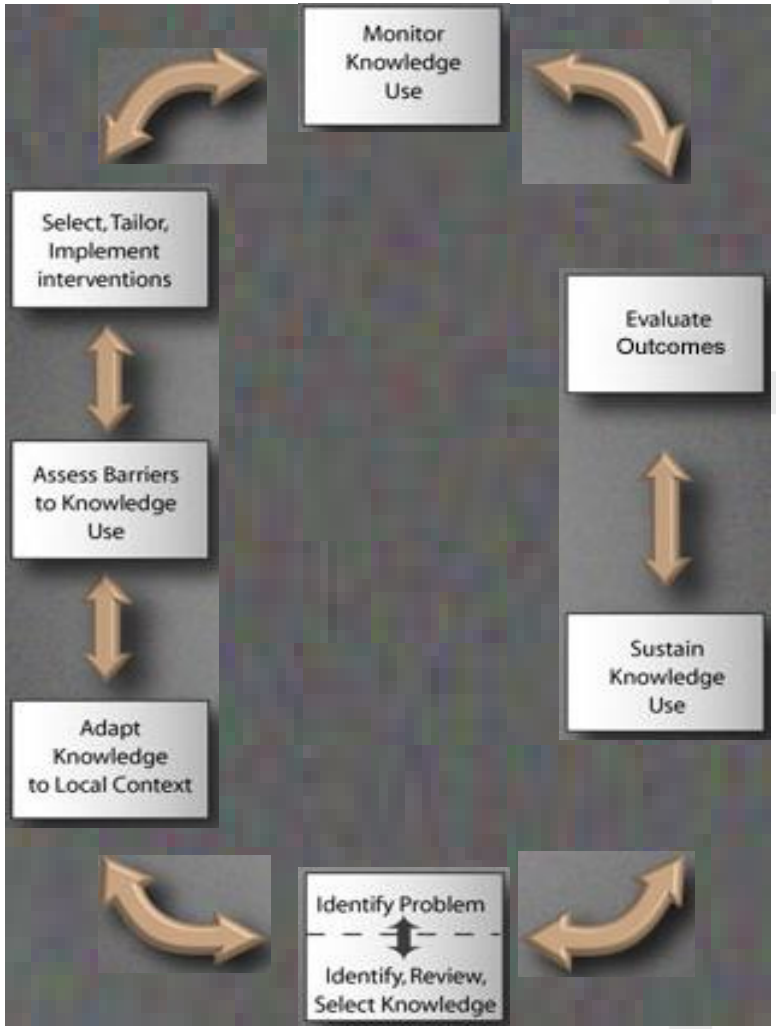
Access barriers – facilitation to knowledge use

Select, tailor, implement interventions

Monitor knowledge use

Evaluate outcomes

Sustain knowledge use



Graham ID et al. Lost in knowledge translation: time for a map ? J Contin Ed Health Prof. 2006; 26(11):13-24.

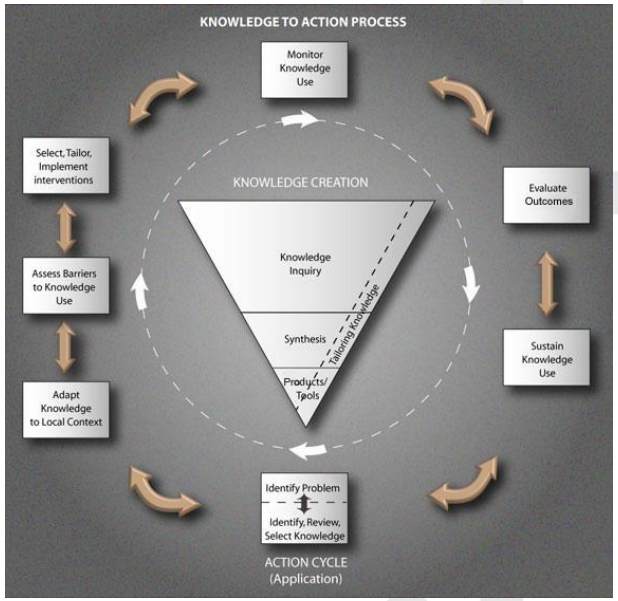
Human behaviours to be considered

Repetitive behaviours

- They allow to free the brain for higher level thinking (diagnosis, prognosis)
- Nevertheless, they gradually drive to reduced quality
- Only regular checks allow to identify this loss of quality

Resistence to change

- Individuals
- Organizations
- Systems

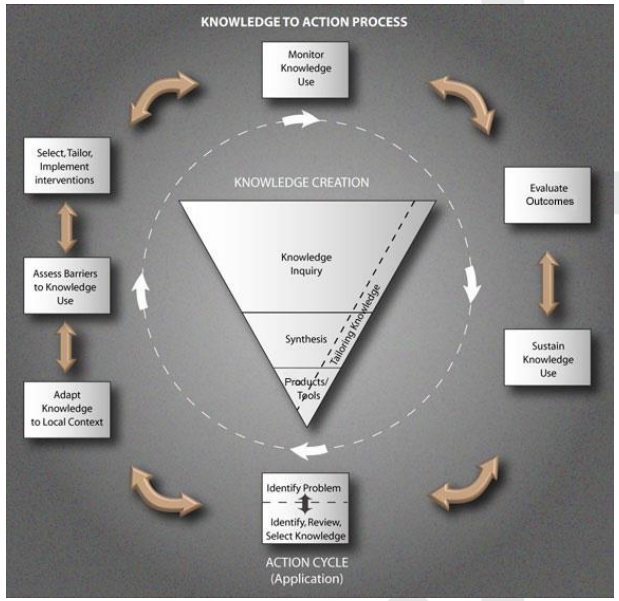


Implementation of evidence

Micro-level: individuals
- Surrender to evidence
- Use facilitators (clinical charts)

