Hoofdpijn?
Wat kan je als kinesitherapeut betekenen?

9 juni 2022

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KINE GLAZENLEEUW www.kineglazenleeuw.be

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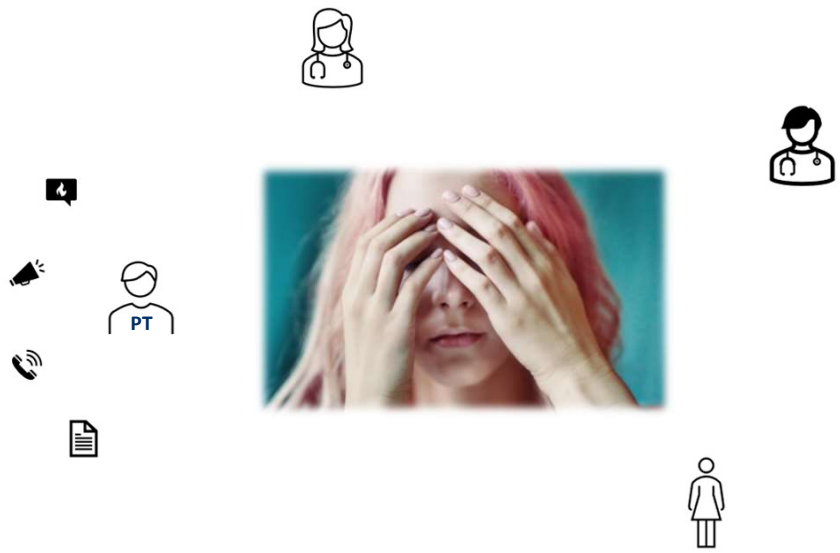
- **Enkele *statements* om te beginnen**

1. Neem uw rol op in de zorgverlening van patiënten met hoofdpijn
2. Probeer logisch na te denken bij onderzoek en therapie

2

Ad 1.



3

Ad 2.

?

Pathofysiologie

4

4

- **Highly prevalent**
  - 1 y. prevalence in adults: 50%, globally
- **Huge burden**
- **Important cause of disability**

Jensen and Stovner, *Lancet Neurology*, 2008
Stovner et al., *Cephalalgia*, 2007
GBD 2016 Headache Collaborators; *Lancet Neurology 2018*

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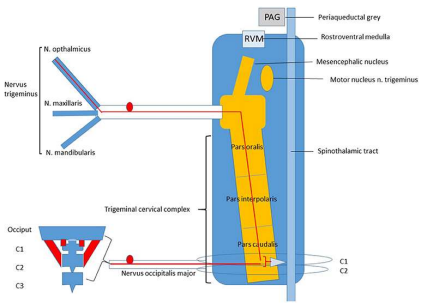
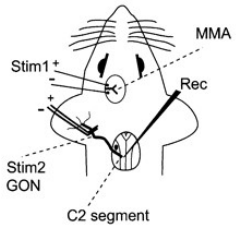
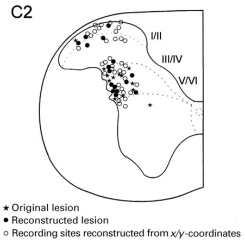
Headache + neck pain = very common



Castien and De Hertogh, *Front Neurol* 2019

https://www.frontiersin.org/articles/10.3389/fneur.2019.00276/full





Bartsch and Goadsby, *Brain* 2002

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Headache and neck pain

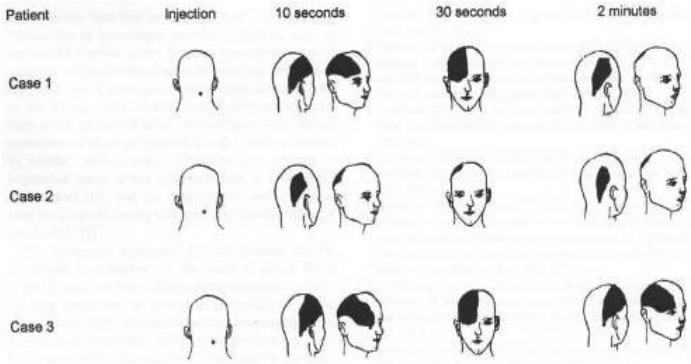

Figure 1 Distribution of the pain sensory symptoms.

Piovesan, *Cephalalgia*, 2001

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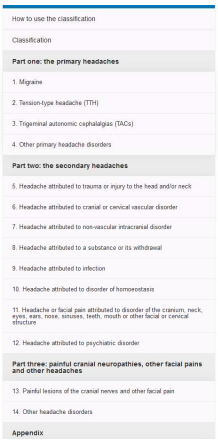
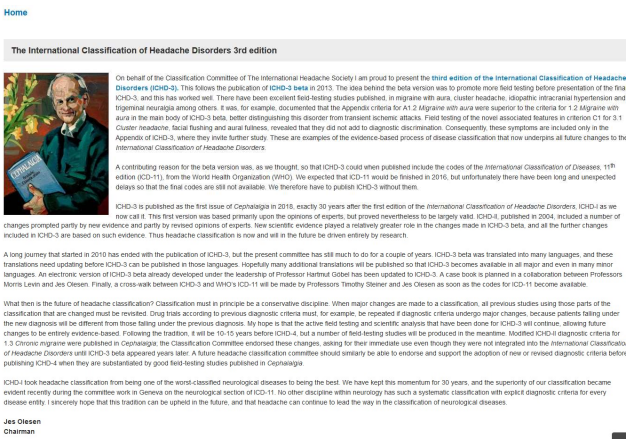
International Classification of Headache Disorders, 3rd Edition





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Anamnese

Basis van diagnostiek

Weinig tot geen reden voor bijkomende beeldvorming

Eller & Goadbsy *Expert Rev Neurother* 2013

Waar vraag je naar?

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Anamnese

Typische tekenen
- Intensiteit
- Locatie
- Soort pijn
- …

Tijds aspecten
- Verloop aanval, duur en frequentie
- Voorgeschiedenis, leeftijd van start

Geassocieerde tekenen en symptomen

Reactie van patiënt

Herken je een patroon?

Is it a go or no-go?

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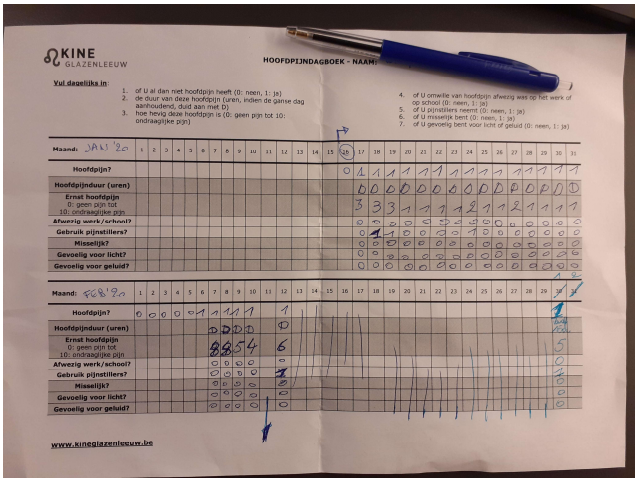
Diagnostiek - hulpmiddel

Hoofdpijn dagboek



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Diagnostiek - hulpmiddel

Headache Impact Test

Hoofdpijn Impact Test (HIT-6)
QualityMetric, Inc. and GlaxoSmithKline Group of Companies.

Instructies: Deze vragenlijst is ontwikkeld om u te helpen beschrijven en uit te drukken hoe u zich voelt en wat u vanwege hoofdpijn niet kunt doen.

Om de vragenlijst in te vullen graag één antwoord per vraag aankruisen.

	Nooit	Zelden	Soms	Vaak	Altijd
1. Wanneer u hoofdpijn heeft, hoe vaak is de pijn dan hevig?	O	O	O	O	O
2. Hoe vaak wordt u door hoofdpijn beperkt in uw vermogen om gebruikelijke dagelijkse activiteiten te doen, zoals het huishouden, werk, studie/opleiding of sociale activiteiten	O	O	O	O	O
3. Wanneer u hoofdpijn heeft, hoe vaak wenst u dan dat u zou kunnen gaan liggen?	O	O	O	O	O
4. Hoe vaak in de afgelopen 4 weken heeft u zich te moe gevoeld om uw werk of dagelijkse activiteiten te doen vanwege hoofdpijn?	O	O	O	O	O
5. Hoe vaak in de afgelopen 4 weken was u het beu of voelde u zich geïrriteerd vanwege hoofdpijn?	O	O	O	O	O
6. Hoe vaak in de afgelopen 4 weken werd u door hoofdpijn beperkt in uw vermogen om u te concentreren op uw werk of dagelijkse activiteiten?	O	O	O	O	O

	6 pnt per antwoord	8 pnt per antwoord	10 pnt per antwoord	11 pnt per antwoord	13 pnt per antwoord
Totaal					

Totaalscore tussen 36 – 78 punten

Interpretatie: De score kan variëren van 36 tot 78 punten. Hoe hoger de score, hoe groter de impact op het leven

Score 60 of meer:
Uw hoofdpijn heeft een zeer zware invloed op uw dagelijks leven. Het is mogelijk dat u invaliderende pijn en andere symptomen ervaart die veel ernstiger zijn dan voor andere hoofdpijnpatiënten. Laat uw hoofdpijn u niet weerhouden om van de belangrijke dingen in het leven te genieten, zoals uw familie, werk, school of activiteiten in uw vrije tijd.

