Spinal pain: When is it less about the spine and more about the person

Dr. Kieran O'Sullivan

Lead Physiotherapist, Sports Spine Centre

Senior Lecturer, University of Limerick

UNIVERSITY of LIMERICK

OLLSCOIL LUIMNIGH


Ballyferriter
Dunquin
Dingle
Inch Beach
Milltown
Boherbue
Killorglin
Glenbeigh
Killarney
Millstreet
North Atlantic Ocean
Killarney National Park
Cahersiveen
Molls Gap
Ballyvourney
Portmagee
Kenmare
Sneem
Ballingeary
Caherdaniel
Glengarriff
Dunmanway
Eyeries
Bantry
Map data ©2018 Google

Kerry

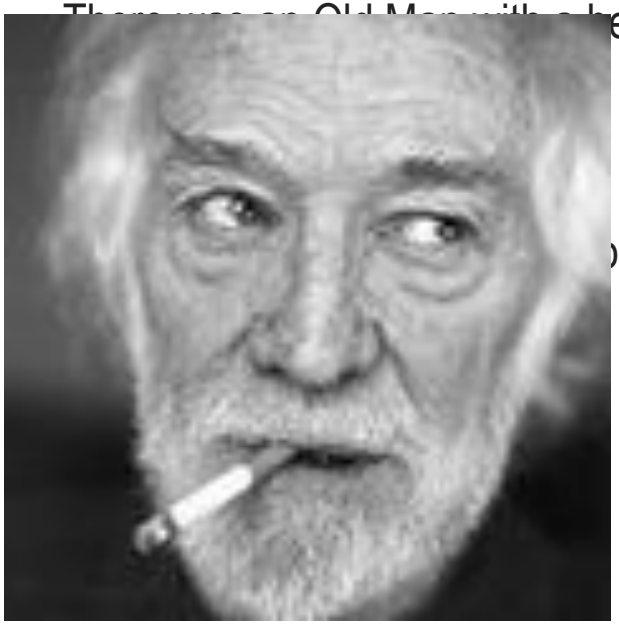

KERRY GROUP
O'Neills

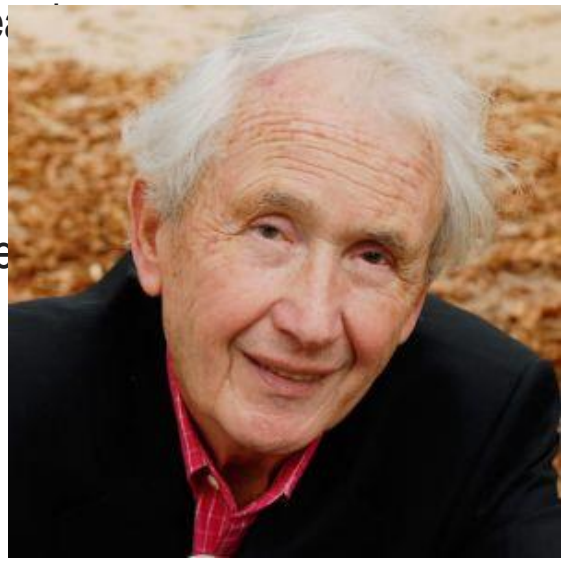
Limerick

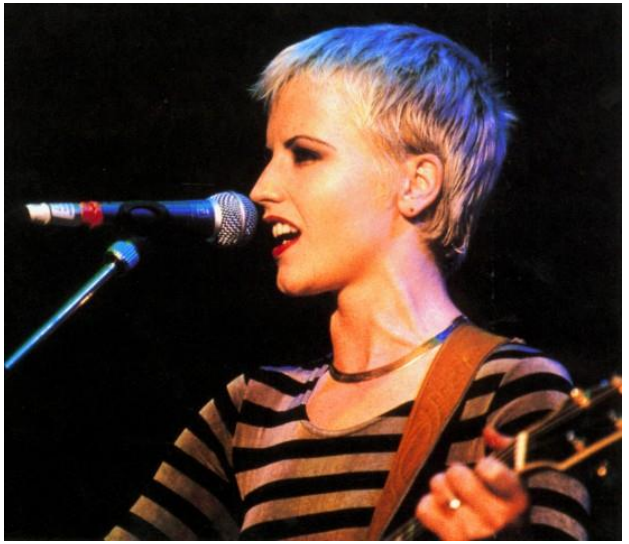
s.

even to ten syllables wh

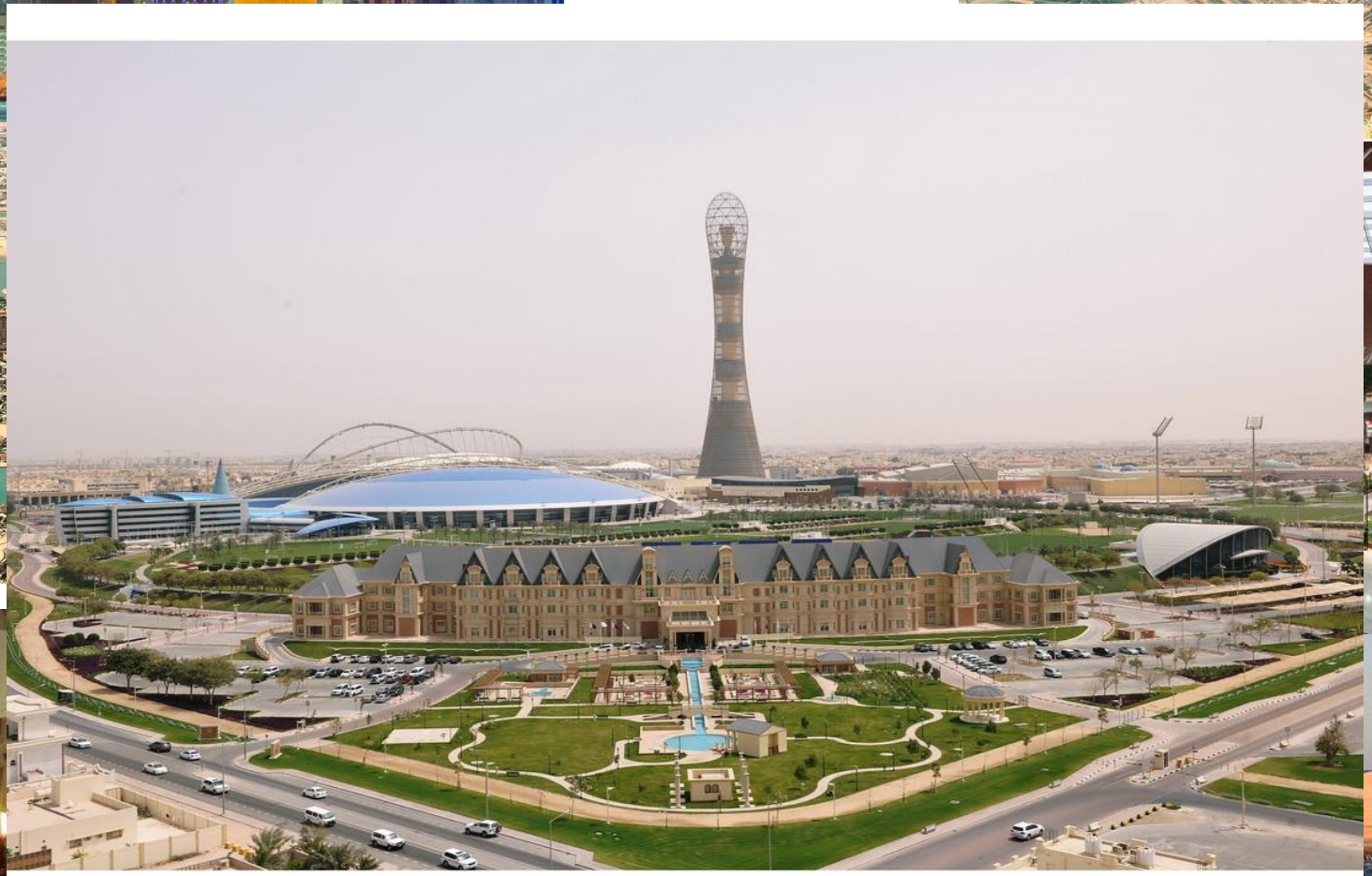
ive to seven syllables, a







Qatar



Today

- Can spinal pain sometimes be less about spinal tissues?
- What else could it involve?
- Can we identify these “other” factors?
- Can we do anything about these?

