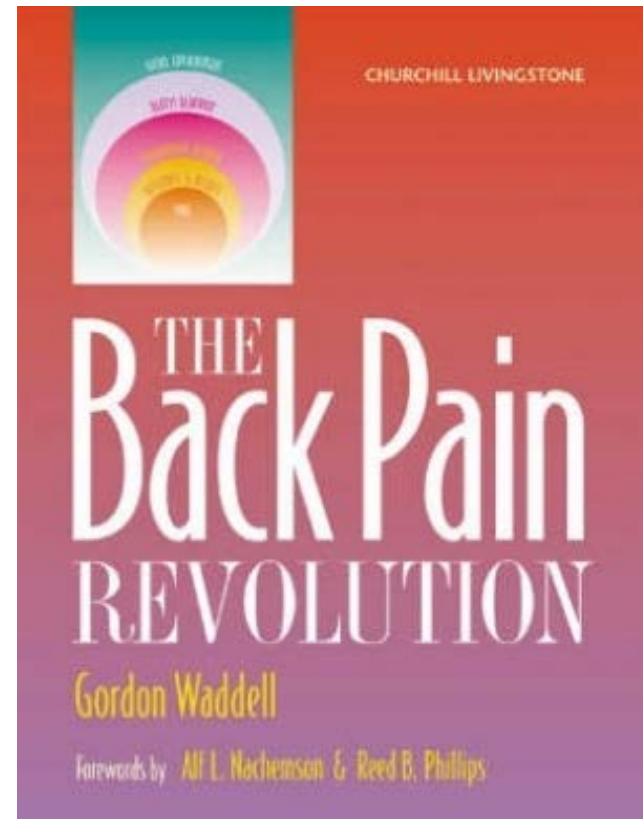


TIME FOR A NEW BACK PAIN REVOLUTION ?

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GORDON WADDELL



COCHRANE BACK AND NECK GROUP SINCE 1996



25 YEARS OF BACK PAIN RESEARCH: 1992-2017

- Patients
 - High incidence / prevalence rates
- Health care system
 - Health care utilization high
- Society
 - High costs
 - Health care utilization (20%)
 - Work absenteeism / presenteeism (80%)
- Effective and cost-effective treatment highest priority

1992 – 2017 : what didn't change

Mean YLDs ×1000	Mean rank (95% UI)	1990 leading causes	2013 leading causes	Mean rank (95% UI)	Mean YLDs (×1000)	Median percentage change
46068	1.3 (1-2)	1 Low back pain	1 Low back pain	1.0 (1-1)	72318	57% (53 to 61)
40079	2.0 (1-3)	2 Iron deficiency anaemia	2 Malnutrition	2.1 (2-4)	51784	53% (49 to 59)
33711	2.8 (1-4)	3 Depression	3 Iron deficiency anaemia	3.6 (2-6)	36663	-9% (-10 to -7)
22294	4.7 (4-6)	4	4 Neurological disorders	4.3 (3-6)	34348	54% (49 to 60)
21633	5.1 (3-7)	5 Iron deficiency anaemia	5 Other mental and substance use disorders	5.3 (3-9)	32580	51% (45 to 55)
19805	5.8 (4-8)	6	6 Neurological disorders	6.6 (3-10)	28898	46% (41 to 50)
17180	6.9 (4-9)	7 Alcohol use disorders	7 Diabetes	6.7 (5-9)	29518	136% (127 to 144)
15151	7.9 (6-10)	8 COPD	8 COPD	7.8 (4-10)	26131	72% (67 to 79)
12672						
12533						
10337						
9995						
8048						
7831						
7362						
7307						
6780						
7491						
6643						
6368	19.7 (15-24)	20 Dysthymia	20 Dermatitis	18.8 (15-25)	9278	37% (35 to 39)
6076	20.6 (15-25)	21 Other mental and substance use disorders	21 Alzheimer's disease	22.2 (18-26)	7774	92% (85 to 99)
5699	22.1 (17-26)	22 Alcohol use disorders	22 Alcohol use disorders	23.0 (18-28)	7654	34% (32 to 37)
5827	22.9 (12-38)	23 Acne vulgaris	23 Epilepsy	23.2 (18-30)	7544	41% (28 to 57)

LOW BACK PAIN NO.1

Global, regional, and national incidence, prevalence, and years lived with disability for 301 acute and chronic diseases and injuries in 188 countries, 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013 – The Lancet 2015; june 5

1992 – 2017: major changes

From bed rest to physical activity

< 1990 - bed rest mainstay of treatment



2017 – staying active !



