An algorithm to assign GRADE levels of evidence to comparisons within systematic reviews

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Conflict of interest

I have no actual or potential conflict of interest in relation to this presentation.

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Background & Aim

Cochrane overview of reviews of interventions to improve upper limb (arm) function after stroke		
40 included systematic reviews	127 comparisons with relevant outcomes	Plan to use GRADE approach, but subjectivity led to inconsistency of application

AIM: to develop and use an algorithm to objectively assign GRADE levels of evidence

Methods: exploratory & pragmatic

Expert panel meeting

- 6 review authors + 1 invited expert
- Discuss & agree objective criteria perceived most relevant to quality of this body of evidence

Develop, test & refine algorithm

- Apply to sample of 43 comparisons
- Compare algorithm grade with subjective judgements
- Discuss & agree optimal criteria & ‘cut-offs’

‘Rules’ to convert downgrades

- 4 versions of rules applied to 43 comparisons
- Explore conversion of applied downgrades to level of evidence
- Consensus agreed through discussion

Results

1. Algorithm for determining "downgrades" to levels of evidence in reviews.

Area assessed	Imprecision	Risk of bias (trial quality)	Inconsistency	Risk of bias (review quality)
Method of assessment	Number of participants	Participants in studies with low ROB for randomisation & observer blinding	Heterogeneity	Responses to AMSTAR questions 1-4

2. Formula / 'rules' for applying GRADE level of evidence from number of downgrades determined using the algorithm.

GRADE level of evidence	Number of downgrades
HIGH	0 downgrades
MODERATE	1 or 2 downgrades
LOW	3 or 4 downgrades
VERY LOW	5 or 6 downgrades

Conclusions

Consistent

Transparent

Efficient

Mechanistic?

Captures what is subjectively judged to be of greatest importance to this specific evidence base

Implications

For each of 127 comparisons:

Objective algorithm (based on GRADE) assessed:

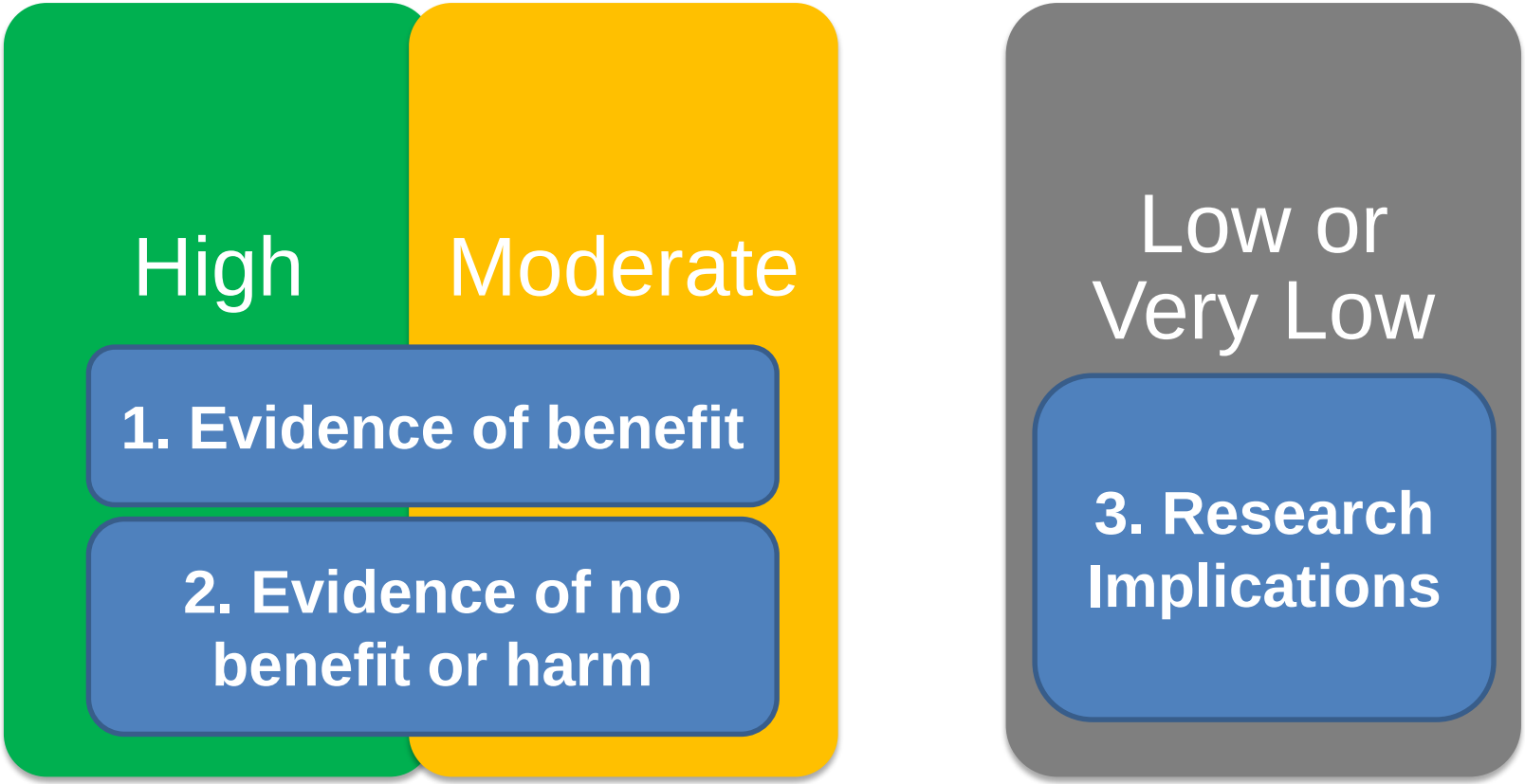
- number of participants
- risk of bias of trials
- heterogeneity (I^2)
- quality of the review

HIGH

MODERATE

LOW or VERY LOW

Implications: synthesis



1. Evidence of benefit

	Upper limb function	Impairment	ADL
CIMT	☑		
Mental practice	☑	☑	o
Mirror therapy	☑	☑	☑
Virtual reality	☑	☑	
> 20 hours Repetitive task training	☑		
Sensory interventions *vs no treatment*	☑	☑	
Robotics		☑	☑
Brain stimulation: tDCS		☑	o

2.Evidence of no benefit or harm

	Upper limb function	Impairment	ADL
Bilateral arm training *vs unilateral*	x	o	o
Stretching & positioning		o	o
Repetitive task training	o		

3. Research recommendations

Definitive RCTs	Further research	Systematic review
• **DOSE** • CIMT • Mental practice • Mirror therapy • Virtual reality	• Stretching & positioning • Sensory interventions • Robotics • tDCS	• Repetitive task training
	• rTMS • Hands-on therapy • Music therapy • Pharmacological interventions • Strength training	• Biofeedback • Bobath therapy • Electrical stimulation • Reach-to-grasp training • Strength training

Pollock A, Farmer SE, Brady MC, Langhorne P, Mead GE, Mehrholz J, van Wijck F. Interventions for improving upper limb function after stroke. Cochrane Database of Systematic Reviews 2014, Issue 11. Art. No.: CD010820

Pollock A, Farmer SE, Brady MC, Langhorne P, Mead GE, Mehrholz J, van Wijck F. Wiffen P. An algorithm was developed to assign GRADE levels of evidence to comparisons within systematic reviews. J Clinical Epidemiology 2015 (published online 1st Sept 2015)

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