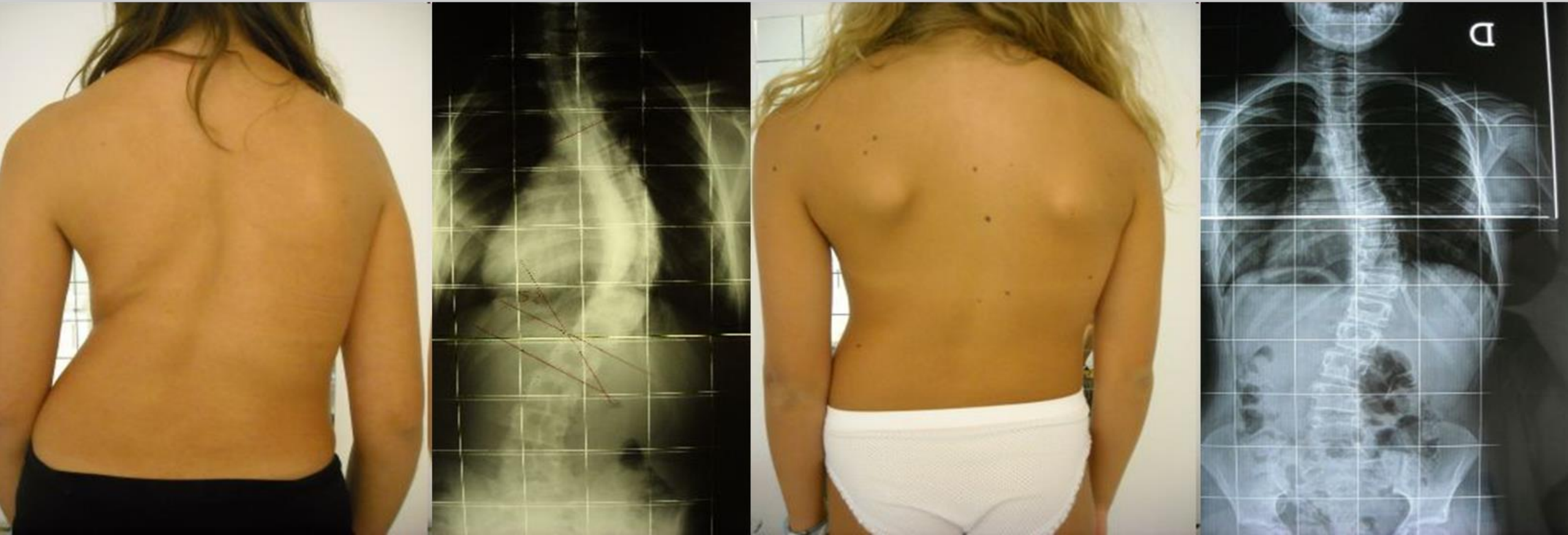
Meso-level (organizations)
- EBM Continuous Quality Improvement groups
  - Human and financial resources
  - Specific thematic projects on a regular basis

Macro-level (Health Systems)
- National guidelines and flow-charts
- Data collection
- Rewarding system

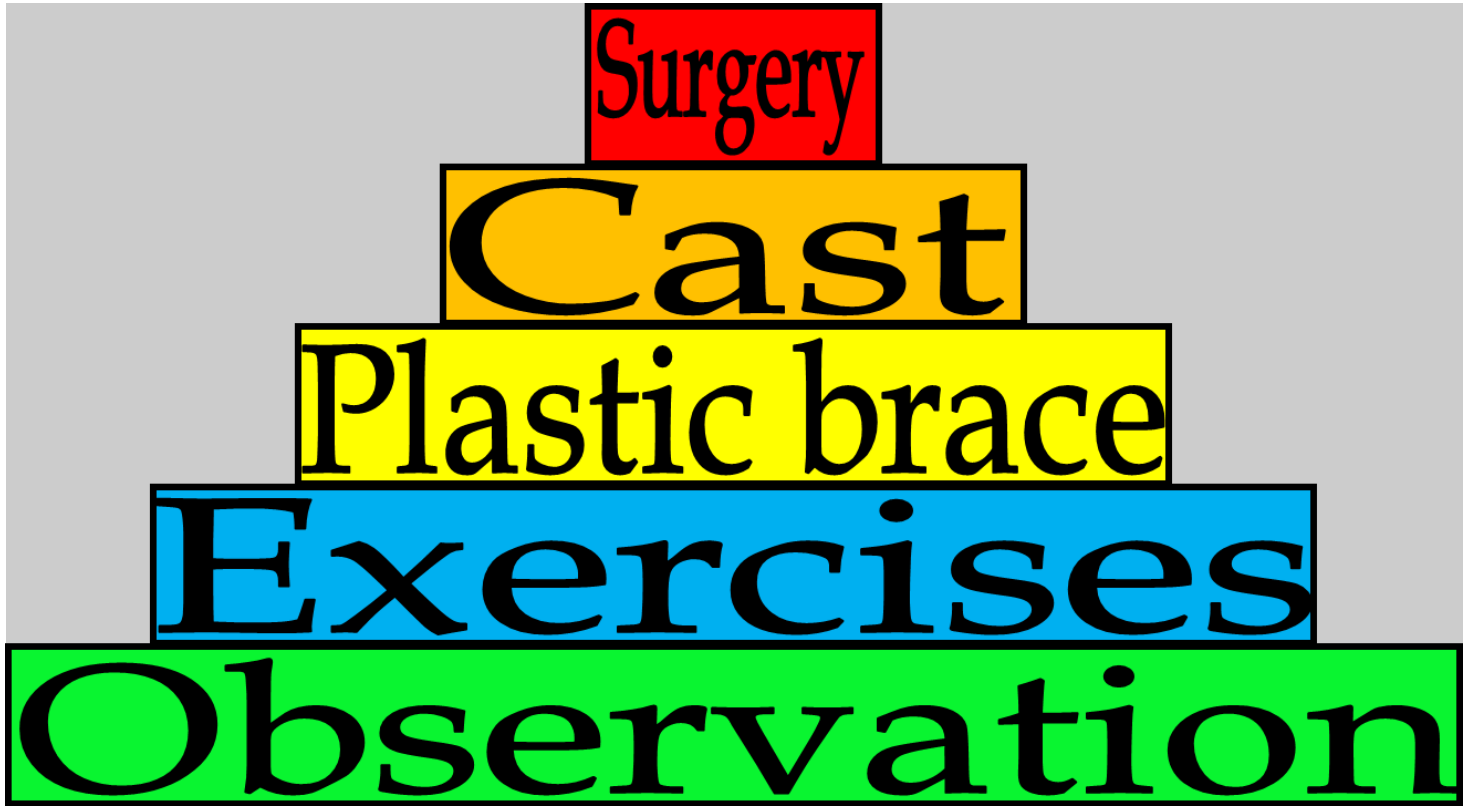


Adolescent Idiopathic Scoliosis (AIS)

