

## Pijn in de sport: *In the mind or in the brain?*

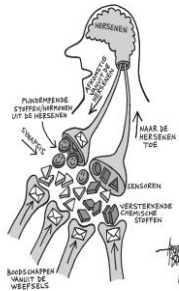
Jo Nijs

Universitair  
Ziekenhuis  
BrusselUNIVERSITY OF  
GOTHENBURG

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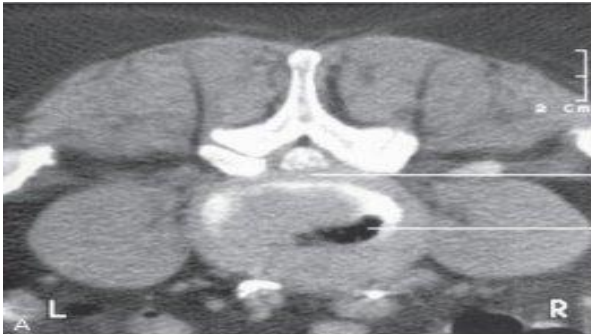
11-05-1988 EC-II finale  
Ajax Amsterdam–KV Mechelen



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Spinal 'damage' in people free of pain

Imaging finding	Age (yr)							
	20	30	40	50	60	70	80	
Disk degeneration	17%	33%	54%	68%	80%	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%	

Brinjikji et al. Am J Neuroradiol 2014

8

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Imaging finding	Age (yr)							
	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%	
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Brinjikji et al. Am J Neuroradiol 2014

9



PAIN IN MOTION

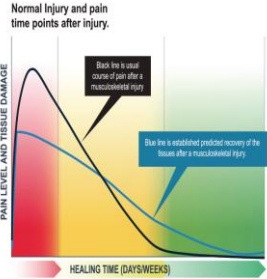
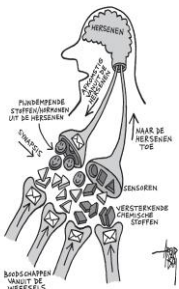
Heb jij vandaag kousen aan?

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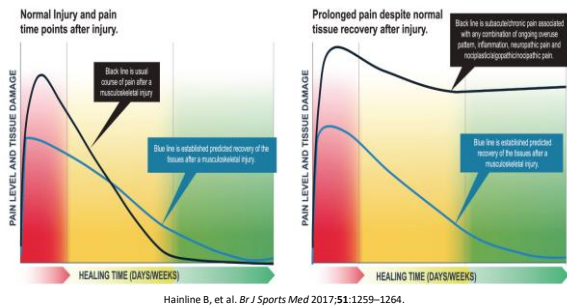
YouTube The SPAM FILTER Metaphor | Explain Pain by Jo Nijs - YouTube  
<https://www.youtube.com/watch?v=CxmMc9NAmQ>

11



Hainline B, et al. Br J Sports Med 2017;51:1259-1264.