Score 56-59:
Uw hoofdpijn heeft een aanzienlijke invloed op uw dagelijks leven. Het is mogelijk dat u invaliderende pijn en andere symptomen ervaart, waardoor u soms minder tijd kunt besteden aan uw familie, werk, school of activiteiten in uw vrije tijd.

Score 50-55:
Uw hoofdpijn lijkt invloed te hebben op uw dagelijks leven. Uw hoofdpijn zou u niet moeten hinderen om tijd te besteden aan uw familie, werk, school of activiteiten in uw vrije tijd.

Score 49 of minder:
Uw hoofdpijn heeft momenteel weinig of geen invloed op uw dagelijkse leven. Wij raden u aan om de HIT-6 elke maand in te vullen om de invloed van hoofdpijn op uw dagelijks leven te blijven volgen.

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Anamnese, let op voor…

Medicatie overgebruik hoofdpijn

- In geval van:
  - Frequent hoofdpijn (> 15 d/m)
  - Veelvuldig (frequent) medicatie innemen
  - Gedurende langere tijd (3m)
- Transformatie
- Welke medicatie
  - Ergotamines/ Triptans (10 d/ m)
  - Simpele analgetica (paracetamol/ NSAIDs ≥ 15 d/m)
- Guideline
  - Preventie en Withdrawal

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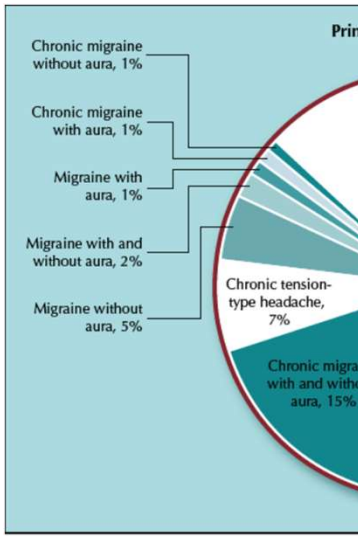

Figure 1. Classification of primary headache diagnoses for 195 patients admitted to a comprehensive pain rehabilitation center program. NOS—not otherwise specified.

44% MOH

Bruce et al., *Current Neurology and Neuroscience Reports* 2008

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Treatment plans for patients with medication-overuse headache should include the following:

- Patient education. Patients need to understand that
  - -acute medication overuse can increase headache frequency
  - -when medication overuse is stopped, headache might worsen temporarily and other withdrawal symptoms might occur
  - -many patients will experience a long-term reduction in headache frequency after medication overuse is stopped
  - -prophylactic medications might become more effective
- A strategy for cessation of medication overuse
  - -abrupt withdrawal should be advised for patients with suspected medication-overuse headache caused by simple analgesics (acetaminophen, NSAIDs) or triptans; however, gradual withdrawal is also an option
  - -gradual withdrawal should be advised for patients with suspected medication-overuse headache caused by opioids and opioid-containing analgesics
- Provision of a prophylactic medication while medication overuse is stopped. While many prophylactic agents are used (tricyclics, β-blockers, etc), drugs with the best evidence for efficacy in chronic migraine with medication overuse are
  - -onabotulinumtoxinA, 155 units to 195 units injected at intervals of 3 mo by clinicians experienced in its use for headache
  - -topiramate with slow titration to a target dose of 100 mg/d
- A strategy for the treatment of remaining severe headache attacks with limitations on frequency of use (eg, a triptan for patients with analgesic overuse, dihydroergotamine for patients with triptan overuse, etc)
- Patient follow-up and support

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Anamnese, let op voor…

Nieuwe hoofdpijn > 50 j.
Eerste hoofdpijn > 40 j.
Atypische aura, aura zonder hoofdpijn
Temporale pijn > 50 j.
Plots ontstane hoofdpijn
Koorts
Persisterende hoofdpijn

Bronnen:

NHG standaard (Google: NHG Hoofdpijn M 19)
Joubert, *Austr. Fam. Phys.* 2005; Sobri et al., *Br. J. Radiol.* 2003; Randall, *Am. Fam. Phys.* 2001

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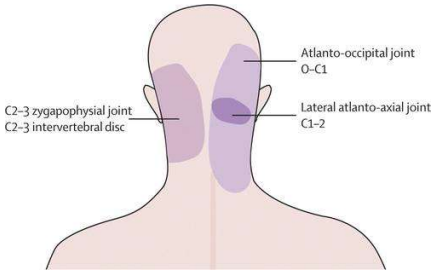
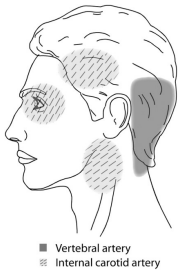
Plotse hoofdpijn !

Sentinel Headache

- Plots ontstaan
- Occipitale hoofdpijn





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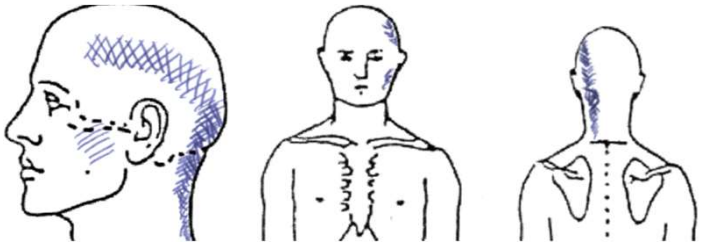
Casus

Man 63 j. HP sinds 2 maand



- Oudere man
- 'nieuwe' hoofdpijn
- Pijn bij palpatie arterie
- Harde arterie

- Negatief functieonderzoek nek

De Hertogh *Manual Therapy* 2013

https://www.sciencedirect.com/science/article/pii/S1356689X12001920?via%3Dihub

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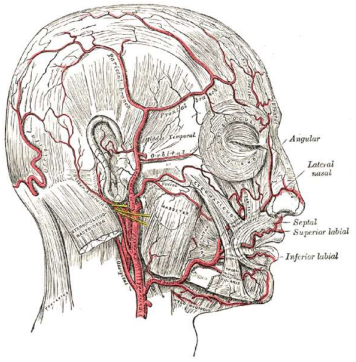
Casus
→ arteriitis temporalis/ Giant Cell Arteritis

Prevalentie
- Open populatie < 1%

Vasculitis
- Visusverlies
- Claudicatio kauwen +LR: 4.2
- Diplopie +LR: 3.4

- Prominente arterie +LR: 4.3
- Pijnlijke palpatie +LR: 2.6



De Hertogh *Manual Therapy* 2013 Smetana, *JAMA* 2002

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Headache types for PT practice

Cervicogenic Headache (CEH)

Tension Type Headache (TTH)

Migraine (M)

(attributed to TMD)

Pathophysiology
→ Clinical assessment
→ Treatment

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Cervicogenic Headache - CEH

Due to cervical dysfunction

Is debated in neurology

Prevalence	4,1%
	0.17%

Overdiagnosed

Sjaastad, *Act. Neurol. Scand*, 2008
Knacksted, *Cephalalgia*, 2010
Steiner, *J Head Pain*, 2019

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CEH - Criteria

Major criteria

- Neck involvement
  - Mechanical provocation (movements, position, pressure)
  - CROM ↓
  - Ipsilateral shoulder/ arm pain
- Confirmation by anaesthetic block
- Unilateral, without side-shift

Head pain characteristics

- Moderately intense, not pulsating, not lancinating
- Rather continous, like neck pain
- Occipital start

Other

- Mostly female patients
- History with neck trauma
- Associated symptoms: rare
- Marginal effect of specific medication (Indomethacin, ergots, triptans)

Sjaastad, 1983 -> 2008 (CHISG criteria)

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11.2.1 Cervicogenic headache

Coded elsewhere:

Headache causally associated with cervical myofascial pain sources (myofascial trigger points) may, when it meets other criteria, be coded as 2.1.1 *Infrequent episodic tension-type headache associated with pericranial tenderness*, 2.2.1 *Frequent episodic tension-type headache associated with pericranial tenderness* or 2.3.1 *Chronic tension-type headache associated with pericranial tenderness*. A11.2.5 *Headache attributed to cervical myofascial pain* is an Appendix diagnosis awaiting evidence that this type of headache is more closely related to other cervicogenic headaches than to 2. *Tension-type headache*. Clearly, there are many cases which overlap these two categories, for which diagnosis can be challenging.

Description:

Headache caused by a disorder of the cervical spine and its component bony, disc and/or soft tissue elements, usually but not invariably accompanied by neck pain.

