

# From research to practice

... and practice to research.

## Knowledge translation in neurorehabilitation

**A/Prof William Levack PhD**  
**Rehabilitation Teaching & Research Unit (RTRU)**

Trusted evidence.  
Informed decisions.  
Better health.





## Cochrane News

- ◆ Cochrane Response seeks Editorial Assistant - London, UK
- ◆ Cochrane seeks Executive Assistant to the CEO - London, UK
- ◆ Cochrane seeks post-doc research fellow - Exeter, UK
- ◆ Featured Review: School-based interventions for preventing HIV, sexually transmitted infections, and pregnancy in adolescents
- ◆ World Chronic Obstructive Pulmonary Disease Day 2016

[More](#)


Welcome to the new Cochrane  
Rehabilitation Field

## Latest News and Events

Exploratory  
Meeting 2016,  
Rovato, Brescia,  
Italy



Cochrane  
Colloquium 2017



## Keep Posted



Tweets by  
[@CochraneRehab](#)

Hmm, an empty timeline.  
That's weird.

[Check for Tweets](#)
[Embed](#)
[View on Twitter](#)

# Contents

- Origins of Cochrane Rehabilitation
- Goals & purpose of Cochrane Rehabilitation
- Challenges for neurorehabilitation in developing an evidence base
- Work currently underway to address these challenges

## What is Cochrane?

- Global
- Independent
- Non-profit
- Network of researchers, professionals, patients, carers, and people interested in health
- Exists so that healthcare decisions get better



# A leader in evidence-based healthcare

## Audit of systematic reviews found Cochrane Reviews:

- Most comprehensive reporting
- More likely to use a pre-published protocol
- More likely to report risk of bias assessment and integrate it in analysis of results
- Most consist use of appropriate statistical methods
- Most likely to be updated over time

(Page et al., 2016, PLoS Medicine)



## Free access in Australia and NZ

“Ongoing support for The Cochrane Library is recognition of the vital role systematic reviews play in informing policy and practice.”

(NHMRC Media Release, 21/8/2012)



# Cochrane Rehabilitation

## Location:

- Department of Clinical and Experimental Sciences, University of Brescia

## Initial Funding:

- Care & Research Institute; Don Gnocchi, Milan

## Established:

- 22 October 2016



Prof Stefano Negrini  
Field Director



RTRU  
Rehabilitation Teaching & Research Unit

# Cochrane Rehabilitation Exec

Stefano Negrini, MD (Italy) – Director

Carlotte Kiekens, MD (Belgium) - Coordinator

William Levack, PT, PhD (NZ) – Review Committee

Thorsten Meyer, Psy, PhD (Germany) – Methods Committee

Elena Ilieva, MD, PhD (Bulgaria) – Education Committee

Julia Patrick Engkasan, MD (Malaysia) – Education Committee

Frane Grubisic, MD (Croatia) – Publications Committee

Farooq Rathore, MD (Pakistan) – LMIC Representative

Francesca Gimigliano, MD, PhD (Italy) – Communication Committee

Tracey Howe, PhD, PT (UK) – Professionals Representative

Antti Malmivaara, MD (Finland) – Methods Committee





# Cochrane Rehabilitation Advisory Board

ISPRM

ISPO

WCPT

WFNR

WFOT

WHO

AMLAR

ESPRM

UEMS PRM Section

Am J Phys Med Rehab

Arch Phys Med Rehab

Aus Occ Ther

Clin Rehabil

Devel Neurorehab

J Ortho Sports Phys Therap

J Rehab Med

Manual Therapy

Neurorehab & Neural Repair

Phys Ther

Pros Ortho Int

Cochrane Italy

Cochrane Musculoskeletal

Cochrane Stroke

LMIC Reps

Consumer Reps (Rehab International)

+ some others

# Cochrane Organization

**Review Groups**: prepare & maintain Cochrane reviews

**Centres**: Support local Cochrane contributors, connect regions to Cochrane central

**Methods Groups**: development & implementation of methods used in the preparation of Cochrane reviews

**Fields**: Focus on dimensions of health care rather than a condition or topic; focus on knowledge translation and dissemination