A spinal deformity progressing during growth

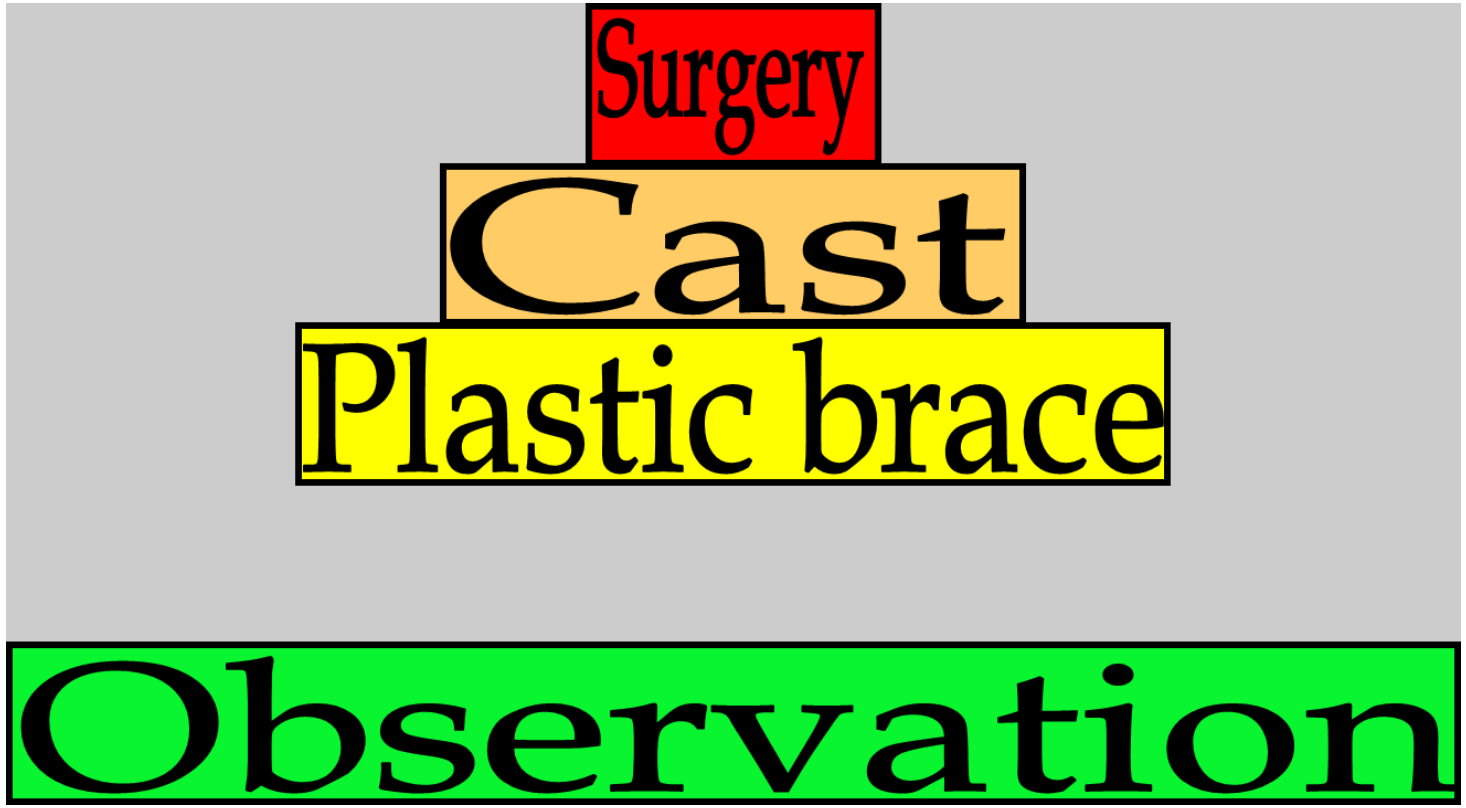


Tradition: step by step theory (PRM)