Diagnostic criteria:

A. Any headache fulfilling criterion C
B. Clinical and/or imaging evidence[1] of a disorder or lesion within the cervical spine or soft tissues of the neck, known to be able to cause headache[2]
C. Evidence of causation demonstrated by at least two of the following:
   1. headache has developed in temporal relation to the onset of the cervical disorder or appearance of the lesion
   2. headache has significantly improved or resolved in parallel with improvement in or resolution of the cervical disorder or lesion
   3. cervical range of motion is reduced and headache is made significantly worse by provocative manœuvres
   4. headache is abolished following diagnostic blockade of a cervical structure or its nerve supply
D. Not better accounted for by another ICHD-3 diagnosis[3;4;5].

Notes:

1. Imaging findings in the upper cervical spine are common in patients without headache; they are suggestive but not firm evidence of causation.
2. Tumours, fractures, infections and rheumatoid arthritis of the upper cervical spine have not been formally validated as causes of headache, but are accepted to fulfil criterion B in individual cases. Cervical spondylosis and osteochondritis may or may not be valid causes fulfilling criterion B, again depending on the individual case.
3. When cervical myofascial pain is the cause, the headache should probably be coded under 2. *Tension-type headache*; however, awaiting further evidence, an alternative diagnosis of A11.2.5 *Headache attributed to cervical myofascial pain* is in the Appendix.
4. Headache caused by upper cervical radiculopathy has been postulated and, considering the now well-understood convergence between upper cervical and trigeminal nociception, this is a logical cause of headache. Pending further evidence, this diagnosis is in the Appendix as A11.2.4 *Headache attributed to upper cervical radiculopathy*.
5. Features that tend to distinguish 11.2.1 *Cervicogenic headache* from 1. *Migraine* and 2. *Tension-type headache* include side-locked pain, provocation of typical headache by digital pressure on neck muscles and by head movement, and posterior-to-anterior radiation of pain. However, while these may be features of 11.2.1 *Cervicogenic headache*, they are not unique to it and they do not necessarily define causal relationships. Migrainous features such as nausea, vomiting and photo/phonophobia may be present with 11.2.1 *Cervicogenic headache*, although to a generally lesser degree than in 1. *Migraine*, and may differentiate some cases from 2. *Tension-type headache*.

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CEH - Pathophysiology

Referred pain

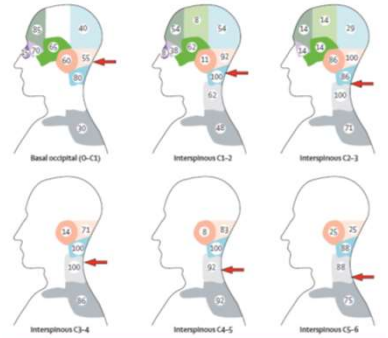

Figure 2: Referred pain patterns after noxious stimulation of basal occipital periosteum and interspinous muscles at C1–2, C2–3, C3–4, C4–5, and C5–6
The more cephalad the site of stimulation, the more likely that pain is referred to distant regions of the head. The numbers indicate the percentage of individuals who reported pain in the area shown after stimulation at each segmental level. The arrows indicate the approximate site of stimulation. Adapted from Campbell and Parsons, with permission from Lippincott Williams & Wilkins.[16]

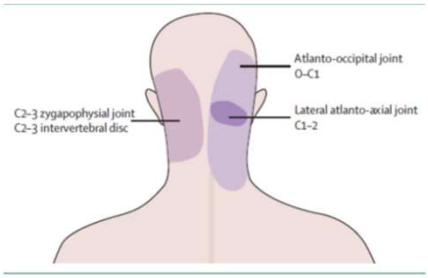

Figure 3: Referred pain patterns after noxious stimulation of upper cervical joints and the C2–3 intervertebral disc
Based on data from Dreyfuss and colleagues,[12] Dwyer and colleagues,[13] Schellhas and colleagues,[14] and Grubb and Kelly.[15]

Bogduk and Govind, *Lancet Neurology* 2009

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CEH – Clinical assessment

Diagnosis via history taking

Clinical tests, but which ones and why?

Anteroposition

Mobility
General
Segmental
Flexion Rotation Test C0-1
C0-2

Deep Neck Flexors

Joint Pain on Palpation

Jull, *Cephalalgia*, 2009; Hall, *JOSPT*, 2008; Ogince, *MT*, 2007, Satpute, *MSP*, 2020

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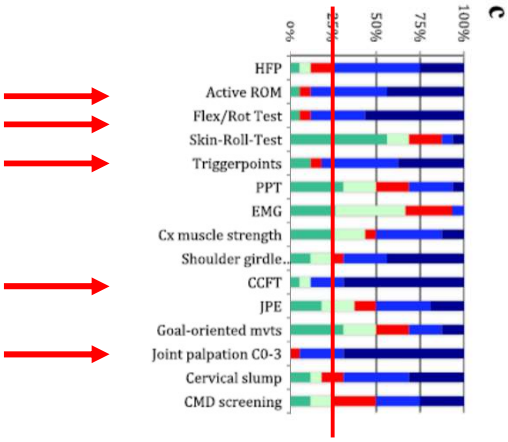
CEH – Clinical assessment



Luedtke, *Manual Therapy*, 2016

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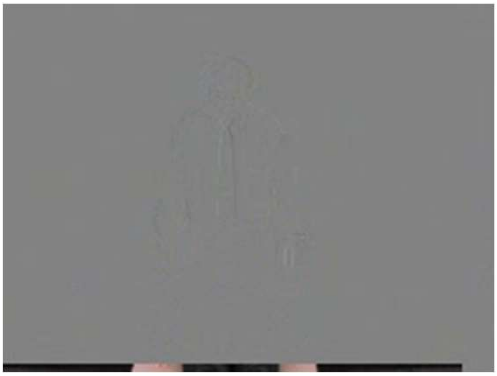
CEH – Clinical assessment

Diagnosis via history taking

Clinical tests, but which ones and why?

Mobility
General
Segmental
Flexion Rotation
Test C0-1
C0-2



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Mobiliteit – Segmentaal

Flexion Rotation Test (FRT) → Developed for CEH

Reliability

• Range:	ICC:	0.93
• Interpretation	Kappa:	0.85

Hall, JOSPT, 2008

Validity for CEH diagnosis

• FRT, Cut off	32°,	sens: 91%	spec: 90%

Ogince, Manual Therapy, 2007

• FRT, Cut off	34°,	sens: 70%	spec: 70%
•	30°	AUC: 85%	

Hall, JHP, 2010

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CEH – Clinical assessment

Diagnosis via history taking

Clinical tests, but which ones and why?

Deep Neck Flexors

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CEH – Clinical assessment

Diagnosis via history taking

Clinical tests, but which ones and why?

Joint Pain on Palpation

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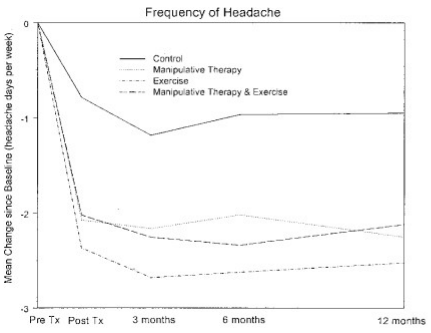
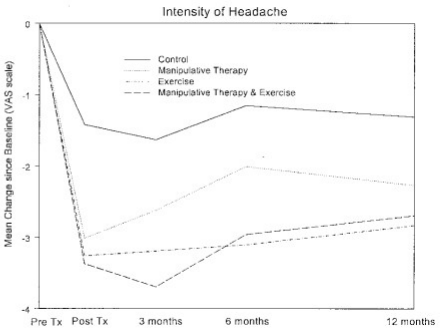
CEH - Treatment

SPINE Volume 27, Number 17, pp 1835–1843
©2002, Lippincott Williams & Wilkins, Inc.

A Randomized Controlled Trial of Exercise and Manipulative Therapy for Cervicogenic Headache

Gwendolen Jull, PT, PhD,* Patricia Trott, PT, MSc,† Helen Potter, PT, MSc,‡
Guy Zito, PT, Grad Dip Manip Ther,§ Ken Niere, PT, Mph,‖ Debra Shirley, PT, BSc,¶
Jonathan Emberson, MSc,# Ian Marschner, PhD,# and Carolyn Richardson, PT, PhD*





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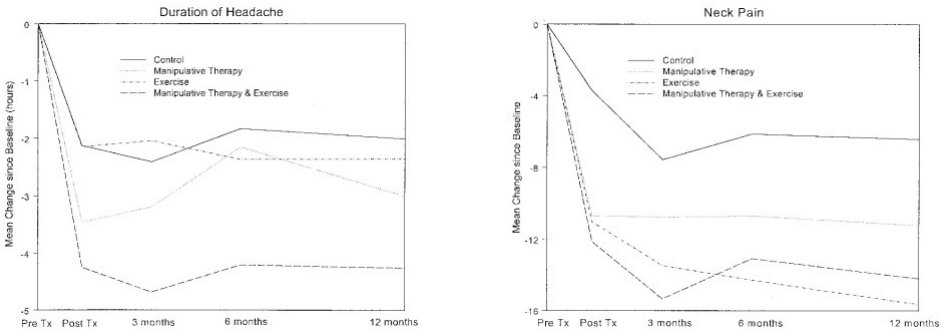

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CEH - Treatment

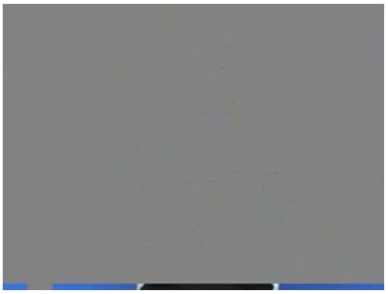
CEH: n=32

2 groups

- C1-C2 self-sustained natural apophyseal glide (SNAG)
- C1-C2 placebo SNAG

Outcome measures

- Immediate ROM increase
- Headache index



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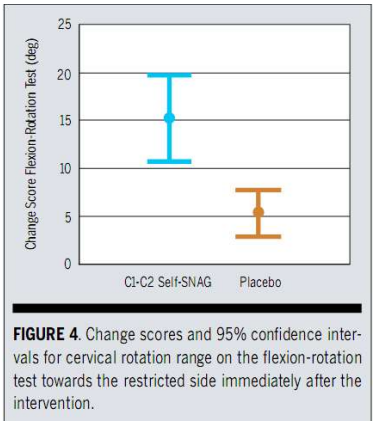

FIGURE 4. Change scores and 95% confidence intervals for cervical rotation range on the flexion-rotation test towards the restricted side immediately after the intervention.

