



Clinical Weekly - 145th Edition

#JOURNALTUESDAY - by Abi Peck

Should exercises be painful in the management of chronic musculoskeletal pain? A systematic review and meta-analysis.

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1. What is the theory behind working into pain with chronic musculoskeletal conditions?

- Pain gate theory: to have a positive impact on the central nerve system by reducing the sensitivity of the neural pathways by working into pain.
- Reassurance to patients that pain doesn't mean damage

2. What were the aims of this review?

To see whether exercises working into pain were superior over pain free exercises in short, medium or long term.

3. What was the outcome of this systematic review?

- Evidence for using exercises into pain offer small but significant benefit over pain free exercises in the short term.
- No significant differences in either in the medium or long term.

4. What kinds of exercises did the research papers prescribe?

- High load strengthening
- Eccentric loading
- Stretching exercises

5. What additional tools can be useful to patients with pain +3 months?

- Education
- Pain tools
- Exercising non-painful body parts

#CLINICALSKILLSFRIDAY - by Josh Featherstone

Cranial nerve 8 - vestibulocochlear

General anatomy and function

Auditory system:

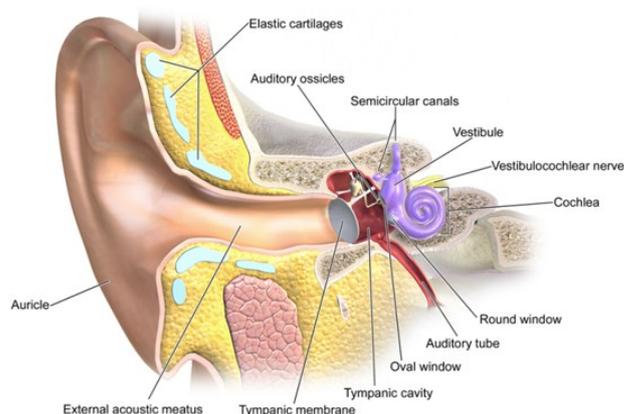
The ear is commonly divided into outer, middle, and inner parts.

The outer organises and carries air pressure waves to the tympanic membrane (ear drum).

The middle organises and carries pressure through the three ossicles (meaning 'tiny bones') from the ear drum to the oval window.

The inner organises and carries waves along the organ of Corti, triggering impulses in its hair cells, which correspond to specific frequencies. These form the auditory branch of the eighth cranial nerve and synapse on the ipsilateral cochlear nuclei in the rostral medulla. A majority cross over to join the lateral lemniscus,

traveling rostrally to the midbrain inferior colliculus. From there, short neurons reach the medial geniculate nucleus, which projects via internal capsule to primary auditory cortex on the superior temporal gyrus.



The Anatomy of the Ear

Vestibular system:

Similar to the auditory part, vestibular nerves impulses send motion to hairs within fluid-filled cavities.

These cavities (the semi-circular canals, utricle and saccule - collectively the labyrinth) are positioned to notify changes in positions.





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The vestibular nuclei project to many locations including the cerebellum, spinal cord, extra-ocular nuclei (nystagmus), parietal cortex (spatial orientation), vagal nucleus (vomiting), nucleus solitarius (nausea), and reticular formation (paleness, sweating).

Common complaints in general medicine are vestibular (such as dizziness) and auditory (such as a hearing impairment).

Diseases of the vestibulocochlear nerve

Auditory system

Common causes of developed hearing loss are:

- Noise exposure = sensorineural damage at the organ of Corti
- Otitis media = middle ear inflammation interfering with conduction
- Cerumen impaction = mechanical blockage of the outer ear, interfering with conduction.
- Age-associated sensorineural hearing loss
- Trauma
- Meniere's disease = transient, sometimes permanent loss of hearing associated with attacks.

Vestibular system

The most common central causes of dizziness and vertigo are:

- Vertebrobasilar circulatory problems
- Migraine
- Multiple sclerosis
- Tumors of the posterior fossa
- Neurodegenerative disorders

Auditory Assessment for the vestibulocochlear nerve:

The whispered voice test

Reported to have a 90% sensitivity and 80% specificity, the patient blocks one ear whilst the clinician whispers a letter, a numeral and another letter. If the patient repeats the triplet correctly, move on to the other side. An abnormal result is if less than half of the letters or numbers are repeated correctly.