1995 ANTTI MALMIVAARA

- Discovered that advise to stay active leads to faster recovery than bed rest for acute low back pain
- 1996 clinical guidelines recommendations discouraged bed rest



Vol. 332 No. 6

TREATMENT OF ACUTE LOW BACK PAIN

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THE TREATMENT OF ACUTE LOW BACK PAIN — BED REST, EXERCISES, OR ORDINARY ACTIVITY?

ANTTI MALMIVAARA, M.D., PH.D., UNTO HÄKINEN, M.SC., PH.D., TIMO ARO, M.D., PH.D.,
MAJ-LEN HEINRICHS, R.N., LIISA KOSKENNIEMI, M.D., EEVA KUOSMA, M.SC., SEPPÖ LAPPI, M.D.,
RAILI PALOHEIMO, M.D., CARITA SERVO, M.D., VESA VAARANEN, M.D., PH.D.,
AND SVEN HERNBERG, M.D., PH.D.

Abstract *Background.* Bed rest and back-extension exercises are often prescribed for patients with acute low back pain, but the effectiveness of these two competing treatments remains controversial.

Methods. We conducted a controlled trial among employees of the city of Helsinki, Finland, who presented to an occupational health care center with acute, nonspecific low back pain. The patients were randomly assigned to one of three treatments: bed rest for two days (67 patients), back-mobilizing exercises (52 patients), or the continuation of ordinary activities as tolerated (the control group; 67 patients). Outcomes and costs were assessed after 3 and 12 weeks.

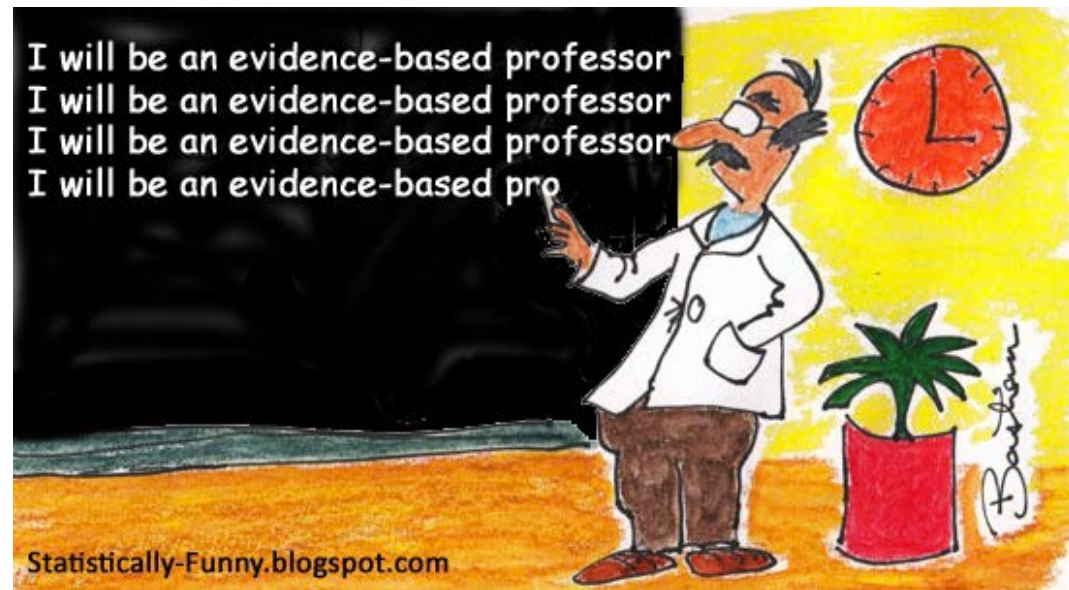
Results. After 3 and 12 weeks, the patients in the con-

trol group had better recovery than those prescribed either bed rest or exercises. There were statistically significant differences favoring the control group in the duration of pain, pain intensity, lumbar flexion, ability to work as measured subjectively, Oswestry back-disability index, and number of days absent from work. Recovery was slowest among the patients assigned to bed rest. The overall costs of care did not differ significantly among the three groups.