TABLE 3 MEANS, SD, SEM, AND CHANGE SCORES FOR HEADACHE SEVERITY INDEX BEFORE AND AFTER THE INTERVENTION

Characteristic	C1-C2 Self-SNAG Group	Placebo Group
Headache severity index baseline, mean ± SD (SEM)*	52 ± 10 (2)	51 ± 9 (2)
Headache severity index 4 wk, mean ± SD (SEM)*	31 ± 9 (2)	51 ± 15 (4)
Change score (95% CI) preintervention to 4 wk postintervention	22 (16, 27)	0 (−7, 6)
Headache severity index 12 mo, mean ± SD (SEM)*	24 ± 9 (2)	44 ± 13 (3)
Change score (95% CI) 4 weeks to 12 mo postintervention	7 (2, 12)	7 (−2, 16)
Change score (95% CI) preintervention to 12 mo postintervention	28 (22, 35)	6 (1, 12)

Abbreviations: CI, confidence interval; SD, standard deviation; SEM, standard error of mean.
** Headache severity index (range, 0-100; larger scores indicate greater severity).*

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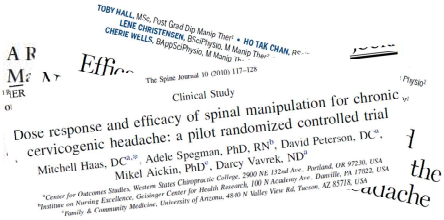
CEH – Treatment

Treatment options - Guideline
- Education
- Postural advice
- Deep Neck flexor training
- Mobilisations and manipulations of thoracic and (upper)cervical spine


TOBY HALL, MSc, Post Grad Dip Manip Ther • HO TAK CHAN, BSc...
LENE CHRISTENSEN, BScPhysio, M Manip Ther
CHERIE WELLS, BAppSciPhysio, M Manip Ther
The Spine Journal 10 (2010) 117–128
Clinical Study
Dose response and efficacy of spinal manipulation for chronic cervicogenic headache: a pilot randomized controlled trial
Mitchell Haas, DC[a,b], Adele Spegman, PhD, RN[b], David Peterson, DC[a], Mikel Aickin, PhD[c], Darcy Vavrek, ND[b]

A. Consider the following therapeutic options based upon shared decision making between patient and provider:[b,c]

Home and clinic-based interventions:
1) Low-load endurance craniocervical and cervicoscapular exercises; or
2) Manual therapy (manipulation with or without mobilization) to the cervical and thoracic spine

B. Do not offer:[d]
1) Multimodal program of care that combines spinal manipulation, spinal mobilization, and low load endurance exercises

Coté, *Eur J Pain*, 2019

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Headache types for PT practice

Cervicogenic Headache (CEH)

Tension Type Headache (TTH)

Migraine (M)

(attributed to TMD)

Pathophysiology

→ Clinical assessment

→ Treatment

37

Tension type headache - TTH

Duration of episode: 30' - 7 days

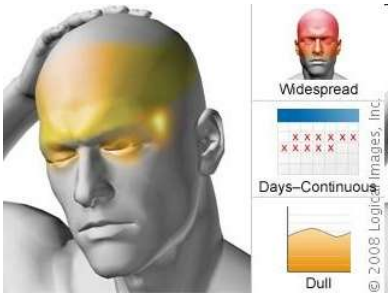
- Bilateral
- Pressing/ non-pulsating
- Mild to moderate
- Routine physical activity: no influence

Associated symptoms

- No nausea or vomitting
- Photo- OR phonophobia

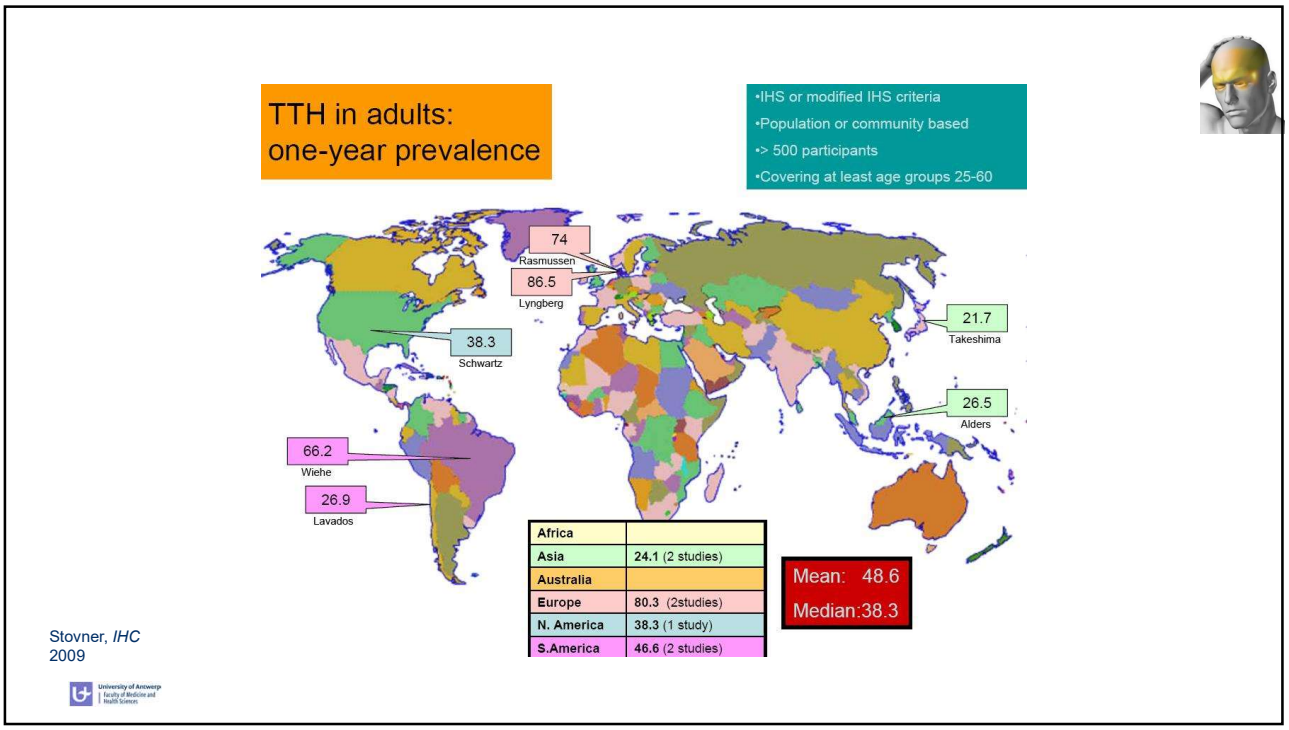
No other diagnosis/ underlying cause

Important: Episodic and Chronic (≥15d/m)



Mean 1 y. prevalence: 48,6%

38



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TTH - Pathophysiology

Different models

Peripheral 'trigger'

Peripheral sensitisation

Central sensitization and disinhibition

40

TTH - Pathophysiology

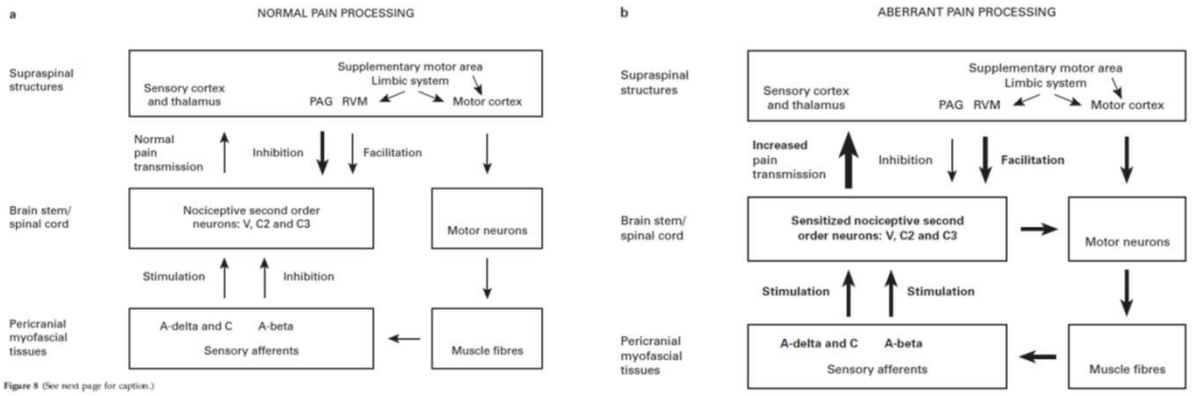

Figure 8 (See next page for caption.)

