

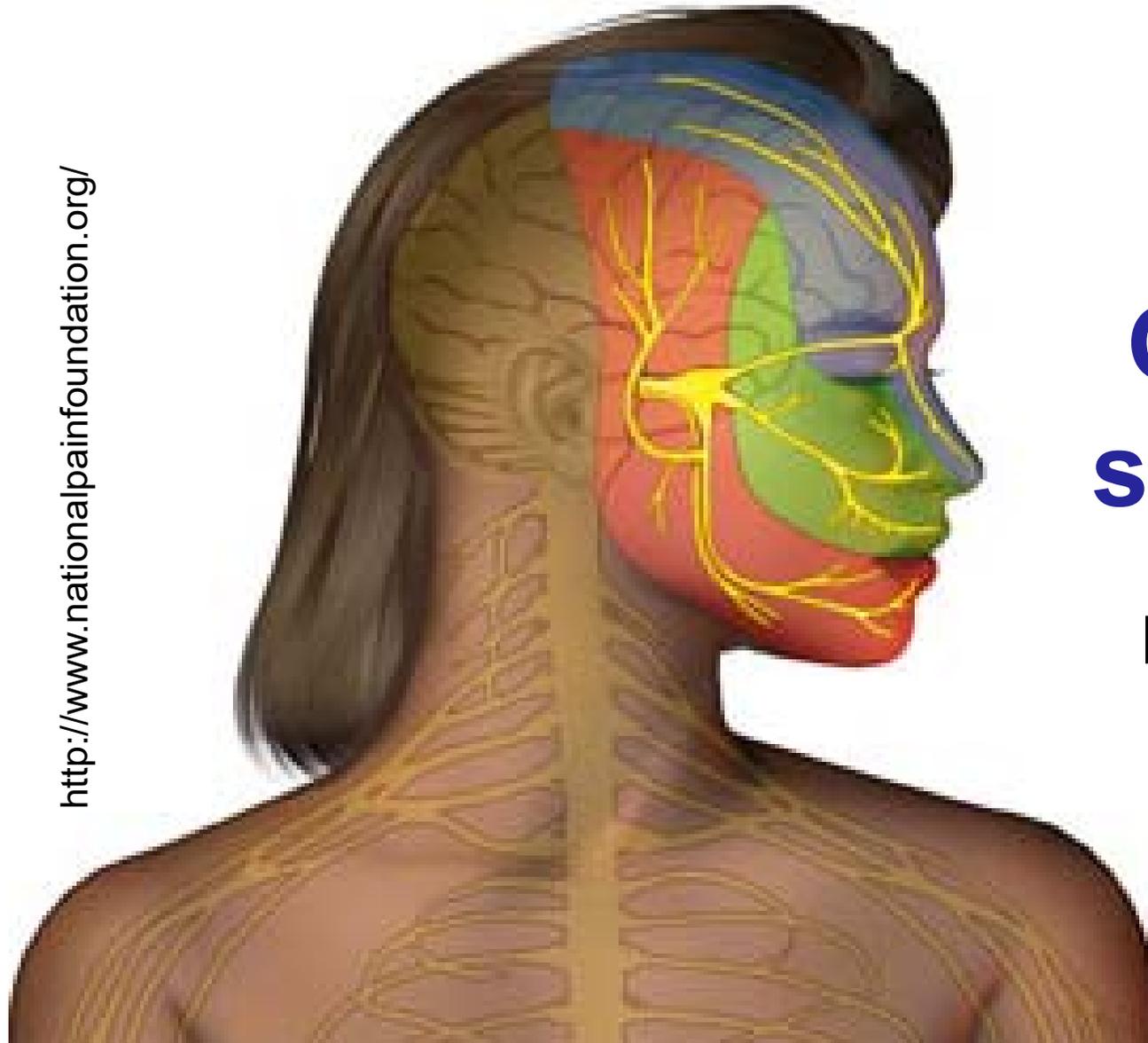


Universität
Zürich^{UZH}

Zentrum für Zahnmedizin

ZZM

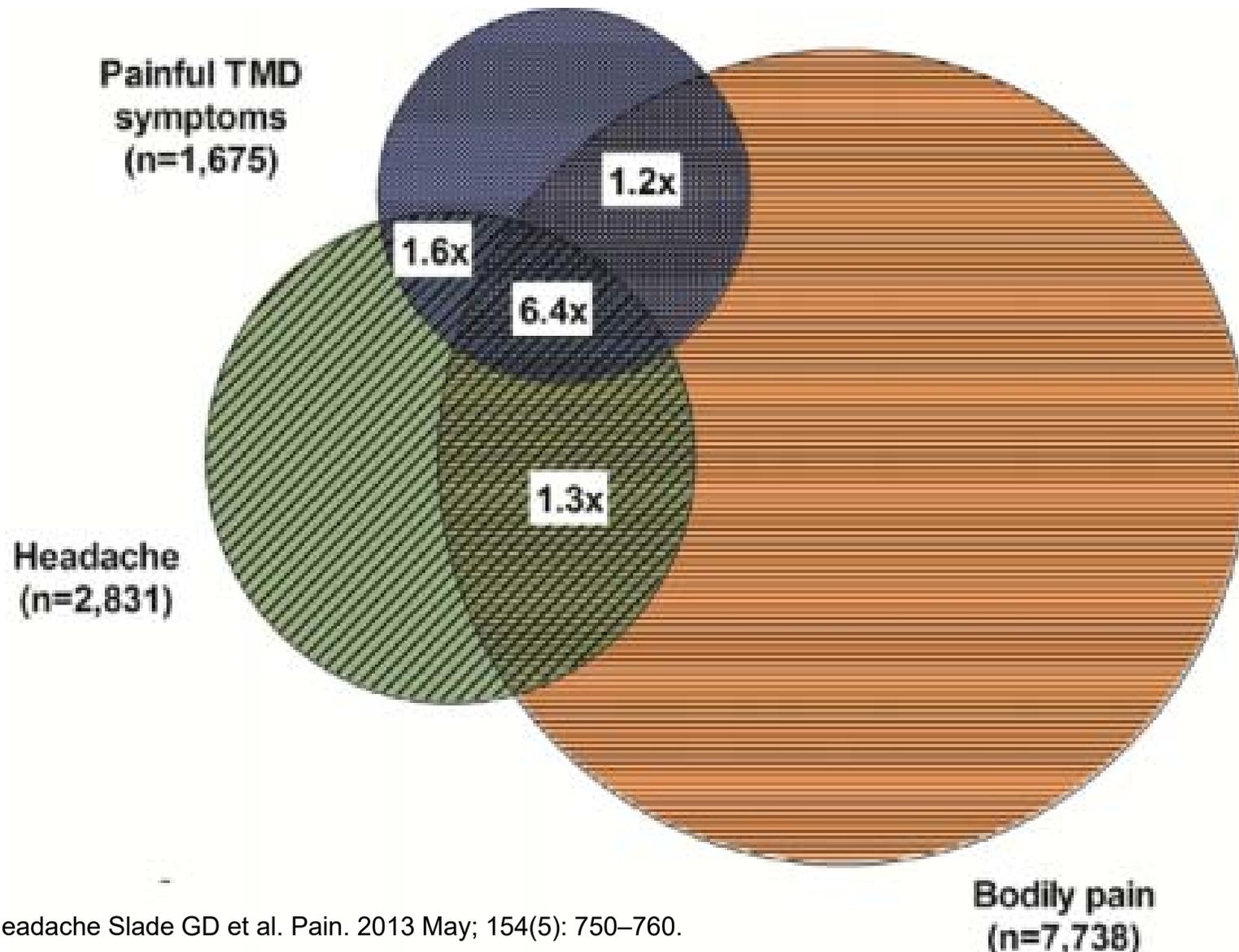
<http://www.nationalpainfoundation.org/>



Gesichts- schmerzen

Dominik Ettl

Co-morbidity of different pains



IHS Klassifikation ICHD-3 beta



Teil 1. PRIMÄRE KOPFSCHMERZERKRANKUNGEN

1. Migräne
2. Kopfschmerz vom Spannungstyp
3. Clusterkopfschmerz und andere trigemino-autonome Kopfschmerzerkrankungen

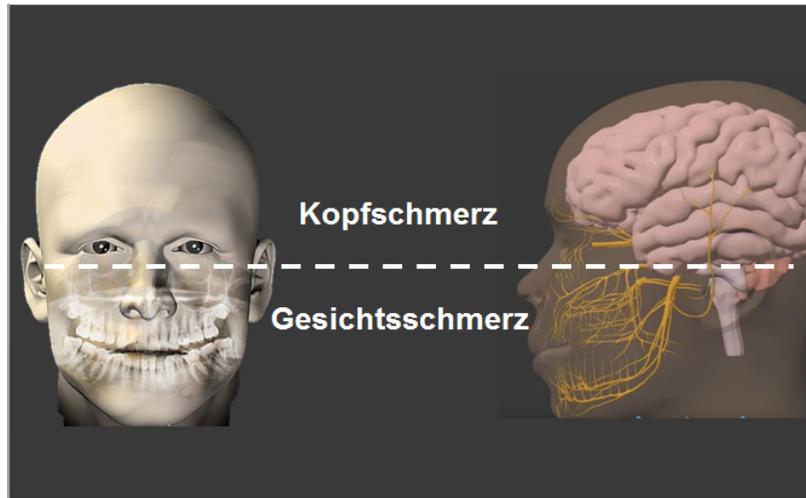
Teil 2. SEKUNDÄRE KOPFSCHMERZERKRANKUNGEN

11. Kopf- oder **Gesicht**schmerz zurückzuführen auf Erkrankungen des Schädels sowie von Hals, Augen, Ohren, Nase, Nebenhöhlen, Zähnen, Mund oder anderer Gesichts- oder Schädelstrukturen

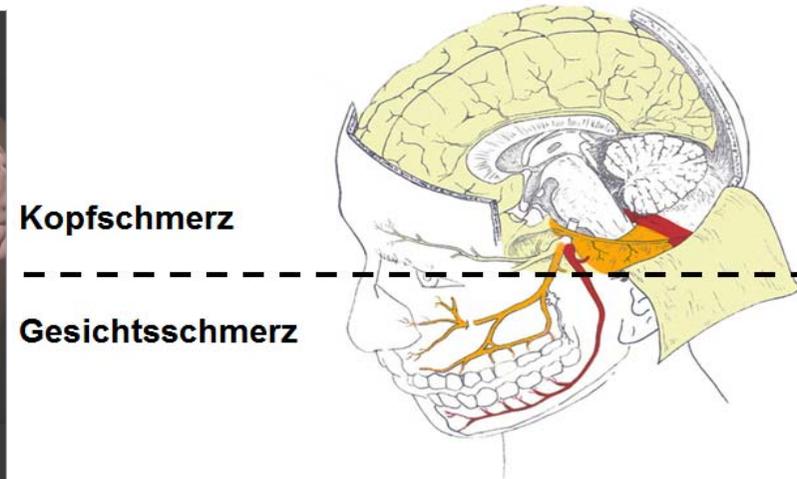
Teil 3. KRANIALE NEURALGIEN, PRIMÄRER **GESICHT**SSCHMERZ UND ANDERE KOPFSCHMERZEN

- 13.1. Trigemini-Neuralgie & -Neuropathie

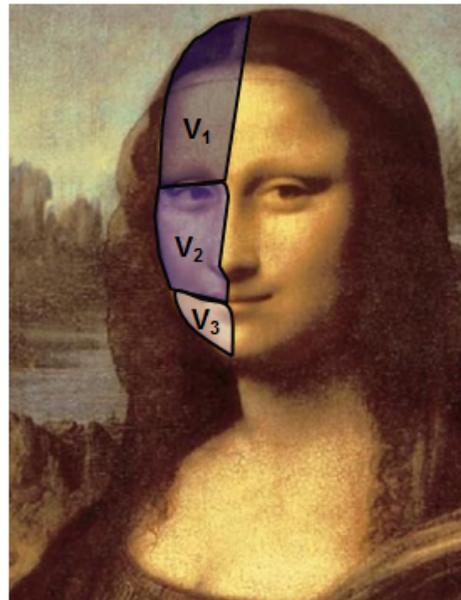
Komplexe trigeminale Anatomie



Peripherie

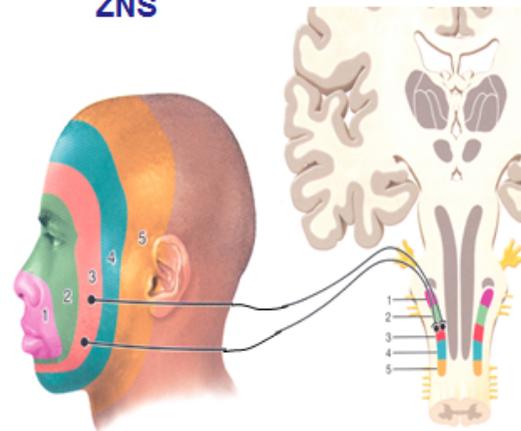


Alonso AA, Nixdorf DR. Journal of Endodontics, Volume 32, Issue 11, 2006, 1110-1113



Leonardo da Vinci, 1503-1505

ZNS



Okeson JP. Bell's orofacial pains, ed 5, Chicago 1995

IHS Klassifikation ICHD-3 beta



Teil 1. PRIMÄRE KOPFSCHMERZERKRANKUNGEN

1. Migräne
2. Kopfschmerz vom Spannungstyp
3. Clusterkopfschmerz und andere trigemino-autonome Kopfschmerzerkrankungen

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11. Kopf- oder **Gesicht**schmerz zurückzuführen auf Erkrankungen des Schädels oder anderer Gesichtsstrukturen

Teil 3. KRANIALE NEURALGIEN, PRIMÄRER **GESICHT**SSCHMERZ UND ANDERE KOPFSCHMERZEN

- 13.1. Trigeminalneuralgie & -Neuropathie

Ätiologie Kiefergelenkbeschwerden

MACROTRAUMA
MICROTRAUMA

biolog.



**BELASTUNGS-
FAKTOREN**



PRÄDISPOSITION

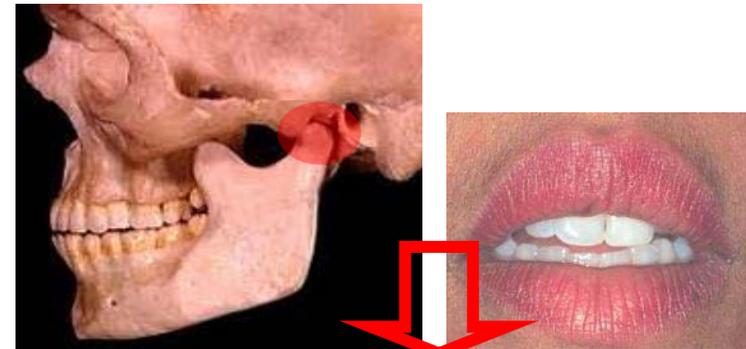


biolog.

GENETIK, WACHSTUMSSTÖRUNG
SYSTEMERKRANKUNG



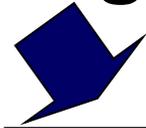
SCHWERKRAFT



Ätiologie Kiefergelenkbeschwerden

MACROTRAUMA
MICROTRAUMA

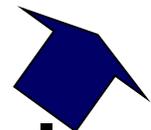
biolog.



**BELASTUNGS-
FAKTOREN**



PRÄDISPOSITION



biolog.

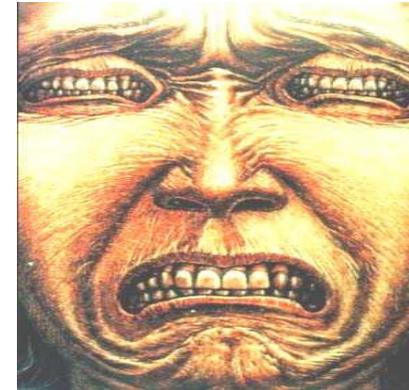
GENETIK, WACHSTUMSSTÖRUNG
SYSTEMERKRANKUNG

Parafunktion

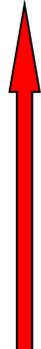
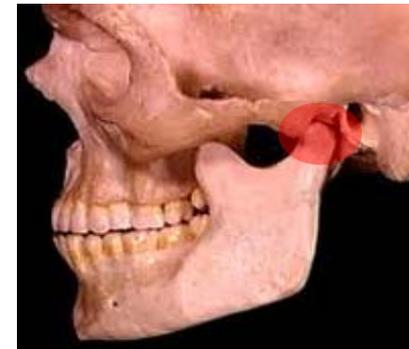


„Bruxism is mainly regulated
centrally, not peripherally“

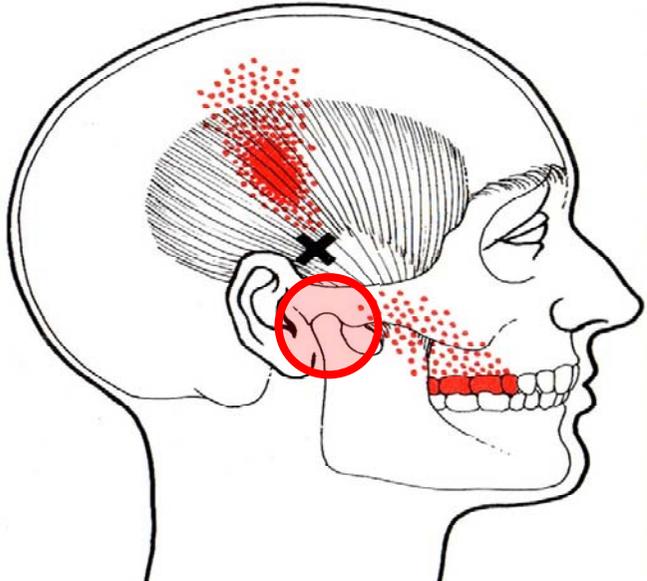
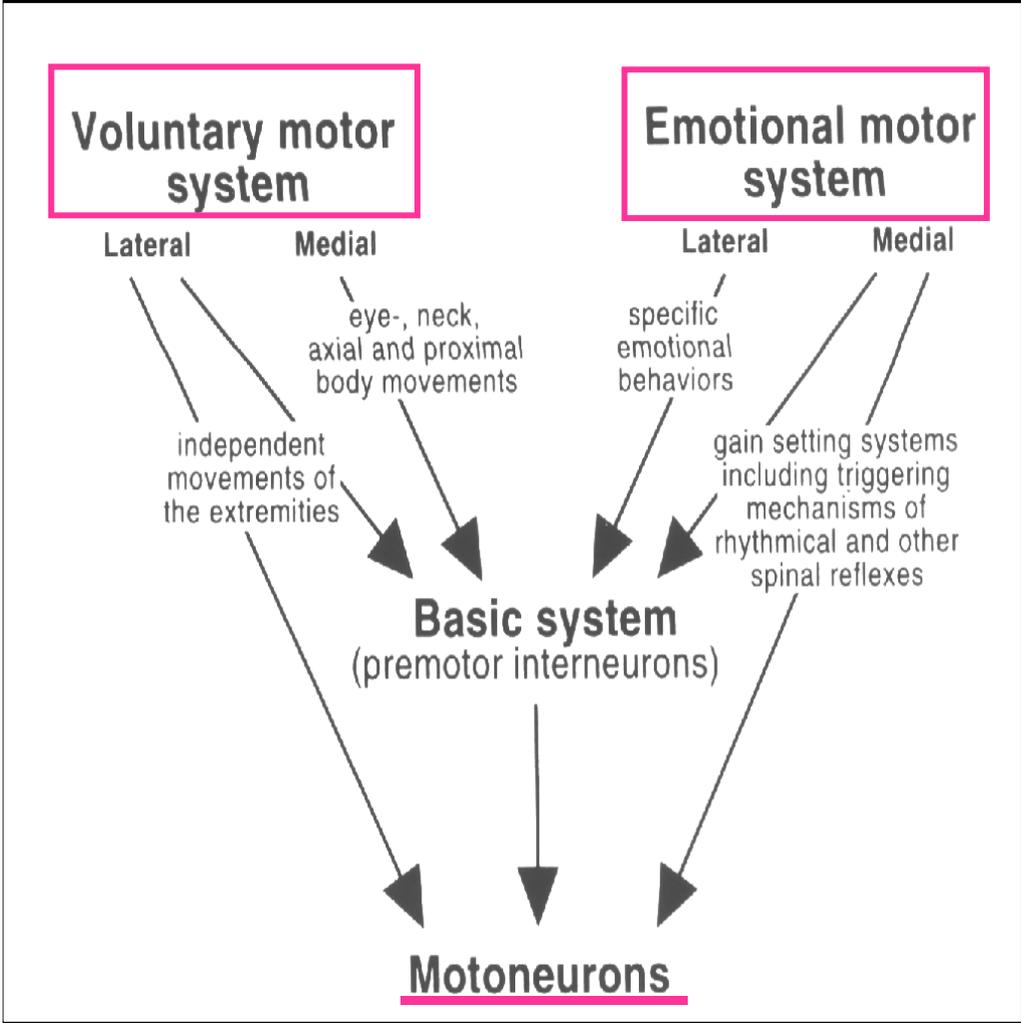
Lobbezzoo and Naeije. 2001