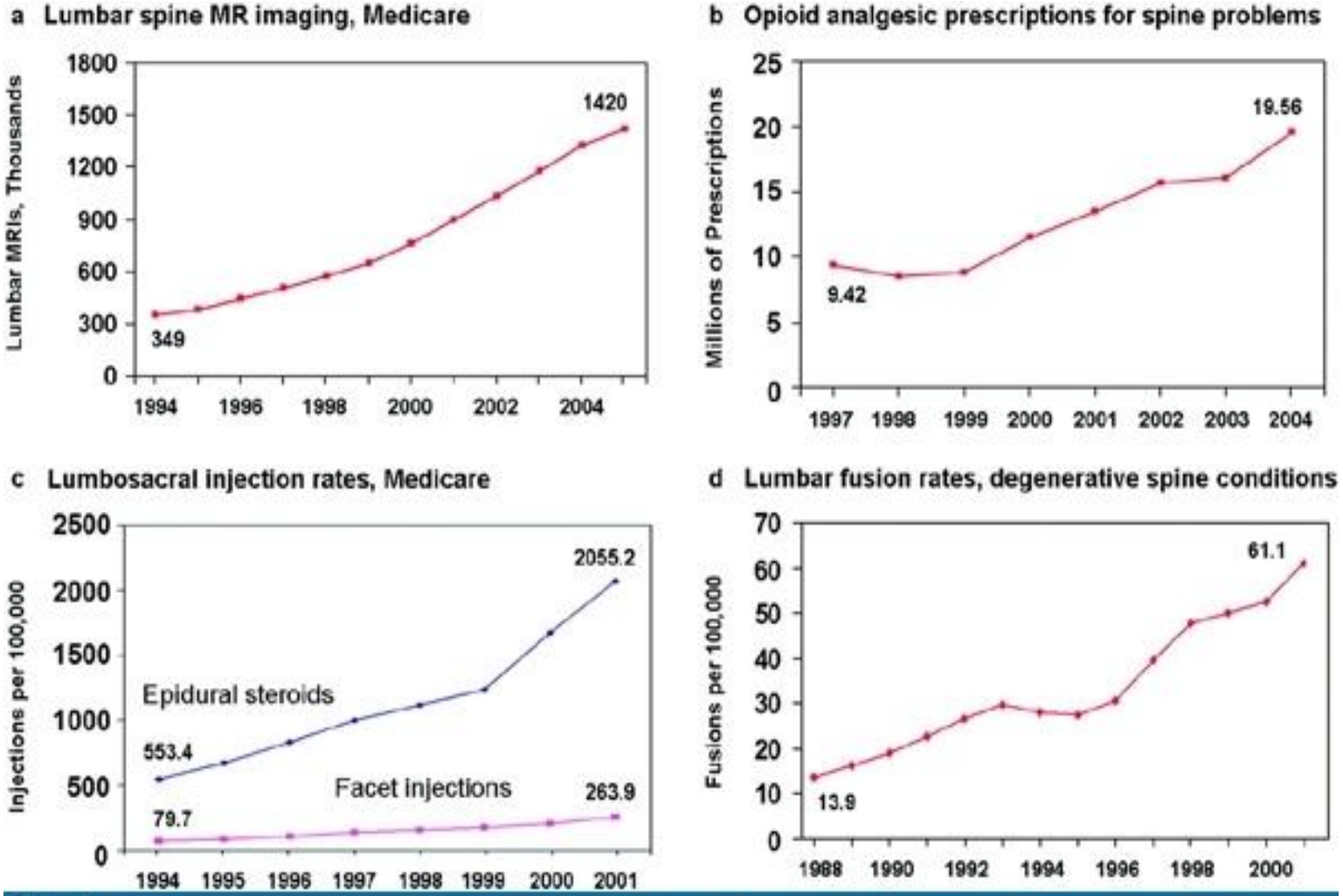
*Persistent pain

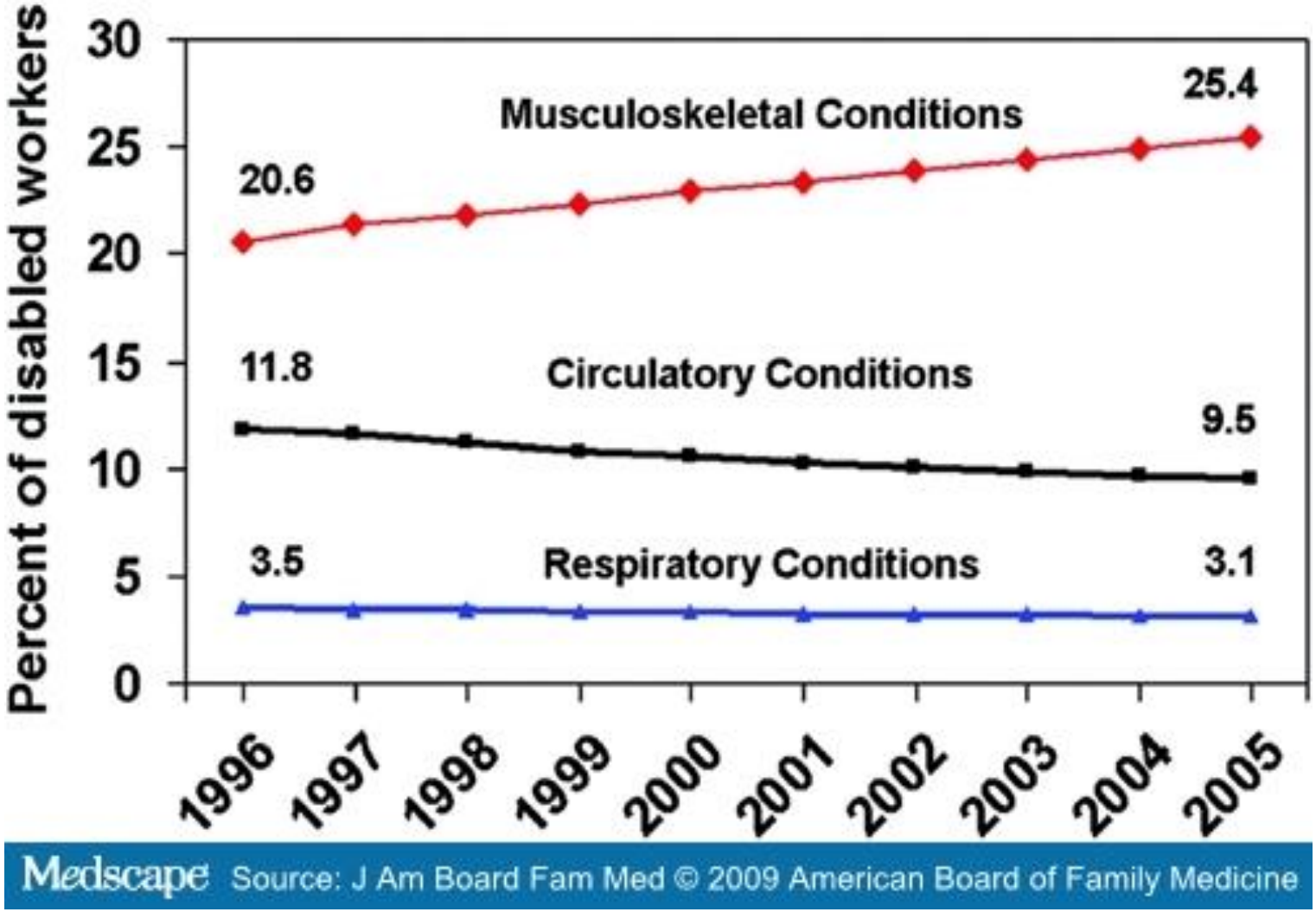
*Vast majority of spinal pain (non-specific)

Yesterday’s symposium?

The obvious starting point?

- The evidence that something is not right!



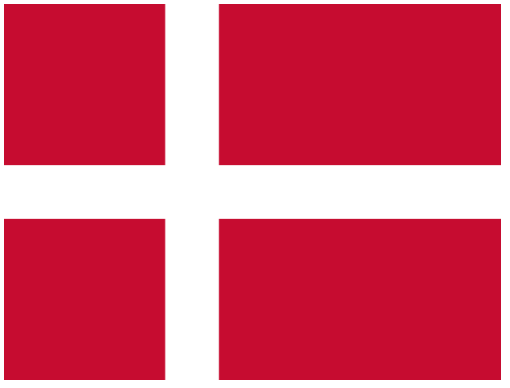


- If you were in charge of the health budget?
- Why the contrast with e.g. cardiovascular disease?