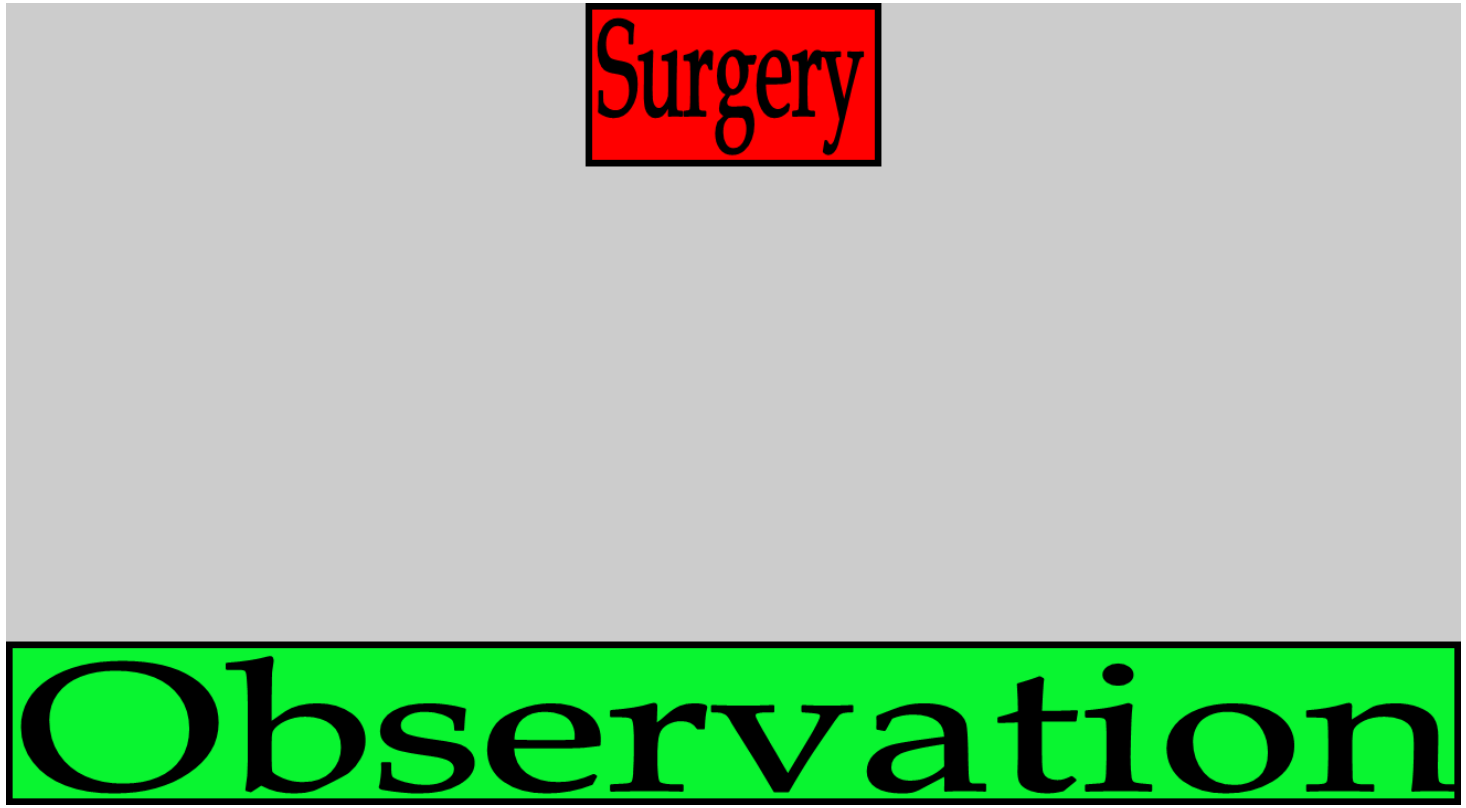


Sibilla P et al. Trent'anni di scoliosi. Lezione" non" magistrale. Rachide & Riabilitazione 2002. Vol 1. GSS, Milan, Italy.

Orthopedic tradition



EB «Wait & see» approach (surgeons)



Cochrane Rehabilitation

Back & Neck Group
Published in 2010

First Cochrane Review

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 et al. Braces for idiopathic scoliosis in adolescents. Cochrane Database Syst Rev. 2010 Jan 20;(1):CD006850. doi: 10.1002/14651858.CD006850.pub2.

First Cochrane Review results

Date of search: July 2008

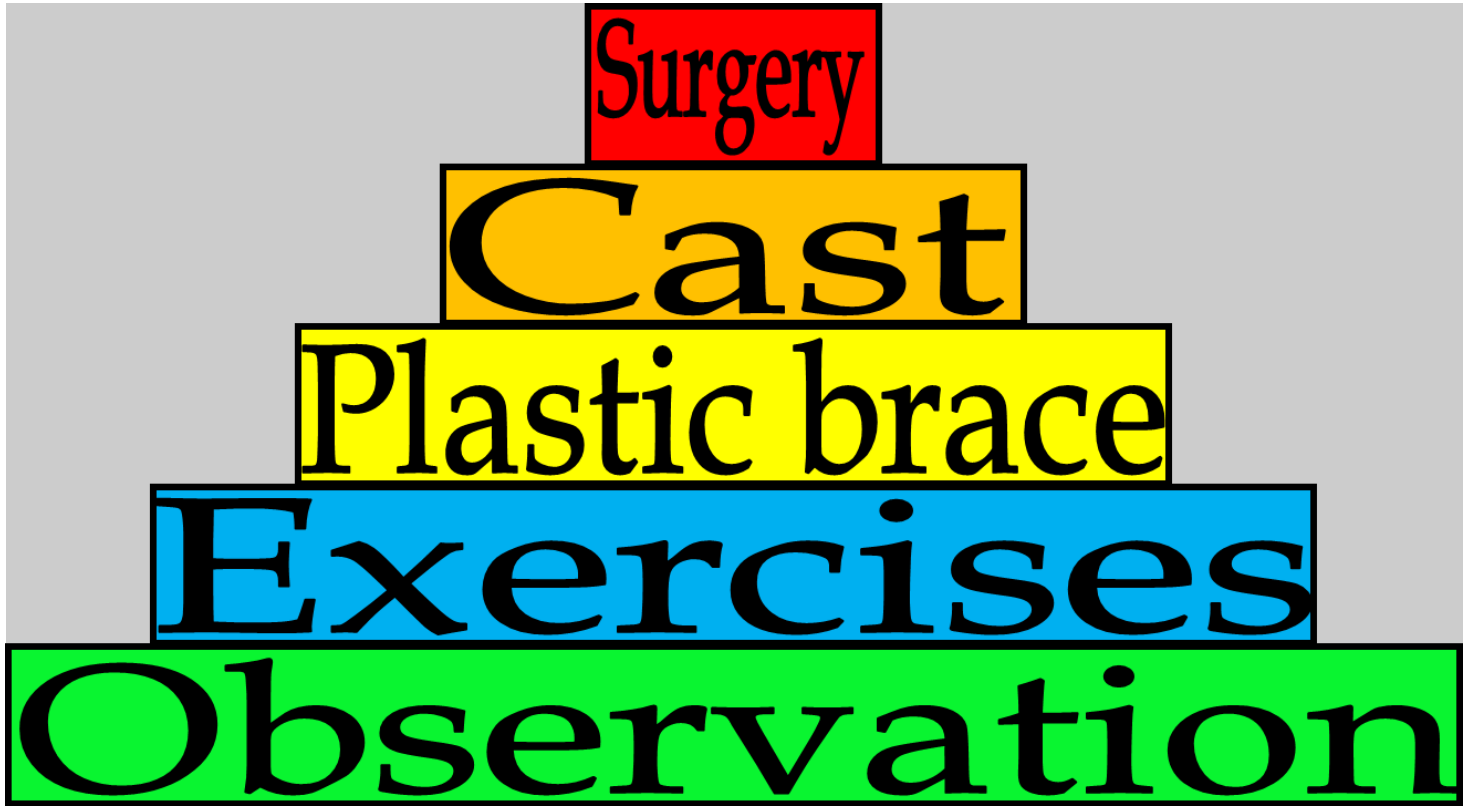
Included studies: 2 - Total population: 329