Kaumukulatur

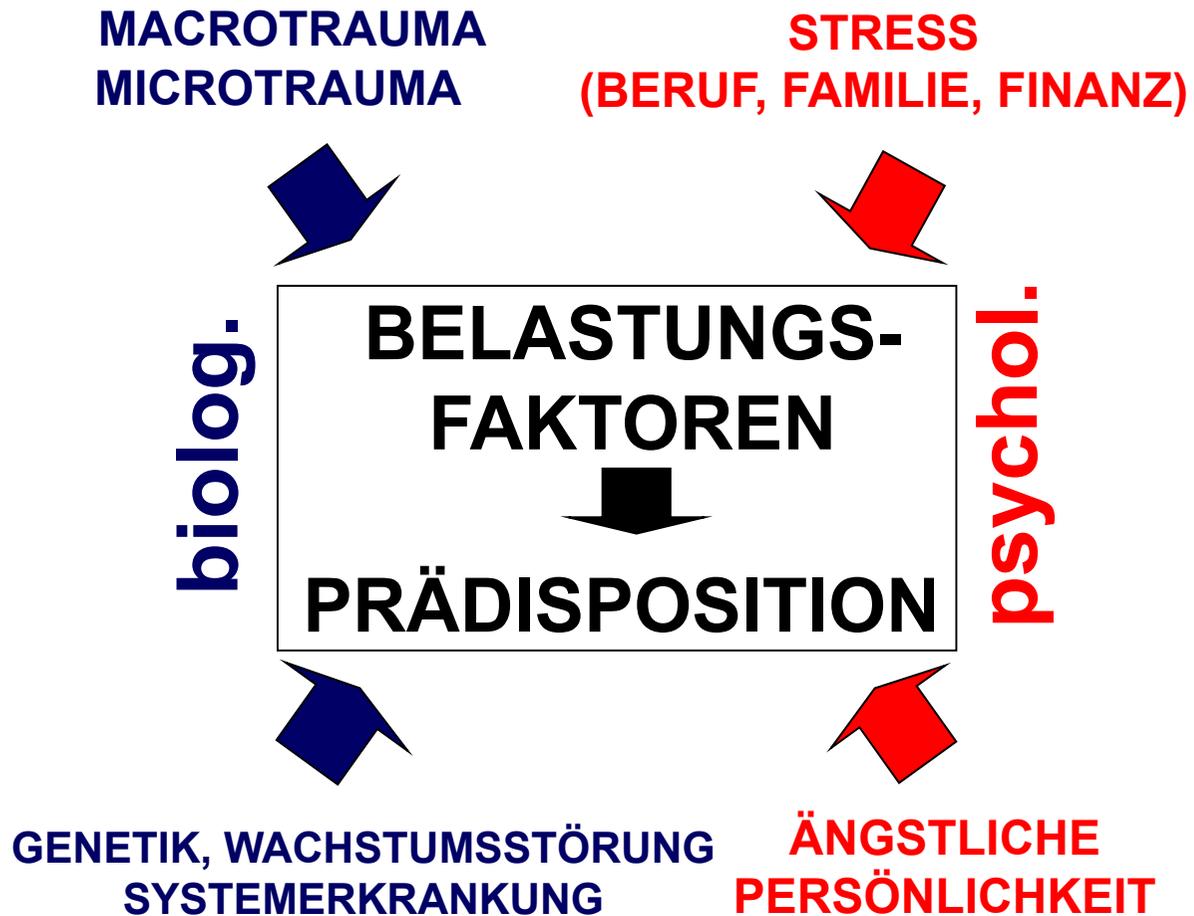


Willkürl. vs unwillkürl. Muskelspannung



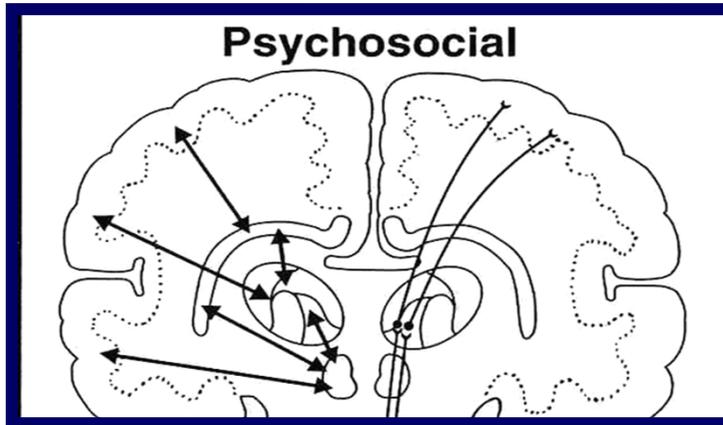
ANTI
GRA
VITÄT

Krankheitskonzept



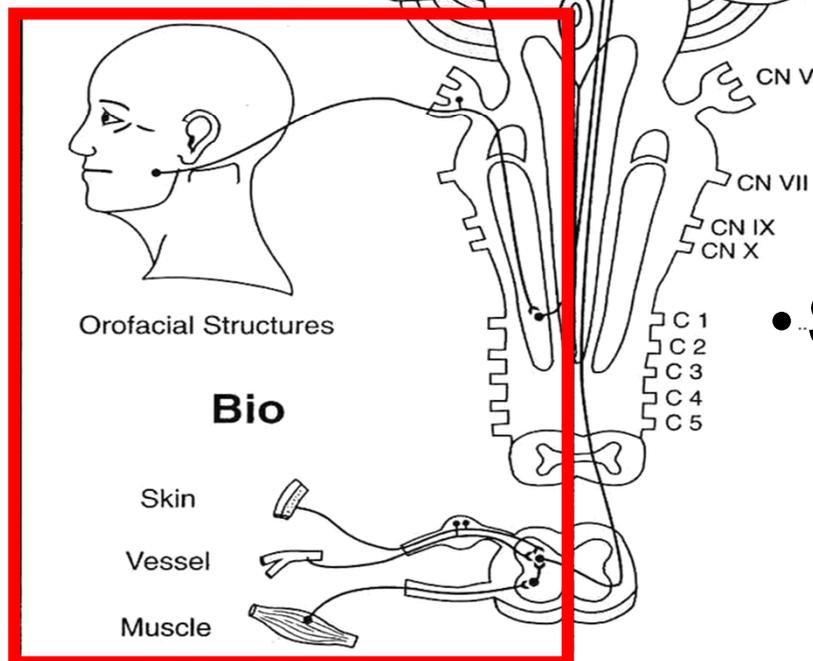
Biopsychosoziale Perspektive

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2



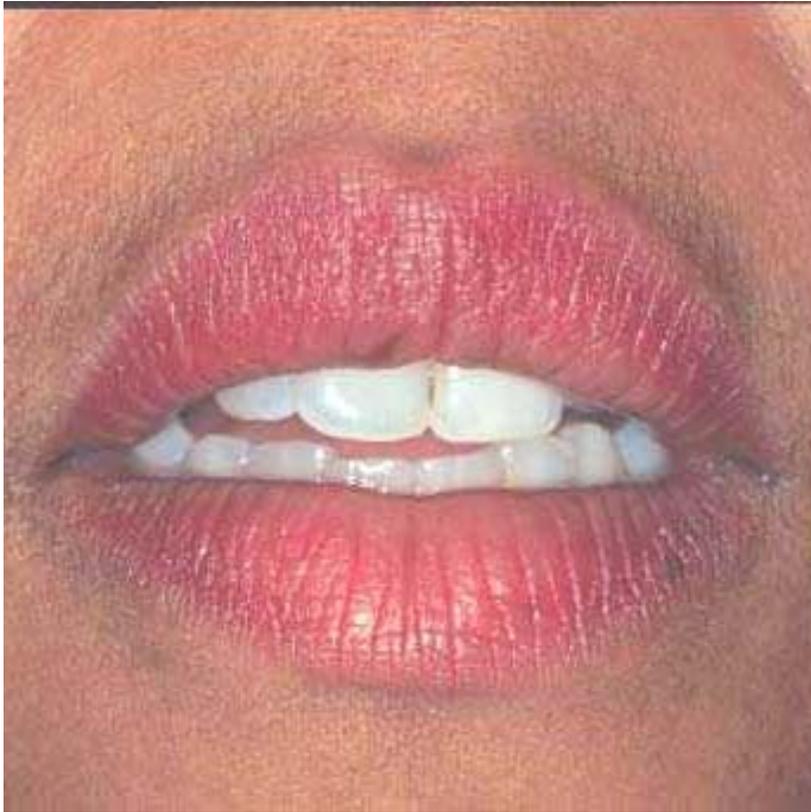
- **Stress-Milieu**
Anforderungen (intern/extern)
- **Beeinträchtigung**
Funktion, Familie, Beruf
- **Komorbiditäten**
Angst, Schlaf, Depression
- **KH-Modell**
nachvollziehbar?

A
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1



- **Somatische Beschwerde(n)**
meist im Vordergrund

Physiol. Okklusion = Disokklusion



~ **23 1/2** std./d

**G
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A
V
I
T
Ä
T**



kumulativ
~ **1/2** Std./d

Ätiologie Kiefergelenkbeschwerden

MACROTRAUMA
MICROTRAUMA

biolog.



**BELASTUNGS-
FAKTOREN**



PRÄDISPOSITION

biolog.

GENETIK, WACHSTUMSSTÖRUNG
SYSTEMERKRANKUNG

Okklusion



Okklusale Interferenzen und CMD

Hypothese von S. Ramfjord 1961:

Interferenzen führen via parodontale Mechanorezeptoren zu reflektiver VERSTÄRKUNG der Kaumuskel-Aktivität.

Elektromyographie Studien 1984:

Experimental occlusal discrepancies and nocturnal bruxism

J. D. Rugh, Ph.D.,* N. Barghi, D.D.S.,** and C. J. Drago, D.D.S., M.S.***

University of Texas Health Science Center, Dental School, San Antonio, Tex., and Gundersen Clinic, Ltd., LaCrosse, Wis.

THE JOURNAL OF PROSTHETIC DENTISTRY APRIL 1984 VOLUME 51 NUMBER 4

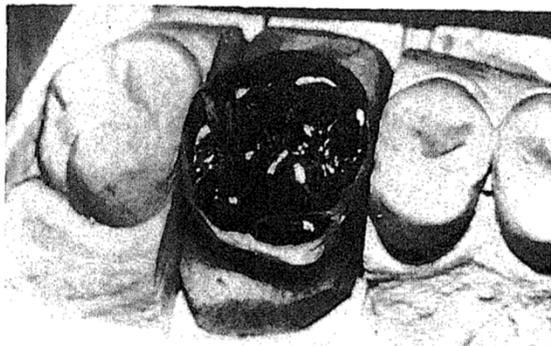


Fig. 1. Deflective contacts were placed on full veneer gold crowns on first or second molar.

CONCLUSION

Under the conditions of this study, nocturnal bruxism was not elicited by placing experimental deflective occlusal contacts even in subjects with a prior history of bruxism. While deflective occlusal contacts are believed to be an etiologic factor in nocturnal bruxism, the results of this investigation seriously question the assumption.

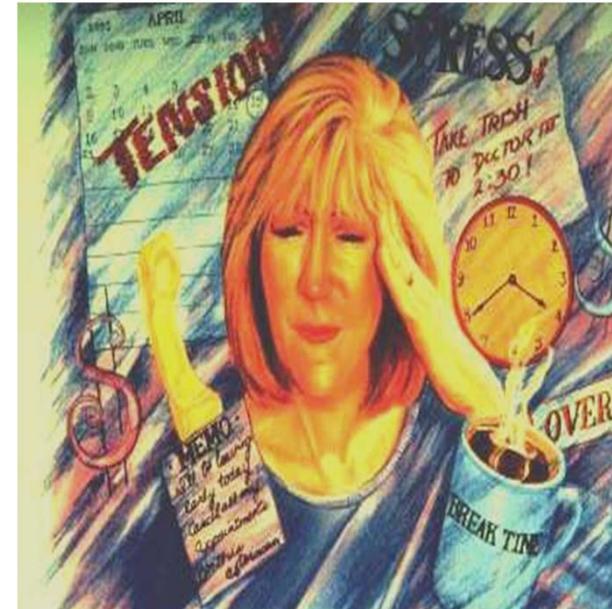
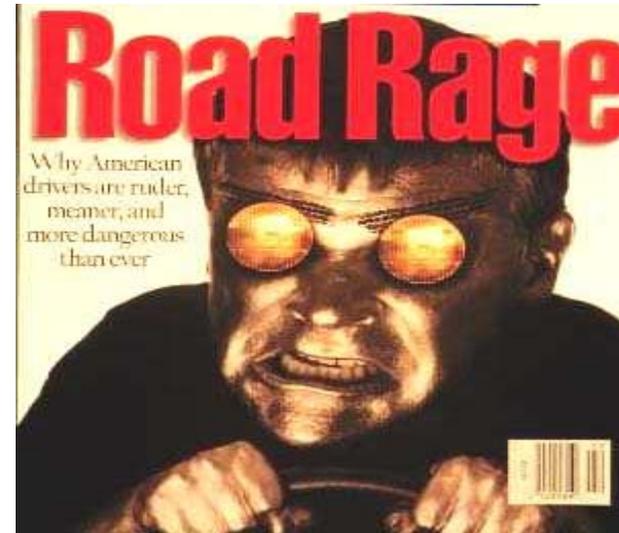
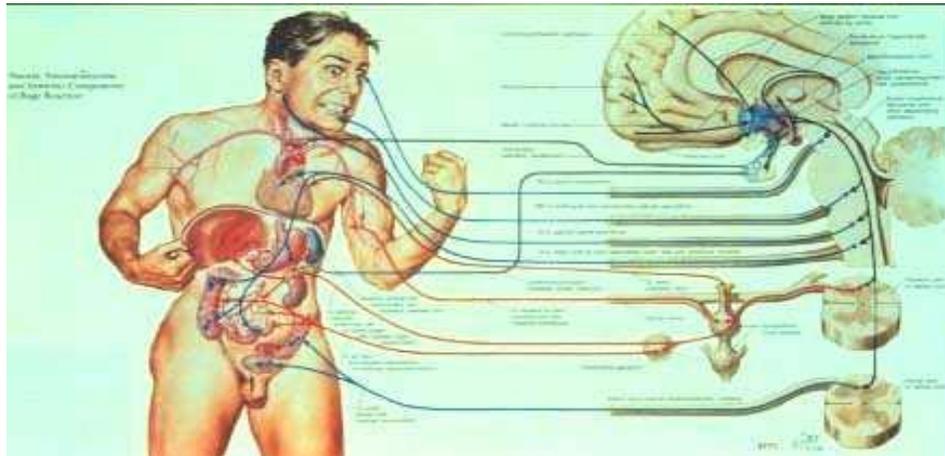
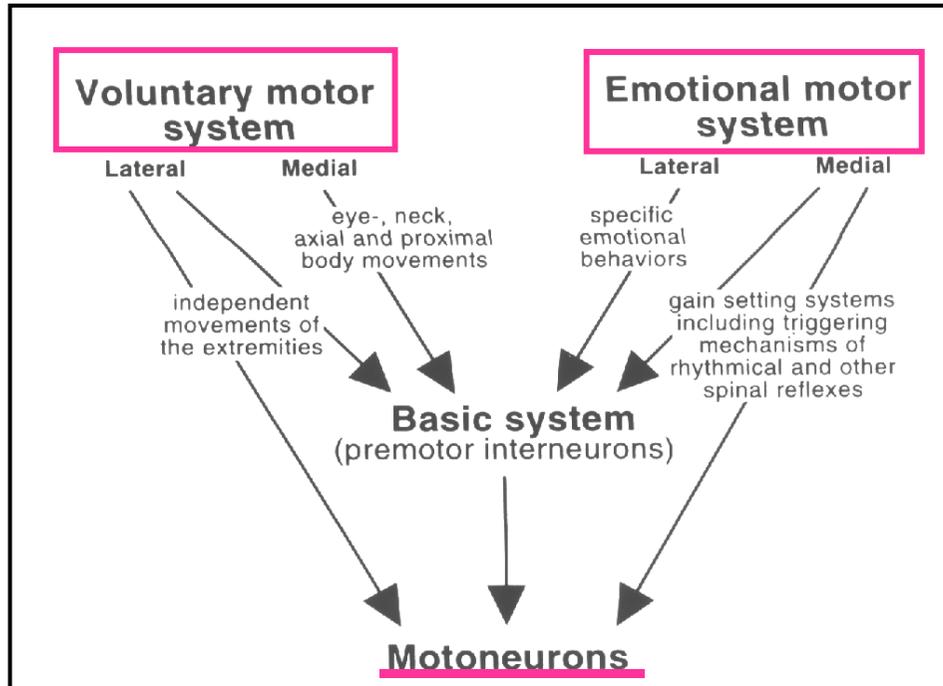
Aktuelle Literatur

Mohlin et al., 2007 (Systematic review)

**Assoziationen zwischen
«Mal»Okklusion und Kiefergelenkbeschwerden
konnten nicht verifiziert werden.**



Emotionale Muskel Aktivierung



Mechanismen bei Spannungstyp-Kopfweh

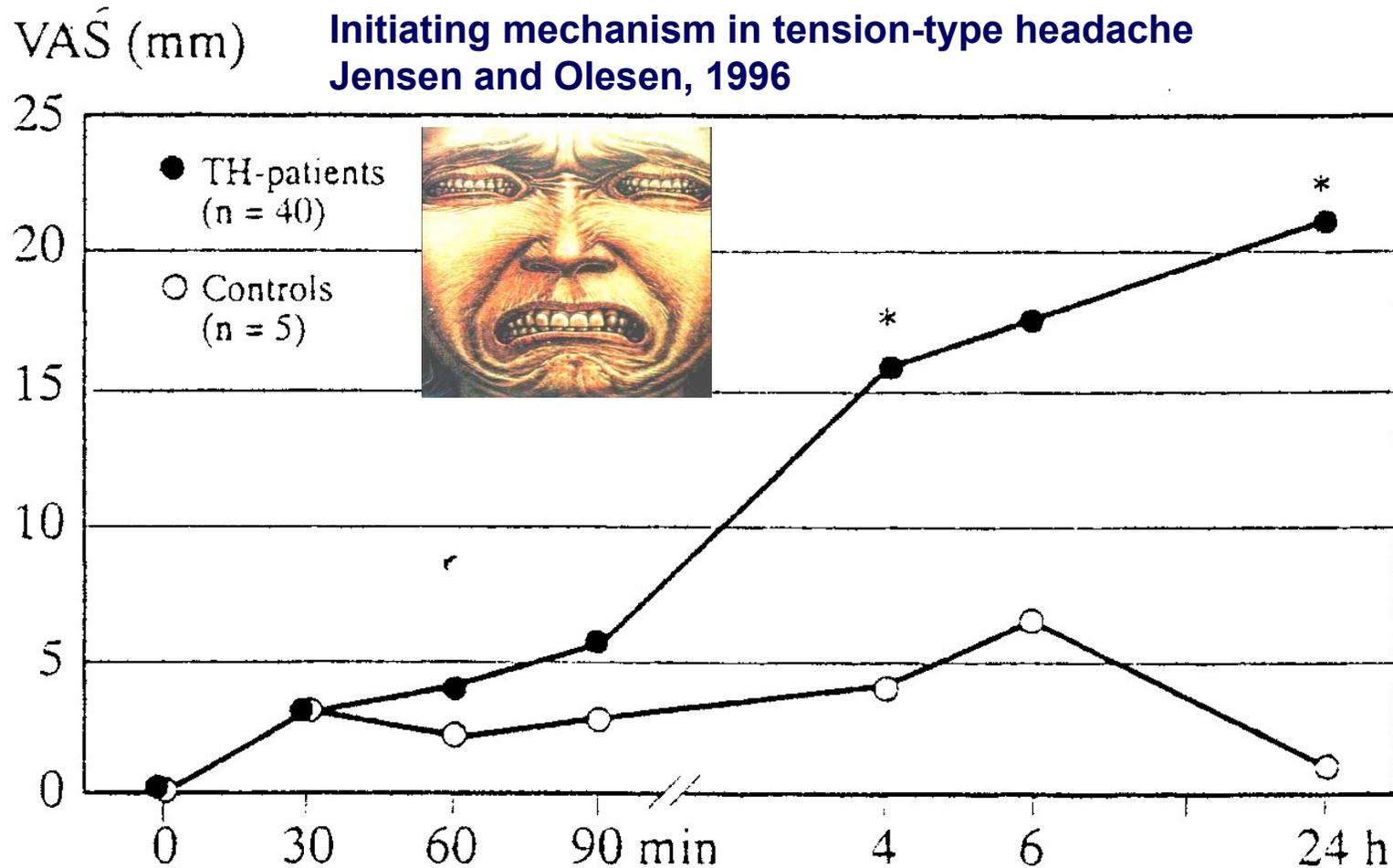
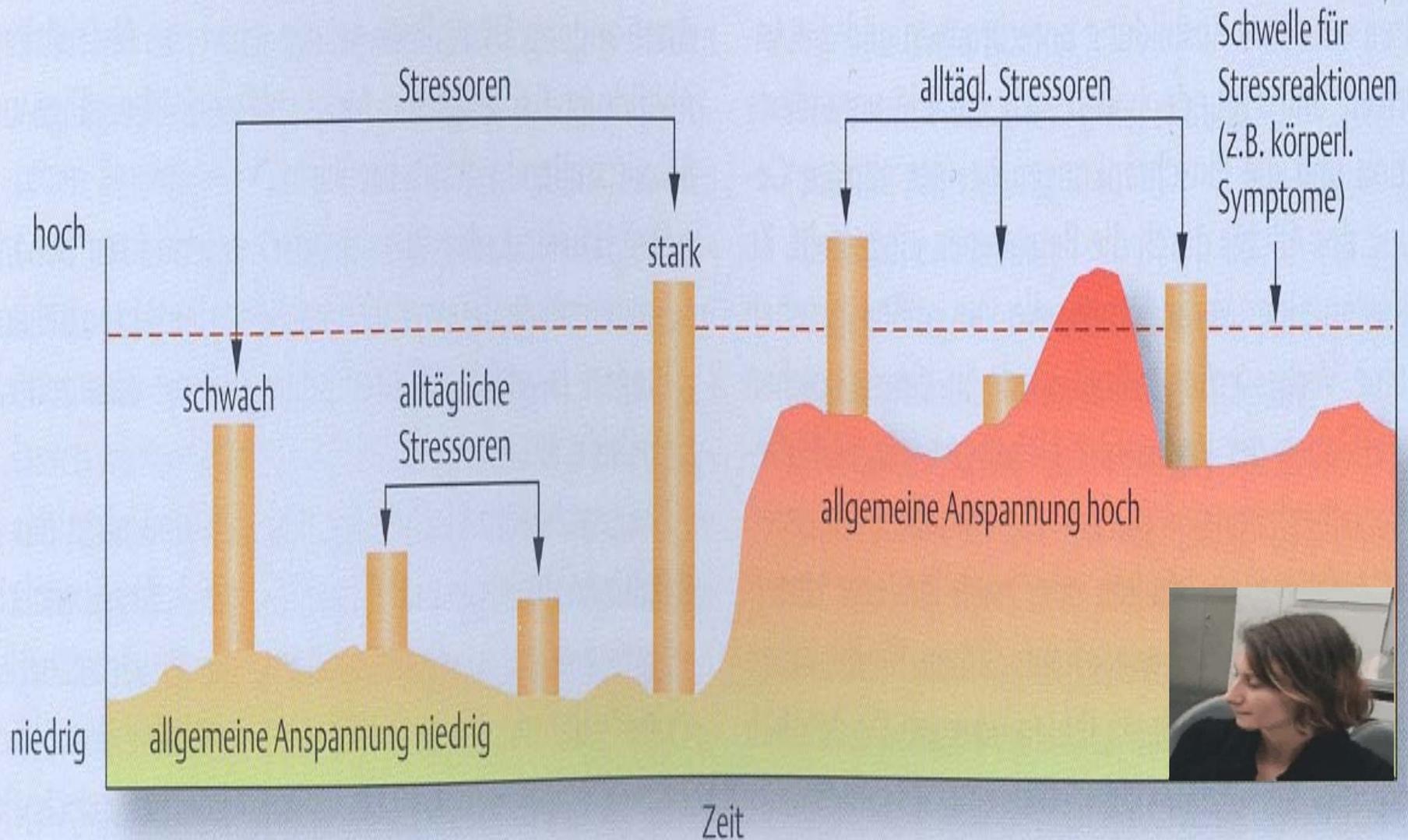


Fig. 1. Pain intensities in those patients (filled circles) and controls (open circles) who developed tension-type headache after a 30-min sustained clenching procedure.