## 53 Cochrane Review Groups

- At least 4 Review Groups contain >20 systematic reviews relevant to rehab
- >28 Review Groups contain at least 1 systematic review relevant to rehab
- > 9 Review Groups directly relevant to neurorehab



# Role of Cochrane Fields: a bridge

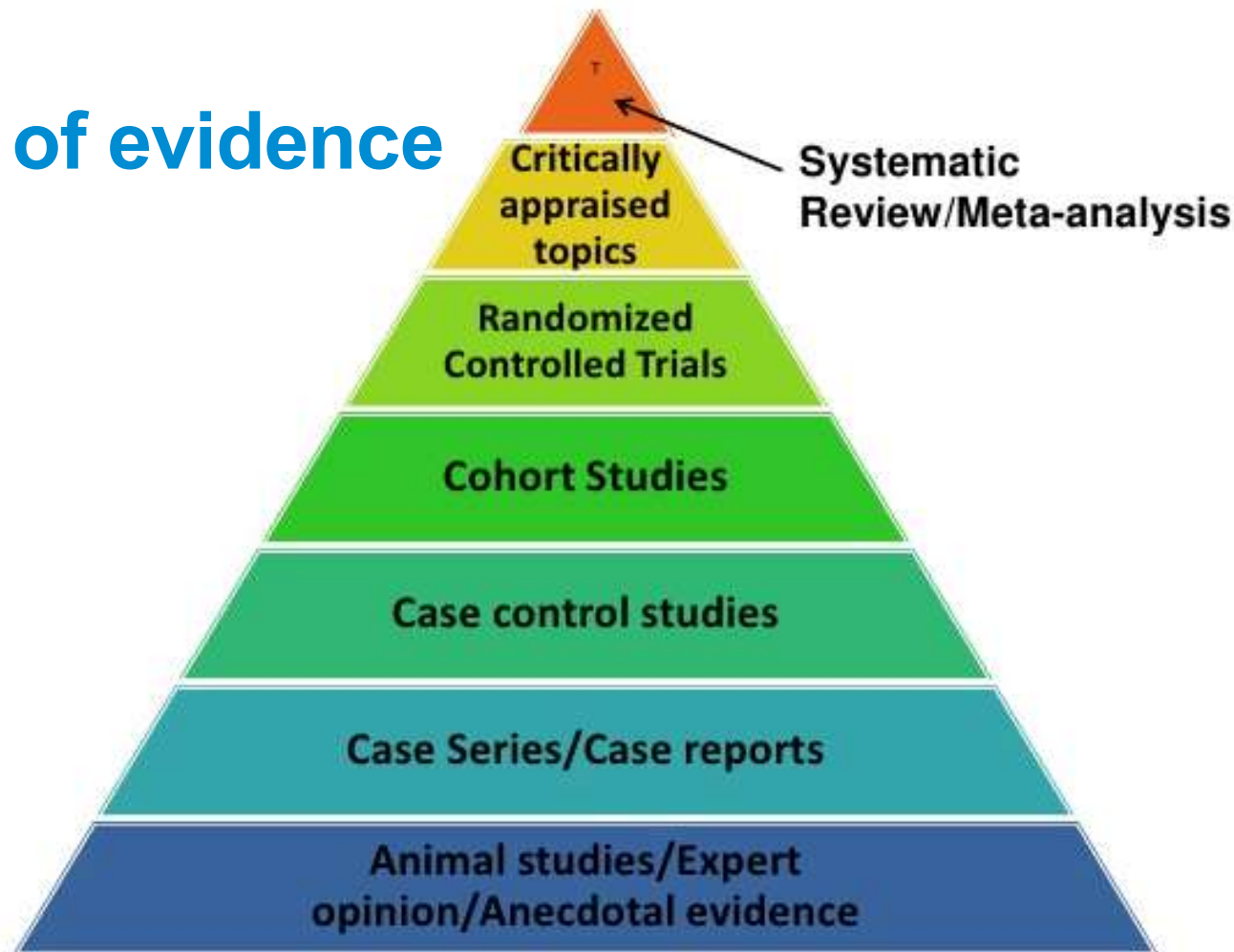
Rehabilitation  
Stakeholders

Cochrane  
Groups

## Cochrane Rehab Goals - Overview

1. Connect rehab stakeholders globally
2. Translate knowledge in rehab
3. Register rehab reviews
4. Educate rehab stakeholders
5. Develop rehab review methods
6. Promote Cochrane to Rehab & Rehab to Cochrane