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

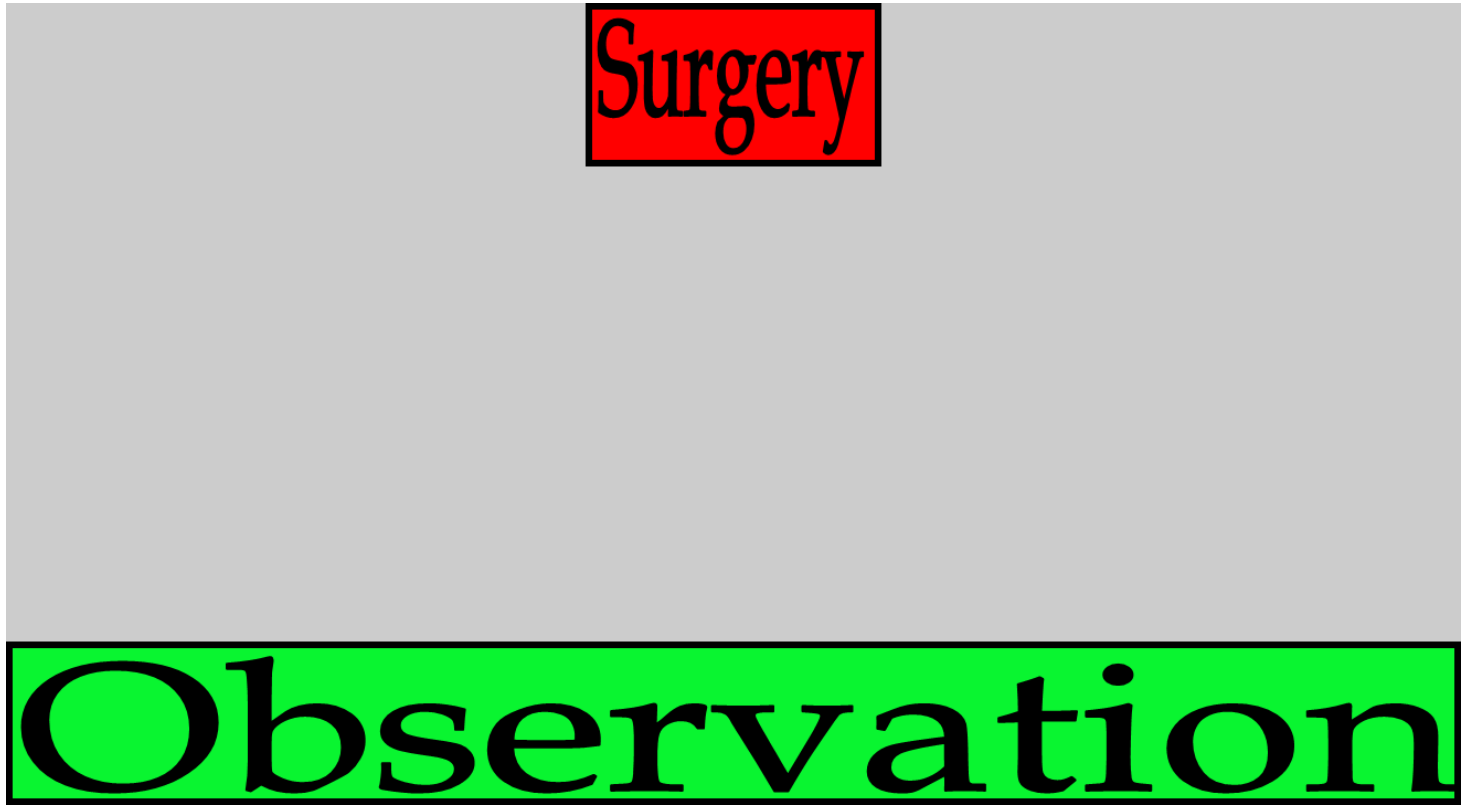
Negrini S et al. Braces for idiopathic scoliosis in adolescents. Cochrane Database Syst Rev. 2010 Jan 20;(1):CD006850. doi: 10.1002/14651858.CD006850.pub2.

Treatments' progression (SOSORT)



Negrini S et al. 2011 SOSORT guidelines: Orthopaedic and Rehabilitation treatment of idiopathic scoliosis during growth. Scoliosis. 2012 Jan 20;7(1):3. doi: 10.1186/1748-7161-7-3.

«Wait & see» approach (SRS)



US RCT financed by NIH with 5 million $

Stop by the Ethical Committee

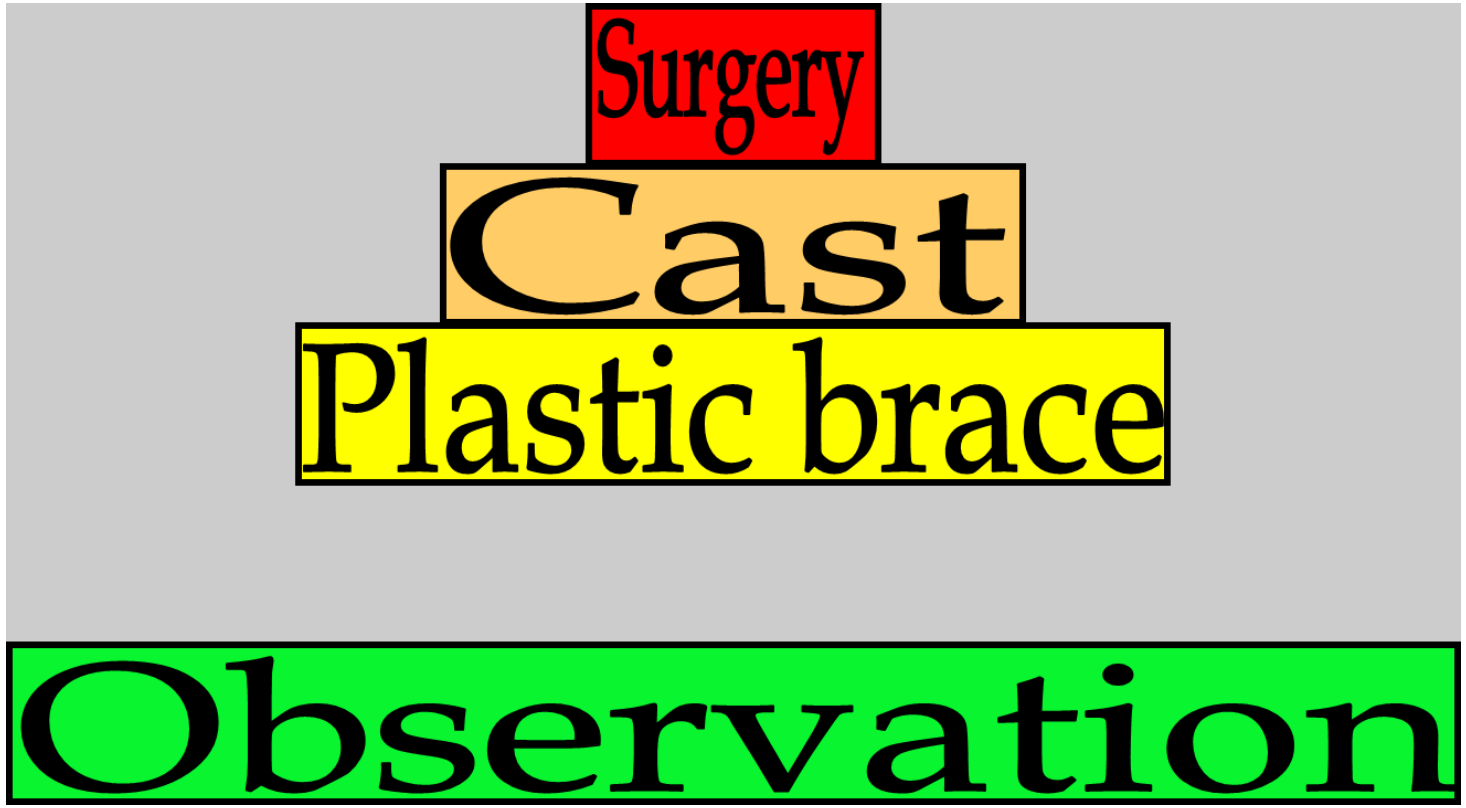
The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Effects of Bracing in Adolescents with Idiopathic Scoliosis