Innere Anspannung - Vulnerabilität



Emotion → Parafunktion

NOCTURNAL BRUXISM

335

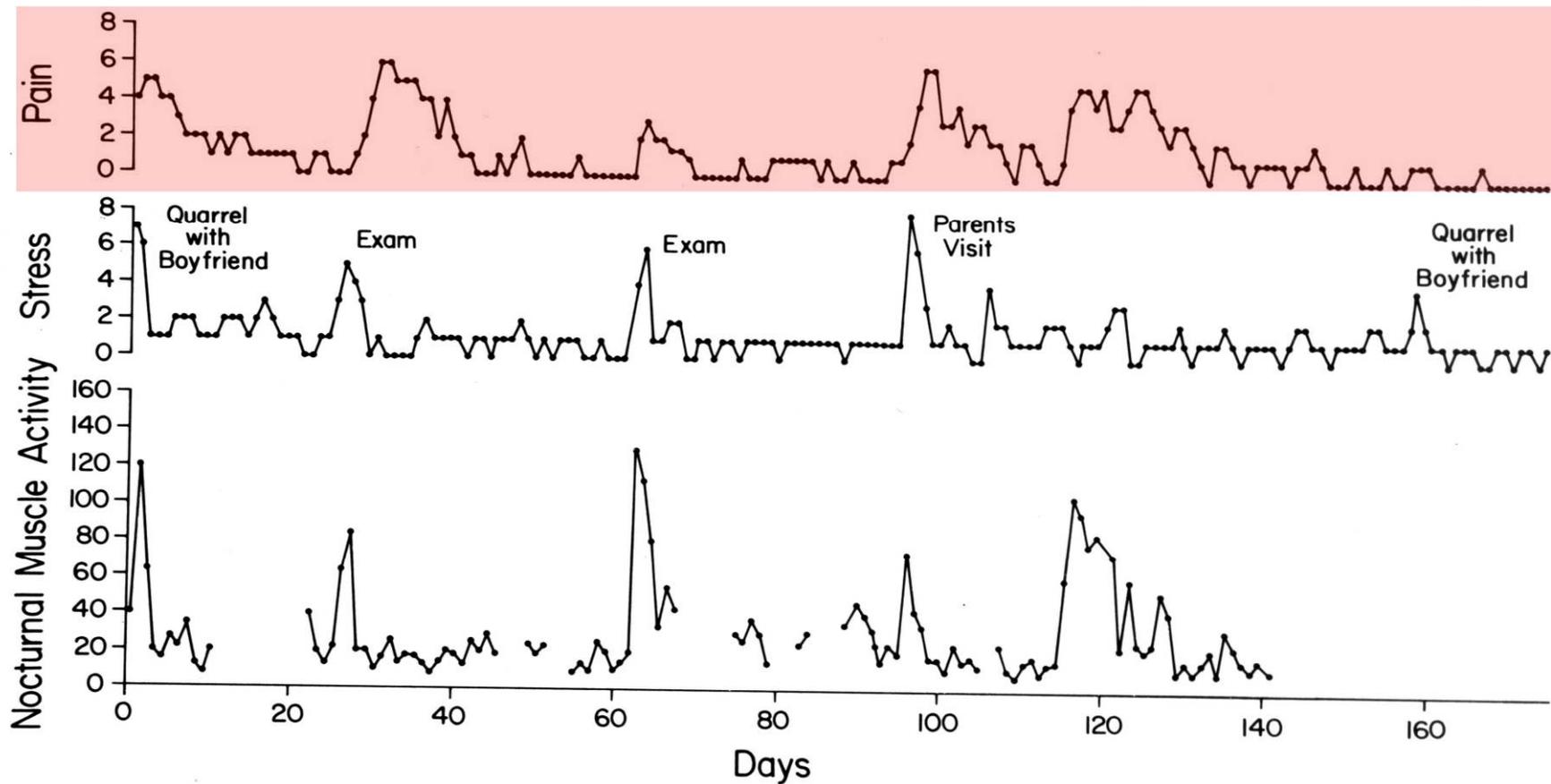
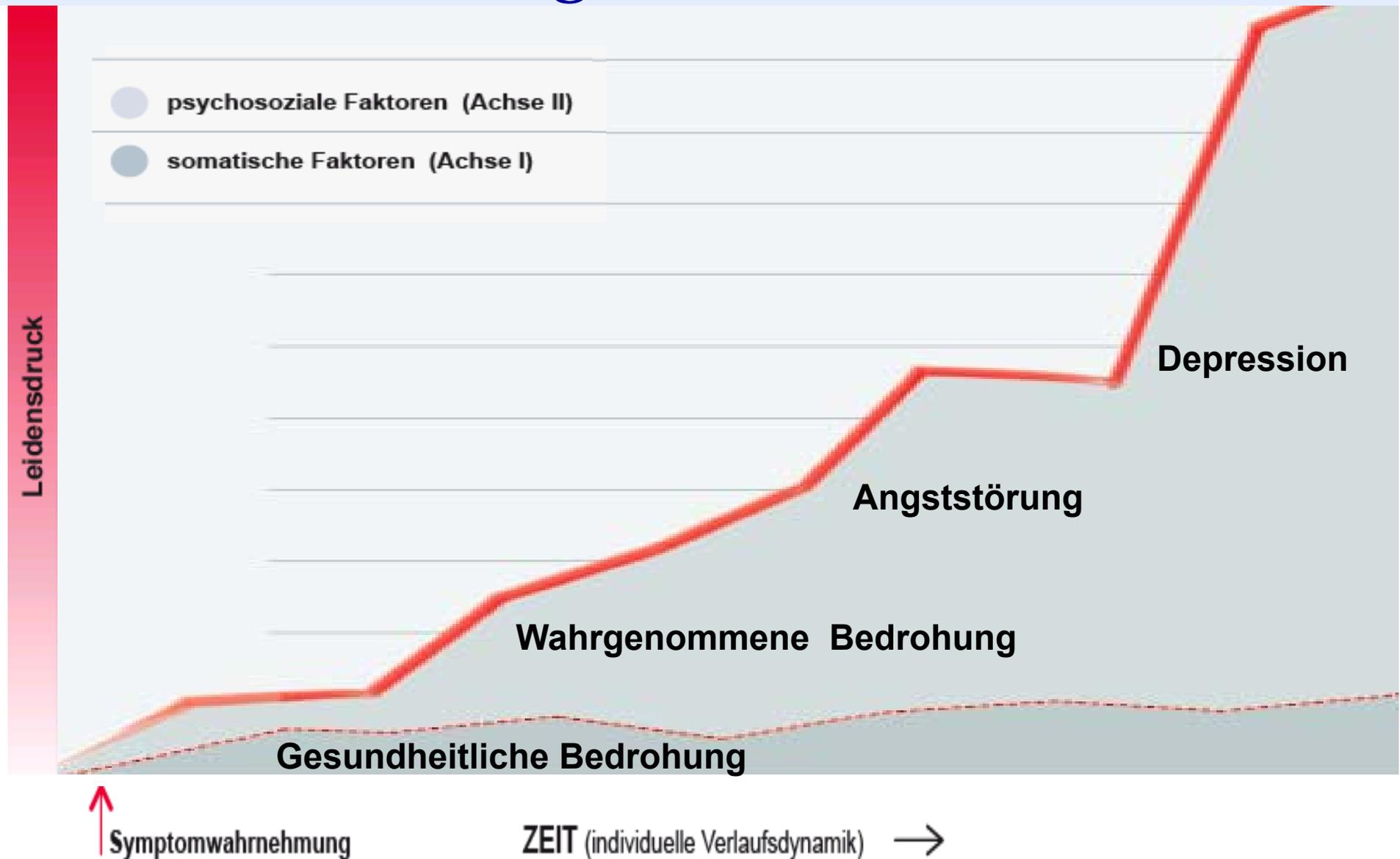


FIG. 5. The relationship between emotional stress, nocturnal muscle activity (bruxism), and facial pain is documented in this young, adult woman who was monitored for 6 months

Krankheitsmodell des Patienten diagnostizieren



Stellenwert von (in)adäquater Information

„Auslöser“

(Information, Vorstellung)



als **Bedrohung** wahrgenommen

„etwas stimmt nicht“; Kontrollverlust

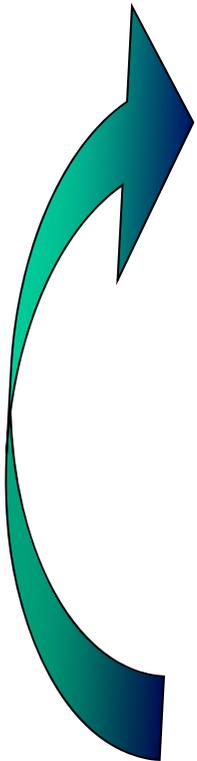


erhöhte Aufmerksamkeit

(Erregung; Wunsch nach Rückversicherung)



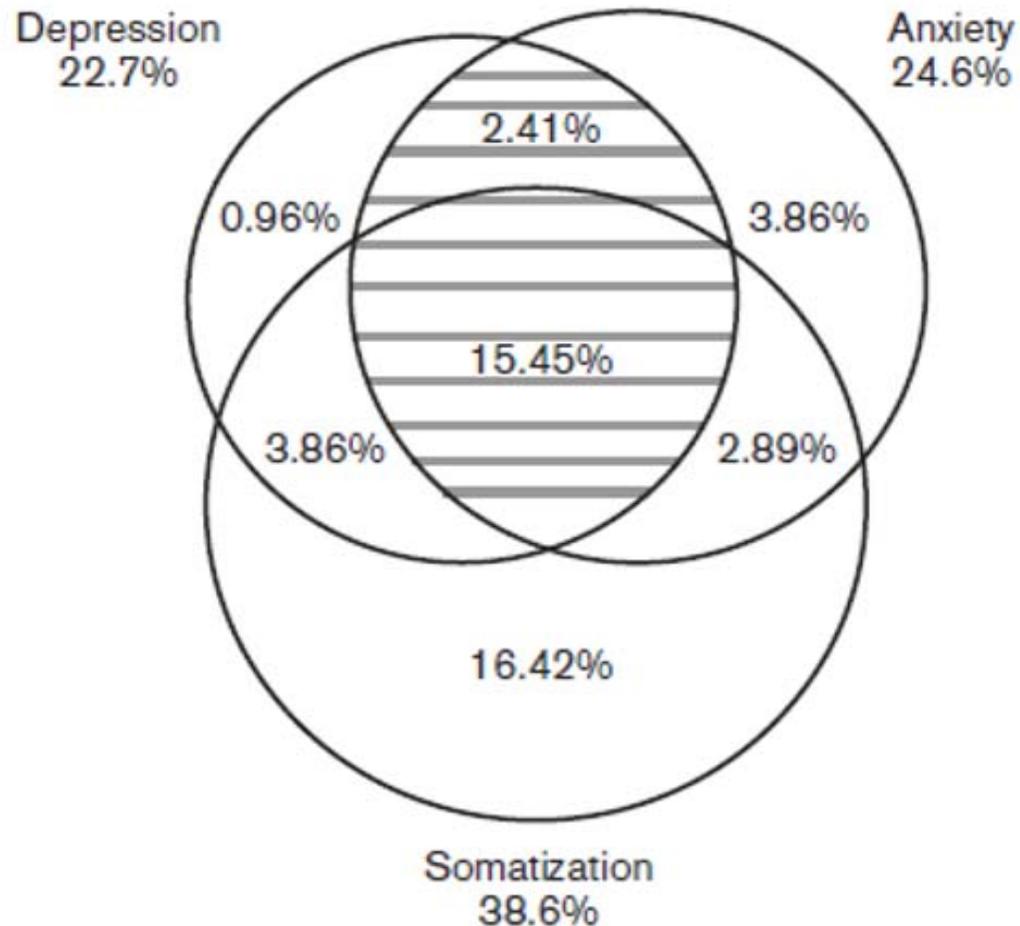
Interpretation: schwere Krankheit



OPPERA Data

Comorbidity of TMD and depression / anxiety

Reiter S. J oral, facial pain & headdache 2015 / Fillingim J Pain. 14(12 Suppl):T75-90, 2013



Total N=2,737; N=207 for severe somatization, depression, anxiety

MAP/CMD: Symptome & Zeichen

- **SCHMERZ**



- **GERÄUSCHE**



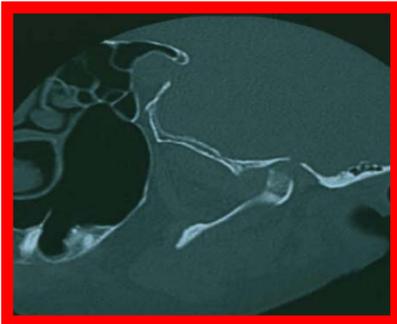
- **LIMITIERTE BEWEGUNG**



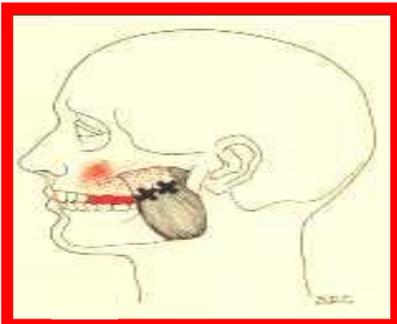
DYSFUNKTION (MAP/CMD/TMD)



- **Diskopathie**
 - mit Reduktion
 - ohne Reduktion

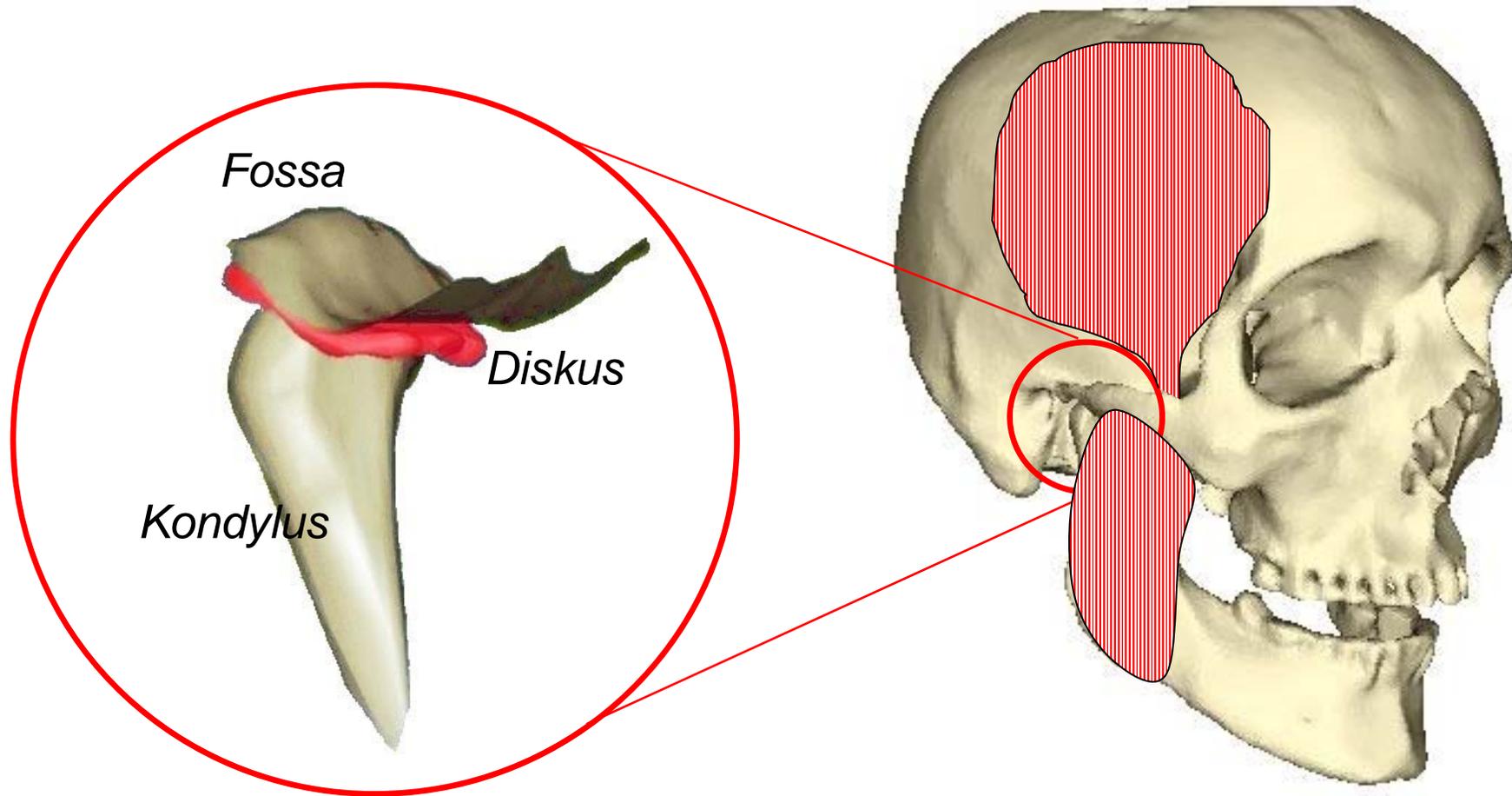


- **Arthropathie**
 - Arthrose (stumm, aktiviert)
 - Arthritis



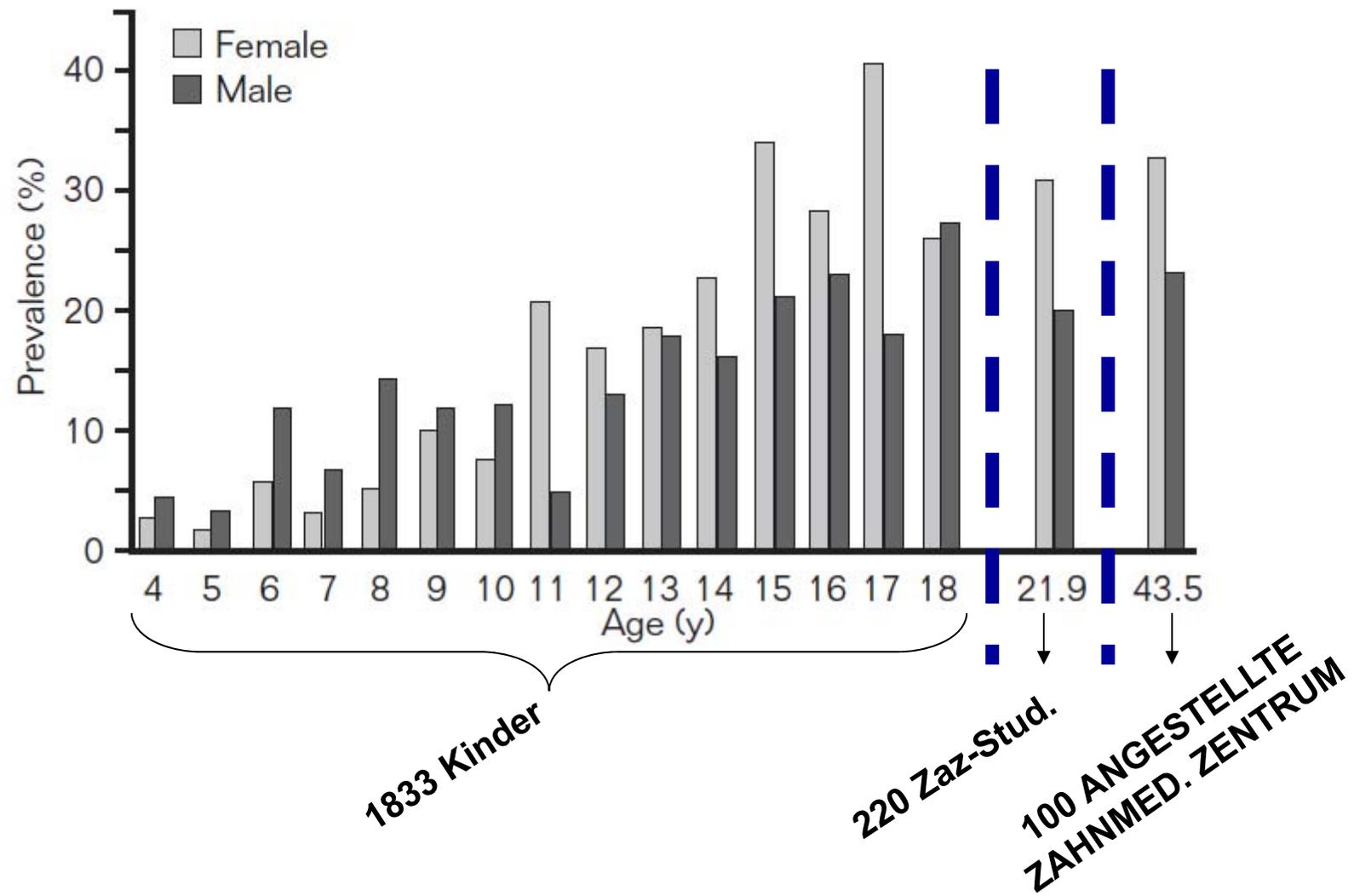
- **Tendo-Myopathie**
 - Kaumuskulatur
 - Nacken- Schultermuskulatur

Strukturen des Kiefergelenks

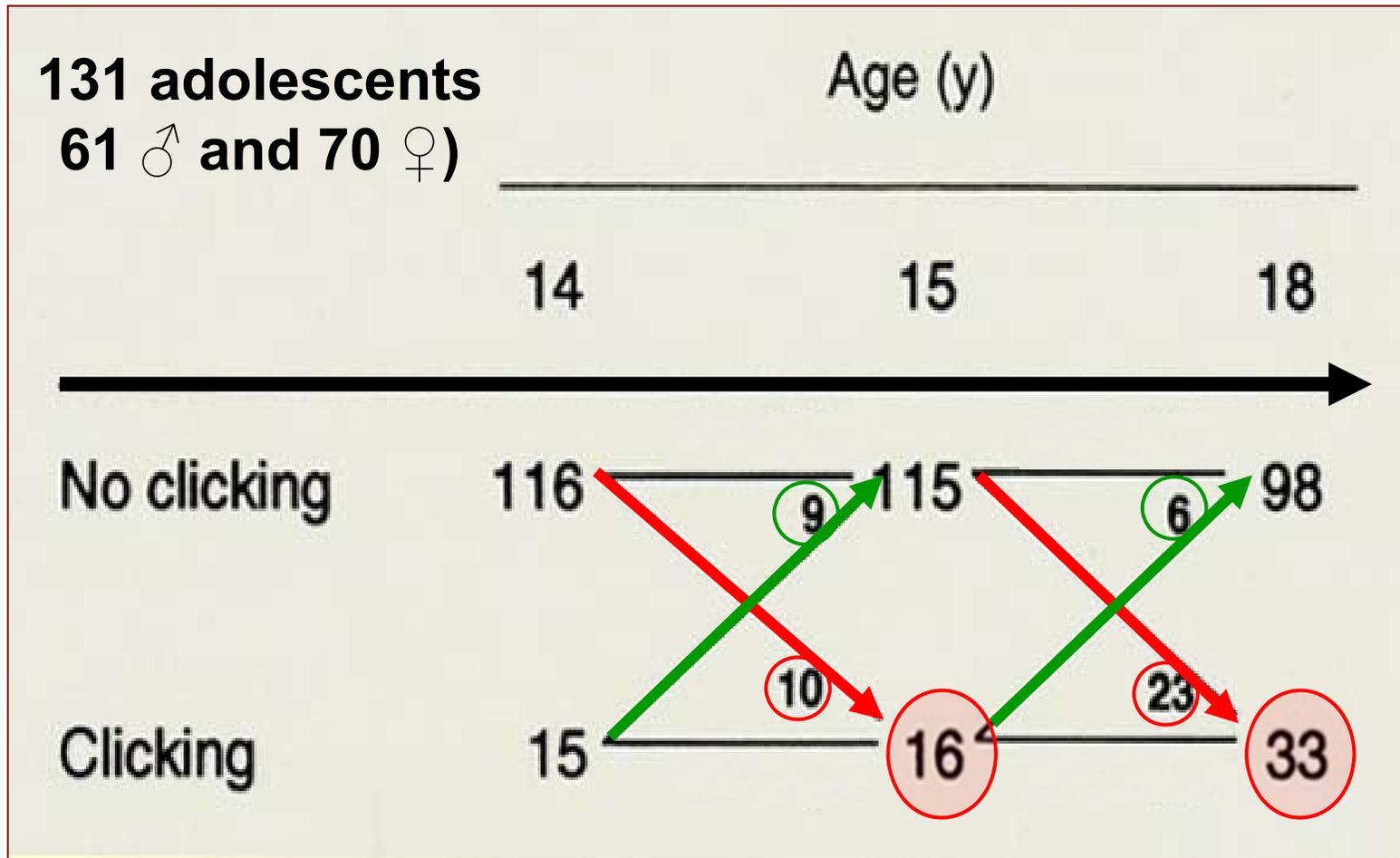


PRÄVALENZ: ASYMPTOMATISCHES KNACKEN (NL)

Huddleston Slater et al. JOP 2007



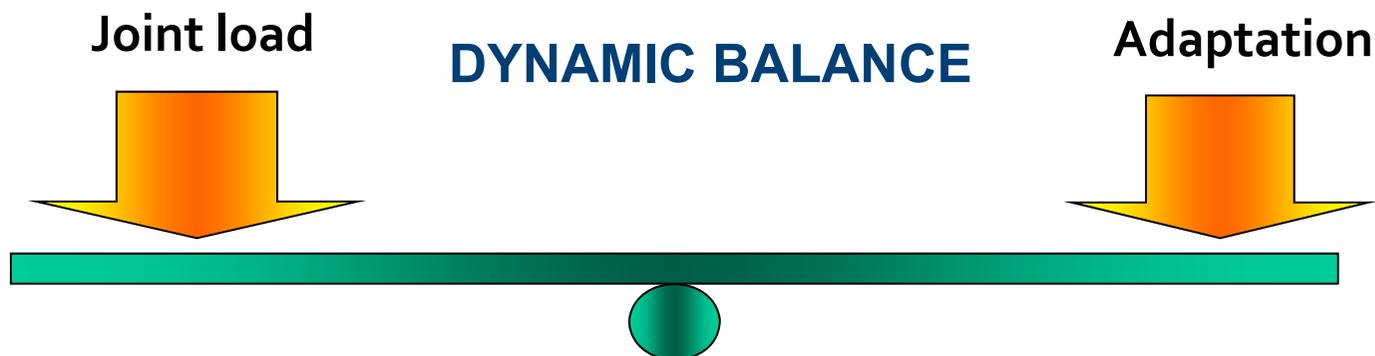
Fluktuierende Symptome



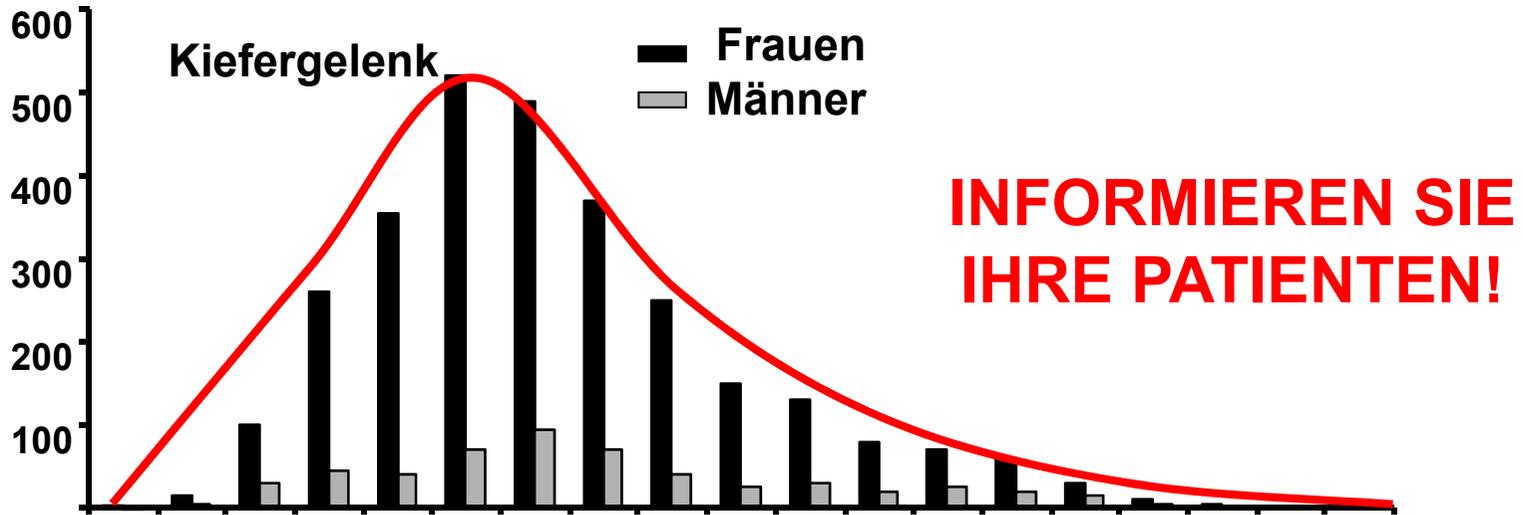
Longitudinale Daten

	<u>initial</u>	<u>< 4 J.</u>	<u>30 J.</u>
Knacken	47%	31%	30%
Schmerz bei KG Bewegung	68%	15%	3%
Bewegungseinschränkung	58%	16%	7%
Krepitus (indiziert Arthrose)	8%	35%	40%