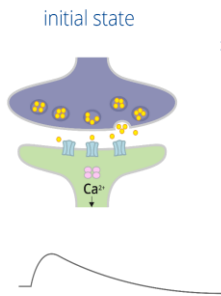
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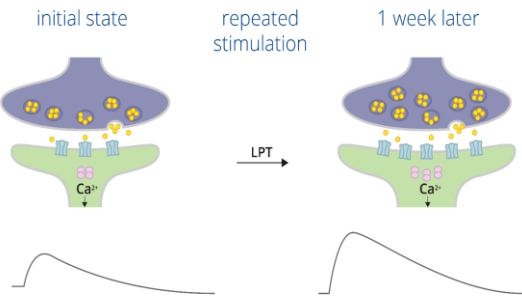
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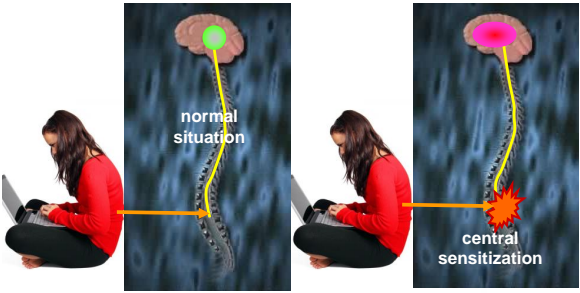
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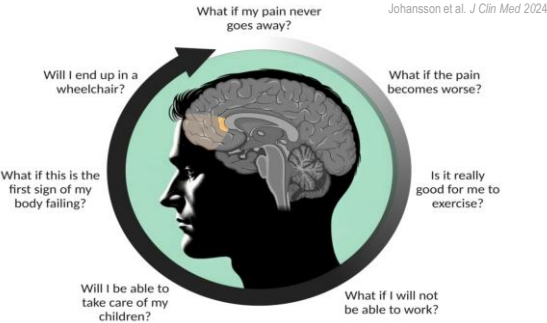
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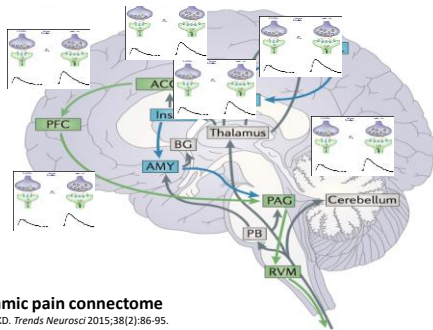
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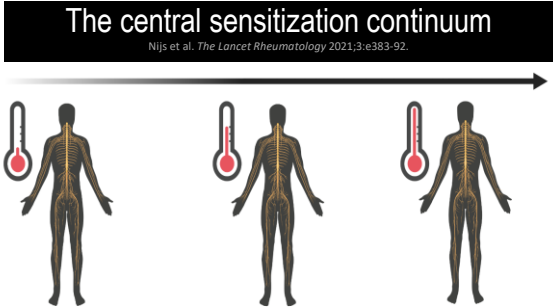


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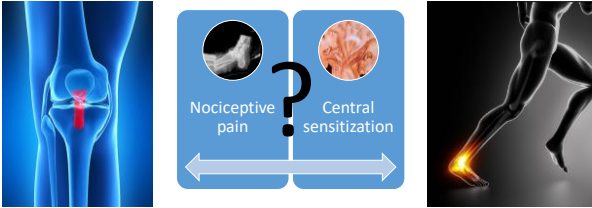
**The dynamic pain connectome**  
Kucyi A, Davis KD. *Trends Neurosci* 2015;38(2):86-95.

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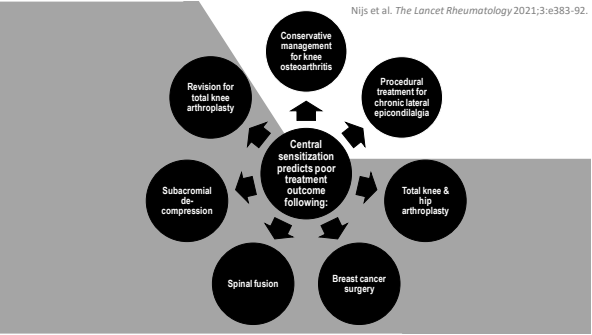


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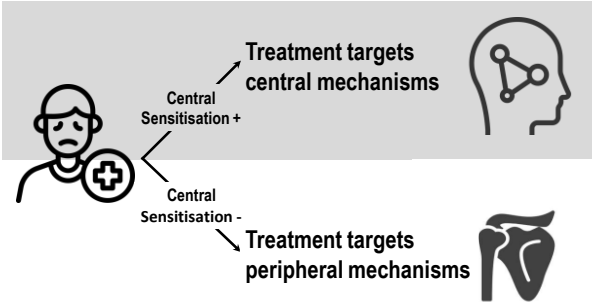
# **Patellar & Achilles Tendinopathies Predominantly Peripheral Pain States** Plinsinga et al. *Br J Sports Med* 2017



21

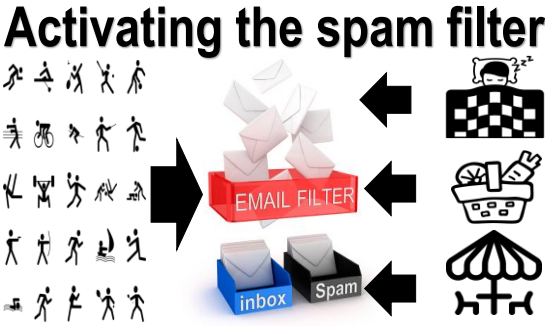


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Nijs et al. *The Lancet Rheumatology* 2021;3:e383-92.