Stuart L. Weinstein, M.D., Lori A. Dolan, Ph.D., James G. Wright, M.D., M.P.H., and Matthew B. Dobbs, M.D.

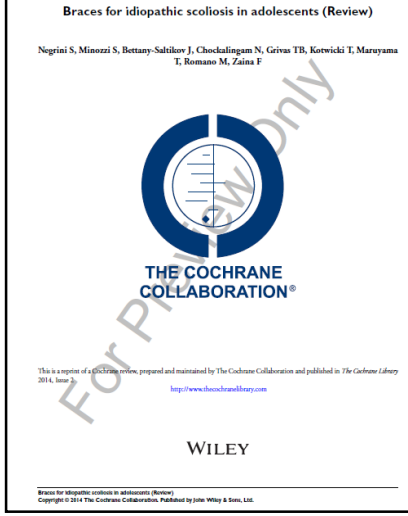
New Evidence Based approach (SRS)



Cochrane Rehabilitation

Last Cochrane Review

Back & Neck Group
Published in 2015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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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COCHRANE COLLABORATION

Braces for Idiopathic Scoliosis in Adolescents

Stefano Negrini, MD,* Silvia Minozzi, MD,† Josette Bettany-Saltikov, PhD, PT,‡
Nachiappan Chockalingam, PhD,§ Theodoros B. Grivas, MD,¶ Tomasz Kotwicki, MD,‖
Toru Maruyama, MD,** Michele Romano, PT,†† and Fabio Zaina, MD††

Last Cochrane Review results

Date of search: February 2015

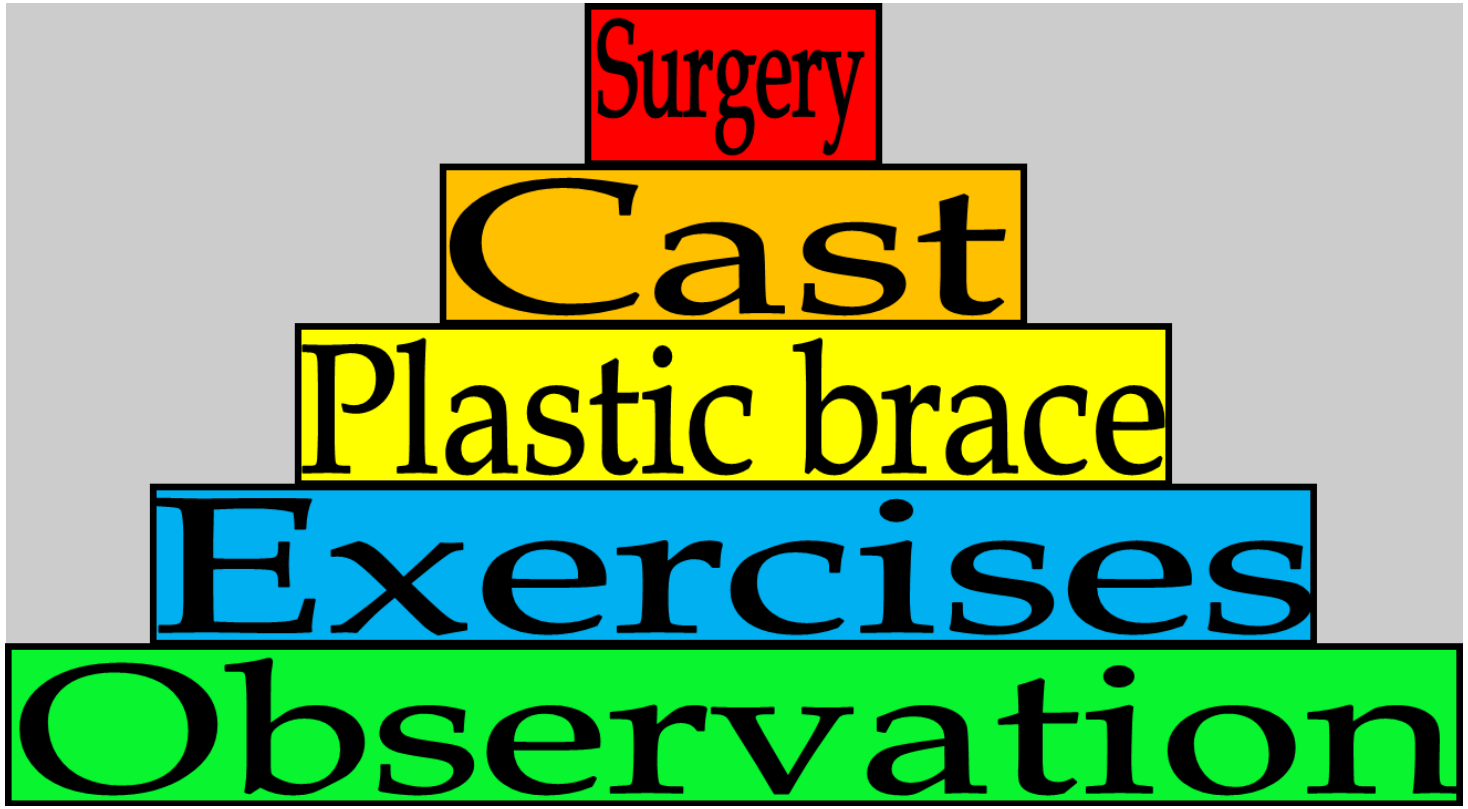
Included studies: 7 - Total population: 662