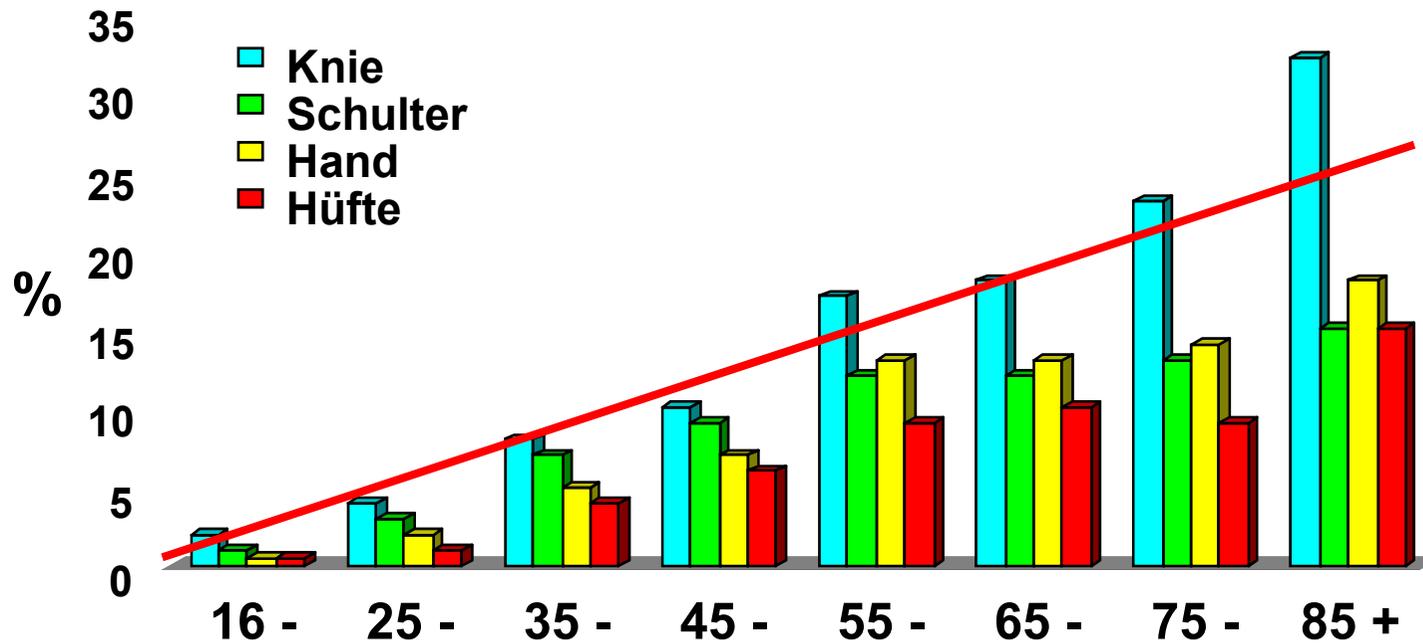
DE LEEUW et al. *J OROFACIAL PAIN.* 8:18-24 1994



PRÄVALENZ-DATEN



Okeson JP. Orofacial pain. Quintessence books. 1996



Badley & Tennant: Postal Survey, Ann Rheum Dis 1992

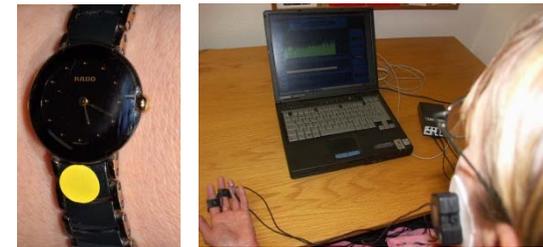
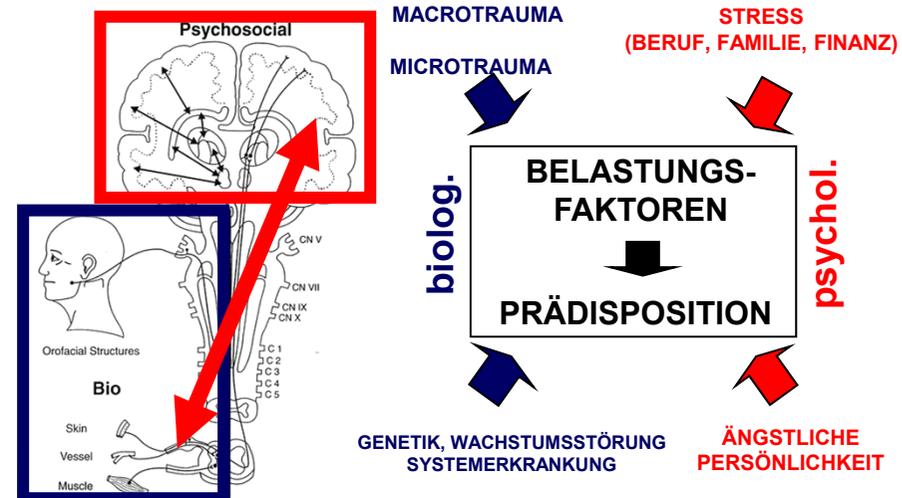
Therapie

Beratung

- Ursache multifaktoriell
- Gute Prognose (kons. Th.)
- Körperwahrnehmung
- psychosoz. Evaluation
- Stress Management

optional:

- Selbst-Dehnübungen
- Triggerpkt. Injektion
- okklusale Schiene
- adjuvante Schmerzmedi.



Heimübungen bei Verspannungen im Gesicht



Selbstbeobachtung

Beachten Sie: Bei entspannter Unterkieferhaltung sind die Zähne nicht in Kontakt. Zu Vermeiden ist insbesondere unbewusstes Zusammenbeißen der Zähne, Verschieben des Unterkiefers und Wangen- oder Lippenbeißen. Zur Erinnerung können gelbe Klebepunkte im alltäglichen Umfeld verteilt werden (Uhr, Handy, Auto, Computer, etc.), welche als Wahrnehmungshilfe dienen.

Krepitus



(entzündliche) Arthritis

Chronische (abakterielle) Synovialitiden

Low-grade-Synovialitis

- Arthrose-assoziierte Synovialitis
- Posttraumatische Synovialitis

Kristallinduziert

- Arthritis urica
- CPPA
- Tumoröse Kalzinose

High-grade-Synovialitis

- Psoriasisarthritis ~ 5 %
- Reaktive Arthritis
- Rheumatoide Arthritis ~ 50 %
- Undifferenzierte Monarthritis
- Periphere Arthritis bei M. Bechterew ~ 5 %

Akute Synovialitis

- Floride bakterielle oder mykotische Entzündungen

Kiefergelenk

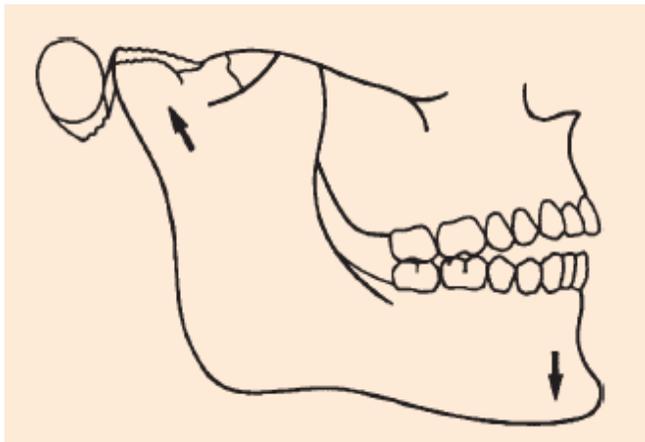
Folgen der KG-Arthritis



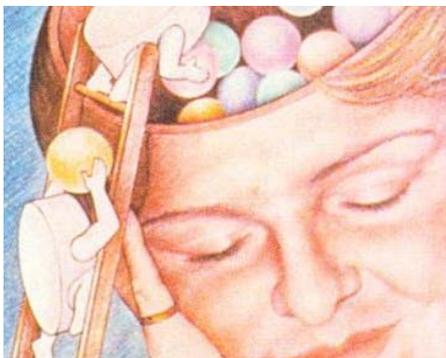
4½ j.

12½ j.

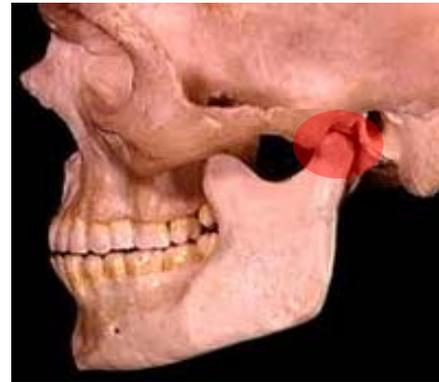
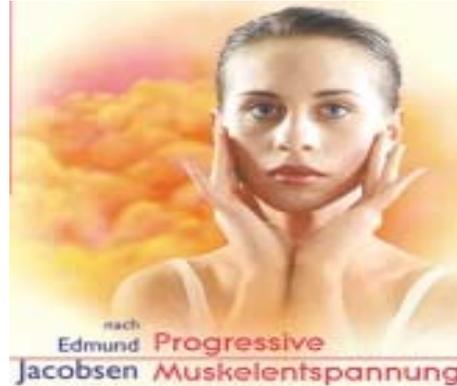
16 j.



Zahnmedizin, Zahntechnik & Psychologie

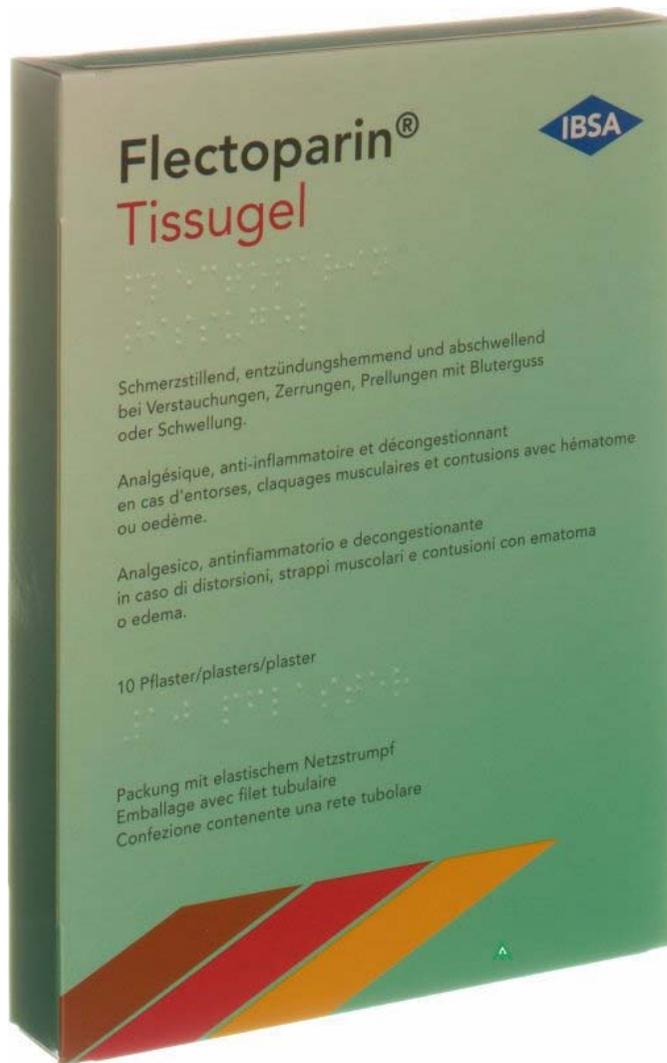
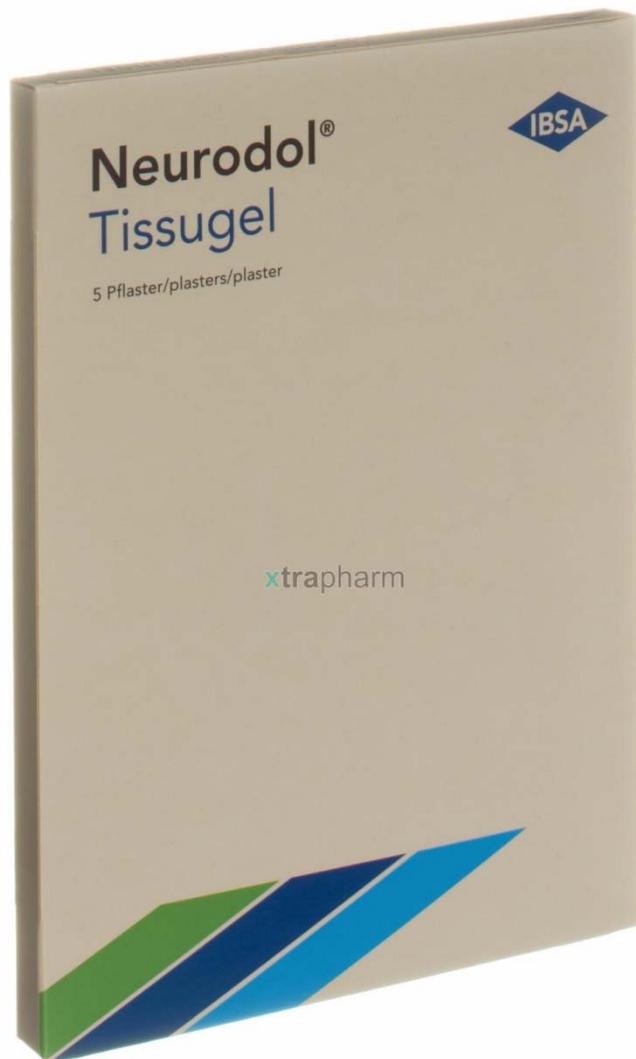


Entzündungskontrolle



**Entspannungstechniken
Zahnschiene**

Lidocain / Diclofenac topisch



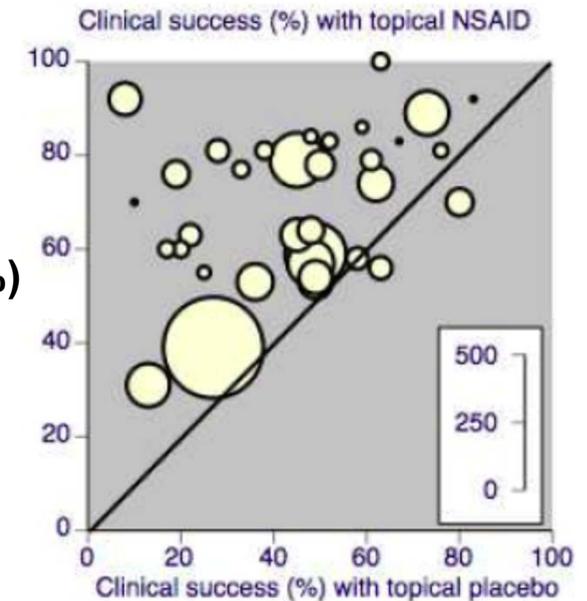
Topical NSAID for acute pain in adults (Review 2010)

Massey T, Derry S, Moore RA, McQuay HJ

<http://www.thecochranelibrary.com>



- 47 studies; 3455 participants
- gel, spray, cream vs placebo
- number needed to treat (NNT) for clinical success (pain↓ >50%) over 6-14 days
- ✓ diclofenac, ibuprofen, ketoprofen, piroxicam
- ✗ indomethacin, benzydamine



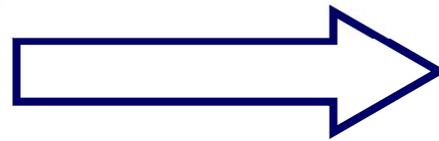
Author's conclusion:

Topical NSAID can provide good levels of pain relief, without the systemic adverse events associated with oral NSAIDs, when used to treat acute musculoskeletal conditions.

Historische Fehler



Zeitgenössische Fehler



RISIKO

CASE REPORT

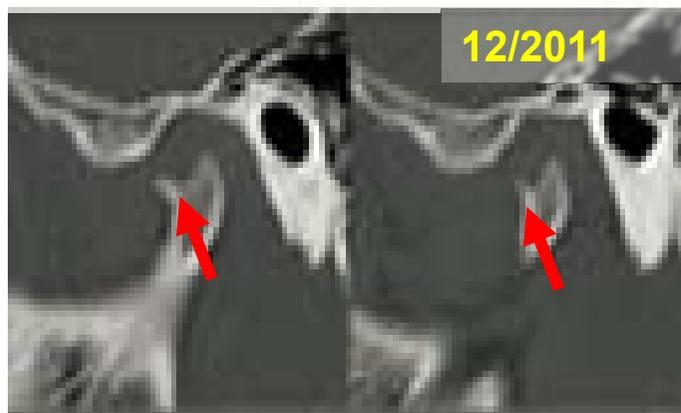
Longitudinal CT Observation of Reversible Arthritic Changes in TMJs of 3 Juvenile Patients

Hwanhee Song*, Ji-Woon Park, Hee-Kyung Park, Jin-Woo Chung, Hong-Seop Kho, Jeong-Yun Lee

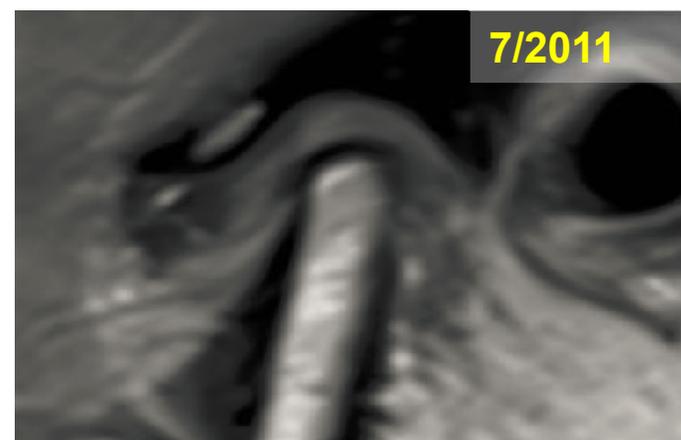
Dept. of Oral Medicine & Oral Diagnosis, School of Dentistry & Dental Research Institute, Seoul National University, Seoul, Korea

CASE2 A 14-years-old boy complaining of both TMJ noise and pain on chewing was confirmed to have erosion of the both TMJ condyles on CT. After the typical conservative treatments for 1 year, 2nd follow-up CT revealed both erosion of condyle improved and restored.

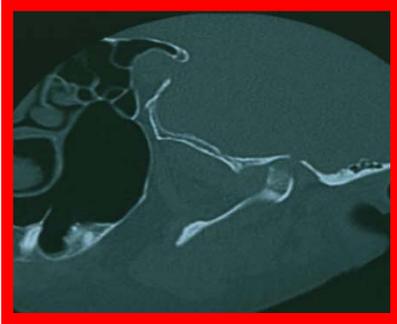
CT



MRT



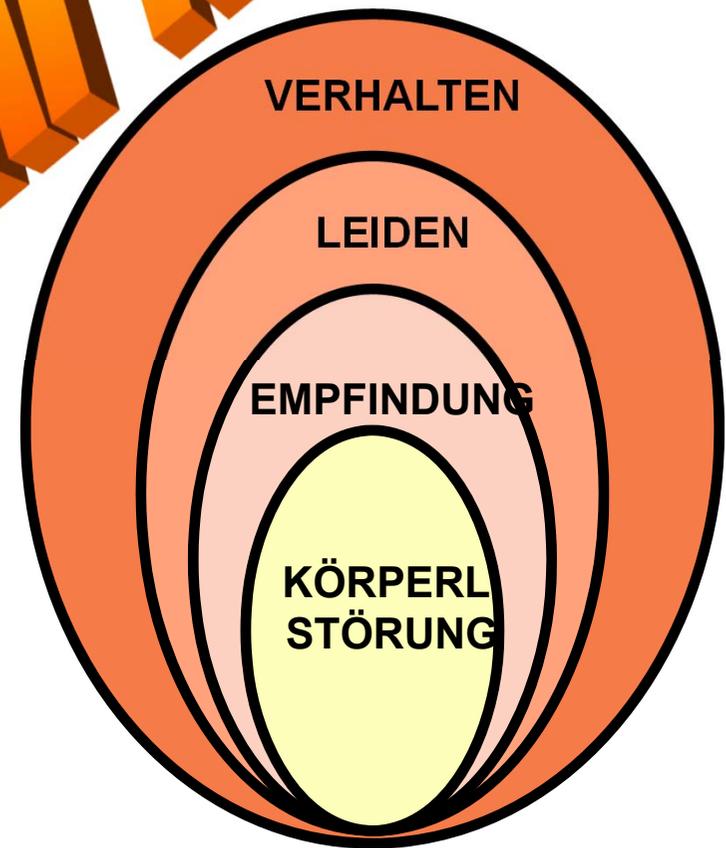
DYSFUNKTION (MAP/CARD)