Conditions where outcomes are better?

e.g. strength training for hamstring injury

- Large effects (once graded progressively, hard enough and maintained)
- Better than other "active" interventions e.g. massage, stretching
- Does strength training demonstrate such a positive effect in spinal pain? Why? Mechanisms?



Pain v injury

- Hamstring “injury” – generally appropriate term (based on imaging of tissue injury)
- Low back “injury” – how often is this an appropriate term?
- Headaches / head “pain” / head “injury”
- If not “injury” – “psychosomatic”?

Today

- **Can spinal pain sometimes be less about spinal tissues?**
- What else could it involve?
- Can we identify these “other” factors?
- Can we do anything about these?

Systematic Literature Review of Imaging Features of Spinal Degeneration in Asymptomatic Populations

W. Brinjikji, P.H. Luetmer, B. Comstock, B.W. Bresnahan, L.E. Chen, R.A. Deyo, S. Halabi, J.A. Turner, A.L. Avins, K. James, J.T. Wald, D.F. Kallmes, and J.G. Jarvik

Table 2: Age-specific prevalence estimates of degenerative spine imaging findings in asymptomatic patients[a]

	Age (yr)						
Imaging Finding	20	30	40	50	60	70	80
Disk degeneration	37%	52%	68%	80%	88%	93%	96%
Disk signal loss	17%	33%	54%	73%	86%	94%	97%
Disk height loss	24%	34%	45%	56%	67%	76%	84%
Disk bulge	30%	40%	50%	60%	69%	77%	84%
Disk protrusion	29%	31%	33%	36%	38%	40%	43%
Annular fissure	19%	20%	22%	23%	25%	27%	29%
Facet degeneration	4%	9%	18%	32%	50%	69%	83%
Spondylolisthesis	3%	5%	8%	14%	23%	35%	50%

[a] Prevalence rates estimated with a generalized linear mixed-effects model for the age-specific prevalence estimate (binomial outcome) clustering on study and adjusting for the midpoint of each reported age interval of the study.

MRI Findings of Disc Degeneration are More Prevalent in Adults with Low Back Pain than in Asymptomatic Controls: A Systematic Review and Meta-Analysis

W. Brinjikji, F.E. Diehn, J.G. Jarvik, C.M. Carr, D.F. Kallmes, M.H. Murad, and P.H. Luetmer

Outcomes

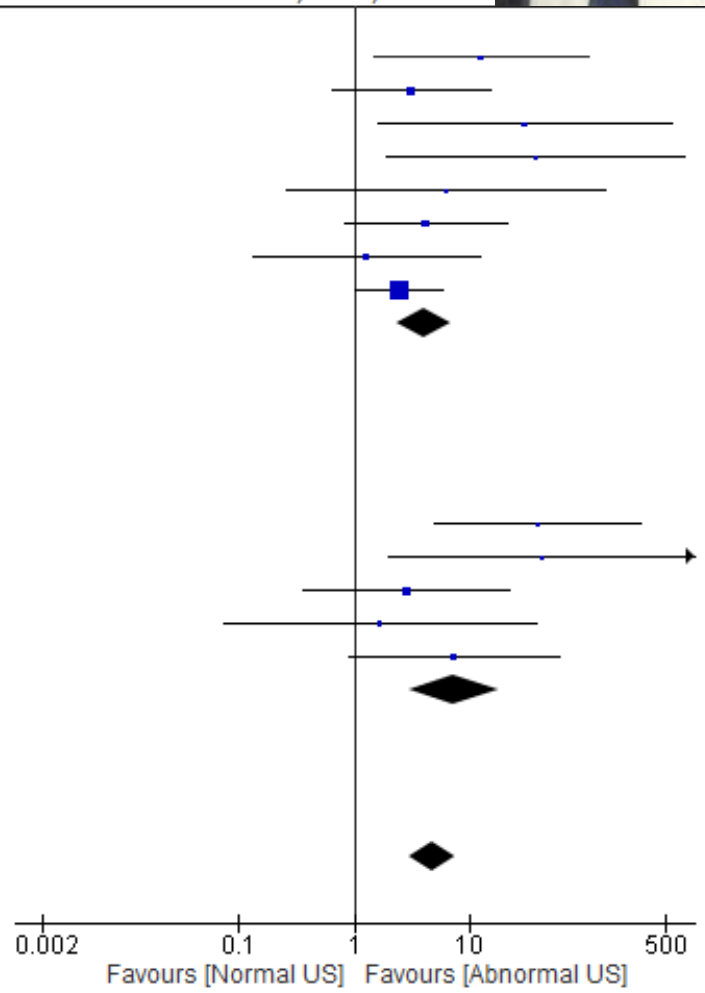
Outcome	No. of Studies	OR (95% CI)	Prevalence Asymptomatic	Prevalence Symptomatic	*P* Value[a]	I^2 (%)
Annular fissure	6	1.79 (0.97–3.31)	11.3% (9.0%–14.2%)	20.1% (17.7%–22.8%)	.06	59
High-intensity zone	4	2.10 (0.73–6.02)	9.5% (6.7%–13.4%)	10.4% (8.0%–13.4%)	.17	72
Central spinal canal stenosis	2	20.58 (0.05–798.77)	14.0% (10.4%–18.6%)	59.5% (54.9%–63.9%)	.32	94
Disc bulge	3	7.54 (1.28–44.56)	5.9% (3.8%–8.9%)	43.2% (38.2%–48.2%)	.03	90
Disc degeneration	12	2.24 (1.21–4.15)	34.4% (31.5%–37.5%)	57.4% (54.8%–59.8%)	.01	89
Disc extrusion	4	4.38 (1.98–9.68)	1.8% (0.1%–3.7%)	7.1% (5.4%–9.4%)	<.01	0
Disc protrusion	9	2.65 (1.52–4.62)	19.1% (16.5%–22.3%)	42.2% (39.3%–45.1%)	.00	62
Modic changes	5	1.62 (0.48–5.41)	12.1% (9.6%–15.2%)	23.2% (21.7%–27.3%)	.43	65
Modic 1 changes	2	4.01 (1.10–14.55)	3.2% (0.7%–9.4%)	6.7% (4.2%–10.4%)	.04	0
Spondylolisthesis	4	1.59 (0.78–3.24)	3.2% (1.8%–5.8%)	6.2% (4.4%–8.7%)	.20	0
Spondylolysis	2	5.06 (1.65–15.53)	1.8% (0.0%–5.3%)	9.4% (6.6%–12.4%)	<.01	0

[a] *P* values are computed from the meta-analysis of ORs. Prevalence data are provided for reference but are not meant for statistical comparison.

- Number of studies per “pathology” often very small
- Only those 50 years of age or younger – “possible that the association between these entities and low back pain is less significant in older age groups”