Bendtsen et al., *Cephalalgia*, 2000

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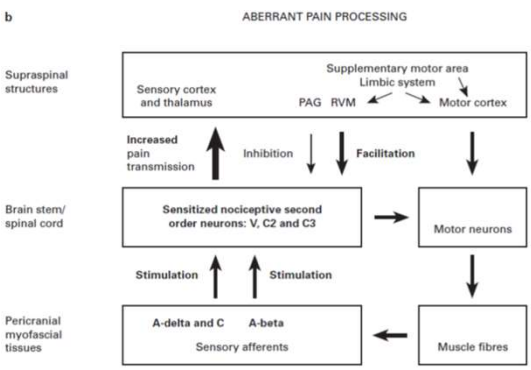
TTH - Pathophysiology

Chronification

TPs as peripheral 'trigger'
Leading to peripheral sensitisation
Central sensitization and disinhibition



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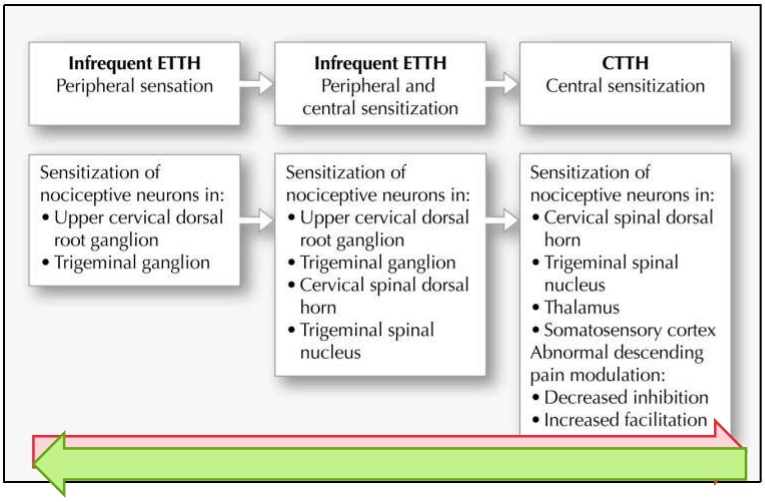


Figure 2. Hypothesis: transformation of episodic tension-type headache (ETTH) into the chronic form (CTTH). Because central sensitization is most likely correlated to frequency of headache, patients with headache frequency between 5 and 15 days per month would exhibit signs of sensitization of the second-order neurons.

Ashina 2005

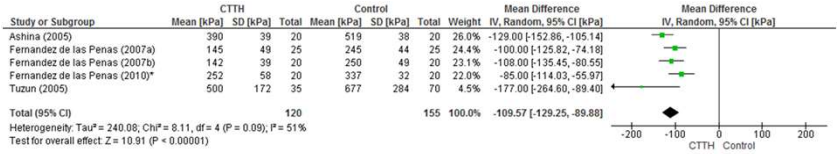
CTTH - Pathophysiology

Systematic Review and Meta-analysis

PPTs in cranio cervical muscles

CTTH versus controls

Trapezius (n=5)



Study or Subgroup	CTTH Mean [kPa]	CTTH SD [kPa]	CTTH Total	Control Mean [kPa]	Control SD [kPa]	Control Total	Weight	Mean Difference IV, Random, 95% CI [kPa]
Ashina (2005)	390	39	20	519	38	20	26.0%	-129.00 [-152.86, -105.14]
Fernandez de las Penas (2007a)	145	49	25	245	44	25	24.4%	-100.00 [-125.82, -74.18]
Fernandez de las Penas (2007b)	142	39	20	250	49	20	23.1%	-108.00 [-135.45, -80.55]
Fernandez de las Penas (2010)*	252	58	20	337	32	20	22.0%	-85.00 [-114.03, -55.97]
Tuzun (2005)	500	172	35	677	284	70	4.5%	-177.00 [-264.60, -89.40]
Total (95% CI)			120			155	100.0%	-109.57 [-129.25, -89.88]

Heterogeneity: Tau² = 240.08; Chi² = 8.11, df = 4 (P = 0.09); I² = 51%
Test for overall effect: Z = 10.91 (P < 0.00001)

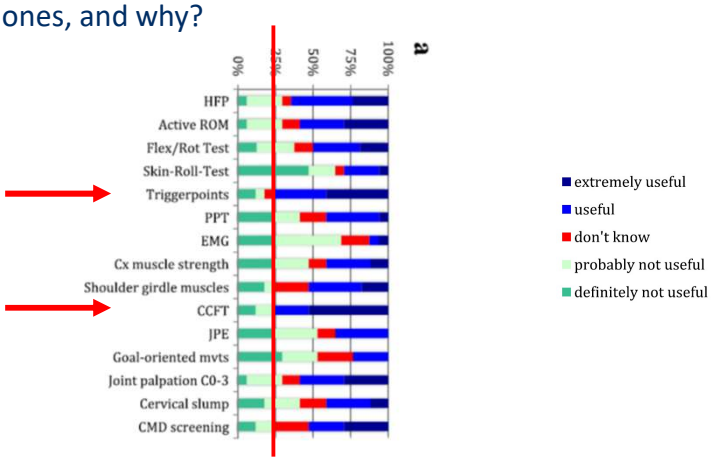
Table 4. Results of meta-analysis pressure pain thresholds (kPa) of trapezius muscle (midpoint between vertebrae C7 and acromion) in chronic tension-type headache (CTTH) versus control, * results of pressure pain thresholds in females

Castien, van der Wouden, De Hertogh, *J Headache Pain*, 2018

TTH – Clinical assessment?

History taking for diagnosis

Clinical tests, but which ones, and why?



Luedtke, *Manual Therapy*, 2016

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Treatment - TTH

TTH: n=81

2 groups

- Physical therapy
- Physical therapy+ CCF Training

Van Ettekoven, *Cephalalgia*, 2006

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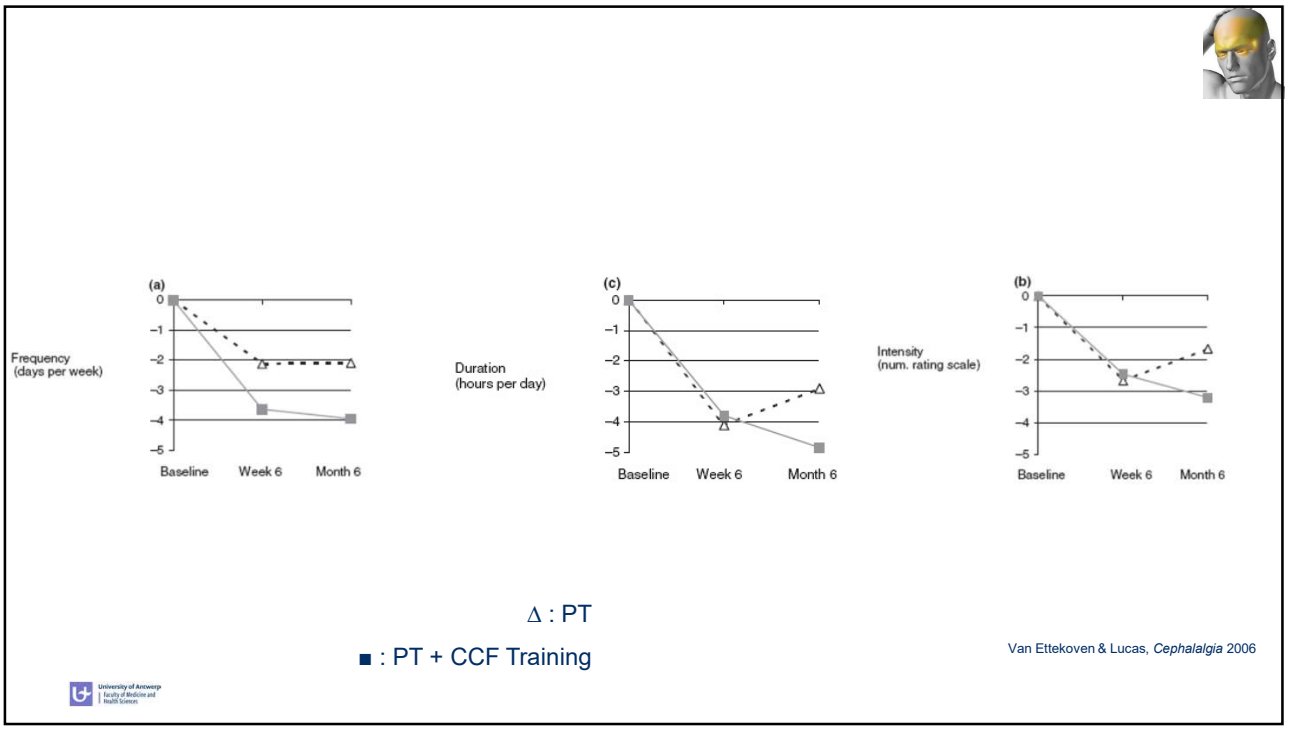