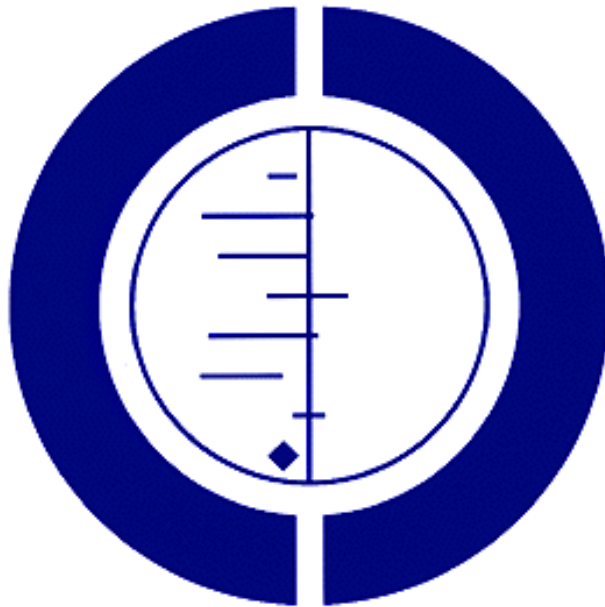
Conclusions. Among patients with acute low back pain, continuing ordinary activities within the limits permitted by the pain leads to more rapid recovery than either bed rest or back-mobilizing exercises. (N Engl J Med 1995;332:351-5.)

1992 – 2017: major changes

- From expert-based to evidence-based care
- From 627 to 4258 back pain publications
- From 19 to 170 back pain RCTs
- From 6 to 307 back pain SRs



COCHRANE COLLABORATION [SINCE 1993]



THE COCHRANE COLLABORATION

Preparing, maintaining and disseminating
systematic reviews of the effects of health care

www.cochrane.org

back.cochrane.org

COCHRANE LIBRARY 2017 – ACUTE LBP

Effective

- Advise to stay active, NSAIDs, muscle relaxants

Probably effective

- Manipulation / mobilisation, patient education

Probably not effective

- Exercise therapy

Ineffective

- Bed rest, traction, paracetamol

Effective

- Exercise therapy, intensive multidisciplinary rehab.

Probably effective

- NSAIDs, back schools, behavioral tx, manipulation / mobilisation

Probably not effective

- Antidepressants, TENS

Ineffective

- Facet joint injections, traction

COCHRANE LIBRARY 2017 – WORK RELATED LBP

- Low to very low quality evidence for **back schools**; uncertain whether they are effective or not [Poquet et al.]
- Unclear whether **lumbar supports** are more effective than no or other interventions for treating lbp [van Duijvenbode et al.]
- Low quality evidence that **physical conditioning** reduces sickness absence days compared to usual care for chronic lbp [Schaafsma et al.]

COCHRANE LIBRARY 2017 – WORK RELATED INTERVENTIONS

- 14 RCTs; 1897 workers; musculoskeletal disorders, mental health problems, cancer,
- High quality evidence that workplace interventions reduce cumulative duration of sickness absence
- Moderate quality evidence that workplace interventions reduce time to first RTW
- Moderate quality evidence that workplace interventions **increase** recurrences of sick leave