Prospective imaging in LL tendons

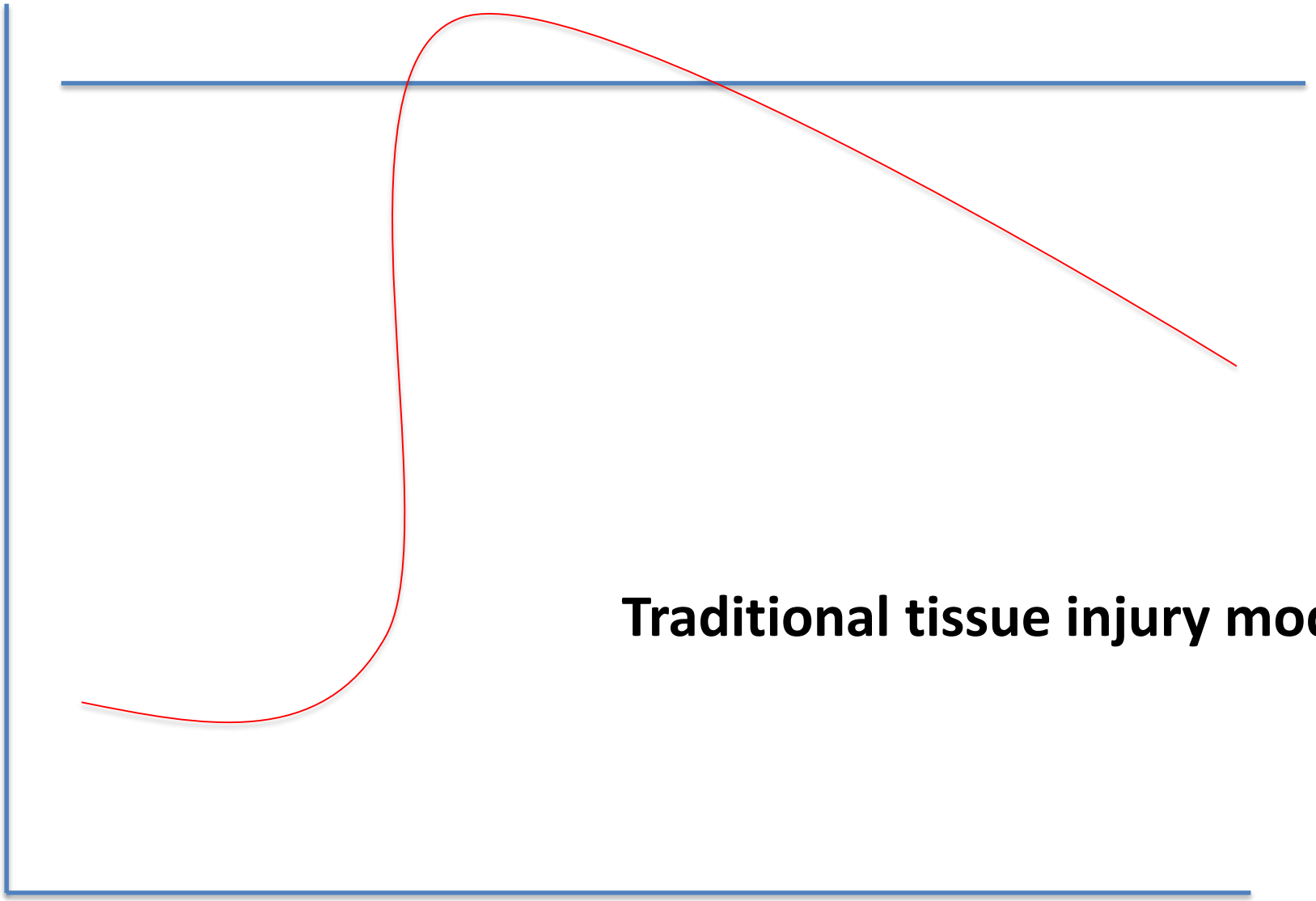
Study or Subgroup	Abnormal US Events	Abnormal US Total	Normal US Events	Normal US Total	Weight	Risk Ratio M-H, Fixed, 95% CI
1.1.1 Patellar						
Cook 2000	3	10	1	42	2.9%	12.60 [1.46, 108.77]
Cook 2001	4	18	2	28	11.9%	3.11 [0.63, 15.27]
Fredberg 2002	3	18	0	80	1.4%	29.84 [1.61, 553.73]
Giombini 2013	2	8	0	66	0.9%	37.22 [1.94, 715.13]
Gisslén 2005	1	33	0	70	2.5%	6.26 [0.26, 149.80]
Gisslén 2007	3	9	2	25	8.1%	4.17 [0.83, 21.03]
Khan 1997	1	9	2	23	8.6%	1.28 [0.13, 12.41]
Malliaras 2006	11	46	7	73	41.3%	2.49 [1.04, 5.97]
Subtotal (95% CI)		**151**		**407**	**77.6%**	**4.04 [2.34, 6.98]**
Total events	28		14			
Heterogeneity: Chi² = 7.38, df = 7 (P = 0.39); I² = 5%						
Test for overall effect: Z = 5.02 (P < 0.00001)						
1.1.2 Achilles						
Fredberg 2002	5	11	1	85	1.7%	38.64 [4.96, 301.06]
Giombini 2013	1	4	0	70	0.5%	42.60 [1.98, 917.18]
Jhingan 2011	5	23	1	13	9.7%	2.83 [0.37, 21.66]
Khan 2003	1	17	0	9	4.9%	1.67 [0.07, 37.21]
Ooi 2015	4	15	1	27	5.4%	7.20 [0.88, 58.70]
Subtotal (95% CI)		**70**		**204**	**22.4%**	**7.33 [2.95, 18.24]**
Total events	16		3			
Heterogeneity: Chi² = 5.50, df = 4 (P = 0.24); I² = 27%						
Test for overall effect: Z = 4.29 (P < 0.0001)						
Total (95% CI)		**221**		**611**	**100.0%**	**4.78 [3.01, 7.60]**
Total events	44		17			
Heterogeneity: Chi² = 14.68, df = 12 (P = 0.26); I² = 18%						
Test for overall effect: Z = 6.61 (P < 0.00001)						
Test for subgroup differences: Chi² = 1.21, df = 1 (P = 0.27), I² = 17.1%						



Issues in the tissues?

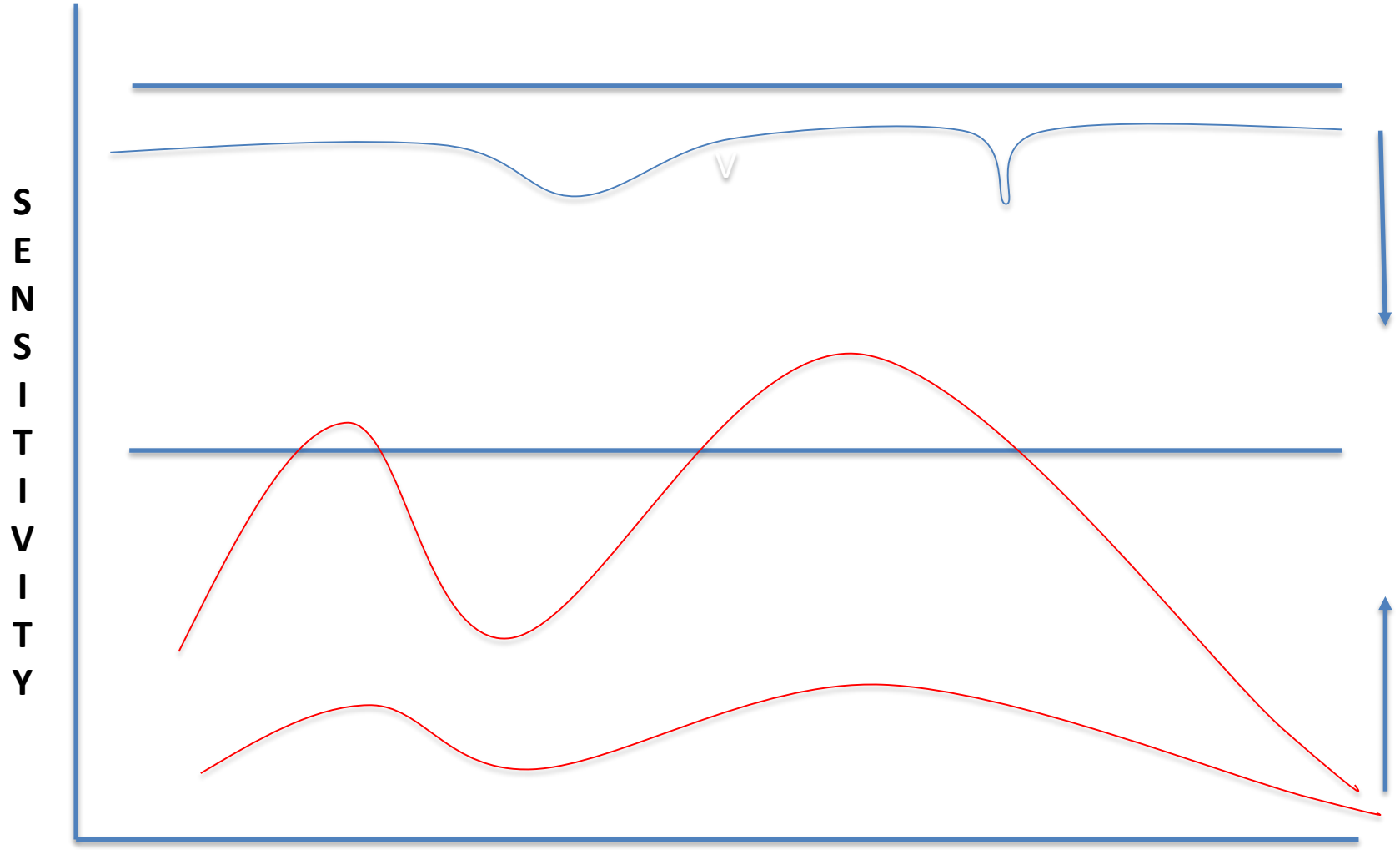
- CLEARLY not all about spinal tissues
- But foolish to say tissues irrelevant
- Tissues as source of input
- Input then open to modification, and interpretation