Results relevant to everyday clinical practice:

- All included papers consistently showed that bracing prevented curve progression – but this was not accepted to be published as a result by Cochrane (!!!)
- There is a progression of effectiveness according to the curve importance:
  - Elastic brace for low degree curves (15°-30°) – low quality evidence
  - Rigid plastic brace for medium degree curves (20°-40°) – low quality evidence
  - Very rigid plastic brace for high degree curves (45° or more) to reduce rate of surgery – very low quality evidence
  - Rigid brace is more effective than elastic brace for medium degree curves (20°-40°) – very low quality evidence

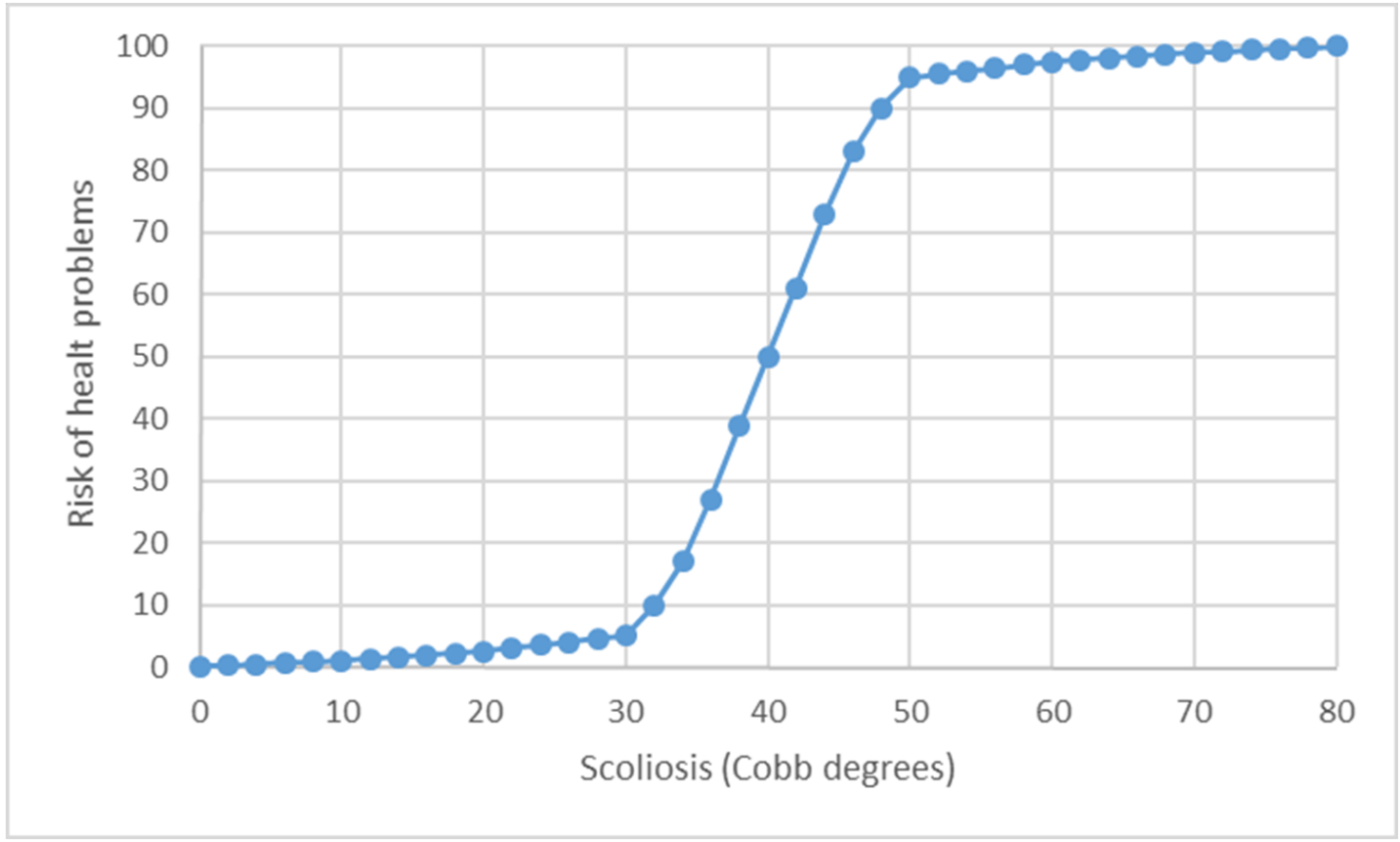
Negrini S et al. Braces for idiopathic scoliosis in adolescents. Cochrane Database Syst Rev. 2015 Jun 18;(6):CD006850. doi: 10.1002/14651858.CD006850.pub3.

Treatments' progression (SOSORT)



Negrini S et al. 2011 SOSORT guidelines: Orthopaedic and Rehabilitation treatment of idiopathic scoliosis during growth. Scoliosis. 2012 Jan 20;7(1):3. doi: 10.1186/1748-7161-7-3.