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Treatment - TTH

CTTH: n=82

2 groups
- Usual Care
- Manual Therapy

Primary outcome measures
- Headache days
- Medication intake

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Treatment - TTH

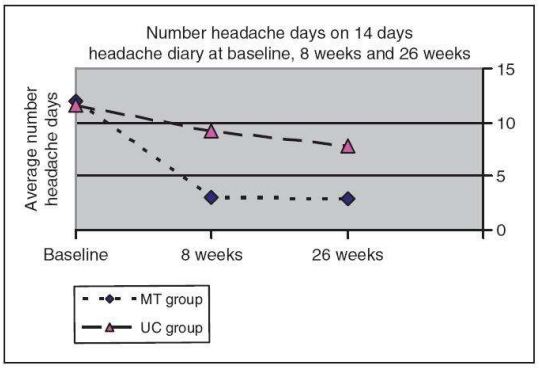

Figure 2. Number of headache days from 14-day headache diary at baseline, 8 weeks and 26 weeks.

Medication: no difference

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Table 2. Within-group change and between-group differences in mean change (95% CI) for primary and secondary outcome measures at 8 weeks

	MT ($n=40$)	Usual care GP ($n=40$)			
	Mean change (SD)	Mean change (SD)	Mean difference in change (SEM)	Student t-test *Mann–Whitney	95% CI of difference
Primary outcome					
Headache diary (14 days): frequency of headache (days)	−9.1 (3.8)	−2.7 (4.3)	−6.4 (0.92)	$P<0.001$	−8.32 to −4.56
Secondary outcome					
Average pain intensity (0–10 Numeric Rating Scale)	−2.7 (0.9)	−0.9 (2.4)	−1.8 (0.6)	$P=0.003$	−3.07 to −0.67
Headache (h/day)	−5.9 (8.7)	−0.60 (10.0)	−5.3 (2.09)	$P=0.013$	−9.51 to −1.15
Headache Impact Test-6 (36–78)	−8.9 (7.1)	−2.4 (6.5)	−6.5 (1.52)	$P<0.001$	−9.62 to −3.52
Headache Disability Inventory (0–100)	−17.4 (16.1)	−5.8 (12.8)	−11.6 (3.2)	$P=0.001$, $*P=0.004$	−18.1 to −5.09
Cervical range of movement: total degrees of all movements in degrees	18.8 (32.5)	2.0 (31.4)	16.8 (7.25)	$P=0.023$	2.42–31.32
Algometry (0–80 points)	−9.2 (14.2)	1.0 (12.2)	−10.3 (3.0)	$P=0.001$	−16.33 to −4.27
Endurance neck flexor (s)	13.0 (16.8)	2.9 (17.2)	10.0 (3.86)	$P=0.011$, $*P=0.006$	2.35–17.74

*Non-parametric tests (Mann–Whitney) were performed in case of non-normal distributions.

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Table 3. Within group change and between-group differences in mean change (95% CI) for primary and secondary outcome measures at 26 weeks

	MT ($n=38$)	Usual care GP ($n=37$)			
	Mean change (SD)	Mean change (SD)	Mean difference in change (SEM)	Student *t*-test * Mann–Whitney	95% CI of difference
Primary outcome					
Headache diary (14 days): frequency headache (days)	−9.1 (4.2)	−4.1 (4.4)	−4.9 (0.99)	$P<0.001$	−6.95 to −2.98
Secondary outcome					
Average pain intensity (0–10 Numeric Rating Scale)	−3.1 (2.8)	−1.7 (2.5)	−1.4 (0.63)	$P=0.027$	−2.69 to −0.16
Headache (h/day)	−7.0 (10.4)	−3.5 (7.3)	−3.5 (2.09)	$P=0.095$	−7.71 to 0.63
Headache Impact Test-6 (36–78)	−10.6 (8.4)	−5.5 (8.6)	−5.0 (1.97)	$P=0.012$	−9.02 to −1.16
Headache Disability Inventory (0–100)	−20.0 (22.6)	−9.9 (18.0)	−10.1 (4.74)	$P=0.037$, $^*P=0.116$	−19.5 to −0.64
Cervical range of movement: total degrees of all movements in degrees	15.6 (37.8)	5.3 (45.0)	10.2 (9.72)	$P=0.296$	−9.16 to 29.63
Algometry (0–80 points)	−6.3 (17.0)	−3.6 (11.7)	−2.6 (3.43)	$P=0.446$	−9.47 to 4.21
Endurance neck flexor (s)	13.3 (20.7)	13.0 (25.0)	0.3 (5.37)	$P=0.952$, $^*P=0.703$	−10.38 to 11.03

*Non-parametric tests (Mann-Whitney) were performed in case of non-normal distributions.

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TTH - Treatment

Treatment options - Guideline

- Education
- General exercise
- Postural advice
- Deep Neck flexor training
- Mobilisations of thoracic and (upper)cervical spine
- Clinical massage

A. Consider the following therapeutic options based upon shared decision making between patient and provider:[b,c]

Home and clinic-based interventions:

1) General exercise (warm-up, neck and shoulder stretching and strengthening, aerobic excercises)
2) Low load endurance craniocervical and cervicoscapular exercises;
3) Multimodal care that includes spinal mobilization, craniocervical exercises, and postural correction; or
4) Clinical massage on shoulders, upper back, connecting area of neck and shoulders, shoulder tips, the back of head, the middle line of head, face

B. Do not offer:[d]

1) Manipulation of the cervical spine

Coté, *Eur J Pain*, 2019

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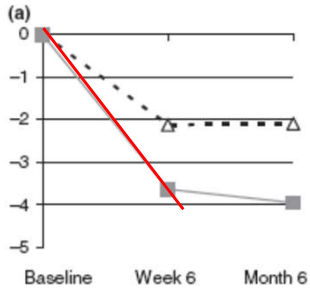
Δ : Physical Therapy (PT)
■ : PT + CCF Training

Van Ettekoven and Lucas, *Cephalalgia*, 2006



Δ : Usual Care
♦ : PT + CCF Training

Castien et al., *Cephalalgia*, 2010

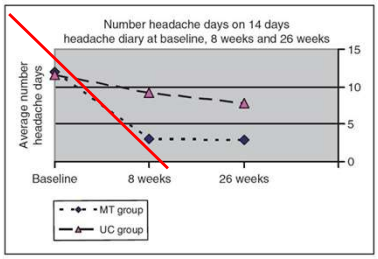


Figure 2. Number of headache days from 14-day headache diary at baseline, 8 weeks and 26 weeks.

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TTH – Treatment

Working mechanism
- ROM?
- DNF training?
- Posture?

Endurance of neck flexors 24,5%

Castien et al. *JOSPT*, 2013

54

TTH - Treatment

Working mechanism?

CTTH, n=145

	8 weeks n = 142	26 weeks n = 125
Isometric strength neck flexors (95% CI)	17.33 (14.05 to 20.61)	19.18 (14.89 to 23.48)
Pressure pain scores (95% CI)	-11.24 (-13.8 to -8.23)	-11.09 (-13.95 to -8.23)
Correlation	-0.273	-0.317
P-value	0.001	0.000

Correlation coëfficients: Spearman rho, non-parametric.