THRESHOLDS



Traditional tissue injury model

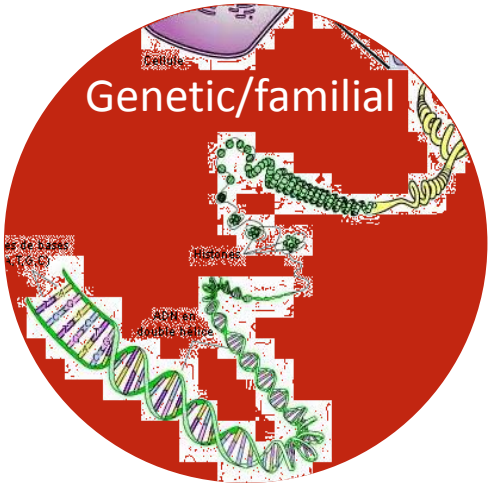
THRESHOLDS



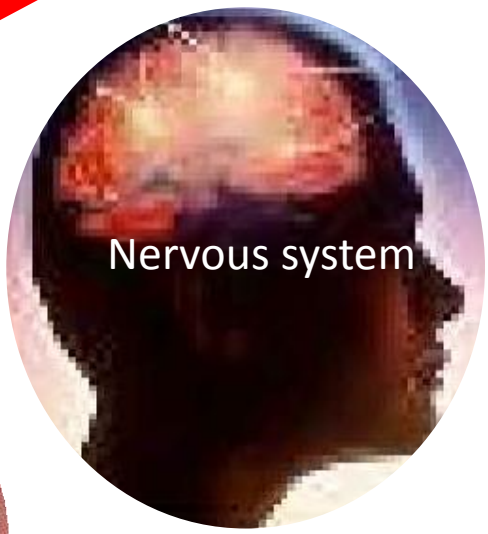
What factors reduce/increase the “gap”?

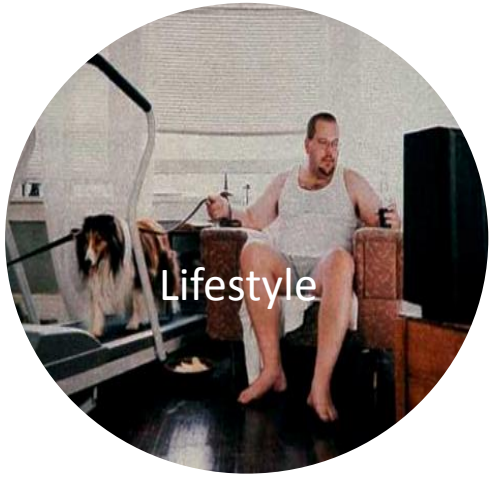
Today

- Can spinal pain sometimes be less about spinal tissues?
- **What else could it involve?**
- Can we identify these “other” factors?
- Can we do anything about these?



What underlies the person with chronic pain?

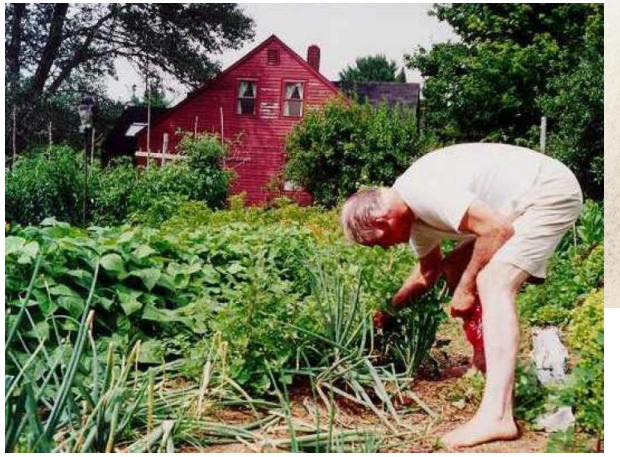




Physical factors

- Are these increasing nociceptive input?
- Has well-intentioned advice contributed to the problem e.g. posture, manual handling
- Is the spine THAT different to knee, wrist?
- Is more load always bad?
- What is a ‘normal’ level of resting muscle tone?
- Even physical factors informed by beliefs e.g. fear-tension
- Giving with one hand (exercise), taking with the other (selling sickness)?

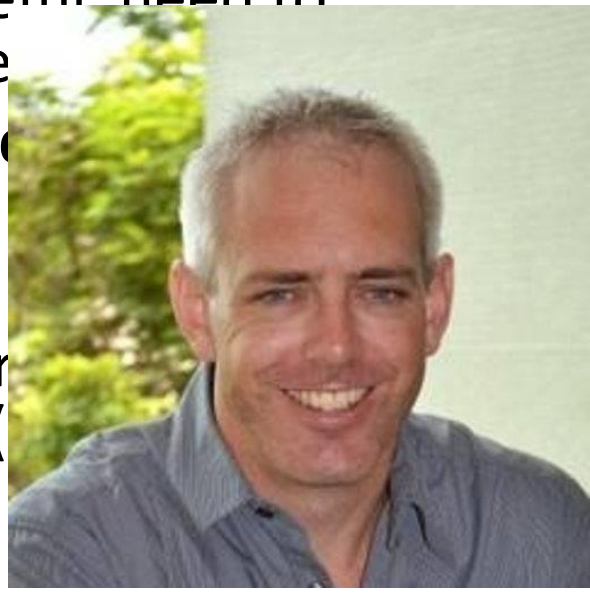
Are these safe, or dangerous?



Burden of proof in determining ‘safety’

- Name an activity for me that has NEVER hurt anyone?
- Does that mean it is dangerous and we should tell people to avoid, or be **very** careful doing it?
- How big is the danger? And how likely?
- How big are the benefits?
- Do we need to ‘prove’ activities that everyone does normally are safe?
- Or do the people who are pushing ‘be careful’ need to prove it is dangerous, and their alternative
- **If you are ever going to run/lift/bend/gar practicing it might not be crazy!**

- If it hurts, by all means see if we can help r activity – but don’t demonise the activity (



Today

- Can spinal pain sometimes be less about spinal tissues?
- What else could it involve?
- **Can we identify these “other” factors?**
- Can we do anything about these?

How to spot “yellow flags”

- Mirror?
- Questionnaires
- Blink?

- Are all these flags “abnormal”?
- Anyone here never experienced any of these?
- Is poor sleep something we could ask people about?

Scope of practice

- Be flexible, yet acknowledge limitations of expertise
- Similar to mgt of obesity & chronic ‘diseases’

Back pain: if all I have is a hammer, all I see is nails

Kieran O’Sullivan PhD MSc
Lecturer, Department of Clinical Therapies, University of Limerick, Ireland

“I suppose it is tempting, if the only tool you have is a hammer, to treat everything as if it were a nail.”
Abraham Maslow, Psychology of Science.

A hammer is a useful tool, as are techniques such as manual therapy and exercise, but often other tools are needed. In this article, I will reflect on the range of tools physiotherapists have in their skillset, how these skills match the needs of people with low back pain (LBP), and how the range of tools can be expanded, while respecting professional boundaries and competencies.

Multidimensional / multidisciplinary

More disciplines offers

- more expertise
- potentially more confusion/ contradiction?
- Might not (ever) be feasible for large numbers – how big is your place of work?

Not just chronic pain?

Caused by???

“run down”

“Psychosomatic” OR “real” coldsore?

“Trigger” and “immune vulnerability”

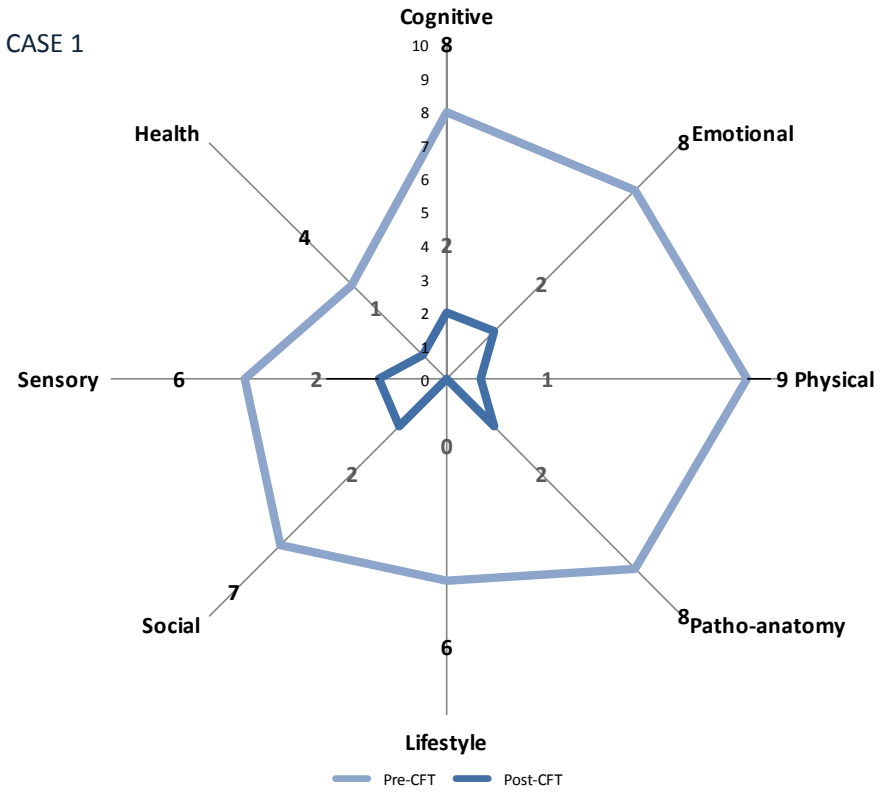
Subgrouping pain mechanisms

- Attempts have been made to identify those with less nociceptive influence
- Not precise so far … but some common, easy to spot indicators (e.g. widespread pain, unpredictable pain behaviour)
- No matter what – we should ask about other sensitising factors