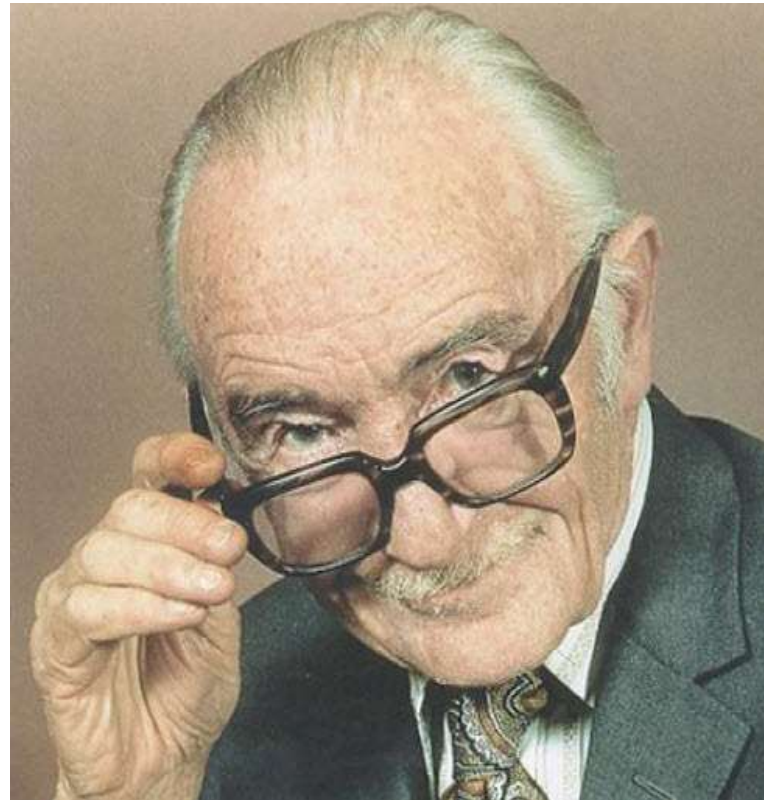
# Hierarchy of evidence

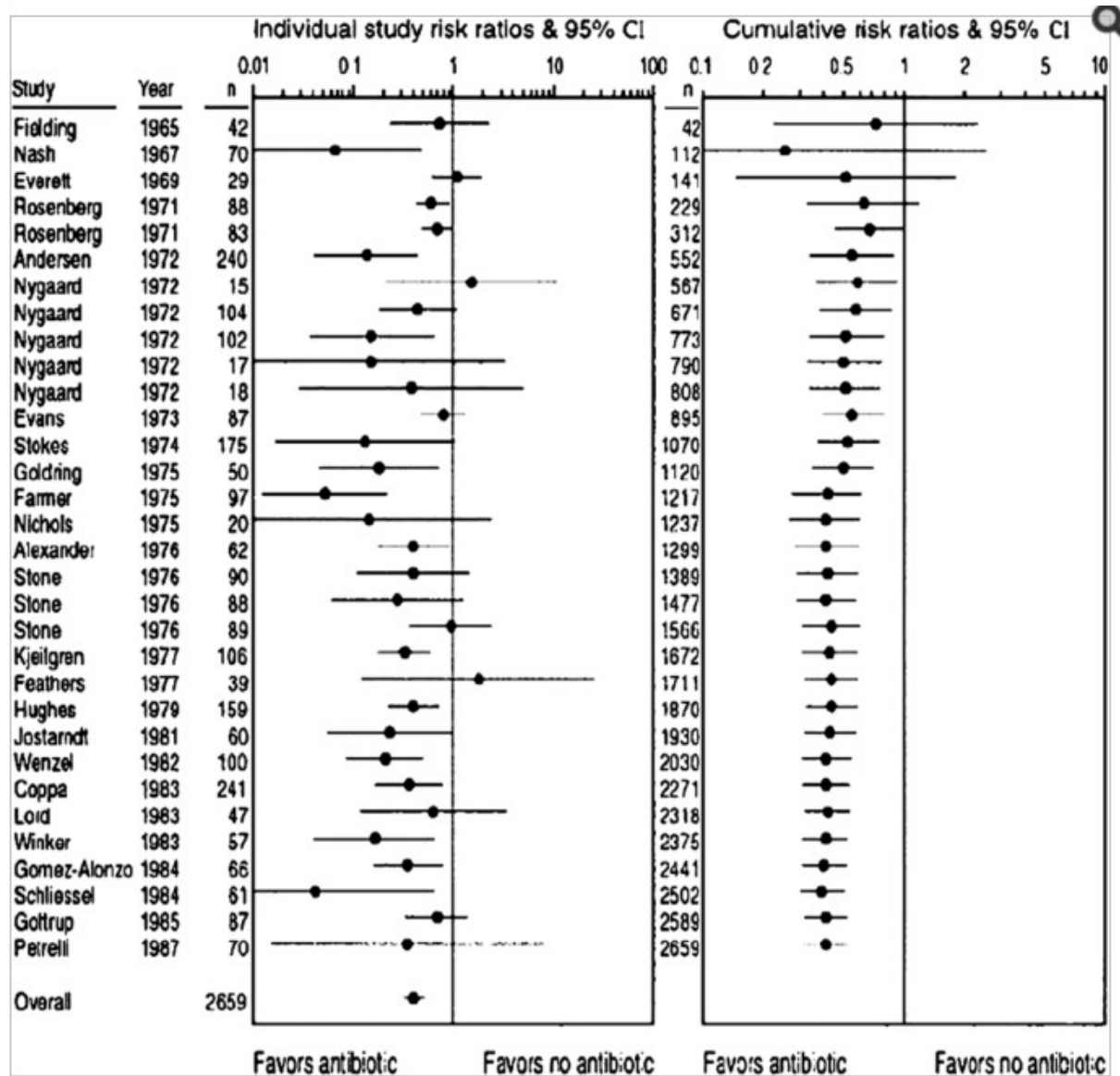


## Archie Cochrane, MD (1909-1988)

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

**Importance of RCTs and meta-analysis**

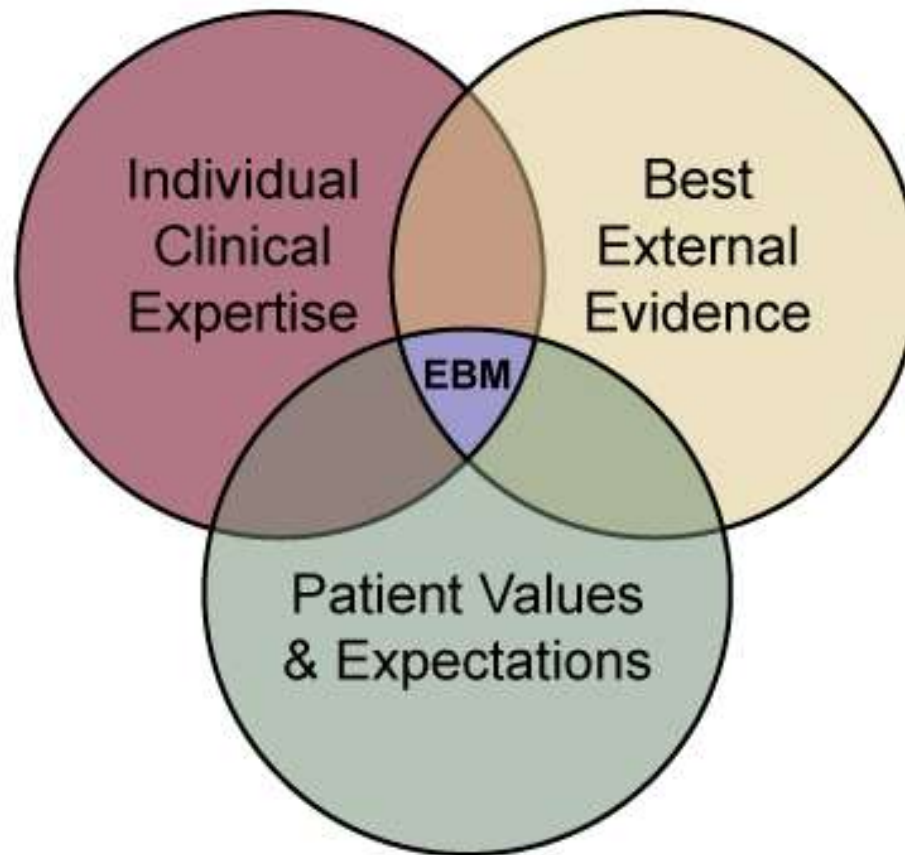




Use of antibiotic prophylaxis compared to no treatment in colon surgery to prevent infection.  
(Ioannidis and Lau, 1999)



## It's not all RCTs and SR however...



## Voices of dissent

doi:10.1111/j.1479-6988.2006.00041.x

*Int J Evid Based Healthc* 2006; **4**: 180–186

SCHOLARLY ARTICLE

### Deconstructing the evidence-based discourse power

Dave Holmes  
PhD(cand)<sup>1</sup> and

<sup>1</sup>Faculty of Health Sciences, School of  
Ryerson University Toronto, Ontario, Canada

#### Abstract

**Background** Drawing on the work of the late French philosophers Deleuze and Guattari, the objective of this paper is to demonstrate that the evidence-based movement

“[Others] have produced much better argued, less inflammatory, more constructive criticisms of evidence-based medicine.”

(Richard Smith, Ex-BMJ Editor, 28 March 2017)

***“to put Cochrane  
evidence at the heart  