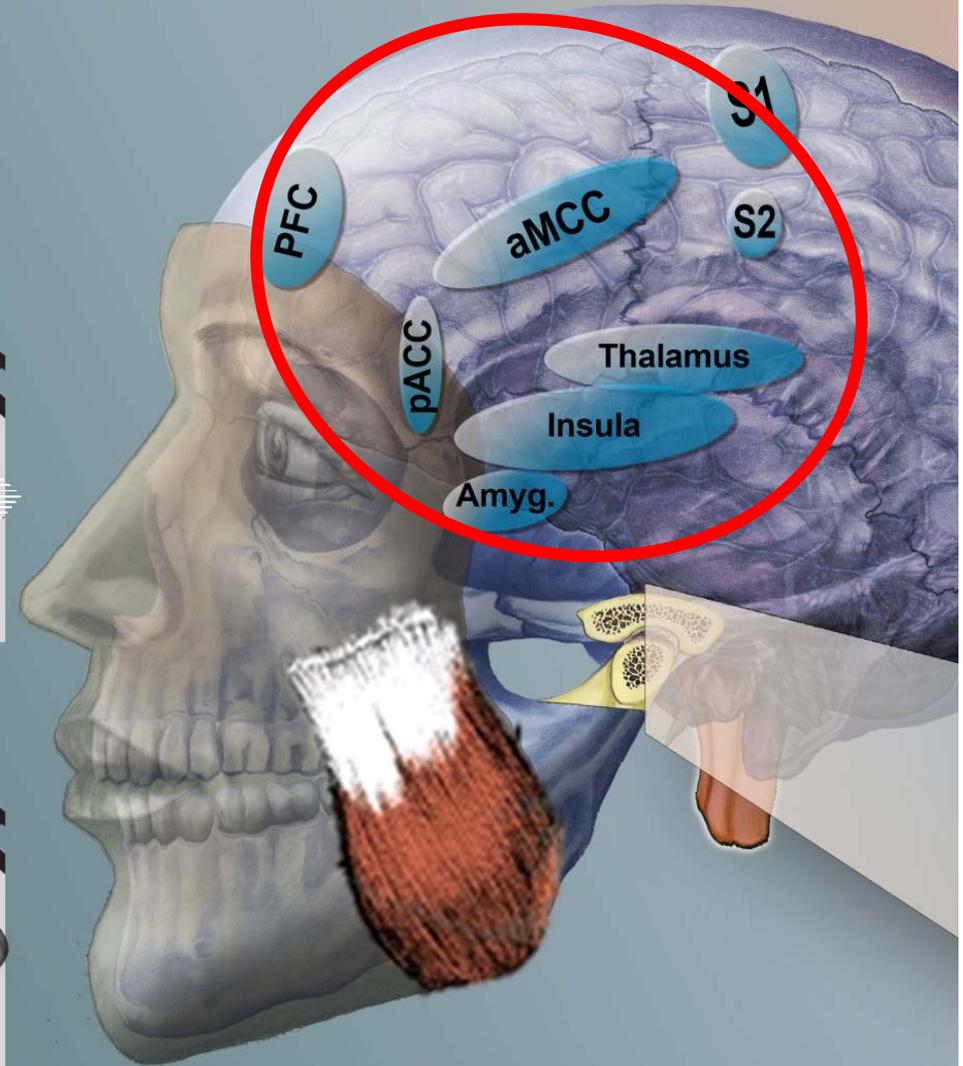
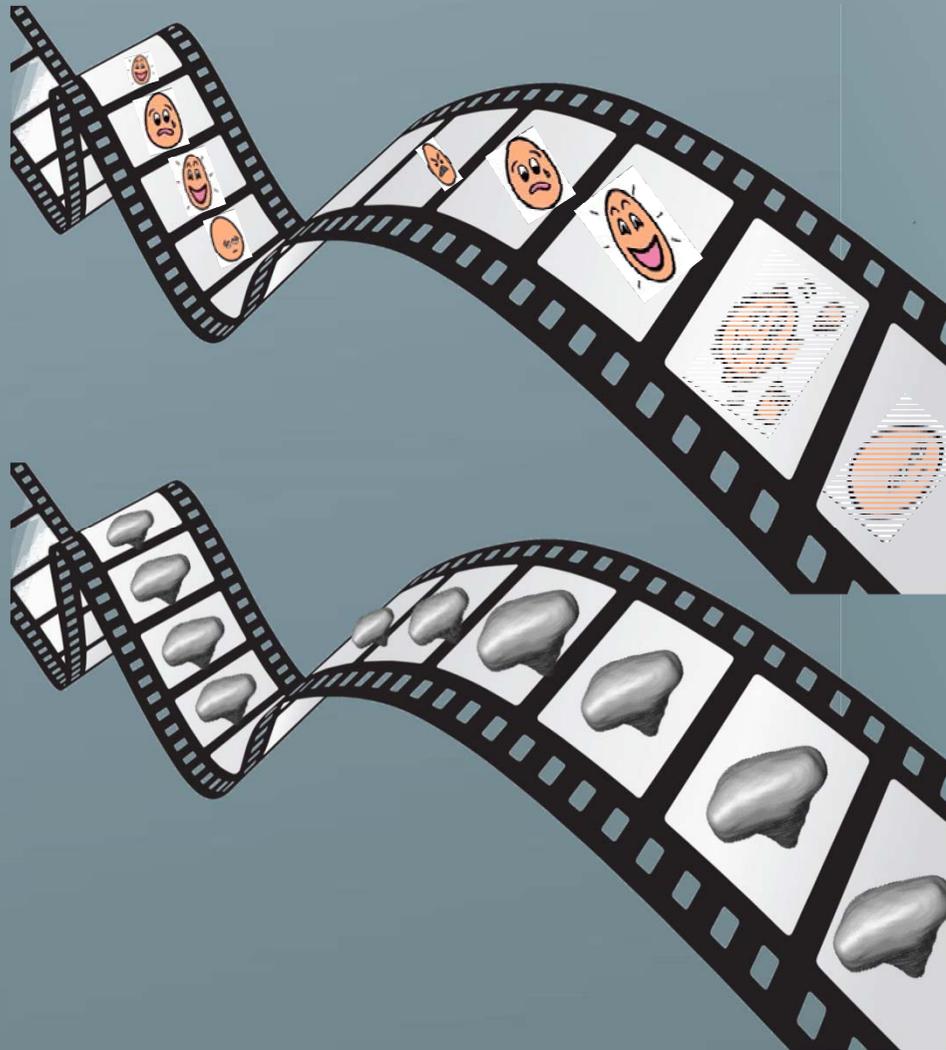
■ Arthropathie

- Arthrose (starke Verschleiß)
- Arthritis

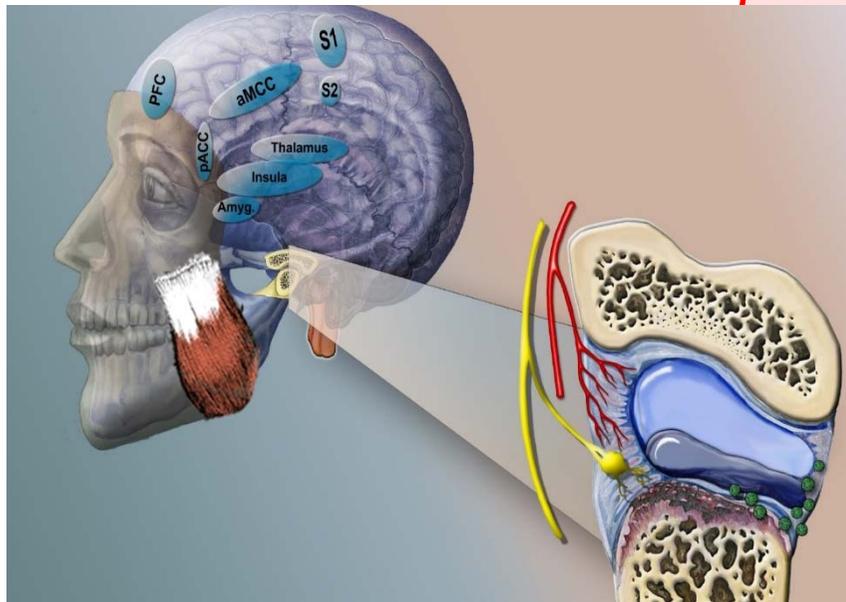
ADAPTATION



Informations-Therapie → Emotion



Biopsychosoziale Wechselwirkungen



sozial
Lebensumstände

psycho
Seelisches Befinden
Bewältigungsstil

bio
Symptome

Informationstherapie

Soziale Belastungen

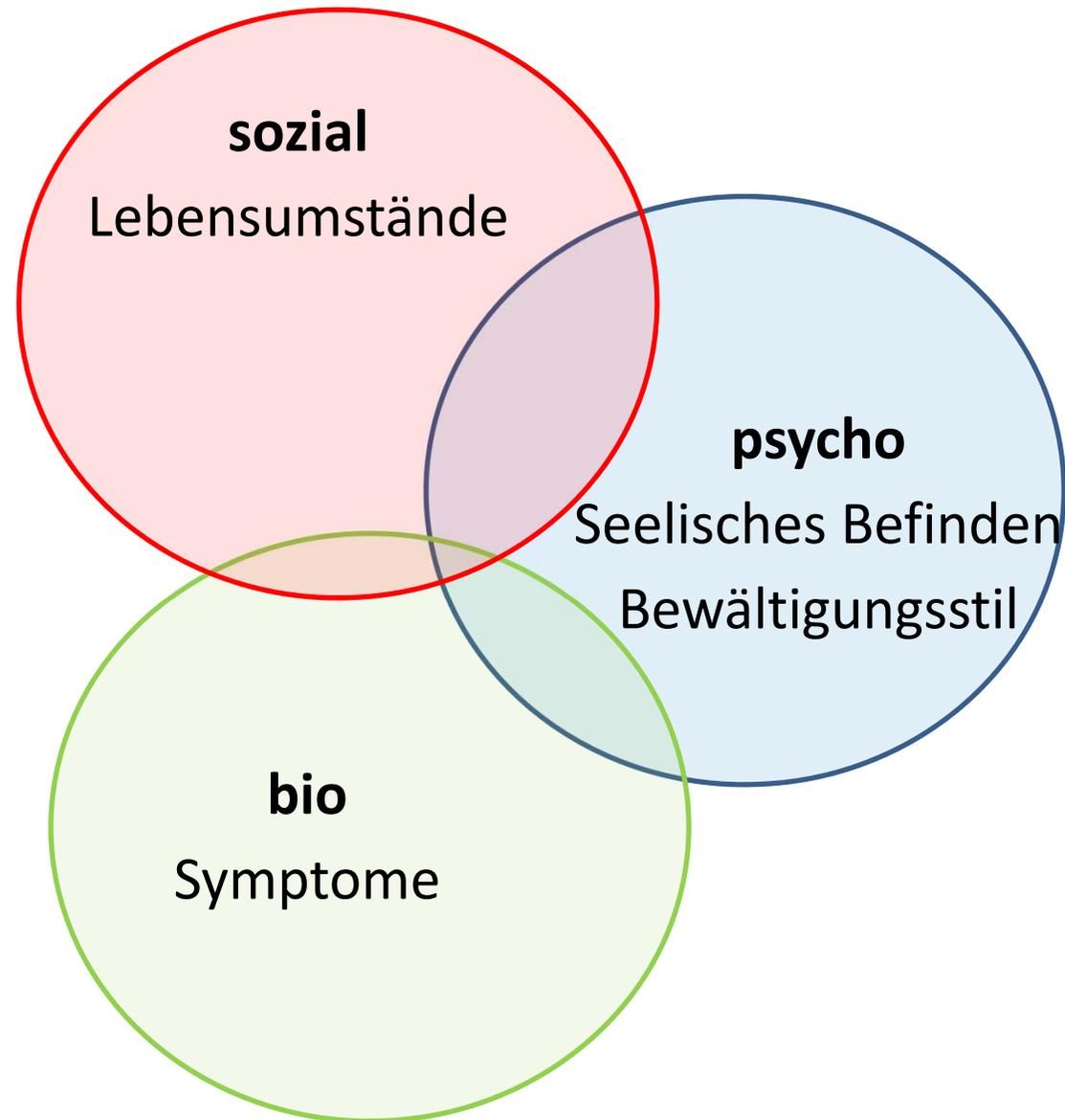
Z.B: belastendes Umfeld,
Arbeitsüberlastung
Zeitdruck, Konflikte,
finanzielle Nöte

Psych. Missbefinden

Z.B: Überforderung,
Befürchtungen,
Ärger, Innere Unruhe

Subklin. Veränderungen

Erhöhter
Kaumuskeltonus,
Bruxismus



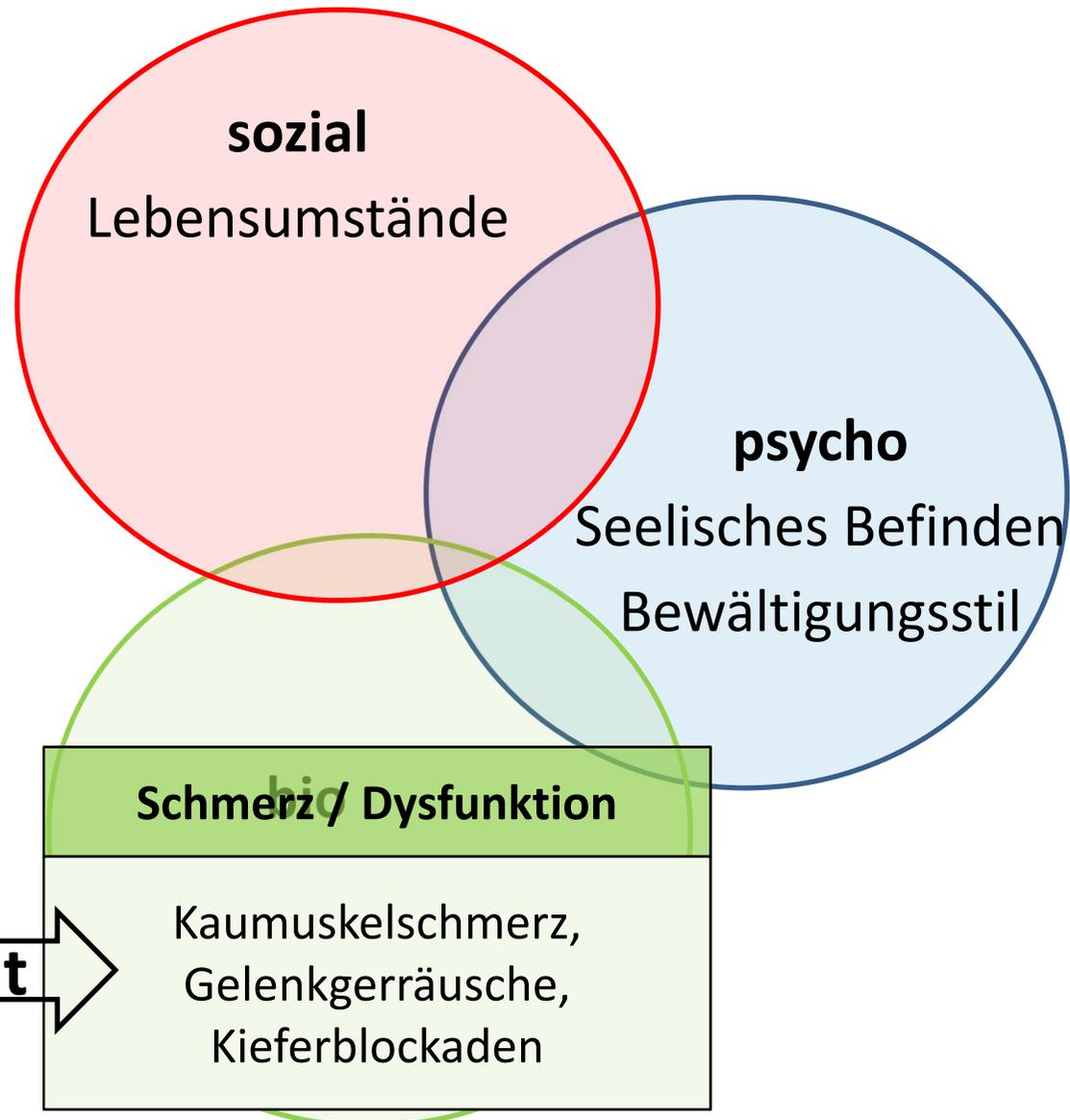
Informationstherapie

Soziale Belastungen
Z.B: belastendes Umfeld,
Arbeitsüberlastung
Zeitdruck, Konflikte,
finanzielle Nöte

Psych. Missbefinden
Z.B: Überforderung,
Befürchtungen,
Ärger, Innere Unruhe

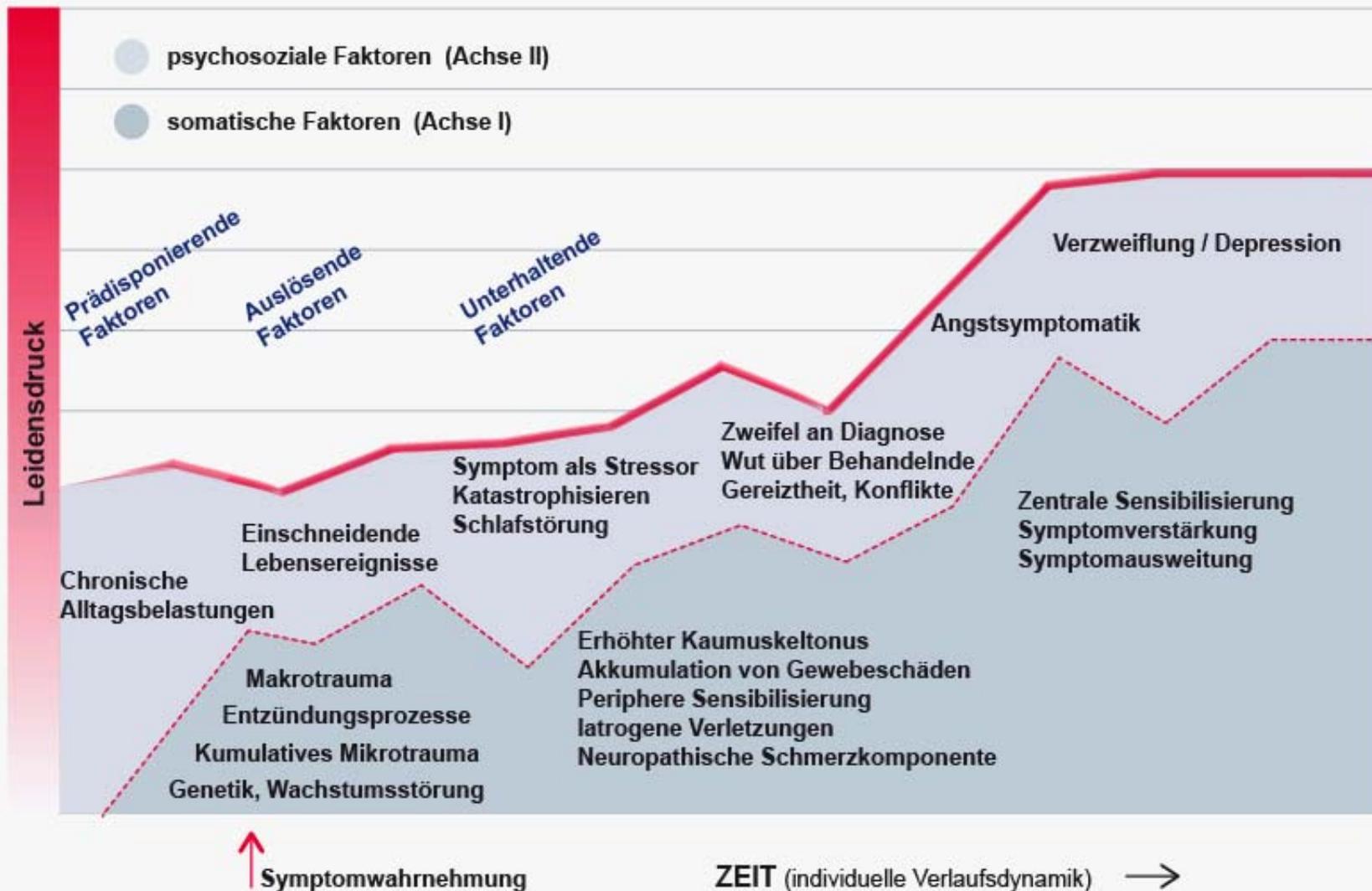
Subklin. Veränderungen
Erhöhter
Kaumuskeltonus,
Bruxismus

Zeit →



Schmerz / Dysfunktion
Kaumuskelerschmerz,
Gelenkgeräusche,
Kieferblockaden

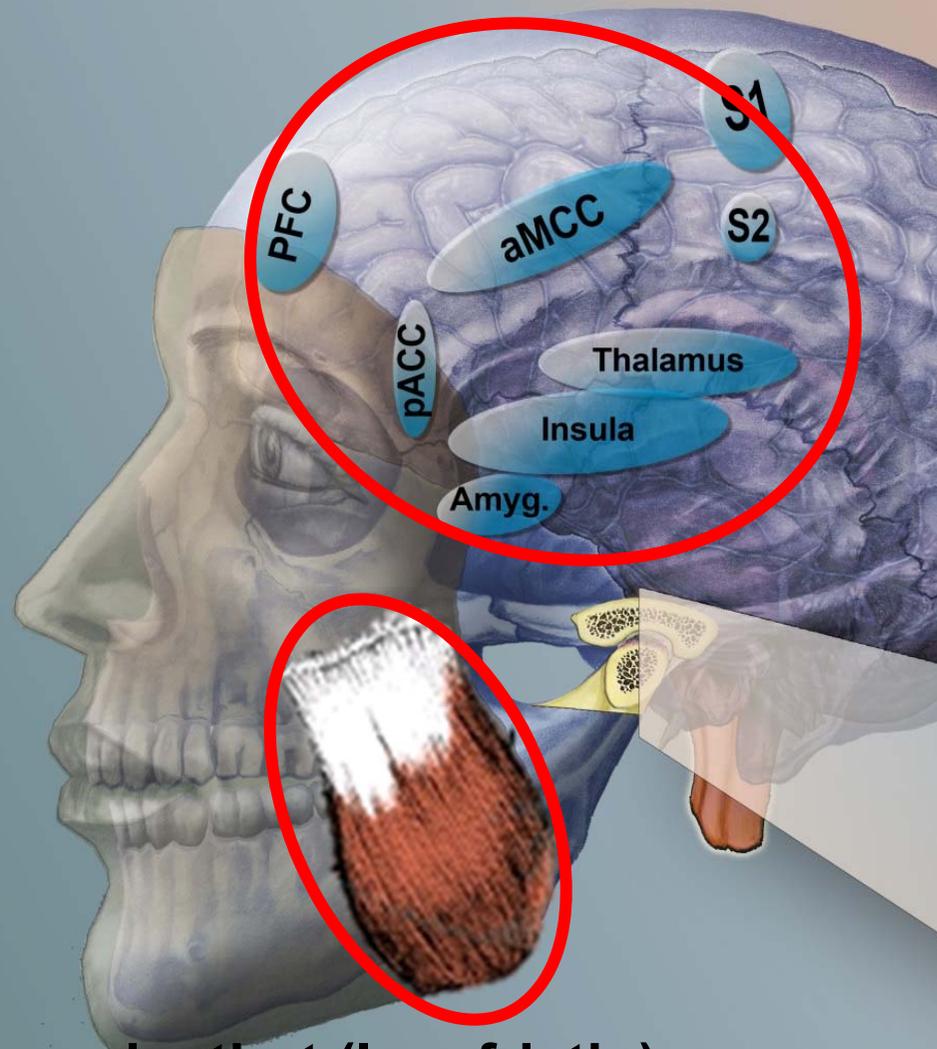
Was ist Leiden (Suffering)?



Tonus-Regulierung

Symptomorientiert (kurzfristig)

→ Entspannungstechniken

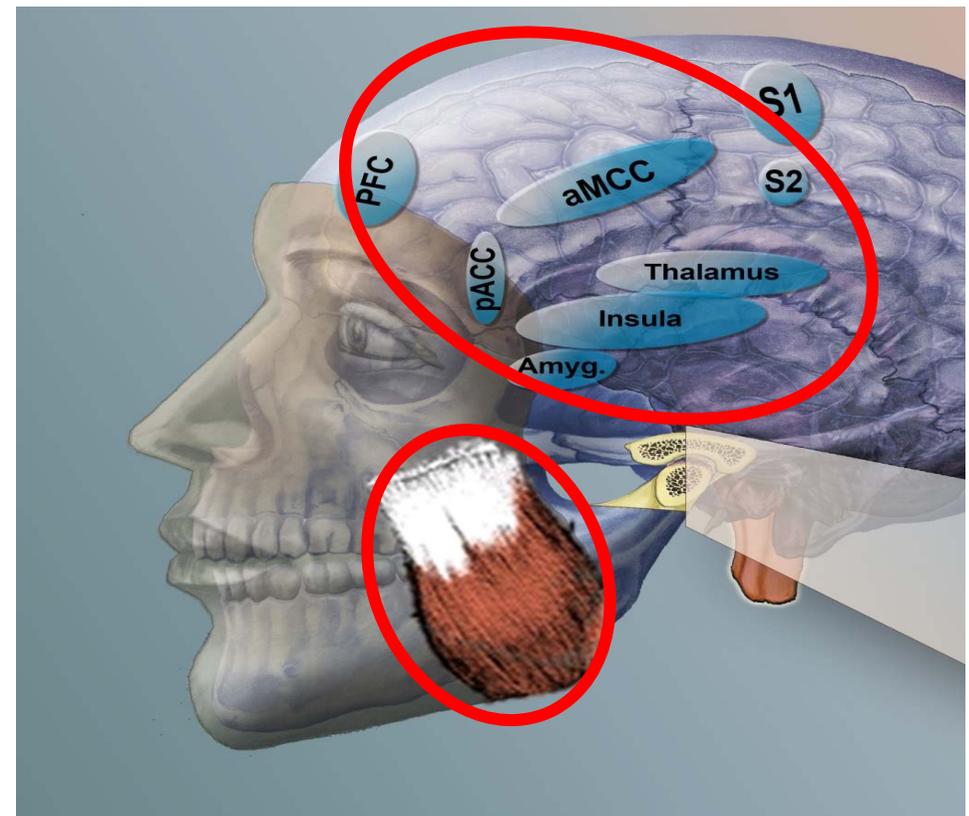


Problemorientiert (langfristig)

→ Einstellungen → Erwartungen → Konflikte

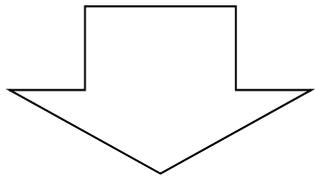
Psychosomatische Brücke: Wie überleiten...