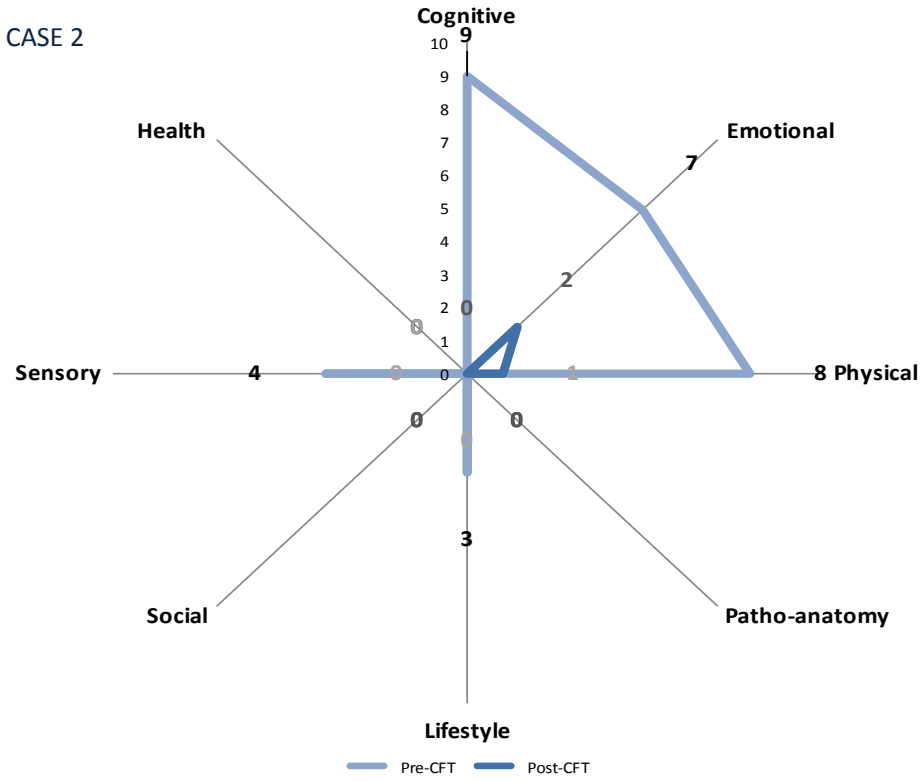
Today

- Can spinal pain sometimes be less about spinal tissues?
- What else could it involve?
- Can we identify these “other” factors?
- **Can we do anything about these?**

CASE 1


Cognitive
8
Emotional
8
Physical
9
Patho-anatomy
8
Lifestyle
6
Social
7
Sensory
6
Health
4
10
9
8
7
6
5
4
3
2
1
0
2
2
1
2
0
2
2
1
Pre-CFT
Post-CFT

CASE 2

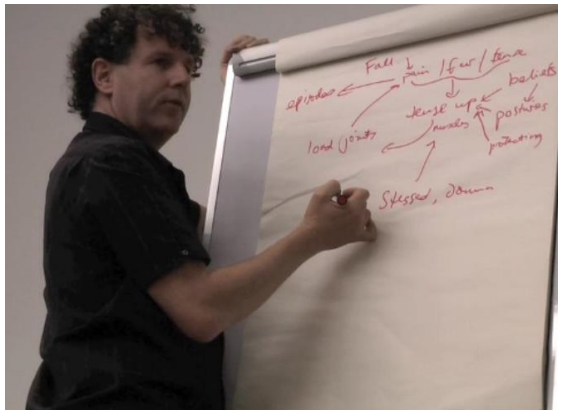

Cognitive
9
10
9
8
7
6
5
4
3
2
1
0
Health
Emotional
7
2
0
0
Sensory
4
0
1
8 Physical
0
0
0
3
Social
Patho-anatomy
Lifestyle
Pre-CFT
Post-CFT

Cognitive Functional Therapy (CFT)

3 proposed stages

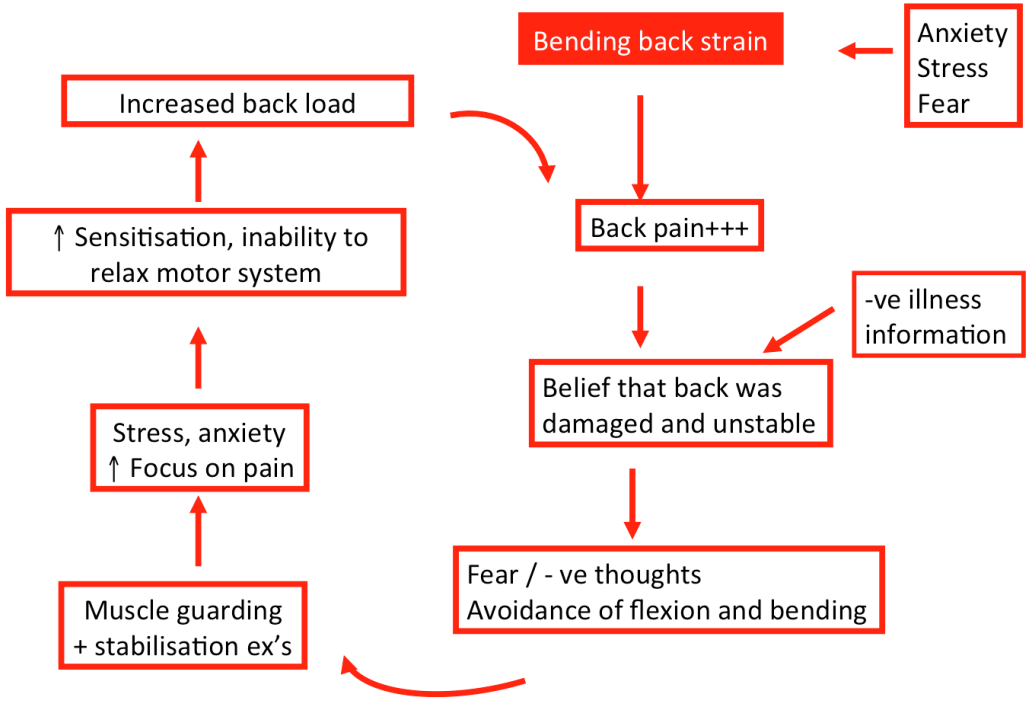
1. **Making sense of pain** (Cognitive re-education)
2. **Exposure with control** (Specific movement training & Functional Integration)
3. **Physical activity and lifestyle advice**