van Vilsteren et al. 2015

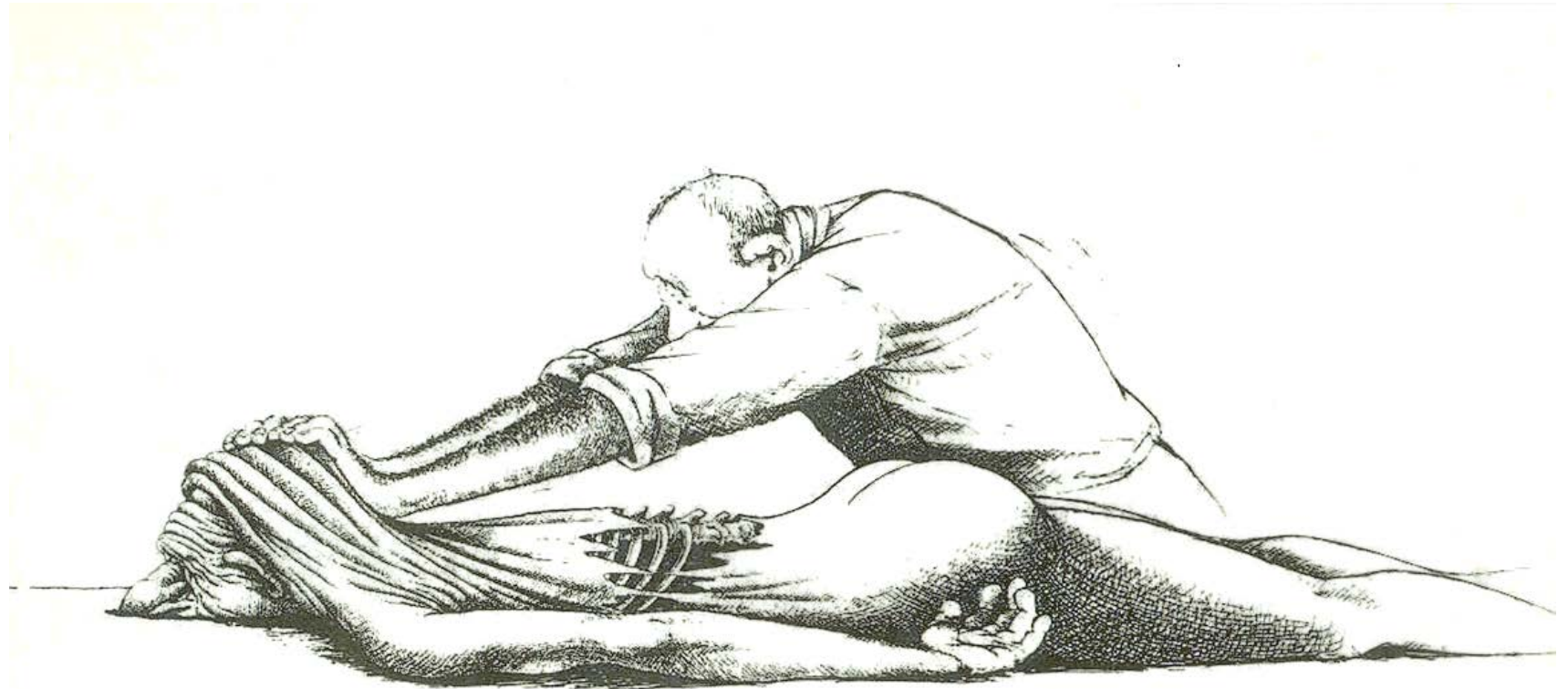
CHALLENGES

- Advise to stay active, NSAIDs, muscle relaxants effective for acute lbp
- Exercise therapy, intensive multidisciplinary rehabilitation effective for chronic lbp
- Workplace interventions reduce sick leave

but.....

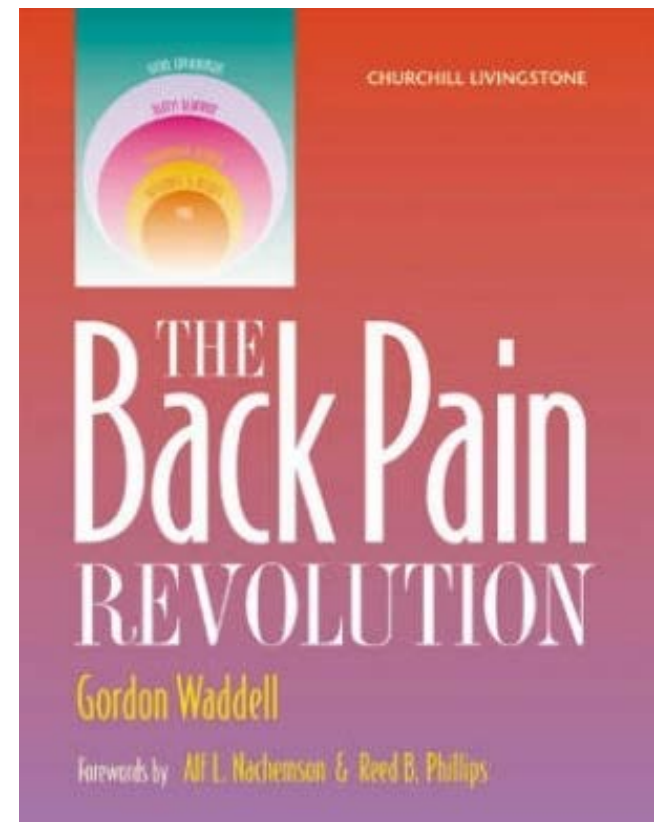
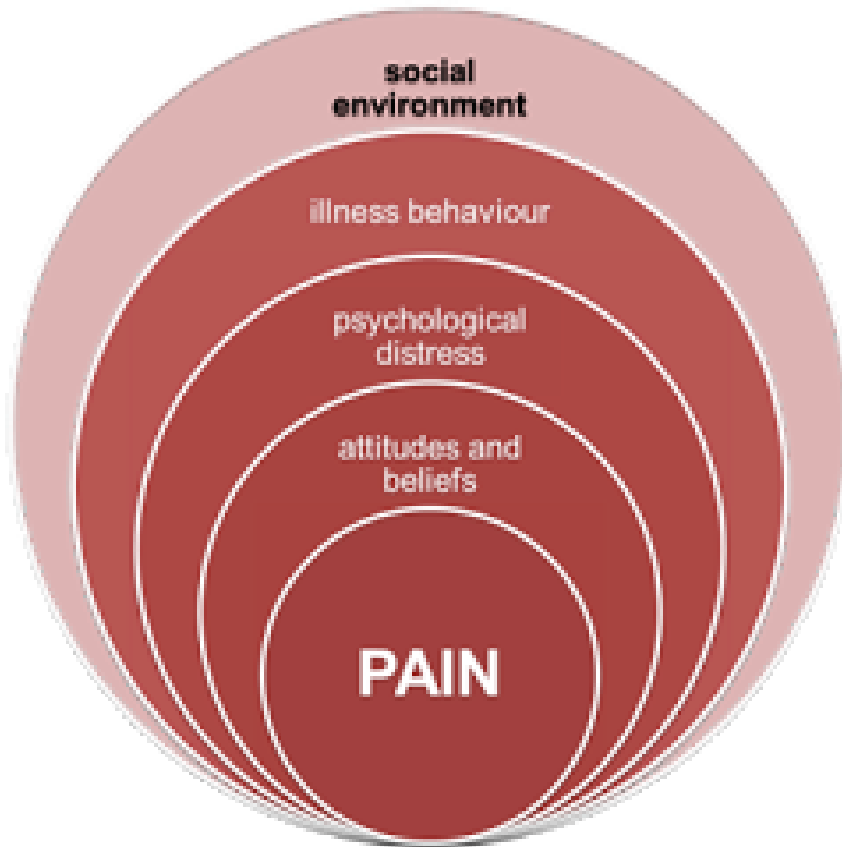
- Effects small ; quality of evidence not high
- Large variation in clinical practice