- **Schmerz = Stress!**
Anforderungen? Anspannung? Gereiztheit?
(am Befund orientieren: Schliffazetten, Mm-Dolenz)
→ ***Entspannung / Stressbewältigung ist lernbar***



Psychosomatische Brücke: Wie überleiten...

- **Schmerz = Emotion!**
(individuellen Ansatz finden)
- Niedergeschlagen?
- Besorgt?
- Ärger, Wut?

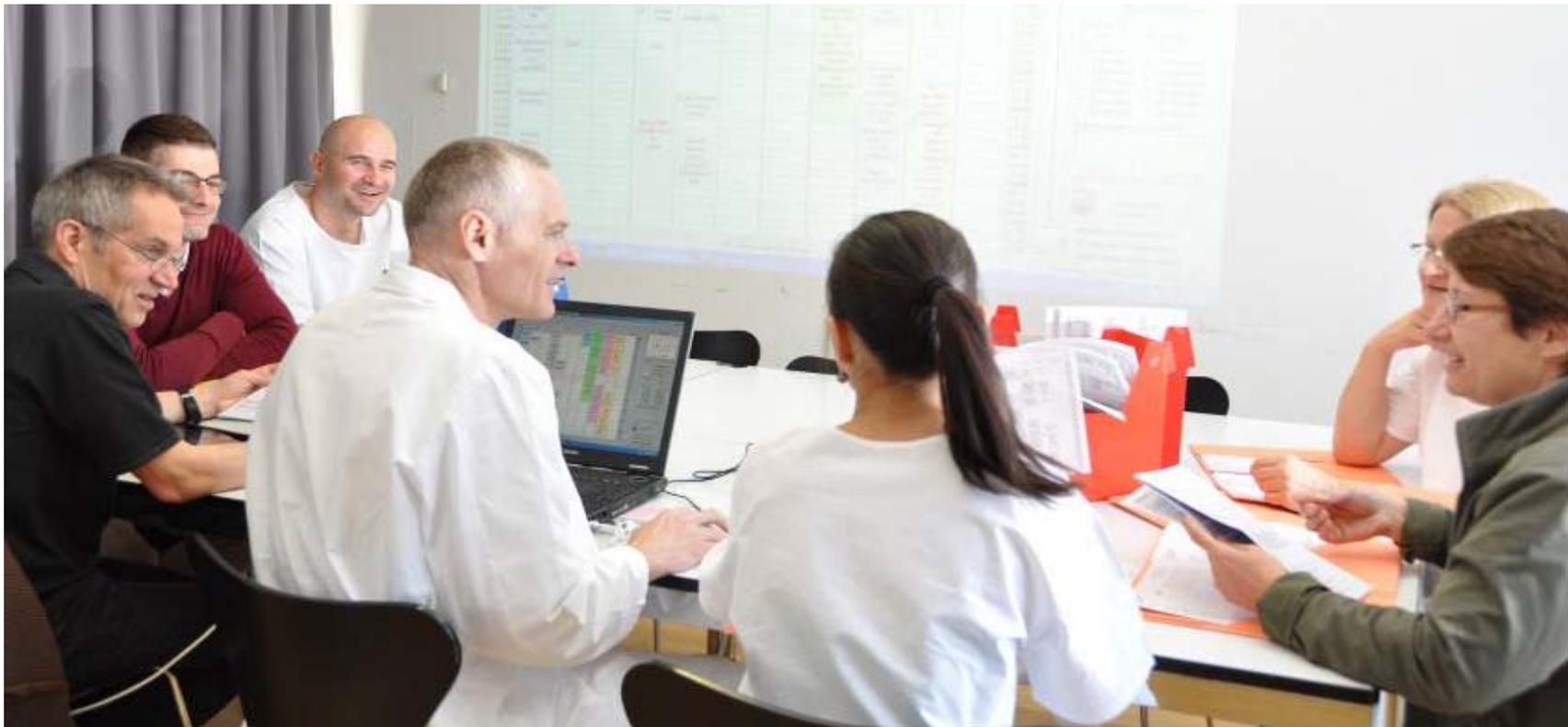


***Stimmungsregulation ist
lernbar***



Psychosomatische Brücke: Wie überleiten...

- **Unterstützung / Ressourcen?**
 - **Ich *allein* kann Sie nicht behandeln**
 - **Professionelle Beratung ist verfügbar**
 - ***Somatische* Behandlung geht verbessert weiter**



Klinische Diagnostik → Klärung von KH-Modell und Leidensursache

**Kiefergelenkbeschwerden
sind i. d. R. trotz
struktureller Veränderungen
selbstlimitierend.**



**Komplexität und damit
Prognose bestimmen
organische & psychische
Begleitstörungen.**

International Classification of Headache Disorder ICHD-3 beta (2013)

13. Painful neuropathies and other facial pains

13.1 Trigeminal neuralgia

13.1.1 Classical trigeminal neuralgia

13.1.1.1 Classical trigeminal neuralgia, purely paroxysmal

13.1.1.2 Classical trigeminal neuralgia with concomitant persistent facial pain

13.1.2 Painful trigeminal neuropathy

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13.1.2.2 Post-herpetic trigeminal neuropathy

13.1.2.3 Painful post-traumatic trigeminal neuropathy

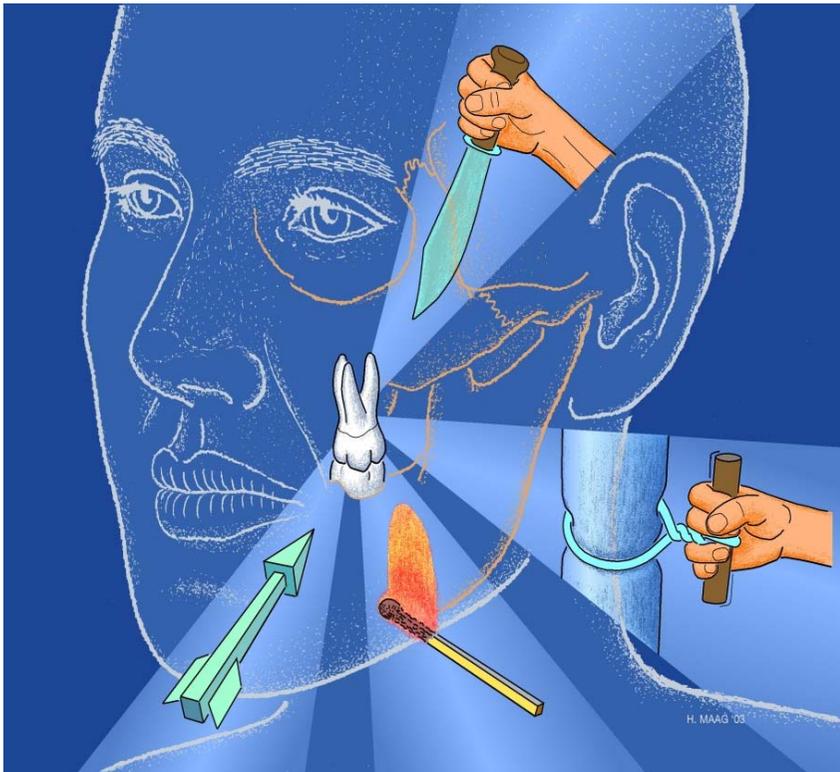
13.1.2.4 Painful trigeminal neuropathy attributed to multiple sclerosis (MS) plaque

13.1.2.5 Painful trigeminal neuropathy attributed to space-occupying lesion

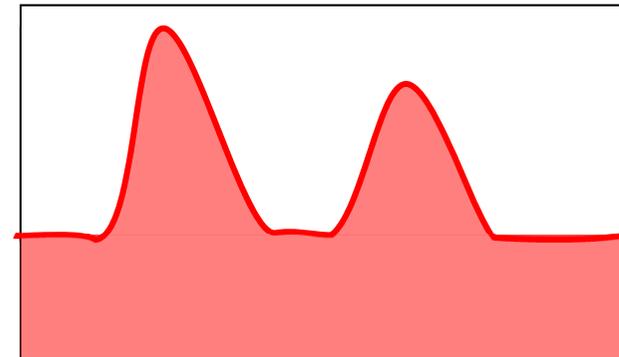
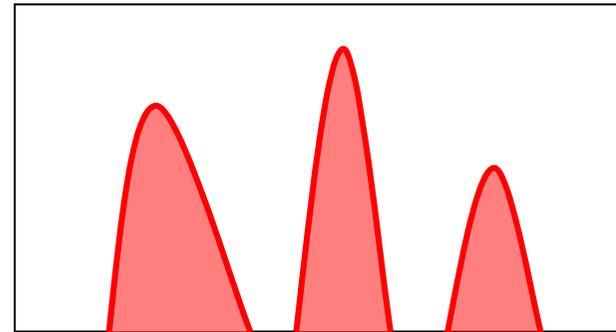
13.1.2.6 Painful trigeminal neuropathy attributed to other disorder

Anamnese

Schmerz-Qualität



Zeitmuster



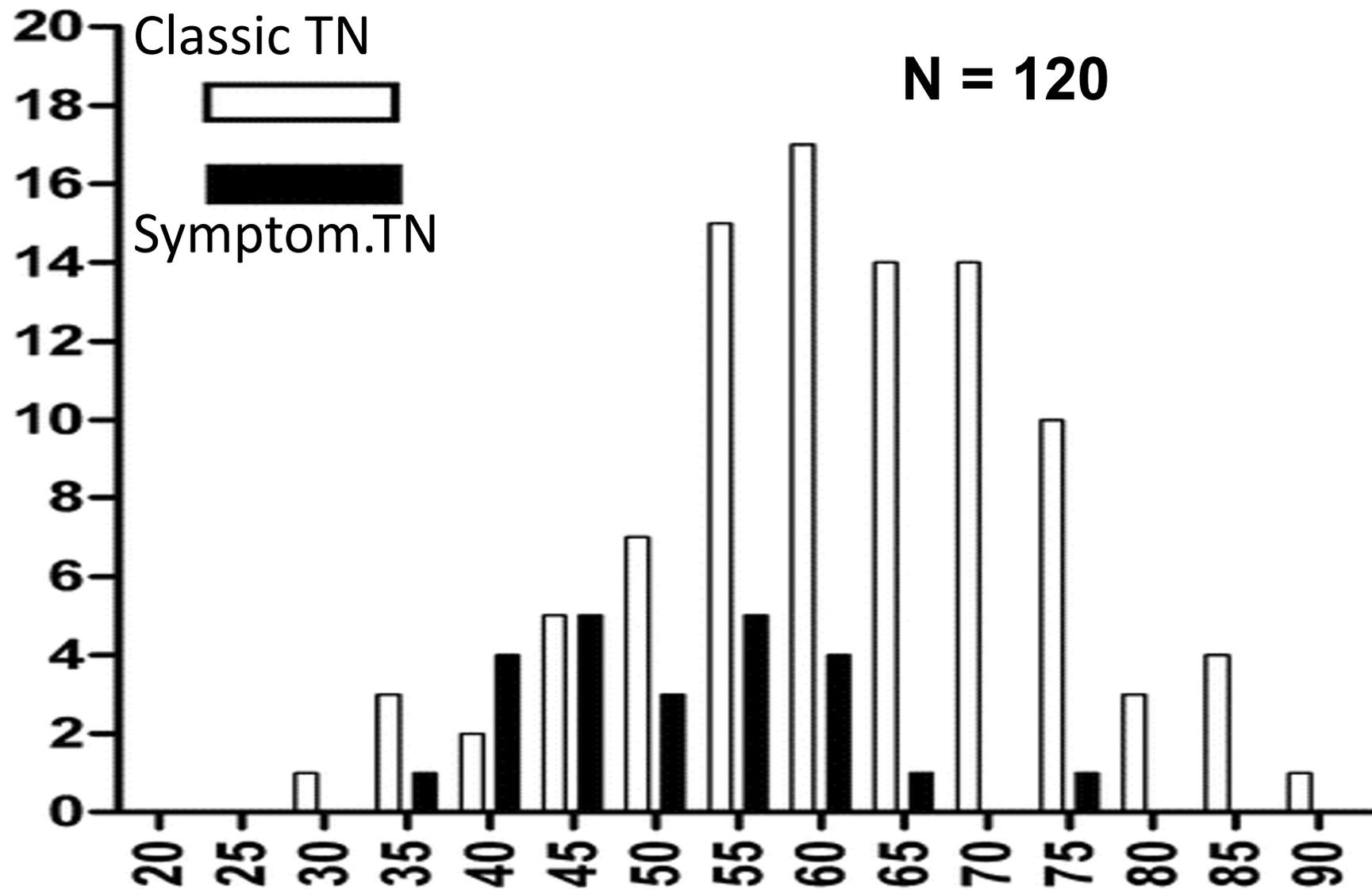
Auslöser

Trigeminus-Neuralgie

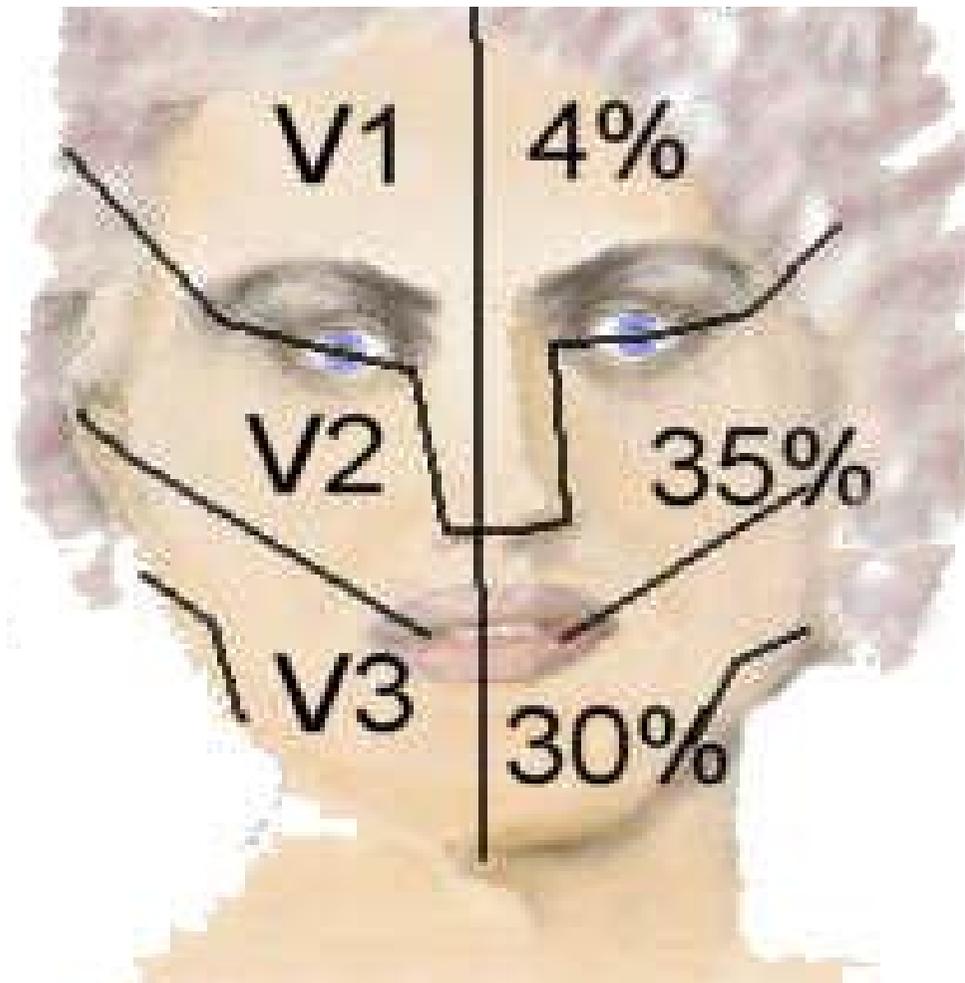
- Einseitig lokalisierbar im 1. / 2. / 3. Trigeminusast
- schneidend, elektrisierend
- stark, quälend
- Sekunden, dazwischen schmerzfrei
- 5 bis 40/Tag
- Berührung, Sprechen, Zähneputzen, Rasieren, etc.



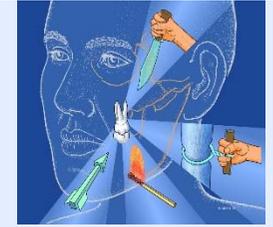
Altersverteilung



Verteilungsmuster TN



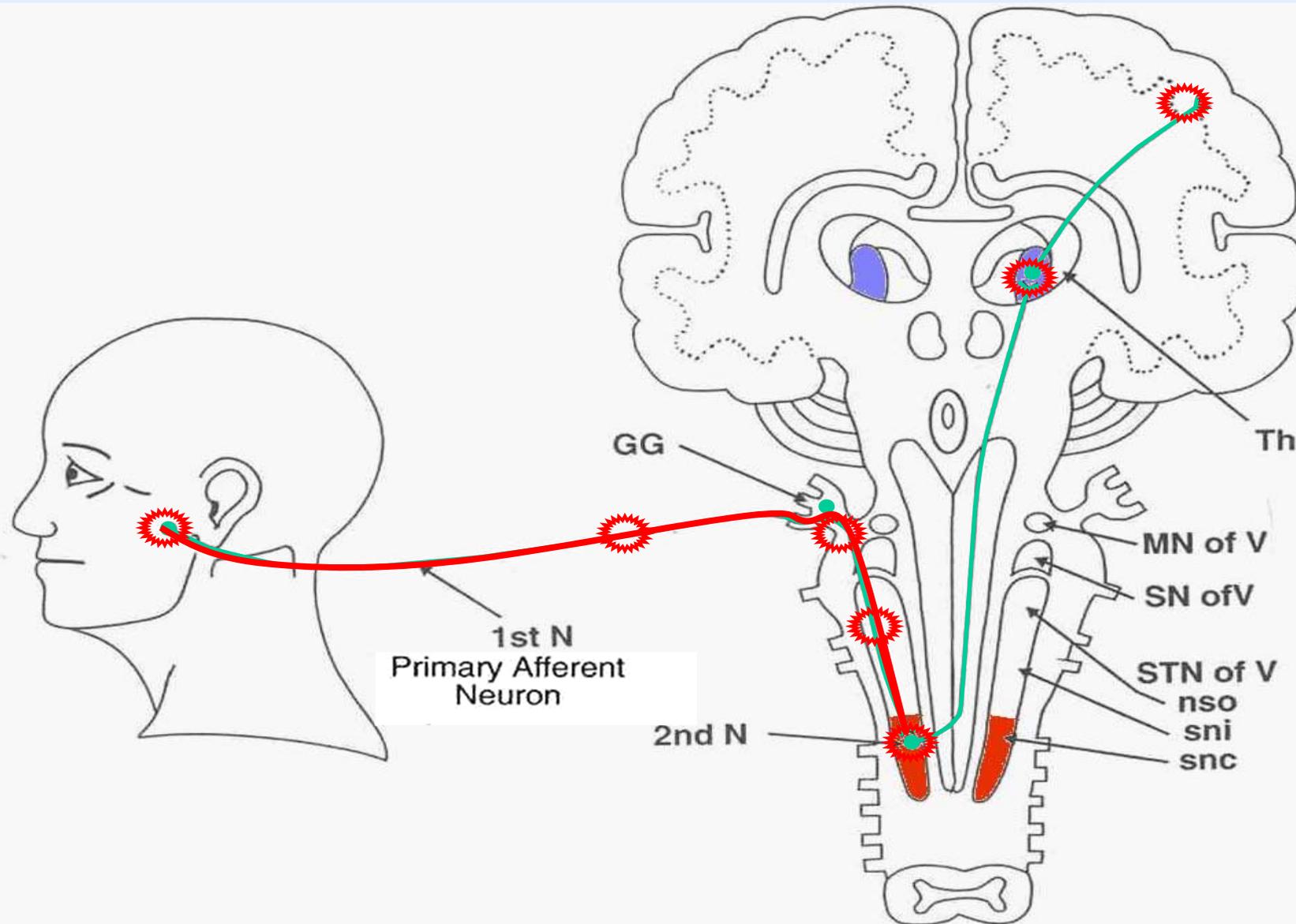
Schmerzcharakter von TN



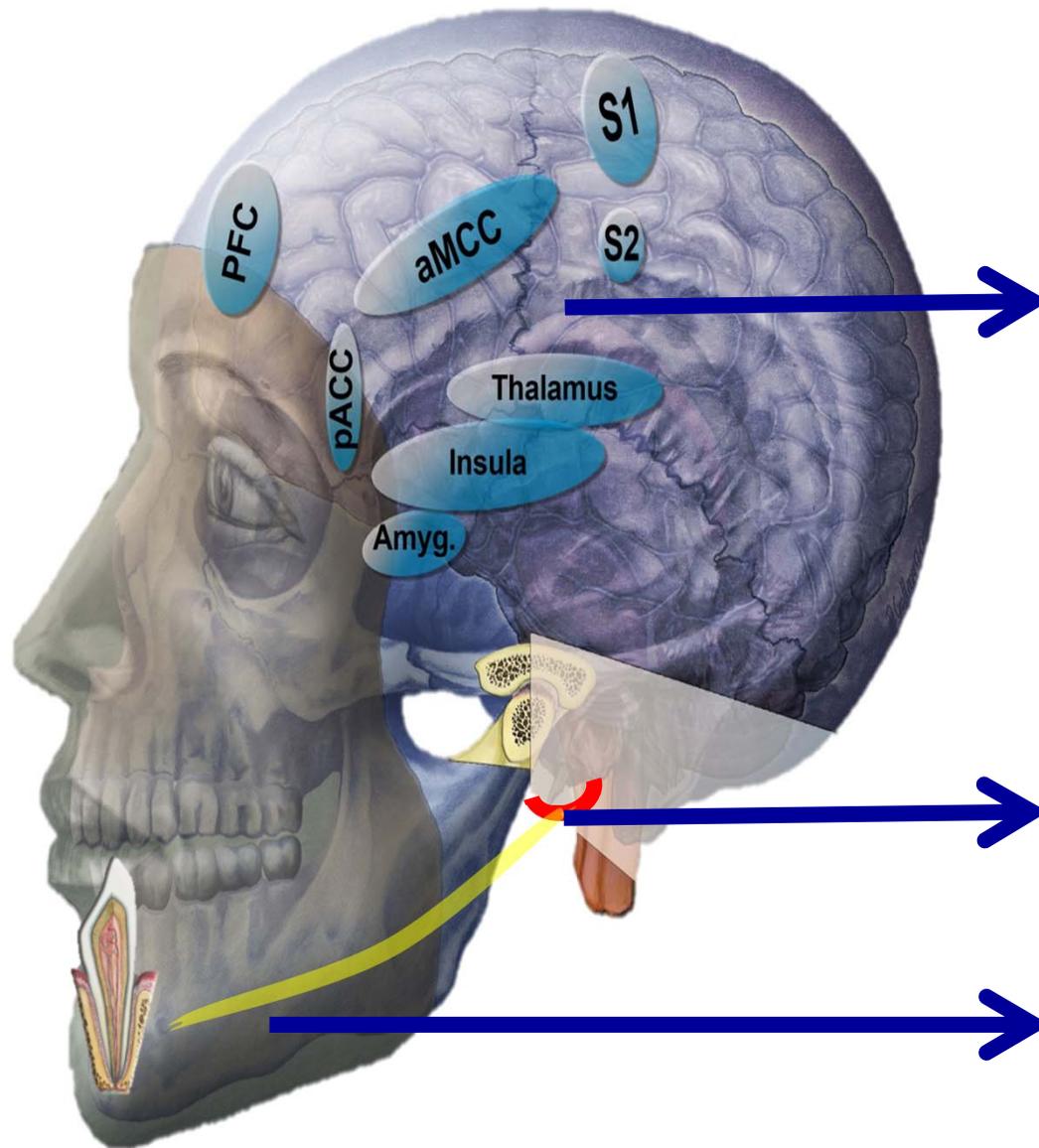
<i>Pain characteristics</i>	<i>Men</i>	<i>Women</i>	<i>Total n (%)</i>
Sharp	52	94	146 (77.6)
Electric shock-like	15	21	36 (19.1)
Stabbing	9	9	18 (9.6)
Numbness	3	10	13 (6.9)
Throbbing	2	10	12 (6.4)
Burning	4	4	8 (4.2)

More than one type of pain characteristics were described in 42 (22.3%) patients.