Table 2. *Within-group mean differences between baseline and 8 weeks and after 26 weeks (means and 95% confidence intervals) and correlations between isometric strength of neck flexors and pressure pain scores.*

Castien, Blankenstein, De Hertogh, *Pain Physician* 2015

55

Headache types for PT practice

Cervicogenic Headache (CEH)

Tension Type Headache (TTH)

Migraine (M)

(attributed to TMD)

Pathophysiology

→ Clinical assessment

→ Treatment

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Migraine – *common migraine*

Minimum 5 aanvallen

Duur: 4-72 uur

Minstens 2 van de volgende:

- Unilateraal
- Pulserend
- Matig tot ernstig (invaliderend)
- Toename door fysieke inspanning of kinesifobie-inducerend

Tijdens hoofdpijn minstens één van de volgende:

- Nausea en/of braken
- Foto- én fonofobie

Geen andere aandoening

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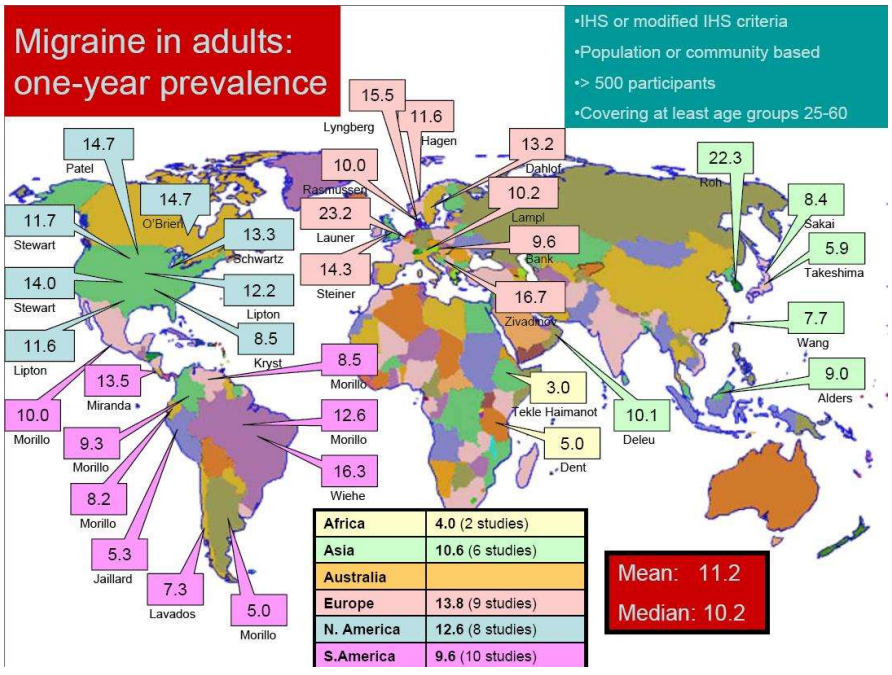
Stovner, *IHC* 2009



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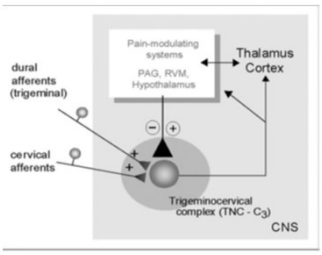
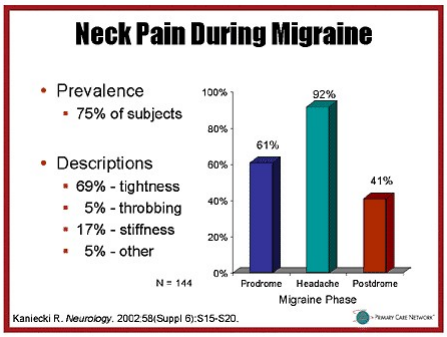
Migraine & Nekpijn

Acute migraine

75%

Kaniecki, *Neurology*, 2002





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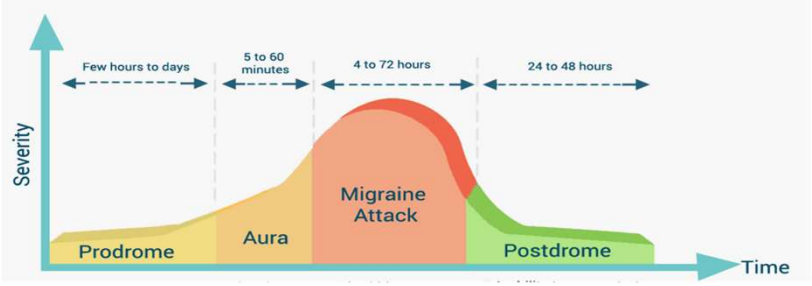

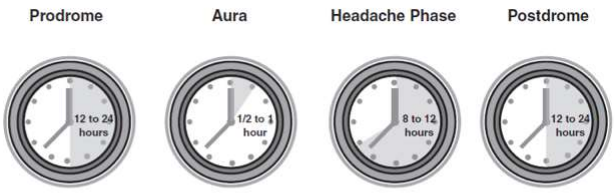

12–24 hours before headache
- Irritability
- Neck pain
- Food cravings
- Yawning

1/2–1 hour before headache
- Affects 1 in 5 people with migraine
- Vision changes
- Numbness
- Weakness
- Dizziness
- Confusion

8–12 hours of migraine symptoms
- Throbbing headache
- Nausea
- Sensitivity to lights
- Sensitivity to noise
- Sensitivity to odors
- Disability or limited activities

12–24 hours after headache
- Hung-over feeling
- Fatigue
- Poor concentration

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MIGRAINE – *With AURA*

A. At least two attacks fulfilling criteria B and C
B. One or more of the following fully reversible aura symptoms:
   1. visual
   2. sensory
   3. speech and/or language
   4. motor
   5. brainstem
   6. retinal
C. At least two of the following four characteristics:
   1. at least one aura symptom spreads gradually over ≥5 minutes, and/or two or more symptoms occur in succession
   2. each individual aura symptom lasts 5-60 minutes[1]
   3. at least one aura symptom is unilateral[2]
   4. the aura is accompanied, or followed within 60 minutes, by headache
D. Not better accounted for by another ICHD-3 diagnosis, and transient ischaemic attack has been excluded.

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M - Pathophysiology

Multifactorial

Starts in the
Sensitisation
A.o. impaired modulation

Physiol Rev 97: 553–622, 2017
Published February 8, 2017; doi:10.1152/physrev.00034.2015

PATHOPHYSIOLOGY OF MIGRAINE: A DISORDER OF SENSORY PROCESSING

Peter J. Goadsby, Philip R. Holland, Margarida Martins-Oliveira, Jan Hoffmann, Christoph Schankin, and Simon Akerman

Basic and Clinical Neurosciences, Institute of Psychiatry, Psychology and Neuroscience, King's College, London, United Kingdom; Department of Neurology, University of California, San Francisco, San Francisco, California; Department of Neurology, University of Hamburg-Eppendorf, Hamburg, Germany; and Department of Neurology, University Hospital Bern-Inselspital, University of Bern, Bern, Switzerland

Goadsby PJ, Holland PR, Martins-Oliveira M, Hoffmann J, Schankin C, Akerman S. Pathophysiology of Migraine: A Disorder of Sensory Processing. *Physiol Rev* 97: 553–622, 2017. Published February 8, 2017; doi:10.1152/physrev.00034.2015.—Plaguing humans for more than two millennia, manifest on every continent studied, and with more than one billion patients having an attack in any year, migraine stands as the sixth most common cause of disability on the planet. The pathophysiology of migraine has emerged from a

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M - Pathophysiology

Systematic Review and Meta-analysis
PPTs in cranio cervical muscles
M versus controls

Trapezius (n=6)

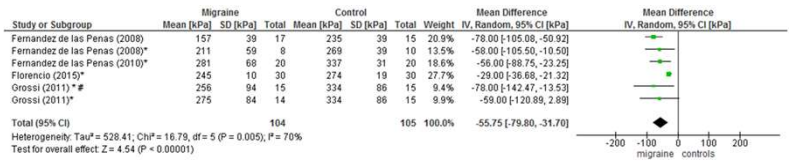

Table 3. Results of meta-analysis of pressure pain thresholds (kPa) of trapezius muscle (midpoint between vertebrae C7 and acromion) in migraine versus control, * results of pressure pain thresholds in females, # episodic migraine.

Castien, van der Wouden, De Hertogh, *J Headache Pain*, 2018

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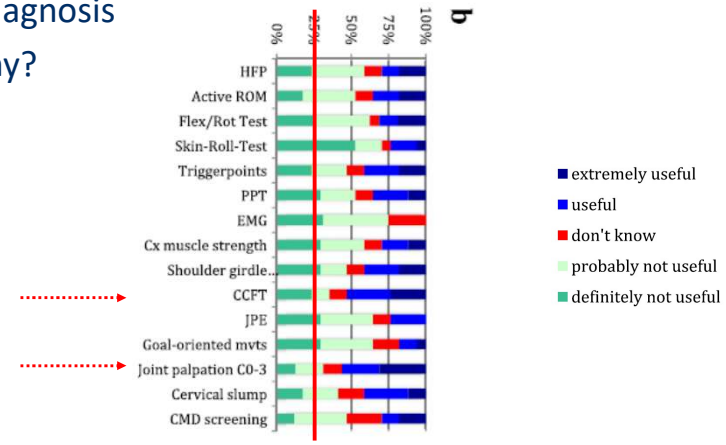
M – Clinical assessment

History taking for diagnosis
Which ones and why?



Luedtke, *Manual Therapy*, 2016

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Masterclass | Open Access | Published: 08 December 2021

Cervical musculoskeletal impairments in migraine

Zhiqi Liang, Lucy Thomas, Gwendolen Jull & Julia Treleaven

Archives of Physiotherapy **11**, Article number: 27 (2021) | Cite this article
1044 Accesses | **16** Altmetric | Metrics

Cluster
- ROM (ext) – JPP – CCFT – FRT
- PPTs

Challenges
- Heightened Sensitisation
- Neuro-mechanosensitivity
- Interictal assessment?