STRONG BELIEFS + WIDE VARIATION IN CARE



1992 – 2017: major changes

From biomedical to biopsychosocial model



PSYCHOSOCIAL FACTORS

- Anxiety
- Depression
- Fear avoidance
- Catastrophizing
- Somatisation
- Psychiatric co-morbidity
- Drug/alcohol abuse
- Distress
- Job dissatisfaction
- Relation with colleagues and supervisor/manager

EVIDENCE PSYCHOSOCIAL FACTORS AFTER 25 YEARS

- Some evidence that fear avoidance, catastrophizing, depression and job dissatisfaction are associated with worse outcomes
- Associations weak
- Small studies
- Methodological weaknesses
- Potential publication bias
- Challenge to target interventions on psychosocial factors

Wertli et al, 2014ab; Pinheiro et al, 2015

INTERVENTIONS ON PSYCHOSOCIAL FACTORS

- Systematic review ***acute and subacute*** LBP

Information strategies (10 RCTs):

- High-quality evidence of no effectiveness for pain, function, work issues and health care use

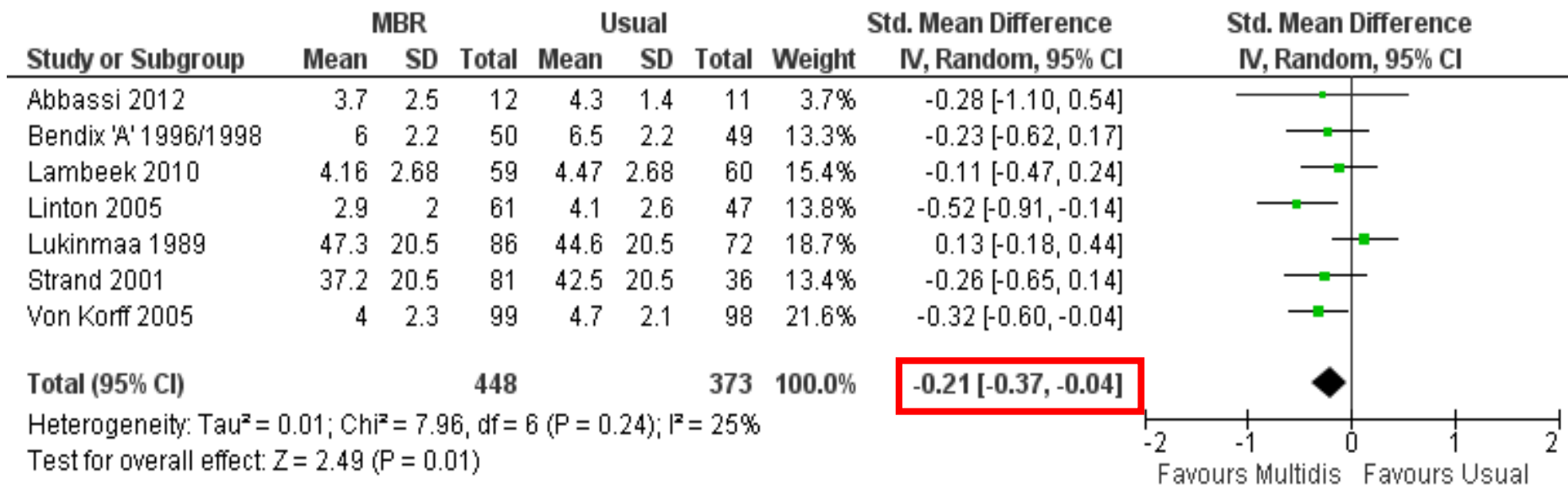
Cognitive behavioural therapy (3 RCTs):