Schmerzgenese?



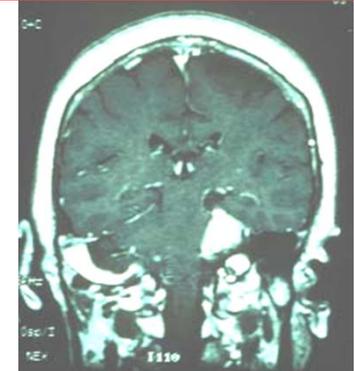
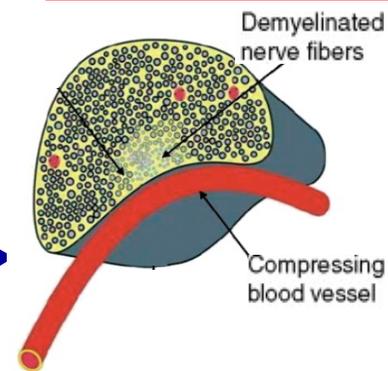
Schmerzgenese der TN?



«Klassisch» (Neuralgie) «Sekundär» (Neuropathie)

Multiple Sklerose

Gefäßkontakt
klassische TN Tumor

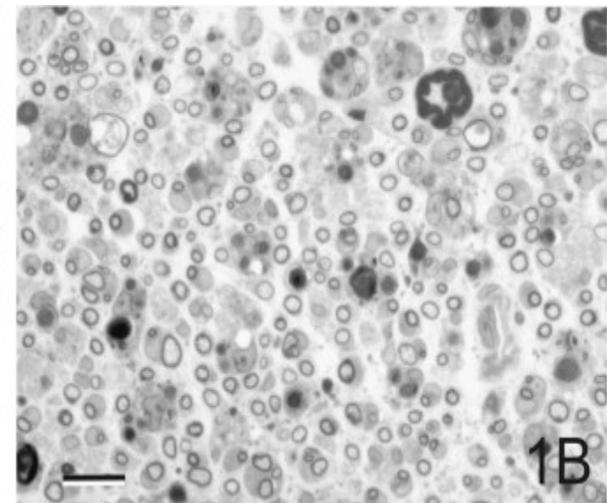
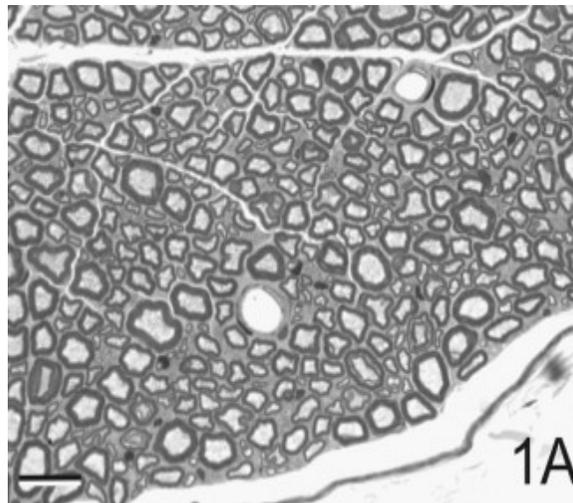
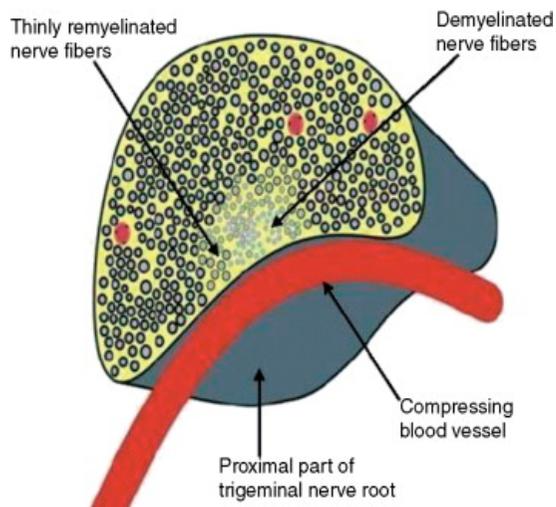


Nerventrauma

Ätiologie der klassischen TN

Auch bei “klassischer TN” Dystrophie

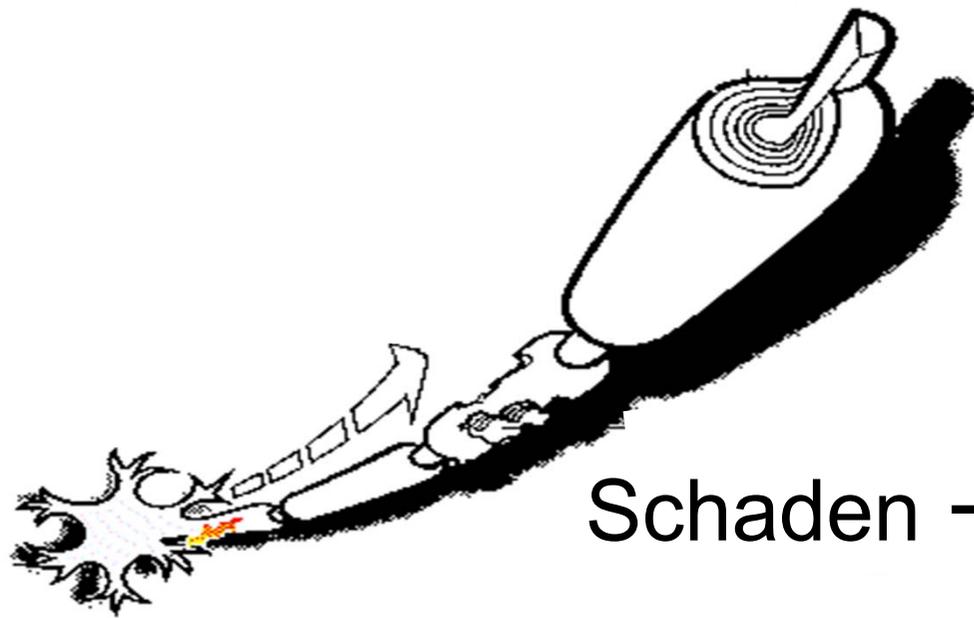
- **Dünne, deformierte Axone; axonaler Debris**
- **Sehr nahe Apposition von Axonen**



Pathophysiologie der TN

Keine Schmerzrezeptoren aktiviert!

Ektope Entladungen in taktilen Neuronen
→ Signalübersprung auf Schmerzneurone



Schaden → "cross talk"

Differentialdiagnose TN

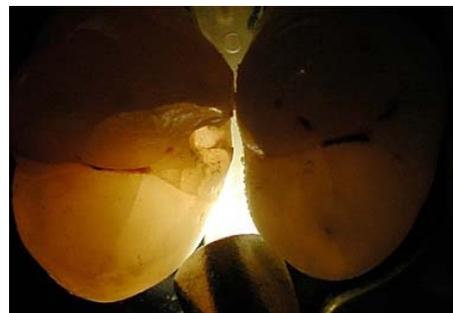
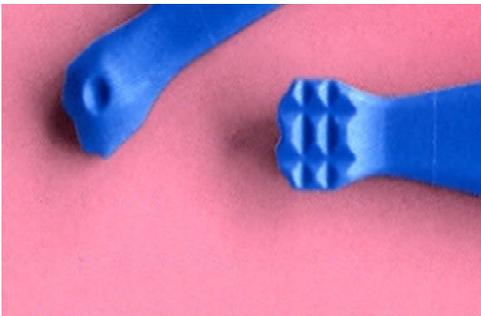
Anamnese

Stechender

Belastungsschmerz

Entlastungsschmerz !!!

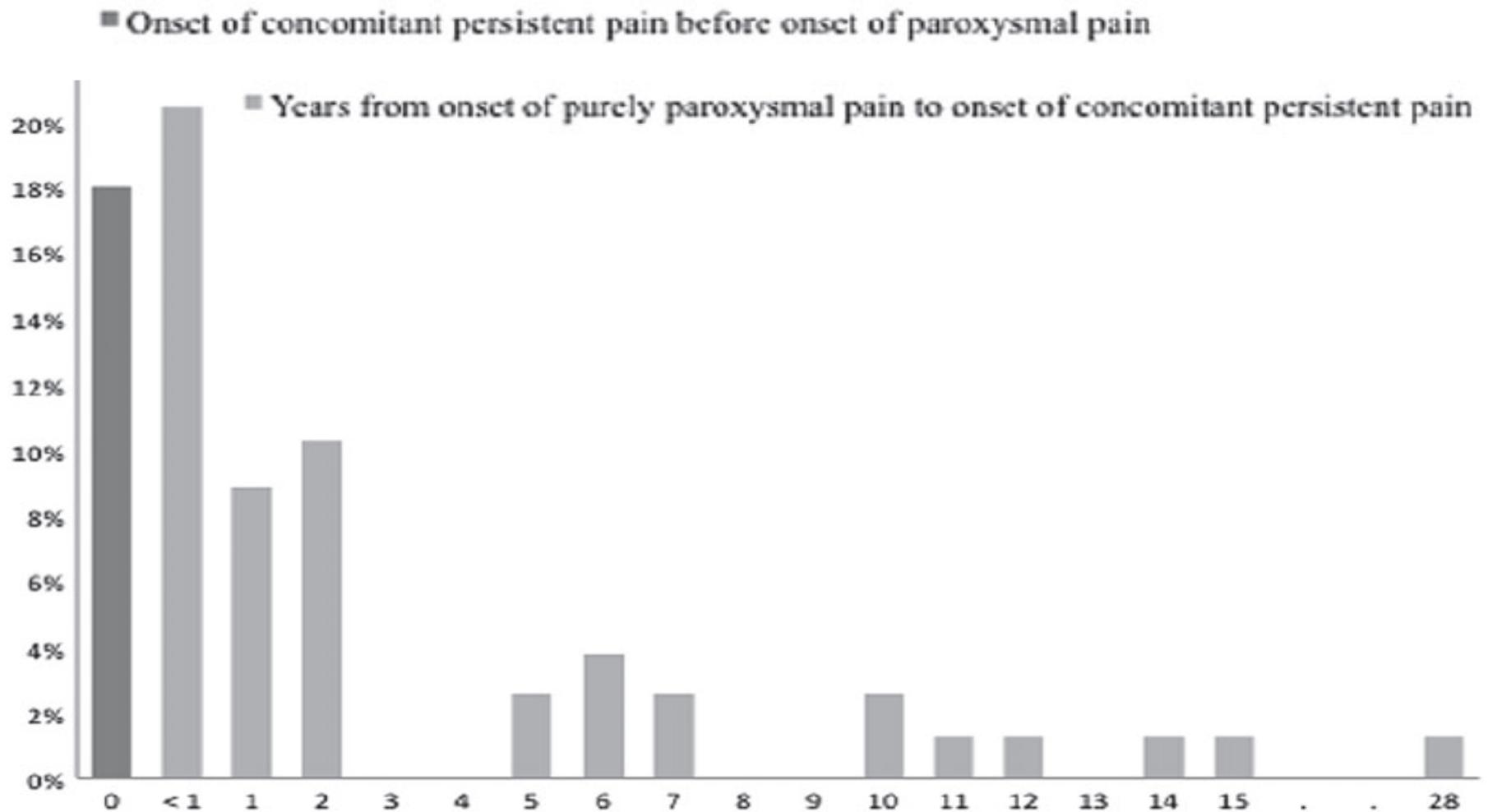
Befund



Periligamentäre Anästhesie



TN Prognose Schmerzverlauf



International Classification of Headache Disorder ICHD-3 beta (2013)

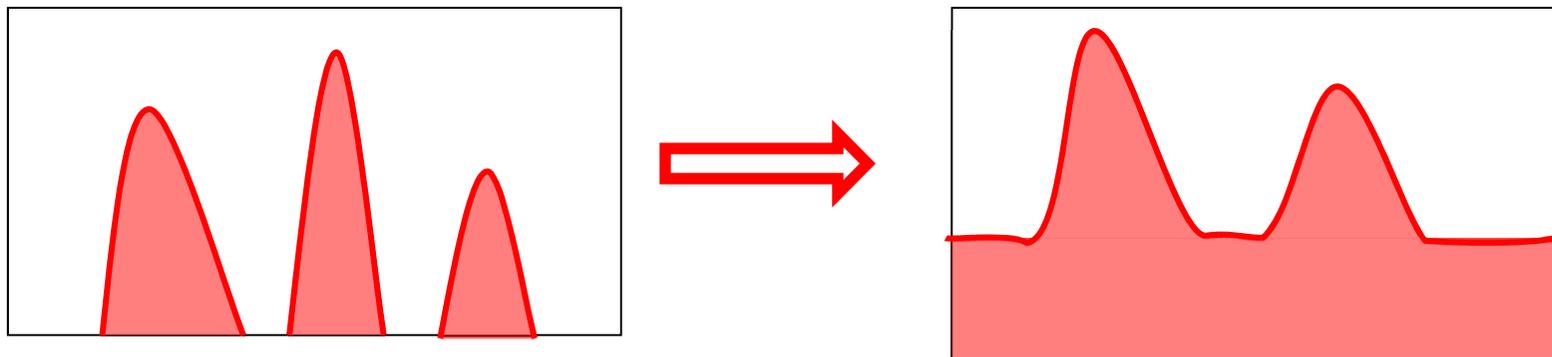
13. Painful neuropathies and other facial pains

13.1 Trigeminal neuralgia

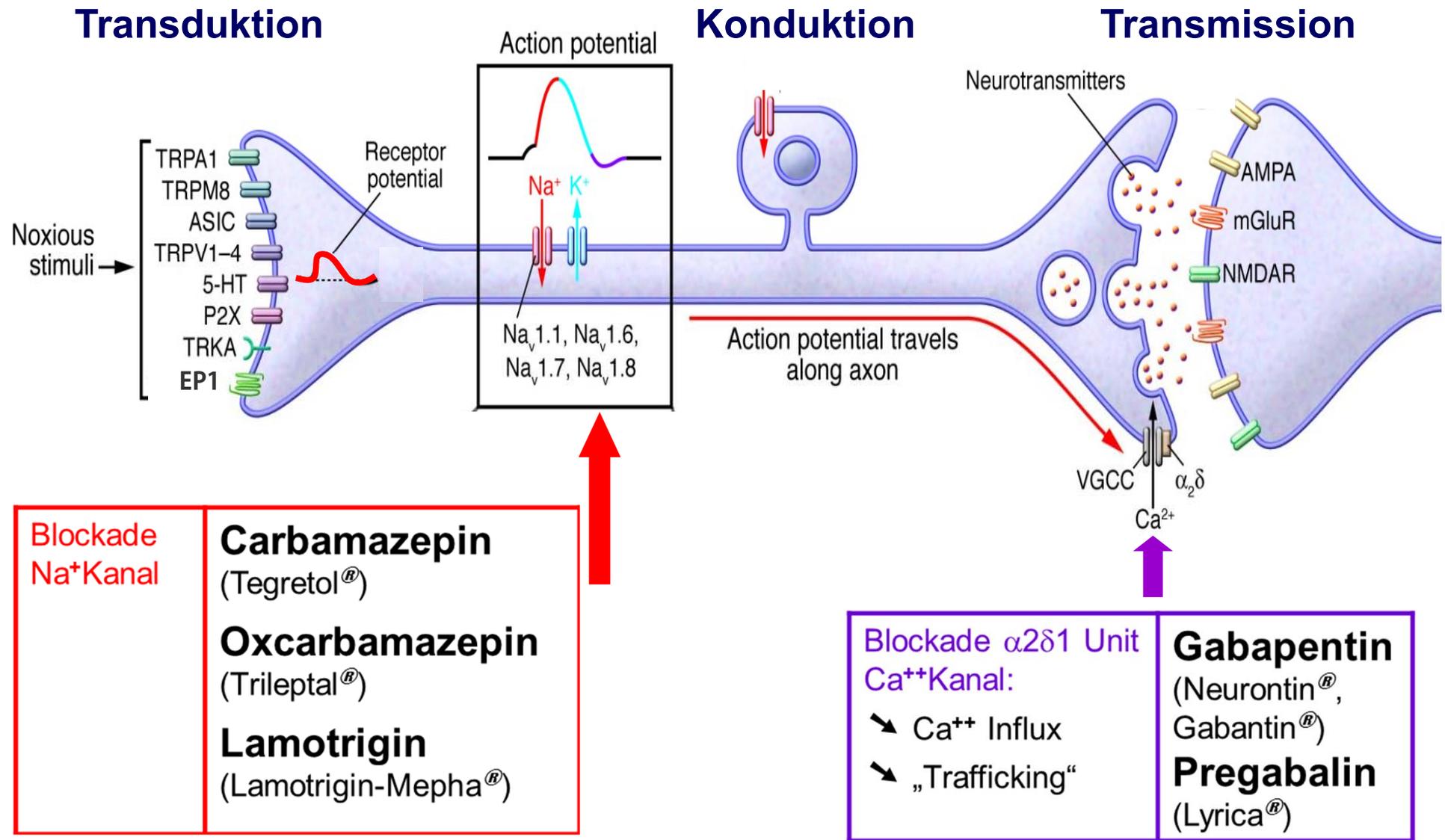
13.1.1 Classical trigeminal neuralgia

13.1.1.1 Classical trigeminal neuralgia, purely paroxysmal

--> neuralgia **with concomitant persistent facial pain**



Medical management of TN



Medical management of TN

Carbamazepin
(Tegretol®)

Müdigkeit, Konz.-Störung, Leberfkt;
Differential-Blutbild; Plasma-
Spiegel; Hyponaträmie

Oxcarbamazepin
(Trileptal®)

Müdigkeit, Schwindel, Ataxie,
Obstipation, Übelkeit, und Diplopie

Topiramate
(Topamax®)

Müdigkeit, Konz.-Störung

Schwangerschaft, akute Myopie,
2° Winkelblockglaukom

•"start slow, go slow"

Pharmacotherapy of TN

Carbamazepin (300-1200 mg/die) $\xrightarrow{\hspace{10em}}$ Oxcarbazepin

unverträglich



unwirksam, Zugabe oder
Umstellen

Lamotrigin

oder

Topiramate



Gabapentin/Pregabalin
Phenytoin (auch i.v. bei Exazerbation)
Baclofen
Clonazepam
Valproat / Mexiletin
Amitriptylin
Botulinumtoxin
Lidocain (z.B. Lidocain Spray 8% bei V2)

Bei Therapieversagen

- Prüfung der Diagnose
- Vorstellung beim Neurochirurgen
(Indikationsstellung durch den Neurologen)

modifiziert nach:

Kanai et al. Br J Anaesth. 2006;97:559-63

Bennetto et al. BMJ 2007;334:201-205

Cheshire Expert Rev Neurotherapeutics 2007;7:1565-79

Adverse effects of carbamazepin

Benigner erythematöser Ausschlag



Adverse effects of carbamazepin

**Erythema multiforme
Stevens-Johnson Syndrom**



Adverse effects of carbamazepin

Toxische epidermale Nekrolyse (TEN)



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→ Painful **post-traumatic** trigeminal neuropathy

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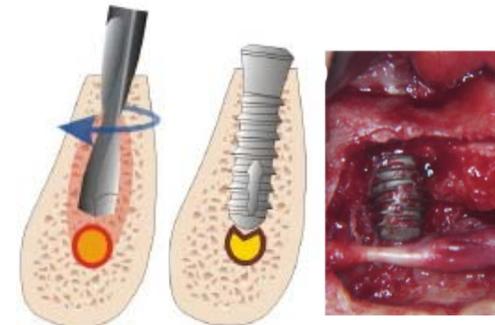
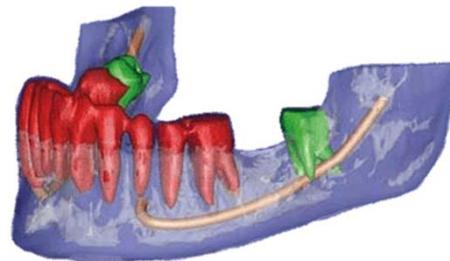
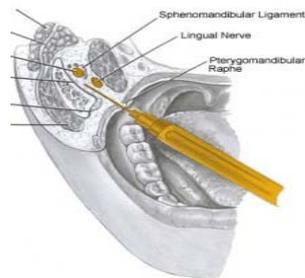
Headache Classification Committee of the International Headache Society (IHS).

„The International Classification of Headache Disorders, 3rd Edition (Beta Version)“.

Cephalalgia: An International Journal of Headache 2013;33: 629–808.