23



24



International  
Olympic  
Committee


## Consensus statement on pain management in elite athletes

Hainline B, et al. *Br J Sports Med* 2019 Vol 53 No 12

25

### MODALITIES & MASSAGE

Hainline B, et al. *Br J Sports Med* 2019 Vol 53 No 12




- 1 Physical therapy techniques: no clear benefit for most of them
- 2 Low-level laser therapy: possibly beneficial (tendinopathy & acute muscle recovery)
- 3 Cryotherapy: little evidence from prospective studies
- 4 Ultrasound therapy: unclear benefit
- 5 Electrical stimulation, massage therapy, myofascial trigger point treatments and acupuncture: poor reliability and consistent efficacy for relief of pain resulting from musculoskeletal injury

The effects of modalities may be manifest in an individually specific way, especially as it pertains to the skill of the treating clinician

26


### MOVEMENT, STRENGTH & CONDITIONING



Exercise-based approaches are effective for managing pain in individuals with chronic painful conditions and can also improve patient self-efficacy for managing pain and fear of (re)injury

### SUPPLEMENTATION


Hainline B, et al. *Br J Sports Med* 2019 Vol 53 No 12



Persistent pain is influenced by any proinflammatory load, which makes nutrition possibly relevant to managing pain in athletes. However, studies demonstrating benefit from nutritional supplements are not methodologically sound and have unclear relevance to elite athletes

27


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Hainline B, et al. *Br J Sports Med* 2019 Vol 53 No 12

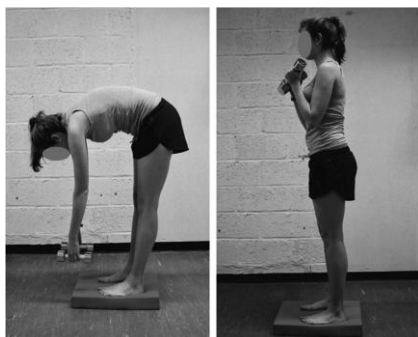


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### PSYCHOSOCIAL INTERVENTIONS (with possible efficacy)

- 1 Skills training in goal setting, imagery, relaxation & positive self-statements
- 2 Cognitive restructuring (identifying and challenging negatively biased appraisals) & developing plans for maintaining treatment gains and coping with setbacks and pain flare-ups
- 3 Psychologically informed physical therapy, which incorporates cognitive and behavioural principles and strategies (eg, techniques to reduce fear-avoidance, use of graded activity and exposure techniques); and education about pain during physical rehabilitation, is a promising approach

28



29



30



# Pain science education + exercise therapy:

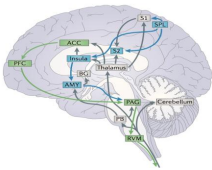
results of a randomized controlled clinical trial

Malliet, Kregel, et al. *JAMA Neurology* 2018;75(7): 808-817.

50% ↓ pain  
32% ↓ vigilance  
30% ↓ fear  
46% ↓ pain catastrophizing  
22% ↑ daily functioning  
27% ↓ central sensitization

medium to large effect sizes – 38% painfree (0 or 1/10)

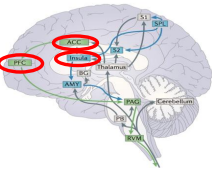
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The dynamic pain connectome.

Kucyi A, Davis KD. *Trends Neurosci* 2015;38(2):86-95.

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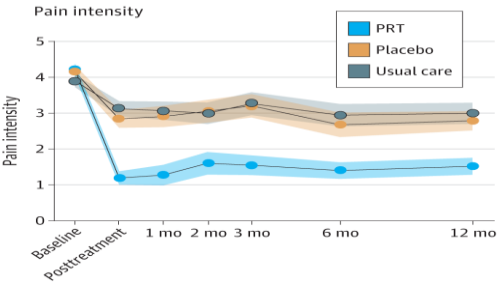
Pain catastrophizing

Campbell & Edwards *Transl Res* 2009.