of health  
decision-making all  
over the world”***

Change | Training | Cochrane Library | Cochrane.org

Search...



- ◆ People
- ◆ Resources
  - ◆ Resources for Groups
  - ◆ Support from CET
  - ◆ Policies
  - ◆ Strategy to 2020
  - ◆ Dashboard

### Producing the evidence:

- Coverage is defined by the needs of end users...
- ... continue to develop innovative methods for designing and conducting research evidence synthesis

# Cochrane Reviews on TBI interventions

Scoping of reviews (Feb 2017):

- 25 reviews and protocols
  - 13 exclusive to TBI (9 reviews; 4 protocol)
  - 12 mixed brain injury, incl. stroke (10 reviews; 2 protocol)
- 9/25 reviews or protocols over 5 years out of date
- Meta-analysis attempted in only 6 reviews (incl. only 2 TBI exclusive reviews)
- Majority concluded “insufficient evidence”



# GRADE the evidence

- Risk of bias (randomisation; group allocation; ITT; other)
- Directness of evidence
- Heterogeneity
- Precision of effect estimates
- Risk of publication bias



## Risk of bias

- Randomisation → Ethical and pragmatic problems of not delivering intervention
- Rehabilitation interventions usually require active involvement of patients and personnel → But blinding not possible
- Patient reported outcome measures important → But blinding not possible
- Incomplete outcome data → Problem with attrition in long term, community-based studies

# Heterogeneity & precision of effect estimates

- Rehabilitation trials often have high heterogeneity in terms of:

- Patient population
- Person-centred interventions
- Health-care context
- Socioeconomic context
- ‘Quality’ of the therapist on effects of intervention

... All of which reduce precision of effect estimates



## Other barriers to RCTs in rehabilitation

- Most rehab interventions are complex (Craig et al., 2008)
  - Multiple interacting components
  - Behaviour challenge elements
  - Individualisation of interventions  
(i.e. the ‘black box’ of rehabilitation)





## Other barriers to RCTs in rehabilitation

- Most rehab interventions are complex (Craig et al., 2008)
  - ... requiring many multiple RCTs to investigate (\$\$\$ and time!)
  - ... problems with intervention fidelity
  - ... problems with selecting a comparison group
    - (no treatment; 'usual care'; attention control?)