- Very low-quality evidence of moderate effectiveness for pain, function, quality of life

Ramond-Roquin et al. *Family Practice*, 2014, Vol. 31, No. 4, 379–388

INTERVENTIONS ON PSYCHOSOCIAL FACTORS

- Systematic review multidisciplinary rehab for **chronic** LBP
- MR vs usual care; long-term pain and disability; moderate quality evidence



Kamper et al. BMJ 2015;350:h444

MULTIDISCIPLINARY REHABILITATION FOR CHRONIC LBP

“To put the findings in perspective, the pooled standardised mean difference comparing multidisciplinary rehabilitation with usual care (about 0.2) corresponds to approximately 0.5 points on a 0-10 pain scale and 1.5 points on a 24 point Roland-Morris scale.”

Statistically significant but not clinically relevant

Kamper et al. BMJ 2015;350:h444

INTERVENTIONS ON PSYCHOSOCIAL FACTORS

- Behavioral treatment for **chronic** low back pain
- 43 RCTs
- High quality evidence that a combination of behavioural therapies is **more effective vs. waiting list control** on pain intensity and functional status in the short-term.



Henschke et al. Update of Cochrane review. Unpublished

BEHAVIORAL THERAPY FOR CHRONIC LBP

- High quality evidence that behavioural treatment is **no more effective than exercise therapy** on pain intensity in the short-, intermediate-, or long-term.
- Moderate quality evidence that behavioural treatment is **no more effective than usual care** on pain intensity or functional status in the short- and intermediate-term.

Henschke et al. Update of Cochrane review. Unpublished

EVIDENCE BIOPSYCHOSOCIAL MODEL

Summary of findings from systematic reviews:

- Prognostic factors
 - Small studies, weak associations
- Interventions
 - Small studies
 - Small effects at best vs. no treatment or WLC
 - No more effective than other (biomedical) treatments



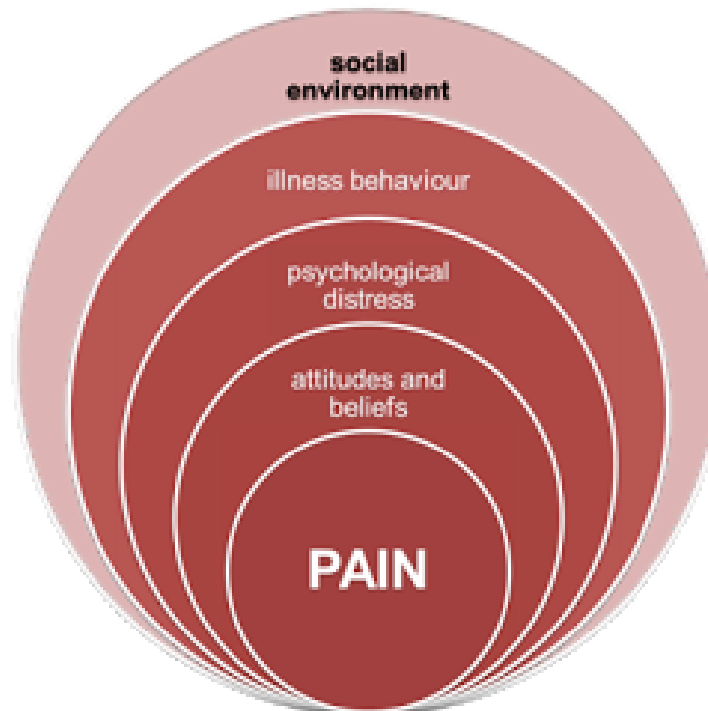
SUMMARY OF 25 YEARS OF BACK PAIN RESEARCH

- Major shift from bed rest to staying active
- Major shift from biomedical to biopsychosocial model
- Small effects
- Time for a new back pain revolution ?