Cognitive Functional Therapy
CFT



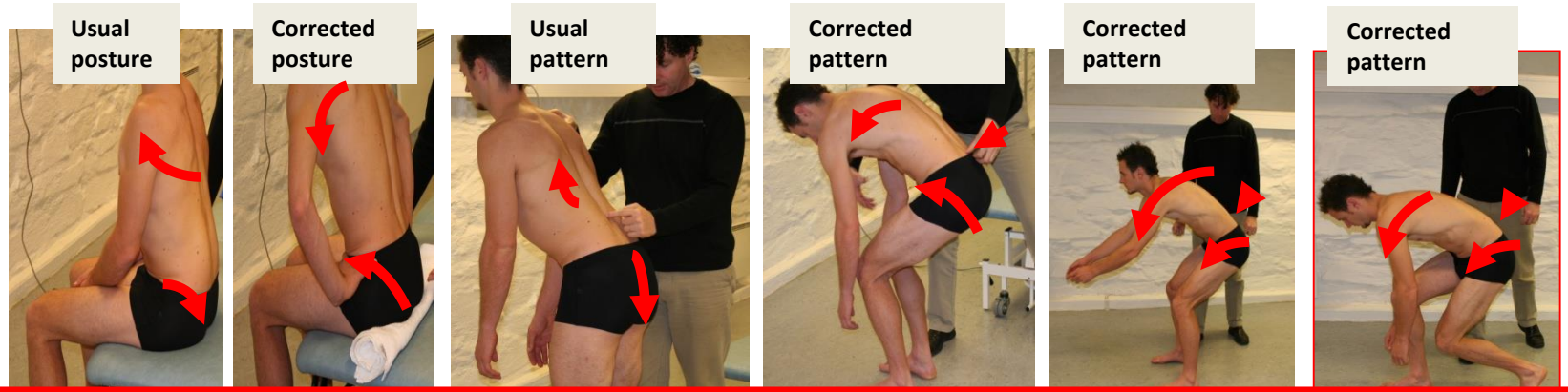
1. Making sense of pain

-explain vicious cycle of pain
-goal setting
-problem solving
-collaborative process
- change beliefs



2a. Specific movement training

- normalise/simplify movement patterns
- break movements down
- developmental sequence
- enhance body awareness
- target pain provocative functional tasks
- linked to patients goals



NO ISOLATED MUSCLE TRAINING

2b. Functional integration

- integrate new movement skills to functional impairments
- graduated exposure into daily life
- linked to patients goals
- conditioning and strengthening as required
- build confidence

3. Lifestyle change

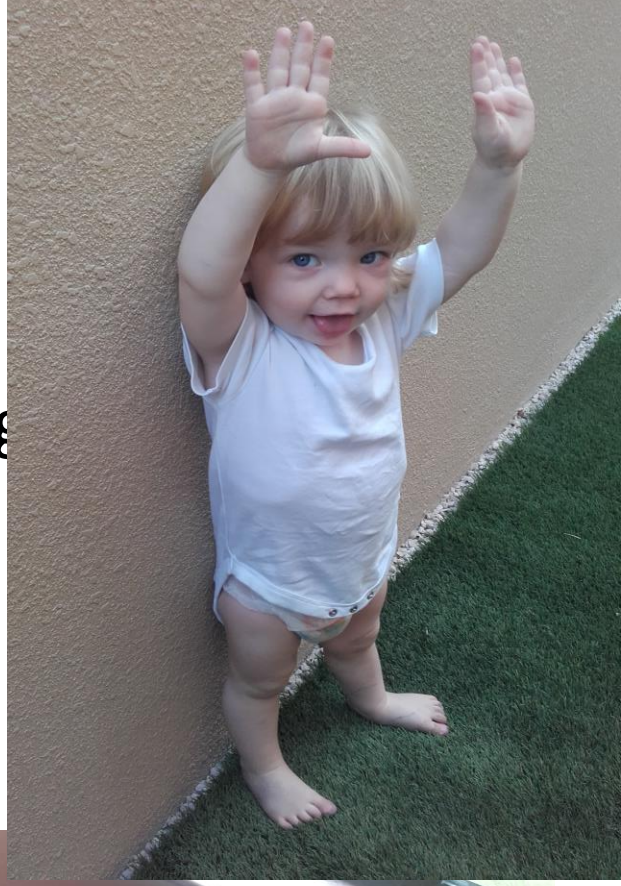
d - adapted to individ

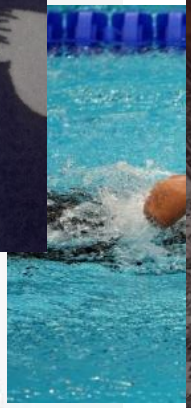
- ie. social support / g

m of 4x/w for 30’

(up to 60 min)

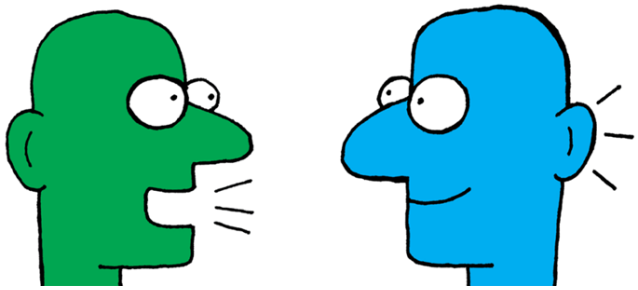
et etc as needed

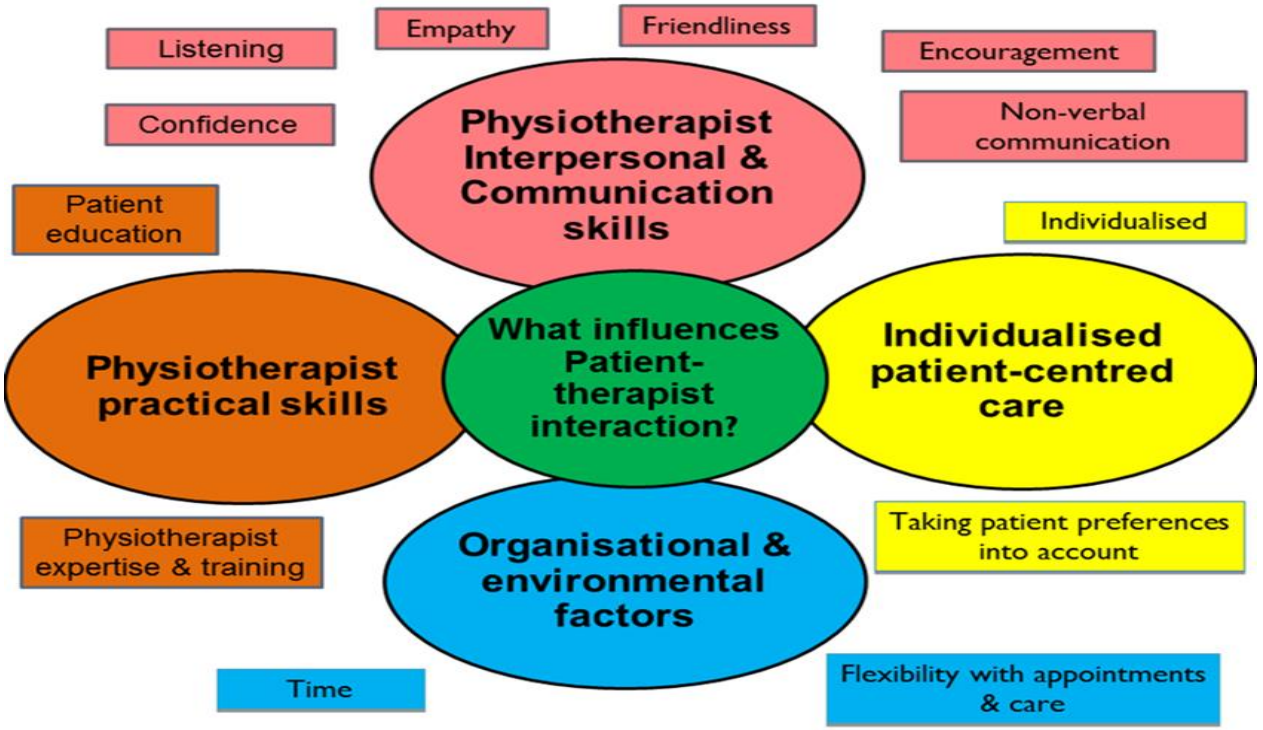




Interaction is intervention!

- First-person neuroscience
- **Patient Narrative** is key!





O'Keeffe et al. 2015 Physical Therapy

What patients have to say…..

TABLE 2 Messages to healthcare professionals from patients with low back pain

Messages to healthcare professionals from patients with low back pain	
We find it **unhelpful** when you…	We find it **helpful** when you…
- Don't listen to us	- Are confident and thorough
- Interrupt us	- Care and take time to listen to our worries, concerns and fears
- Don't consider our expectations	- Can understand how pain has an impact on our life
- Give inconsistent information	- Explain why we have pain, using simple language
- Give us scary information	- Provide examples and resources
- Provide information we don't understand	- Reassure us and build our confidence
- Do not give a clear explanation for our pain	- Are empathetic and supportive
- Don't support us	- Summarize things for us
- Don't involve us in our rehabilitation plan	- Understand our goals and life circumstances
- Don't provide us with a clear treatment plan	- Remember that we are people
- Don't write things down for us	- Use humour with us
- Sign us off as sick	- Make us feel safe
- Blame us for our problem	- Help us to reflect and become aware of our body
- Are in a hurry and rush us	- Put us in charge, with you working as a coach
- Don't follow us up	- Give us time
- Overtreat us unnecessarily	- Provide clear instructions (written or on electronic devices) and a long-term plan that is flexible and adapted to our lives
	- Help us to modify our lifestyle
	- Give us feedback
	- Let us contact you
	- Get our family involved in our care

Can it work?