Webers test

If there is unilateral hearing loss, do the Weber test. 'ping' a vibrating fork and place it on the front of the patients skull. A normal response would be that the sound is coming from the middle. If the affected side is reported softer then it is probable that there is a problems with sensorineurally. If the affected side seems louder, the problem is probably conductive.

Vestibular assessment for the vestibulocochlear nerve:

The horizontal head impulse test

A quick vestibulo-ocular reflex used to distinguish the more benign peripheral lesions than central. With the patient sitting and focusing on your nose, grasp the head from both sides and instruct the patient to relax and instruct on what to expect from the test. Starting from about 20 degrees rotation off center, rapidly rotate the head to midline, observing the eyes.

An abnormal response occurs when the head is rotated toward a vestibular lesion and consists of a quick gaze shift once the head stops moving. Without vestibular input, the patient cannot maintain fixation during the head rotation, requiring the adjustment. **A normal result** on this test is strong evidence instead of central nervous system involvement.

On next weeks #ClinicalSkillsFriday we will be looking at: Cranial nerve 9

References:

Butler DS (2000) 'The sensitive nervous system' Australia: Noigroup publications

Sanders RD, Gillig PM (2010) 'Cranial Nerve VIII: Hearing and Vestibular Functions' 7(3): 17-22

Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2861521/> [Accessed on: 17 July 2017]

Wikipedia (2017) Vestibulocochlear nerve Online at: https://en.wikipedia.org/wiki/Vestibulocochlear_nerve [Accessed on 17 July 2017]





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#NEWSOFTHEWEEK - by Liz Wright

1. Treating plantar fasciopathy in runners

The goal of this infographic is to provide the top take-home messages on how to plan your plantar fasciopathy treatment program, and successfully help patients to return to activity and running. This handout complements the podcast with Tom Goom available via Clinical Edge. <http://bit.ly/2vdgxfP>

2. Cuff integrity alone? Other factors including comfort & functioning need more consideration prior surgical input.

The rationale for rotator cuff repair surgery is that better integrity of the cuff should be associated with better comfort and function. However, in those with cuff dysfunction, there is no good evidence that the degree of cuff integrity is closely associated with the shoulders comfort, active rom and function. This study explored this relationship further. Surgically observed cuff integrity was not strongly associated with shoulders comfort or function. Better understanding of other factors, not solely cuff integrity, that influence comfort and function of shoulders is required.

<http://bit.ly/2ueRWll>

Is central sensitisation a feature in tendinopathy? Tom Goom July 2017 – must read.

New research from Mallows et al. (2016) and Mc Auliffe et al. (2017) has highlighted that psychosocial factors can play a significant part, especially fear and that tendon pain has a significant impact on life and daily activities. Rio et al (2013) concluded that there is evidence for both physiological and pathophysiological influencing pain in lower limb tendinopathy presentations. Nijs et al. (2014) provides excellent advice on how to identify central sensitisation in clinic. 3 major classification criteria; 1. Evidence of pain or perceived disability that is disproportionate to the nature or extent of the injury or pathology. 2. The presence of diffuse pain, allodynia and hyperalgesia (tendon pain is different - often well localised). 3. Hypersensitivity of senses unrelated to the musculoskeletal system e.g. bright light, heat or cold. Exclude neuropathic pain which can present with some of the above. To find the drivers behind the central involvement, assessing patients' beliefs and attitudes towards pain is key. Tom Goom suggests the Tendon Health Questionnaire (TendonQ) and the pain catastrophising scale to assess a patient's outlook towards pain. <http://bit.ly/2vdilZ9> <http://bit.ly/2sR3CaF> <http://bit.ly/2vdFi3Q> <http://bit.ly/2rpFFGR> <http://bit.ly/1hnECCF>

Recommendations for

PLANTAR FASCIOPATHY IN RUNNERS

Based on Physio Edge o62 Treatment of plantar fasciopathy in runners with Tom Goom @tomgoom

- ### 1 Pain dominant phase:

 - a.** Education about the pathology and prognosis to reduce level of threat
 - b.** Reduce aggravating activities such as running or prolonged standing
 - c.** Advise the patient to wear their most comfortable footwear
 - d.** Prescribe isometric toe flexion and isometric mid range calf raises (if effective in reducing pain)
 - e.** Consider adjuncts such as taping, massage, stretches and a gel heel cup
- ### 2 Load dominant phase:

- a.** Use manual therapy and strengthening exercises to address any impairments identified during the objective assessment
 - b.** Cross training to maintain cardiovascular fitness
 - c.** Gradual plantar fascia loading progressing from double leg calf to single leg calf raises
 - d.** Commence the Rathleff et al. (2015) loading programme once patient able to tolerate single leg calf raises
- ### 3 Rathleff et al. (2014) loading programme

- a.** Single leg calf raises performed barefoot with a towel under the toes to increase plantar fascial loading
 - b.** 3 second concentric, 2 second isometric pause at the top of the exercise, 3 second eccentric phase
 - c.** Increase the load by using a backpack and books
 - d.** Performed every other day for a period of 12 weeks
 - e.** Starts with 12 repetition max for 3 sets progressing to 10 repetition max after 2 weeks and then 8 repetition max after 4 weeks
- ### 4

Reintroduce running when the patient reports reduced morning stiffness, can tolerate walking, able to single leg calf raise and able to tolerate impact testing
- ### 5

Performing a run tolerance test can help to improve the patient's confidence and provide a starting point for a return to running programme
- ### 6

Provide the patient with a toolbox of techniques to use if the symptoms flare up to facilitate self-management

BROUGHT TO YOU BY: clinicaledge.co / [@davidpope](https://twitter.com/davidpope)

Rathleff et al. 2014. High-load strength training improves outcome in patients with plantar fasciitis: A randomized controlled trial with 12-month follow-up.





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#FRACTUREOFTHEWEEK BY SAM ACKERLEY

Distal humeral fractures – Continued

Fracture – Extension supracondylar fracture

They result in an extra-articular fracture line, and (when displaced) posterior displacement of the distal component.

Type I: undisplaced

Type II: displaced with intact cortex

Type III: complete displacement

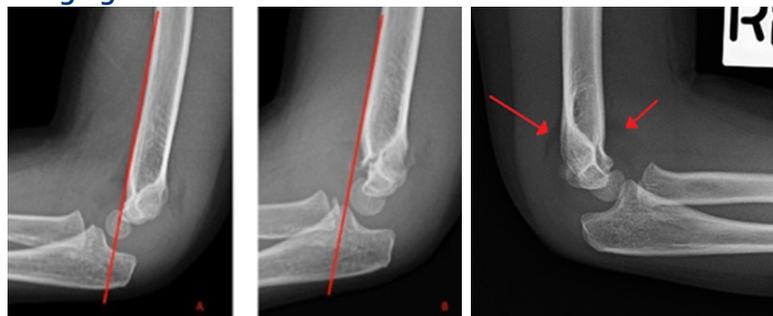
Mechanism of injury

Fall on a hyper-extended elbow, almost always due to accidental trauma, such as falling from a moderate height

Population

Typically younger children - 90% are seen in children younger than 10 years of age, with a peak age of 5-7 years. These fractures are more commonly seen in boys. Uncommon in adults.

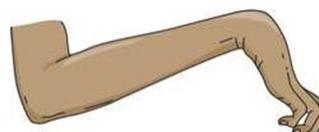
Imaging



Anterior and posterior sail sign in a child who has a subtle supracondylar fracture. (Sail sign: fat pad sign, suggests an occult fracture. It is caused by displacement of the fat pad around the elbow joint.)

Potential complications

- Mal-union: resulting in cubitus varus (gunstock deformity)
- Damage to the ulnar nerve (most common), median nerve or radial nerve.
- Ischaemic contracture (Volkmann contracture) due to damage/occlusion to the brachial artery and resulting in volar compartment syndrome.
- Fish-tail deformity due to reabsorption of the trochlear ossification centre (or failure of formation) due to an osteonecrosis type phenomenon



Resources

- <https://tinyurl.com/ybwm5qtz>
<https://tinyurl.com/y7f5dk3w>
<https://tinyurl.com/ycm3xlfm>
<https://tinyurl.com/yd2g3oar>
<https://tinyurl.com/y8wdycsy>
<https://tinyurl.com/y8ydudux>
<https://tinyurl.com/y8jnr3on>