TIME FOR A NEW BACK PAIN REVOLUTION ?

- Back to the BIO-psychosocial model
- Synthesis of biological, psychological, and social factors in research and clinical practice



Challenges

- Optimising existing treatment
- Knowledge about subgroups
- Better and larger studies
- Well-supported working mechanisms

CHALLENGE 1: OPTIMISING EXISTING TREATMENT

- What is the optimal content, intensity and duration of intervention ?
- How to evaluate multimodal interventions ?
- Do care providers have adequate skills ?
- How can we improve compliance ?
- What role do patient preferences play ?
- Are the benefits worth the costs ?

CHALLENGE 2: KNOWLEDGE ABOUT SUBGROUPS

- Which type of patient benefits most from which type of treatment ?

Options:

- Delitto's classification based algorithm
- Orebro screening questionnaire
- Primary care screening tool (START Back)
-
- All symptom based



START BACK SCREENING TOOL

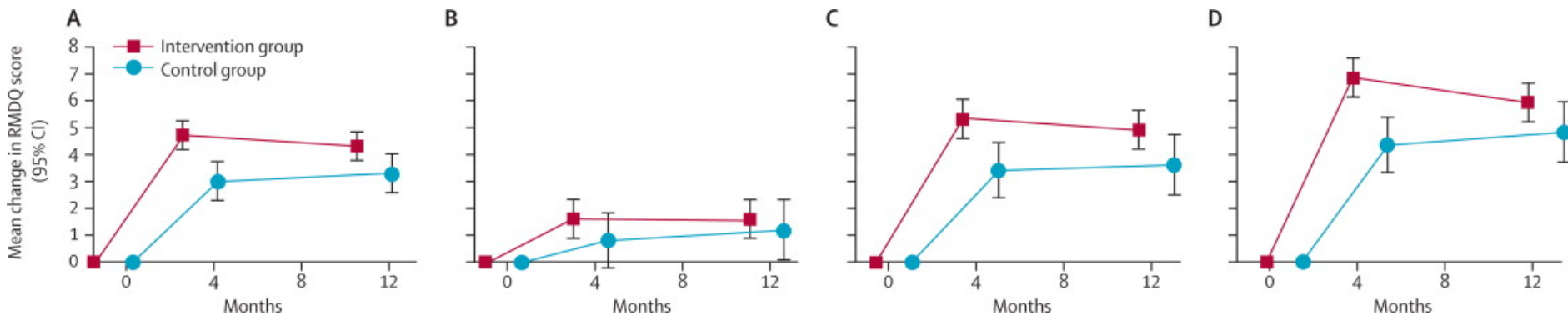
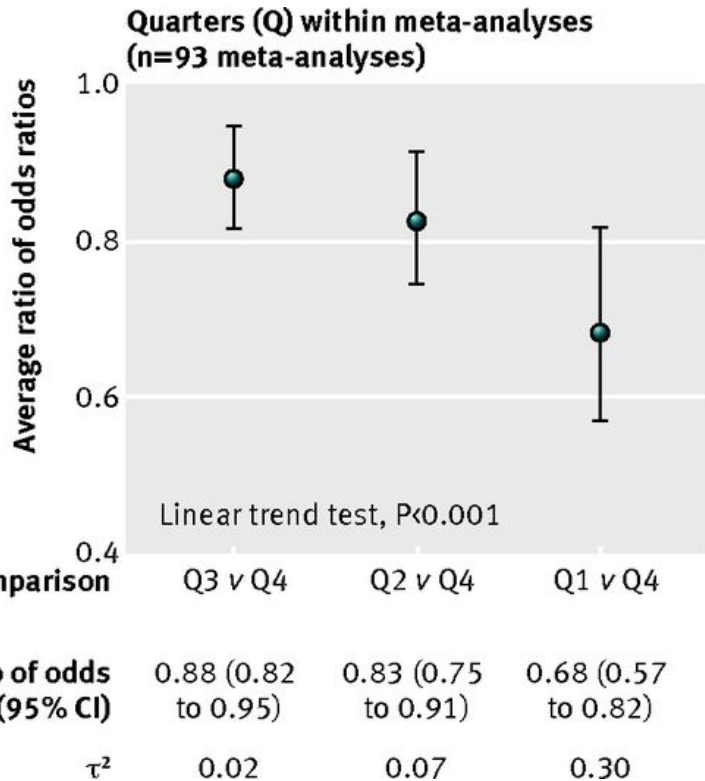