## Other barriers to RCTs in rehabilitation

- Sample sizes for less common conditions  
e.g. multiple sclerosis; motor neuron disease; severe TBI



# But... don't throw the baby out with the bathwater

Evidence-based  
rehabilitation

Rehabilitation professions

Cochrane

Things that are problematic  
for rehabilitation research



## Supplementary Series

[Intervention Review]

# Speech and language therapy for aphasia following stroke

Marian C Brady<sup>1</sup>, Helen Kelly<sup>2,3</sup>, Jon Godwin<sup>4</sup>, Pam Enderby<sup>5</sup>, Pauline Campbell<sup>1</sup>

<sup>1</sup>Nursing, Midwifery and Allied Health Professions Research Unit, University of Otago, Dunedin, New Zealand. <sup>2</sup>Department of Health, Social and Allied Health Professions Research Unit, University of Otago, Dunedin, New Zealand. <sup>3</sup>Department of Health, Social and Allied Health Professions Research Unit, University of Otago, Dunedin, New Zealand. <sup>4</sup>Institutes for Applied Health Research, University of Otago, Dunedin, New Zealand. <sup>5</sup>School of Health and Related Research, University of Otago, Dunedin, New Zealand.

Contact address: Marian C Brady, Nursing, Midwifery and Allied Health Professions Research Unit, 6th Floor Govan Mbeki Building, Cowcaddens Road, Dunedin, New Zealand.

Editorial group: Cochrane Stroke Group.

Publication status and date: New search for studies published in Issue 6, 2016

Review content assessed as of

## 2016 update

- 57 RCT; n=3002
- Strong evidence of effectiveness
- Evidence of dose/response effect
- Development of evidence around types of SLT

## Success stories

[Intervention Review]

### Organised inpatient (stroke unit) care for stroke

Stroke Unit Trialists' Collaboration<sup>1</sup>

<sup>1</sup>Academic Section of Geriatric Medicine, University of Glasgow

Contact address: Peter Langhorne, Academic Section of Geriatric Medicine, Glasgow Royal Infirmary, Glasgow, G4 0SF, UK. [peter.langhorne@glasgow.ac.uk](mailto:peter.langhorne@glasgow.ac.uk)

Editorial group: Cochrane Stroke Group.

Publication status and date: Edited (no change to content)

- Organised stroke unit, less like to:
- Die (OR 0.81; 95% CI 0.69-0.94)
  - Be dependent
  - Be institutionalised

## Success stories

[Intervention Review]

### Services for reducing duration of hospital care for acute stroke patients

Patricia Fearon<sup>1</sup>, Peter Langhorne<sup>1</sup>, Early Supported Discharge Trialists<sup>1</sup>

<sup>1</sup>Academic Section of Geriatric Medicine, University of Glasgow

Contact address: Peter Langhorne, Academic Section of Geriatric Medicine, University of Glasgow  
[peter.langhorne@glasgow.ac.uk](mailto:peter.langhorne@glasgow.ac.uk)

Editorial group: Cochrane Stroke Group.

Publication status and date: New search for studies and analysis in progress  
Review content assessed as up-to-date: 20 April 2010

#### Early support discharge:

- Reduces hospital length of stay
- Reduces mortality
- Improves functional outcome



## So... where to from here?

What work needs to happen now to make Cochrane relevant to rehabilitation?