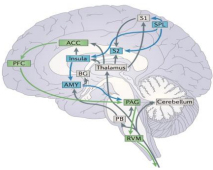
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# Effect of Pain Reprocessing Therapy vs Placebo and Usual Care for Patients With Chronic Back Pain.

Ashar et al. *JAMA Psychiatry*. 2022;79(1):13–23.



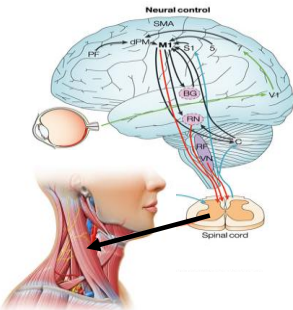
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The dynamic pain connectome.

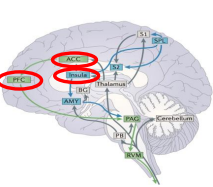
Kucyi A, Davis KD. *Trends Neurosci* 2015;38(2):86-95.

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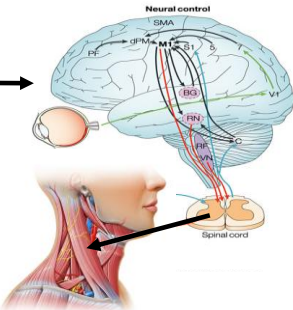
The dynamic movement connectome.

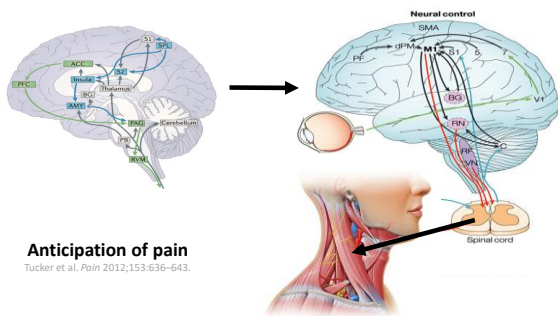
36



Pain catastrophizing

Campbell & Edwards *Transl Res* 2009.





37

Ramos-Lopez et al. *Inflammation Research* 2021;70:29-49.

39

## SLEEP



Pain disturbs sleep, and poor sleep quality or duration increases pain levels and decreases pain thresholds. Psychological strategies to address sleep disorders include cognitive-based therapy, self-hypnosis & mindfulness-based stress reduction

Designed by @YLMsPortScience

[Hainline B, et al. Br J Sports Med 2019 Vol 53 No 12](#)

38

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graph TD; A["Chronic spinal pain + insomnia n=126"] --> B["at 1y follow-up: 40% pain↓  
37% physical functioning↑"]; A --> C["at 1y follow-up: 23% pain↓  
18% physical functioning↑"]; B --> D["pain education +  
sleep management +  
cognition-targeted  
exercise therapy  
3 months – 18 sessions"]; C --> E["pain education +  
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```

**Chronic spinal pain + insomnia**  $n=126$

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Maffiet et al. JAMA Network Open 2024;7(8):e242586.


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
## SURGERY



Surgery should not be performed to treat chronic pain simply because all other interventions have failed but should rather be used when a structural problem associated with the pain has been identified

*Designed by* @YLMSportScience

Hainline B, et al. Br J Sports Med 2019 Vol 53 No 12



41



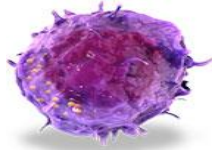
42

## Think twice when prescribing opioids

Opioids suppress immune function:

**Natural Killer cell** numbers ↓  
& cytotoxicity ↓

cellular immunity inhibited by  
opioid system ( $\mu$ -opioid receptor)



Cui et al. Medicine. 2017;96(3):e7519. Bajwa et al. J Cancer Res Ther 2015;11(3):528-34. Boland & Pockley. Br J Pharmacol 2018;175(14):2726-2736.

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