Figure 2. Mean change from baseline in RMDQ (primary outcome measure) scores at 4-month and 12-month follow-ups in all participants (A), low-risk participants (B), medium-risk participants (C), and high-risk participants (D)

Between-group difference of 2.5 points only in high risk group at 4 months

Hill JC et al., *The Lancet*, 2011; 378: 1560-71

CHALLENGE 3: BETTER AND LARGER STUDIES



Small studies:
overestimation of tx effect

Q1 = smallest trials

Dechartres et al. BMJ 2013;346:bmj.f2304

TIME FOR A CHANGE: STOP DOING SMALL STUDIES !

Studies with sample size > 200

- 10 / 41 multidisciplinary rehab 24%
- 7 / 43 behavioral tx 16%

Small studies

- Overestimate treatment effect
- Poorly conducted
- Publication bias
- Poor external validity
- Conflict of interest

Roberts et al. Syst Rev 2016

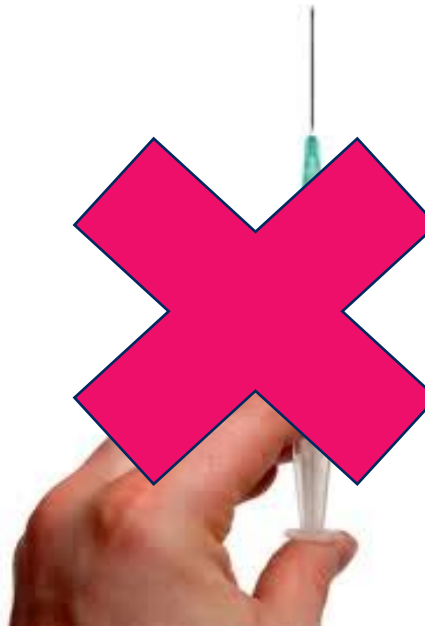
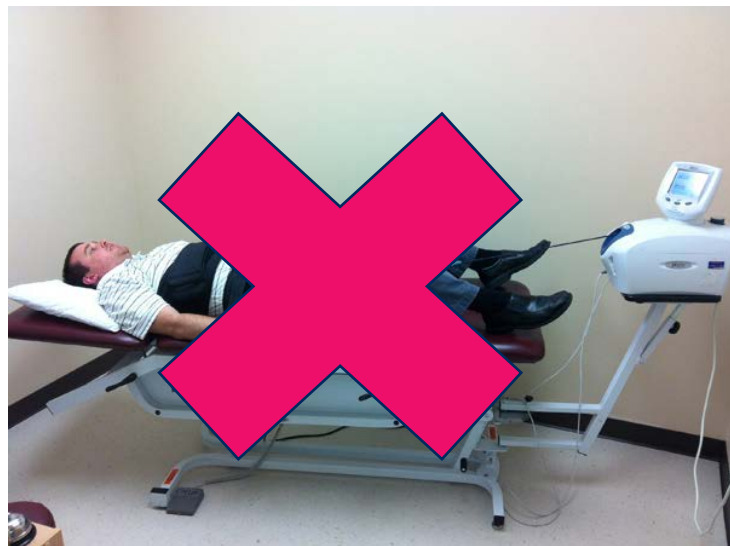
CHALLENGE 1: WELL-SUPPORTED WORKING MECHANISMS

- Flexion
 - Extension
 - Stabilisation
 - Coordination
 - Aerobic
 - Graded activity
 -
- Back muscles
 - Abdominal muscles
 - Trunk muscles
 - M. multifidus
 -
 - Individual vs group
 - Supervision vs home
 -

25 YEARS OF EVIDENCE AND LBP MANAGEMENT TREATMENT FOR LOW BACK PAIN 1992



25 YEARS OF EVIDENCE AND LBP MANAGEMENT TREATMENT FOR LOW BACK PAIN 1992



25 years of evidence and LBP management 2017 –



Staying active, exercises, self management !



IMPLEMENTATION A MAJOR CHALLENGE