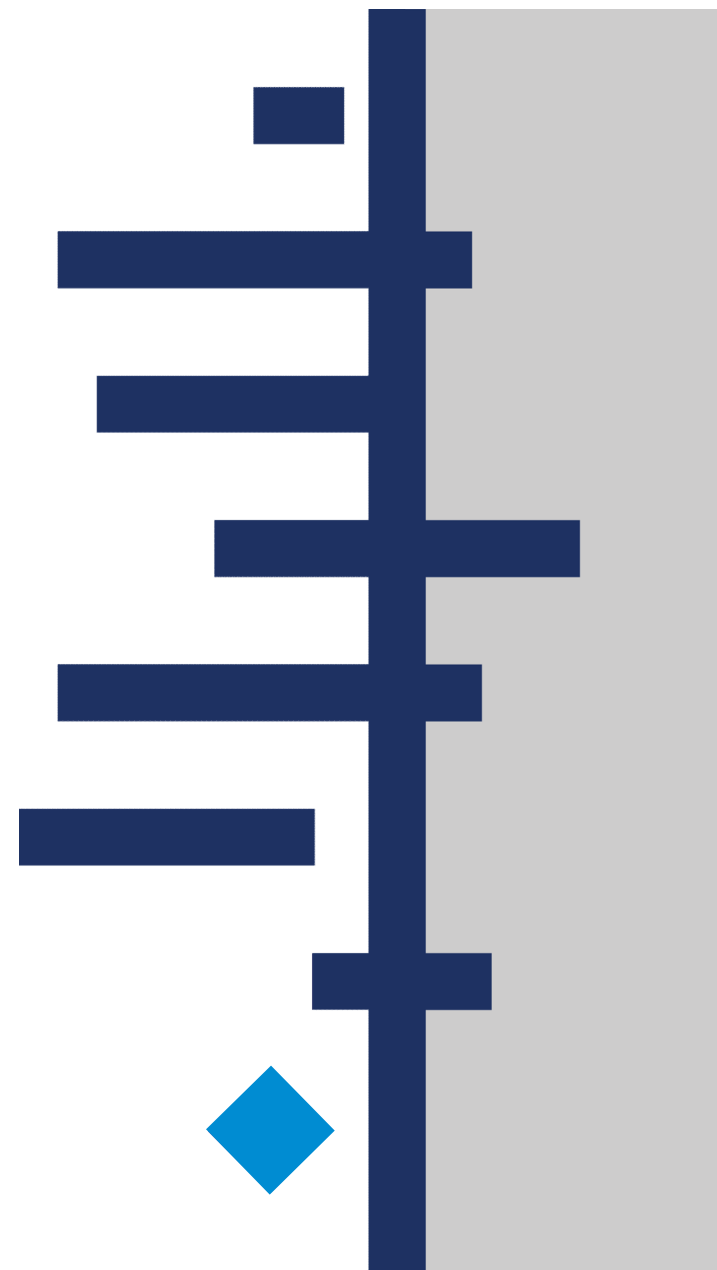




# Cochrane Rehabilitation Methodology Committee

Chair: Dr. Antti Malmivaara (Finland)

Co-Chair: Prof. Thorsten Meyer (Germany)





## Current activities

- Survey of stakeholders re. work priorities for the methods committee & capacity to contribute
- Review how Cochrane methods have been applied to rehab topics
  - How PICO has been applied
  - How risk of bias has been managed
  - How heterogeneity has been managed
- Collect and summarize publications on review methods for evidence based practice relevant to rehabilitation
- Investigate methods used in non-Cochrane reviews on rehabilitation topics



## Current activities

- Assess relevance of Cochrane reviews on rehab topics
- Investigate the relevance of Cochrane reviews and methods, incl. priorities of review questions to low or middle income countries
- Investigate and develop methods for critical appraisal & evidence synthesis involving non-RCT designs (e.g. single case series; benchmark controlled trials)



## Contributions welcome!

- A lot to be done!
- Share your resources with us
- Join Cochrane Rehabilitation mailing list:

**[cochrane.rehabilitation@gmail.com](mailto:cochrane.rehabilitation@gmail.com)**

- Follow on Facebook
- Follow on Twitter:      @CochraneRehab  
                                     @DrLevack