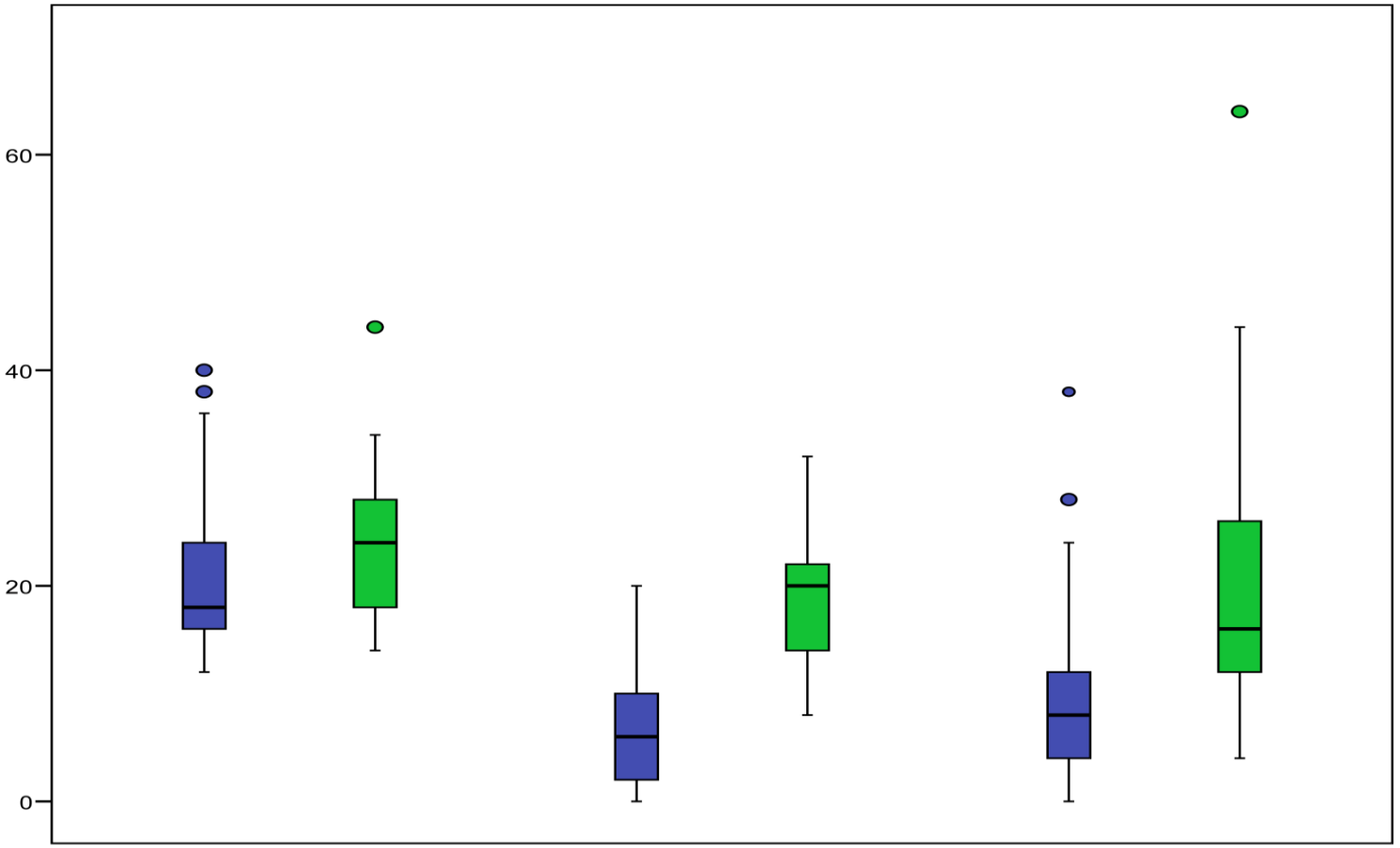
- Yes
- Better outcomes, without more cost

Title:

Efficacy of classification based 'cognitive functional therapy' in patients with Non Specific Chronic Low Back Pain (NSCLBP) – A randomized controlled trial

Kjartan Vibe Fersum [a], Peter O'Sullivan [b], Jan Sture Skouen [a,c], Anne Smith [b] and Alice Kvåle [a]

Disability - Oswestry



Pre

Post

15 months post

P=0.164

P<0.000

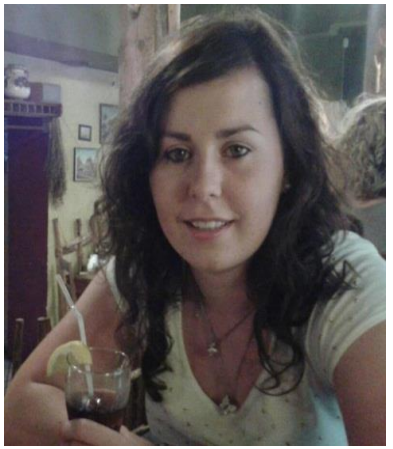
P<0.000

Open Access Protocol

BMJ Open

Individualised cognitive functional therapy compared with a combined exercise and pain education class for patients with non-specific chronic low back pain: study protocol for a multicentre randomised controlled trial

Mary O'Keeffe,[1] Helen Purtill,[2] Norelee Kennedy,[1] Peter O'Sullivan,[3] Wim Dankaerts,[4] Aidan Tighe,[5] Lars Allworthy,[6] Louise Dolan,[7] Norma Bargary,[2] Kieran O'Sullivan[1]



RCT outcomes

- Too early to say definitively, but encouraging……
- And consistent with RCTs by some other groups

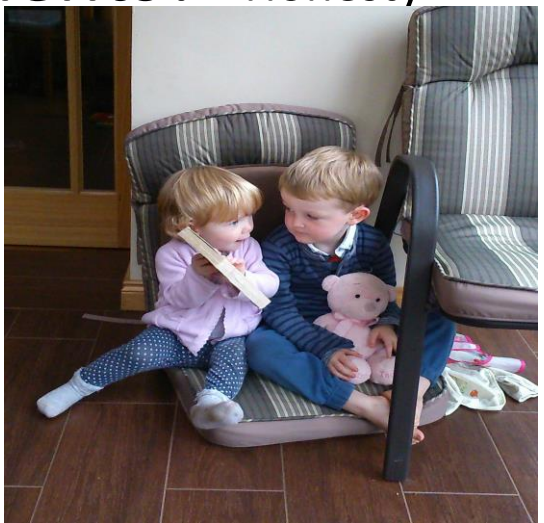
Importantly, these were;

- Including “difficult” cases (e.g. compensation, surgery)
- Using only one discipline (physio)
- Without booster sessions (chronic care model? – once handled appropriately)
- Without technology
- Efficacy → effectiveness

- So clear room for improvement……but more hope for approaches such as this than repackaging outdated structural concepts

Some basic principles

- LBP as a ‘predicament’ of life (Hadler) – prevention?
- Investigations? Ban? Or interpret better?
- Injury or pain? Treat accordingly
- What activities are truly dangerous? Burden of proof?
- Discussions with, and about, patients? Honesty



Review

- Can spinal pain sometimes be less about spinal tissues?
- What else could it involve?
- Can we identify these “other” factors?
- Can we do anything about these?

YES

LOCAL PROVOCATION, CENTRAL SENSITISATION

YES

YES – BOTH PHYSICAL AND PSYCHOLOGICAL – IF WE ACCEPT PAIN AND INJURY NOT ALWAYS SAME, AND WE DON’T VIEW SPINE AS VULNERABLE

Conclusion

- Broad, inclusive screening (even if we cannot “fix”)
- All pain is real
- Might not **always** be “injury”
- Problem = tissue injury? → enhance load tolerance (e.g. hams injury)
- Problem = pain > injury? → don’t just think about local tissues
- Check what patient heard / thinks is the problem
- Behaviours influenced by beliefs (HCP & Societal)
- Treat person - including, but not only, their tissues
- **Who will lead this process?**

Collaborators

www.pain-ed.com

@pain_eddotcom

Pain-Ed

Prof Wim Dankaerts **Prof Peter O'Sullivan** **Dr. Kjartan Vibe Fersum**

Thank you – questions?