Risk of problems in adulthood due to AIS



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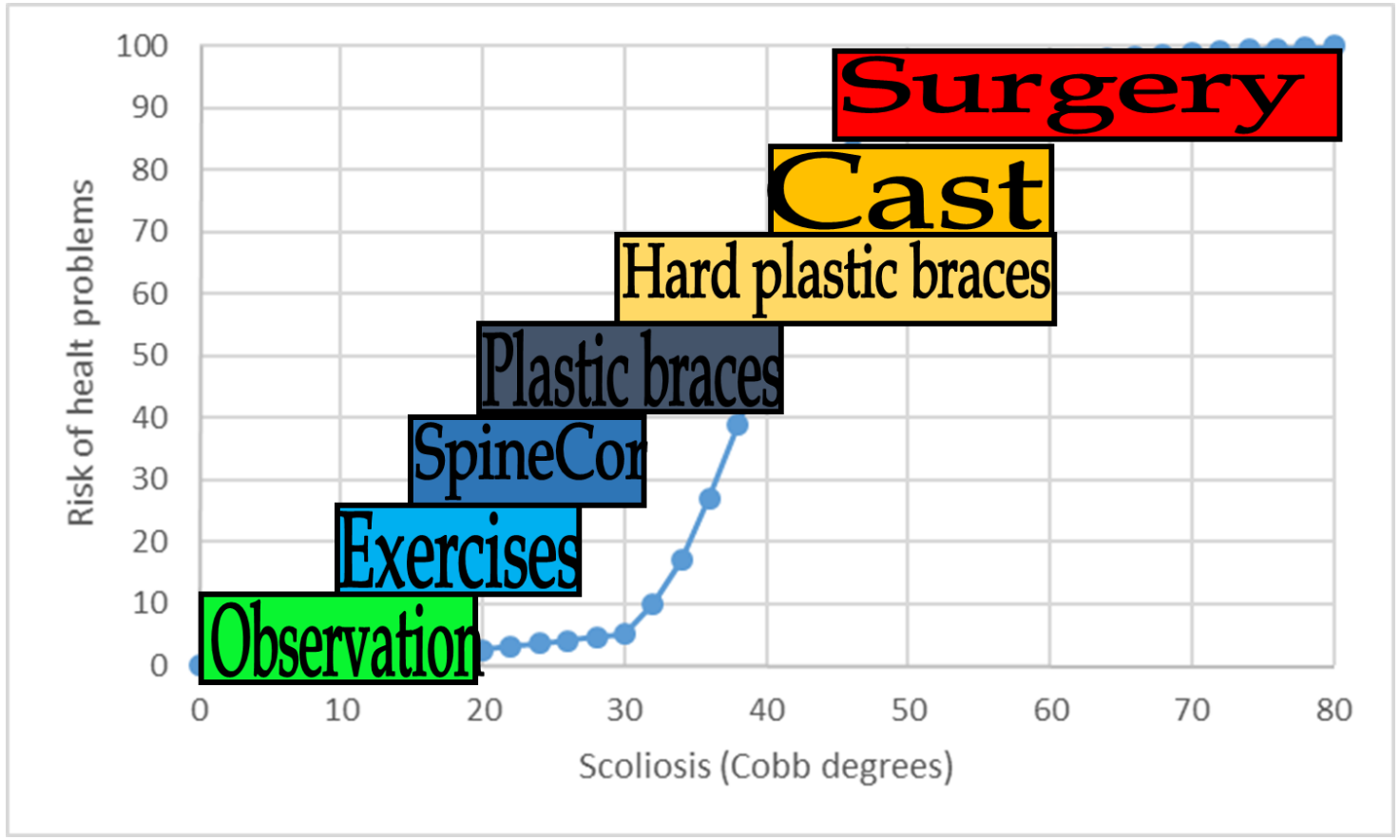
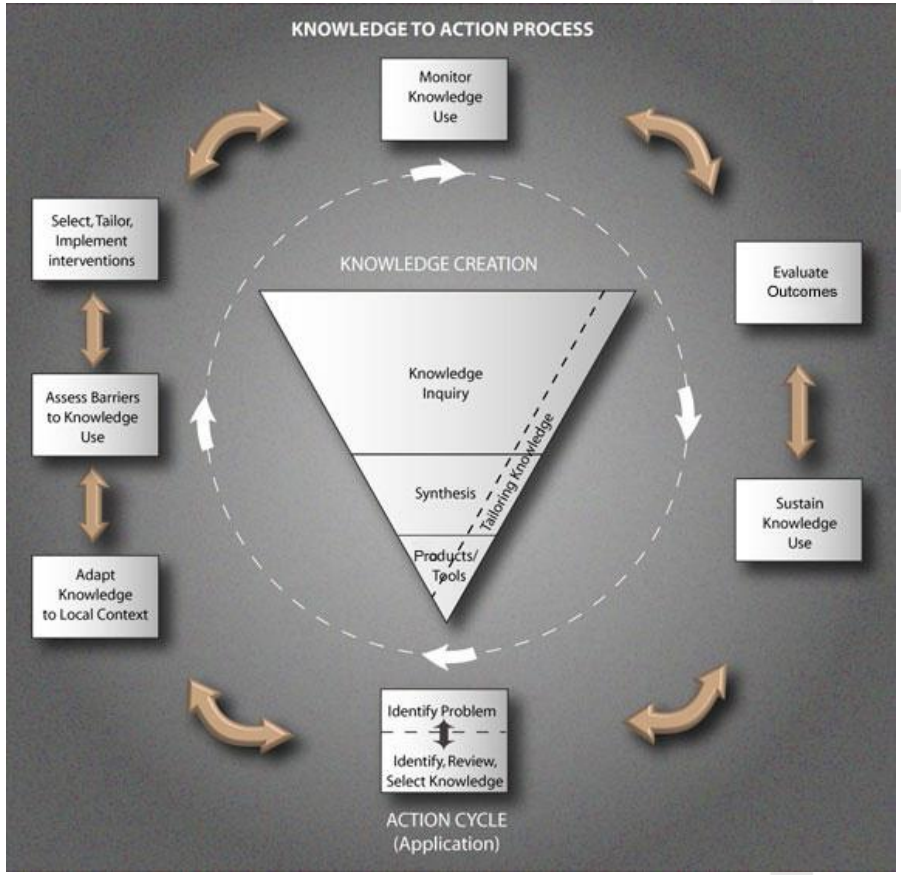
Treatment according to Cochrane Review



Take home messages

Adapting to evidence is a real work that requires:

- Acceptance of the evidence
- Reorganization of one's own work (individual or collective)
- Identification and overcoming of barriers
- Need of resources to make the change possible
- Sustainability in time
- And, most of all, willingness to change !



Thank you

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