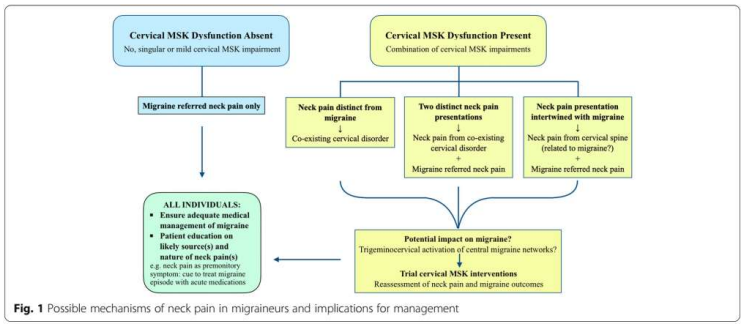

Fig. 1 Possible mechanisms of neck pain in migraineurs and implications for management

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Luedtke and May *The Journal of Headache and Pain* (2017) 18:97
DOI 10.1186/s10194-017-0808-0

The Journal of Headache and Pain

SHORT REPORT Open Access

Stratifying migraine patients based on dynamic pain provocation over the upper cervical spine

Kerstin Luedtke and Arne May*

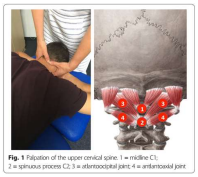
Fig. 1 Palpation of the upper cervical spine. 1 = midline C1; 2 = spinuous process C2; 3 = atlantooccipital joint; 4 = atlantoaxial joint

Findings: Using simple palpation of the upper cervical spine, migraine patients can be stratified into three groups: painfree (11%), local pain only (42%), and pain referred to the head during sustained pressure (47%). Combining both test components (palpation and sustained pressure) has a high sensitivity and specificity for migraine.

Conclusions: The response to palpation of the upper cervical spine may indicate migraine subtypes. The presence of musculoskeletal dysfunctions of the upper cervical spine should be identified and treated to avoid ongoing nociceptive input into the trigeminocervical complex.

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Provocation – Reduction?

Watson Stress Test

C0-1

C2-3

Figure 2: MPT C0-C1

Headache
© 2012 American Headache Society
ISSN 0017-8748
doi: 10.1111/j.1526-4610.2012.02169.x
Published by Wiley Periodicals, Inc.

Research Submission

Head Pain Referral During Examination of the Neck in Migraine and Tension-Type Headache

Dean H. Watson, MAppSc; Peter D. Drummond, PhD

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Provocation - Reduction

- **Stretch suboccipital muscles**

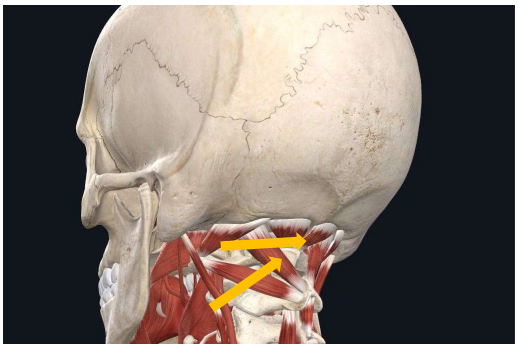

Image from physiostrength.com

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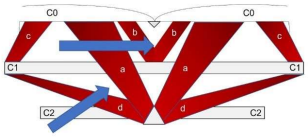
Provocation – Reduction in migraine

- Migraine
- N=30

- Pressure on C1, C2, RCPM, OCI
  - ? Provocation
  - ? How much pressure
  - ? Reduction, in three repetitions
    - NPRS
    - Time to obtain reduction



De Hertogh & Castien, *submitted*

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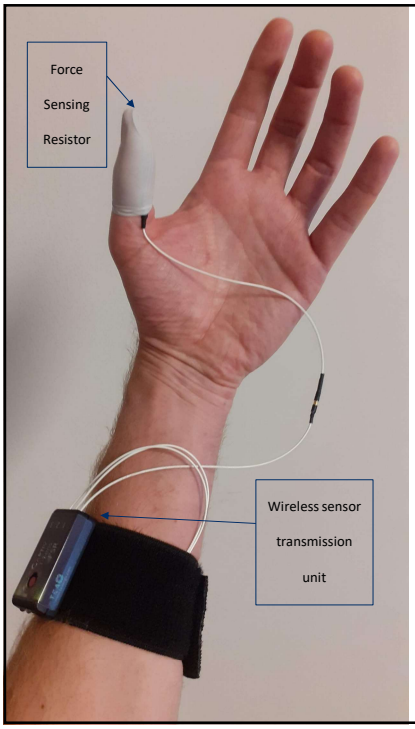

De Hertogh & Castien, *under review in Pain Physician*

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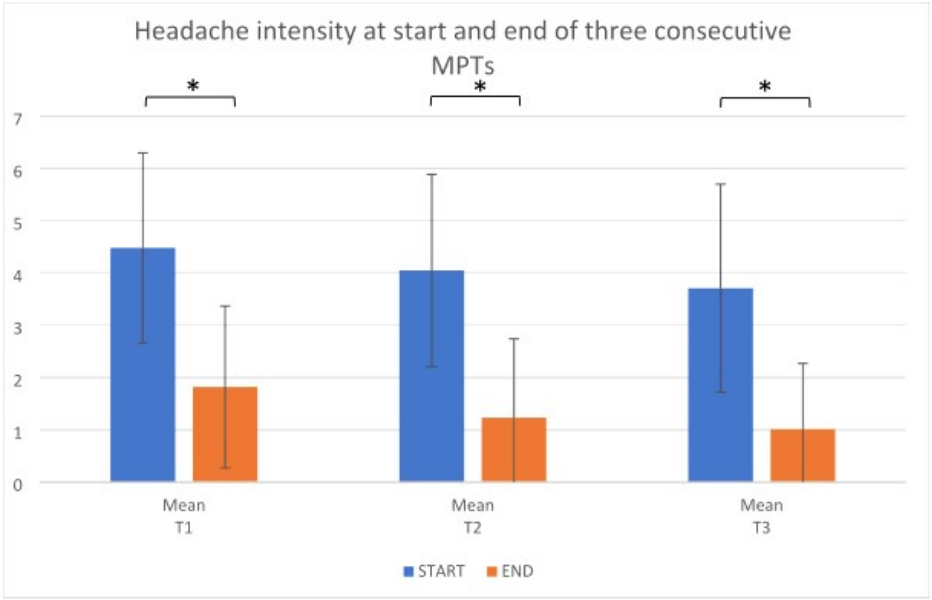

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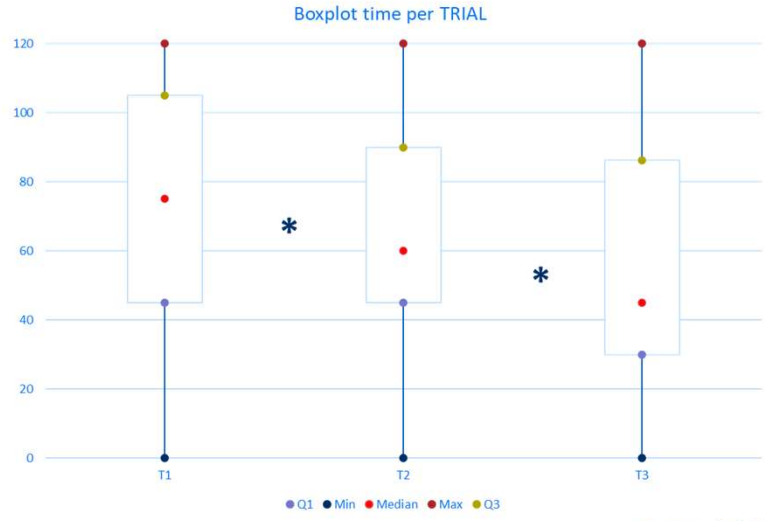

De Hertogh & Castien, *under review in Pain Physician*

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Provocation - Reduction

- Provocation with pressure ranging from 0,8 kg/cm² to 1,21 kg cm²
- Reduction in 21/23 patients
- In consecutive repetitions
  - Less pain
  - Faster pain reduction
- ? Indication for modulation of central nociceptive transmission?


BMC Part of Springer Nature

Trials

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Study protocol | Open Access | Published: 27 December 2019

Manual therapy as a prophylactic treatment for migraine: design of a randomized controlled trial

Andreas Leonard Amons, Rene Franciscus Castien, Johannes C. van der Wouden, Willem De Hertogh, Joost Dekker & Henriëtte Eveline van der Horst

Trials 20, Article number: 785 (2019) | Cite this article

2743 Accesses | 5 Altmetric | Metrics

M - Treatment

MT Trials: ongoing

Alternative? aerobic training

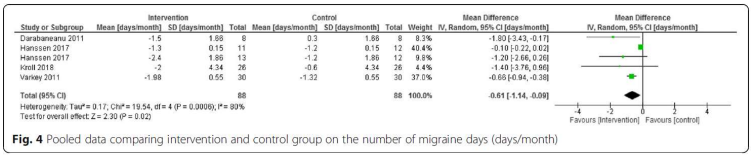

Fig. 4 Pooled data comparing intervention and control group on the number of migraine days (days/month)

Lemmens et al., *J Head Pain*, 2019

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To conclude

History taking!

Cervicogenic Headache (CEH)
Tension Type Headache (TTH)
Migraine (M)

Pathophysiology

Communicate

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