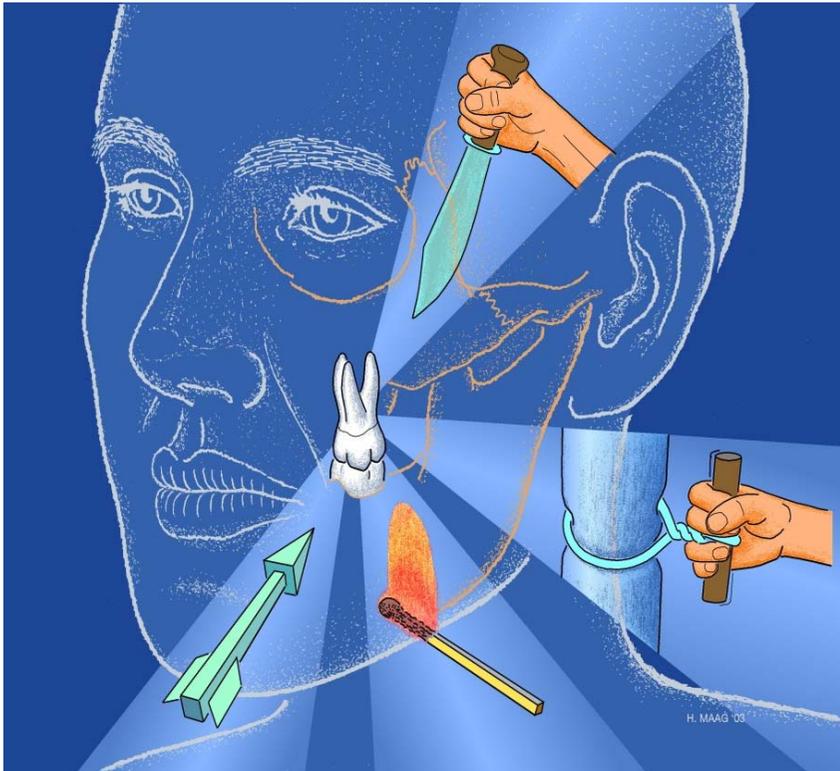
Post-traumatische Trigeminus-Neuropathie

Mechanisches Mikro- oder Makrotrauma

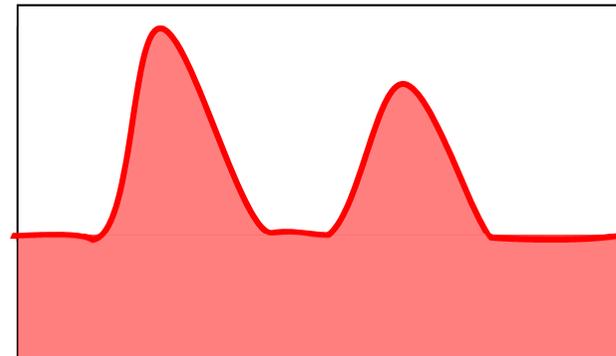
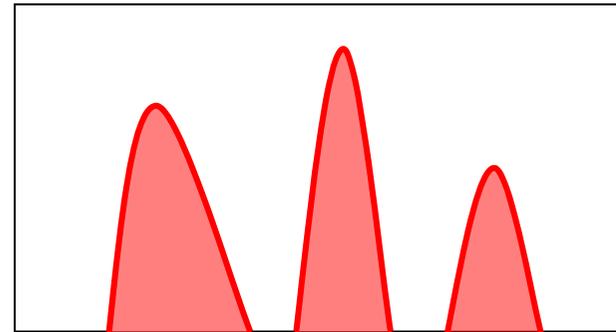


Anamnese

Qualität



Zeitmuster



Post-endodont. Trigeminus-Neuropathie

Date	1. Author	Patients	Postop	% non-odont. pain
1982	Marbach JJ	463 pts. 1 dentist	>1 mt.	3%
1990	Campbell RL	118 pts. 1 clinic	1-3 yrs	5%
2005	Polycarpou N	175 pts. 1 clinic	1-5 yrs	12%
2014	Vena DA	1223 pts. 64 dentists	3-5 yrs	3%
2015	Nixdorf DR	354 pts. 62 dentists	½ yr.	3%

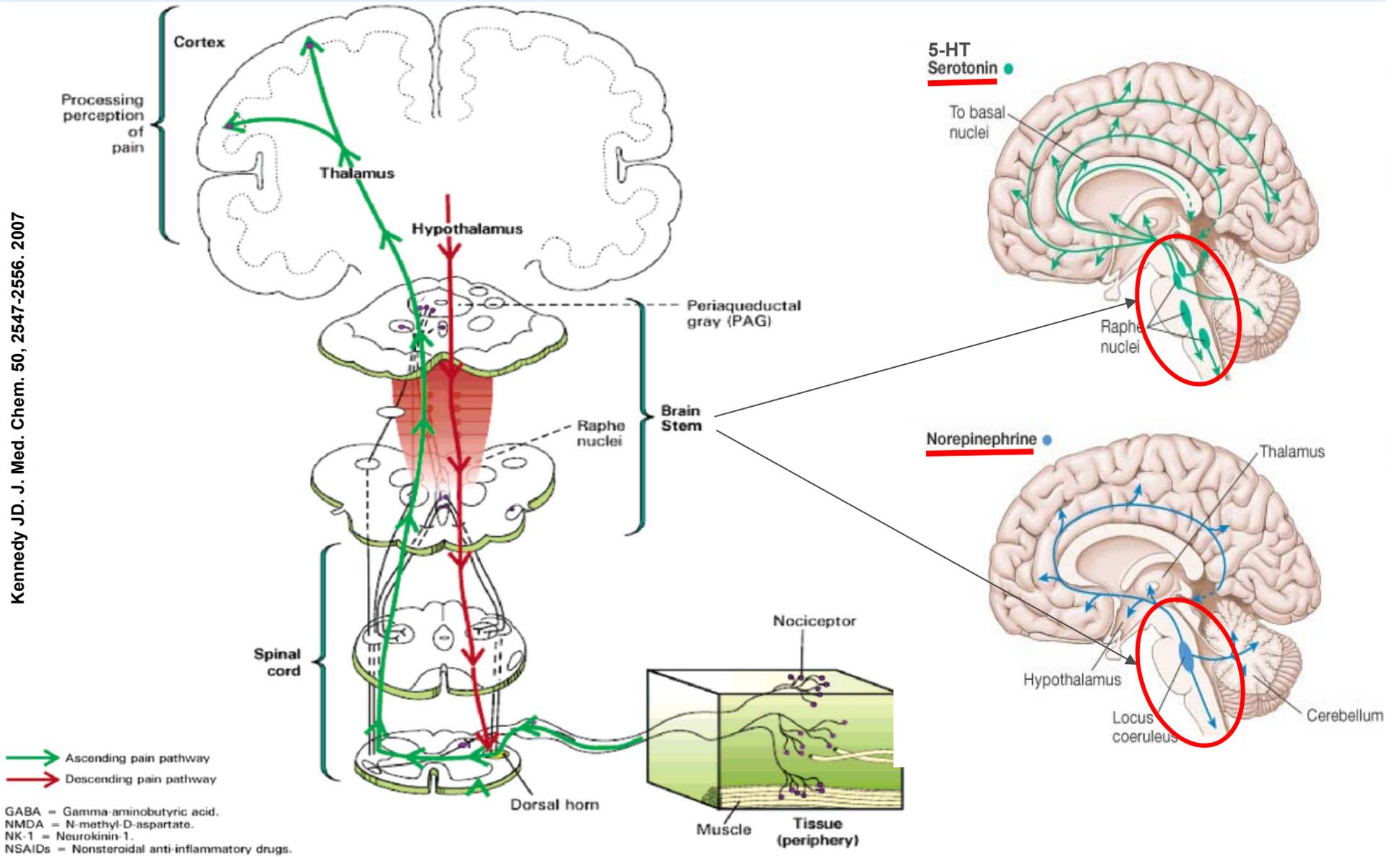
Inzidenz postop. neuropathischer Schmerzen

	Size of patient cohort		Incidence (%)
Postsurgical pain	159,000	Amputation	30–50
	479,000	Breast surgery	20–30
	Unknown	Thoracotomy	30–40
	609,000	Inguinal hernia repair	10
	598,000	Bypass surgery	30–50
	220,000	Caesarean section	10

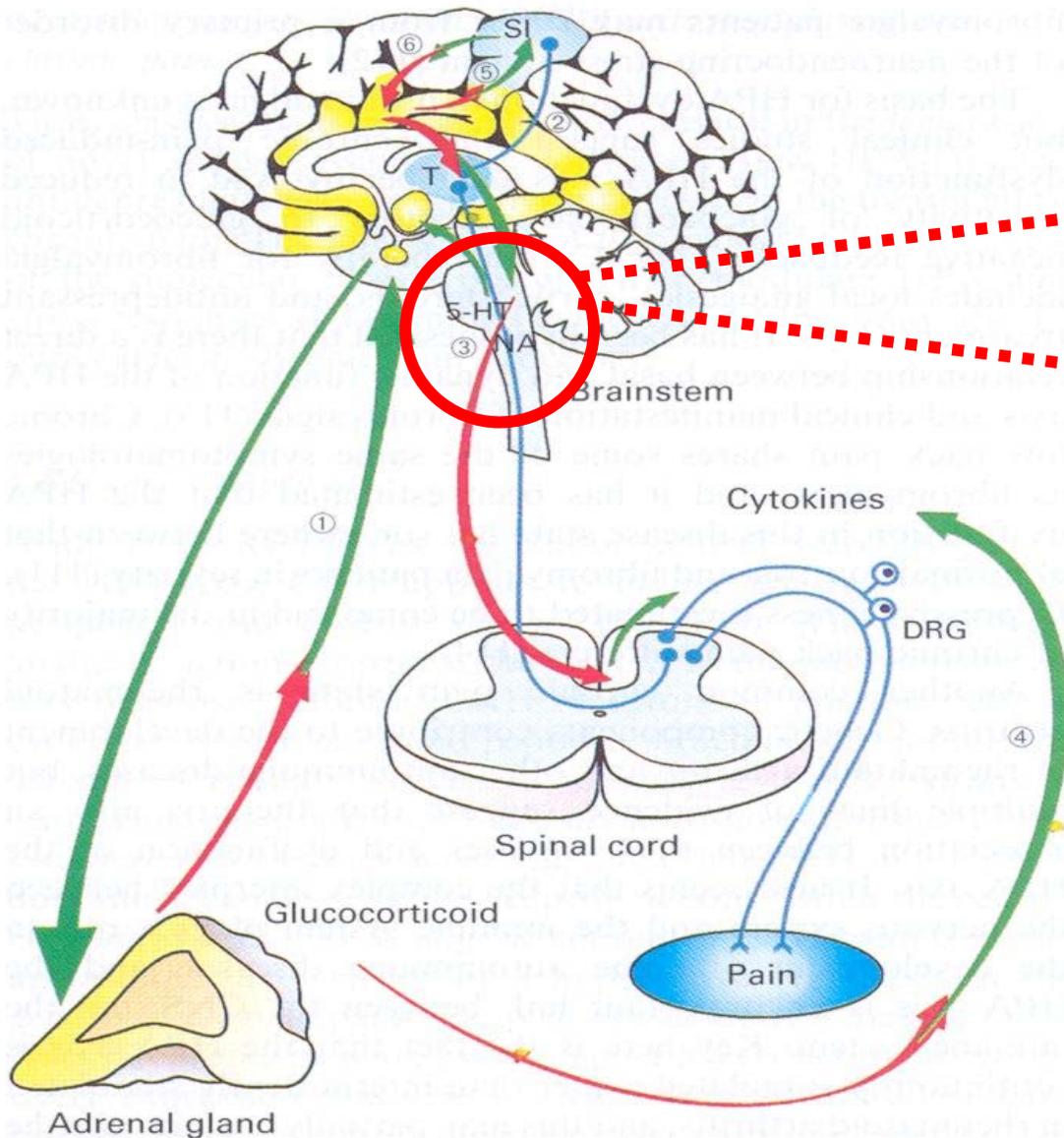
Denk F et al. Nature Neuroscience 2014

Schmerzmodulation

Kennedy JD. J. Med. Chem. 50, 2547-2556. 2007



Trizyklika & SNRI



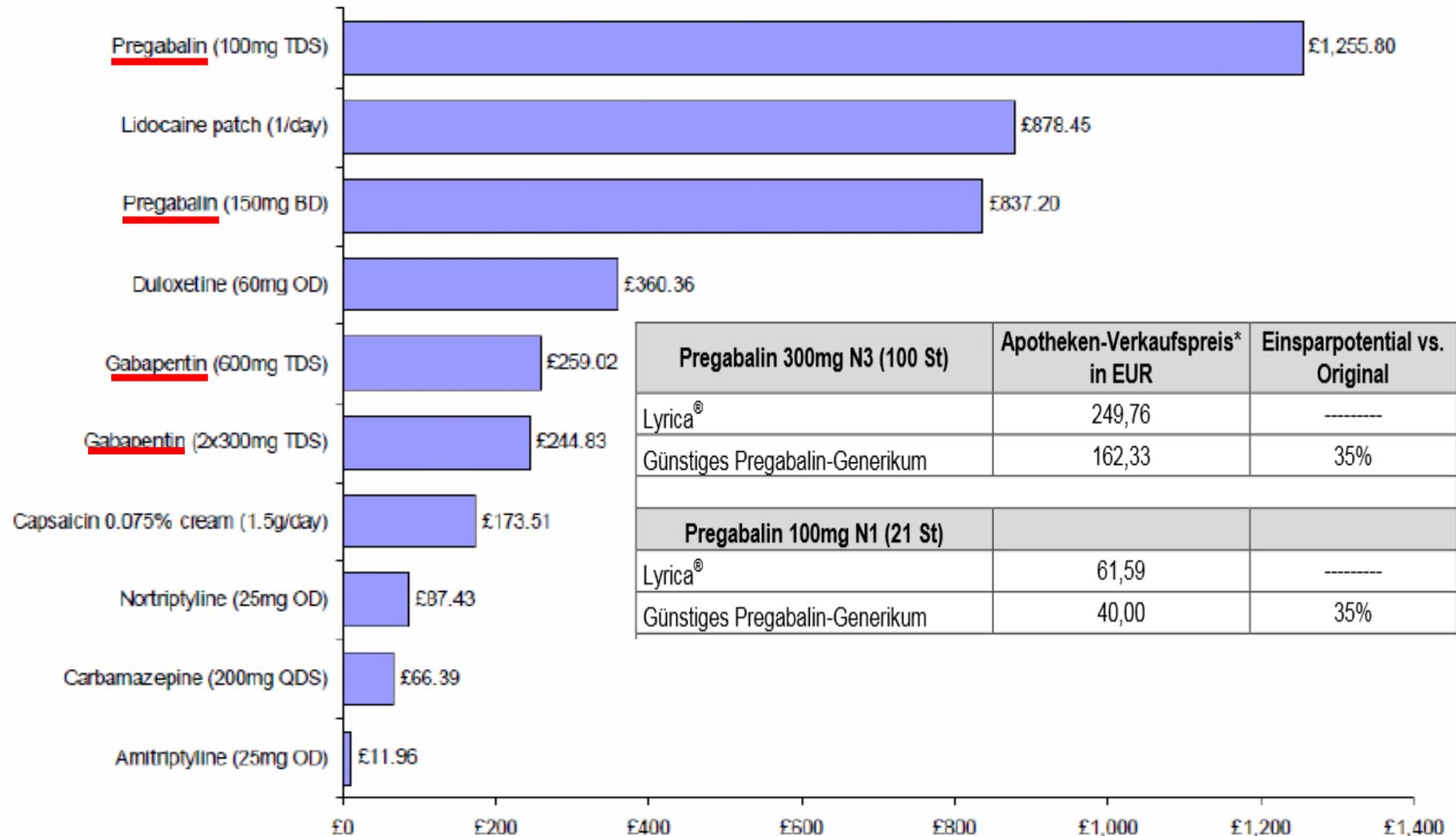
Akut
analgetisch

Chronisch
Speicher- Entleerung von
NA und 5-HT (Serotonin)

Trizyklischen AD
SNRI
hemmen Wiederaufnahme

Preis für Jahresbehandlung

January 2011: Neuropathic pain - cost of 1 year's treatment

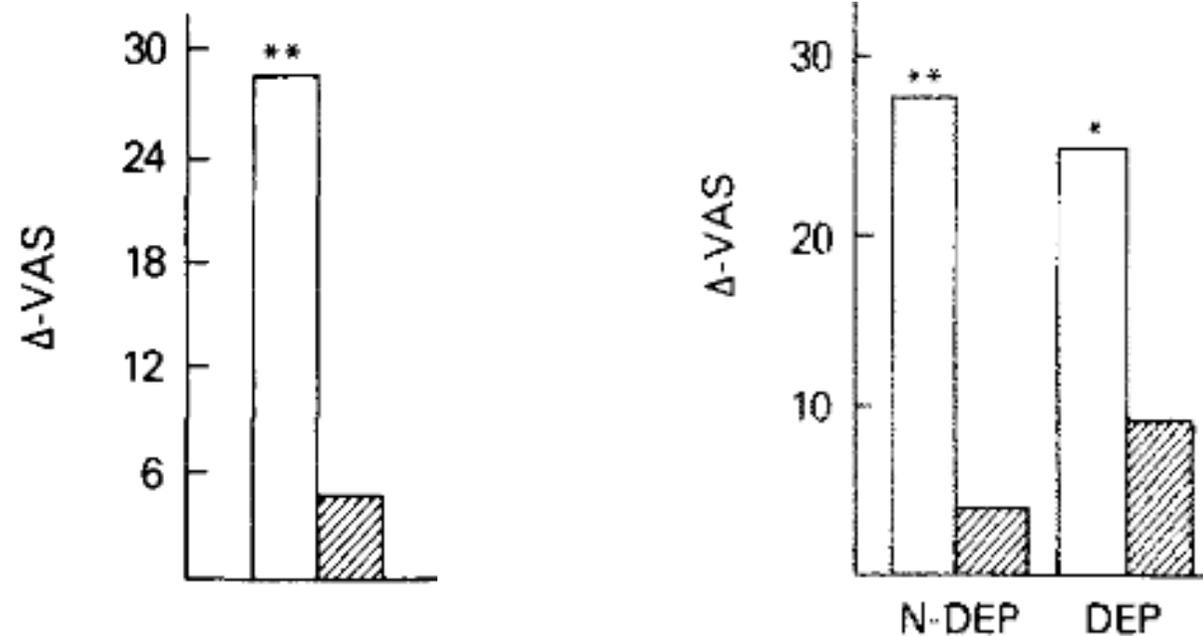


Doses given do not imply therapeutic equivalence. Individual responses and prescribed doses vary substantially in the management of neuropathic pain

Analgetische Trizyklika

The analgesic effect of amitriptyline
on chronic facial pain

Pain, 31 (1987) 199–209



Pharmacological profile of antidepressant drugs for myogenic/ neuropathic pain

		TCA		SNRI	DNRI	SSRI
		Amitriptyline Imipramine Clomipramine	Nortriptyline Desipramine Maprotiline	Venlafaxine Duloxetine	Bupropion	Fluoxetine Paroxetine Citalopram
Reuptake inhibition	Serotonin	+	-/(+)	+	-	+
	Noradrenaline	+	+	+	+	-
	Dopamine	-	-	-	+	-
Ion channel blockade	Sodium	+	+	(+)/-	?	(+)/-/?
	Calcium	+	+	?	?	?
Inhib. microglia	P2X	+				

TCA=tricyclic antidepressants, SNRI=serotonin noradrenaline reuptake inhibitors, DNRI=dopamine noradrenaline reuptake inhibitors, SSRI=selective serotonin reuptake inhibitors.

+: action present.

(+): action weak.

-: action not present.

?: not known.

modified after Søren H. Sindrup & al., *Pharmacology & Toxicology* 2005

Trizyklika (TCA) & Schmerztherapie

- **Amitriptylin (Saroten®)**
- **Nortriptylin (Nortrilen®)**



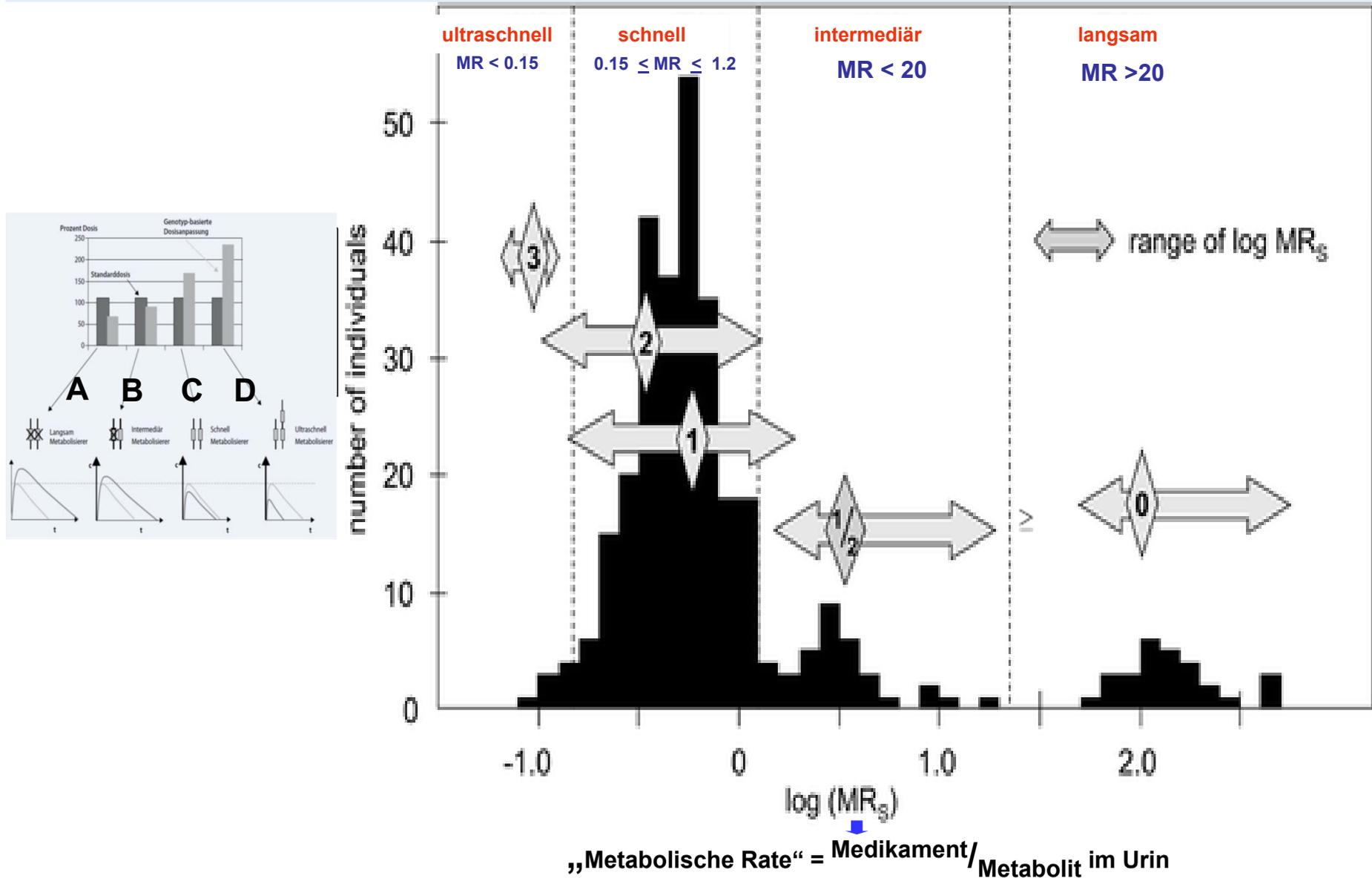
Für analgetische Indikation:

- **10mg abends x 1Wo, dann**
- **20mg abends x 1Wo, dann**
- **30mg abends bis Kontrolle**
(antidepressive Dosis: 150-200mg)

Cave bei:

- Arrhythmie
- Glaukom
- Harnretention

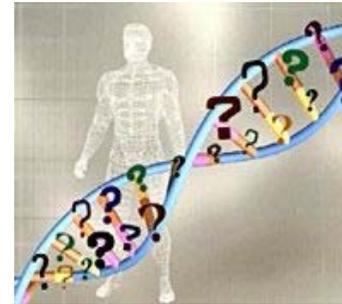
Verteilung des P450-Cytochrom 2D6 Gens europäische Population (N=316)



Trizyklika (TCA) & Schmerztherapie

Nebenwirkungen:

- orthost. Hypotonie
- Xerostomie
- Obstipation
- (morgendliche) Schläfrigkeit
- Gewichtszunahme



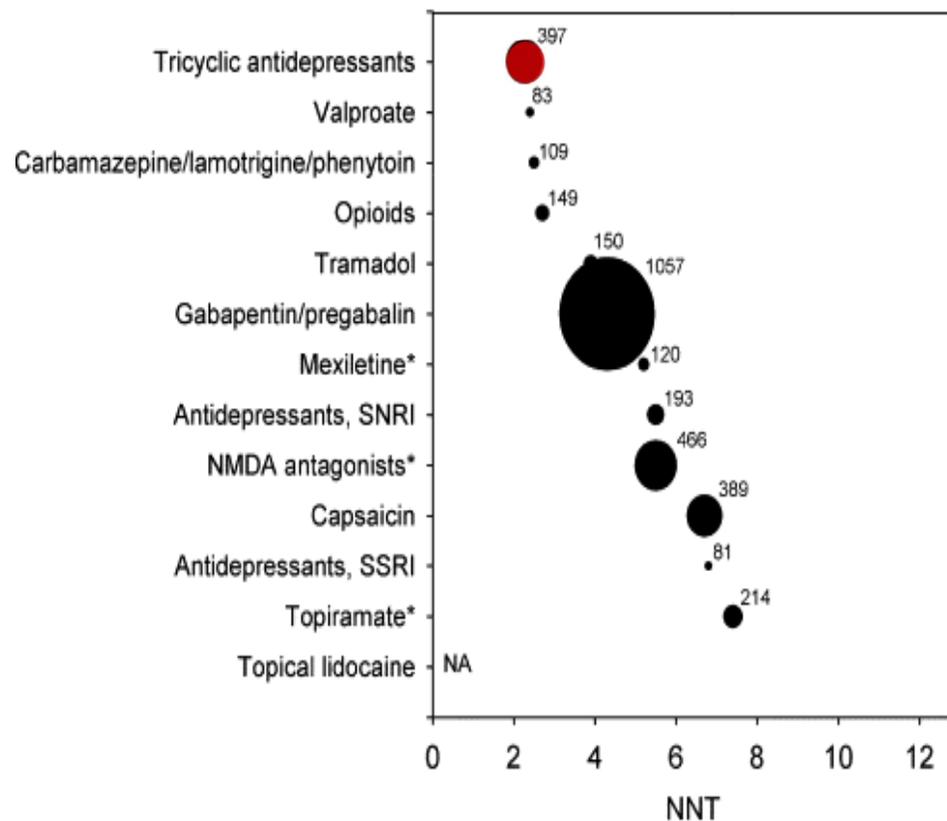
Med. Überwachung:

- Leberfunktion

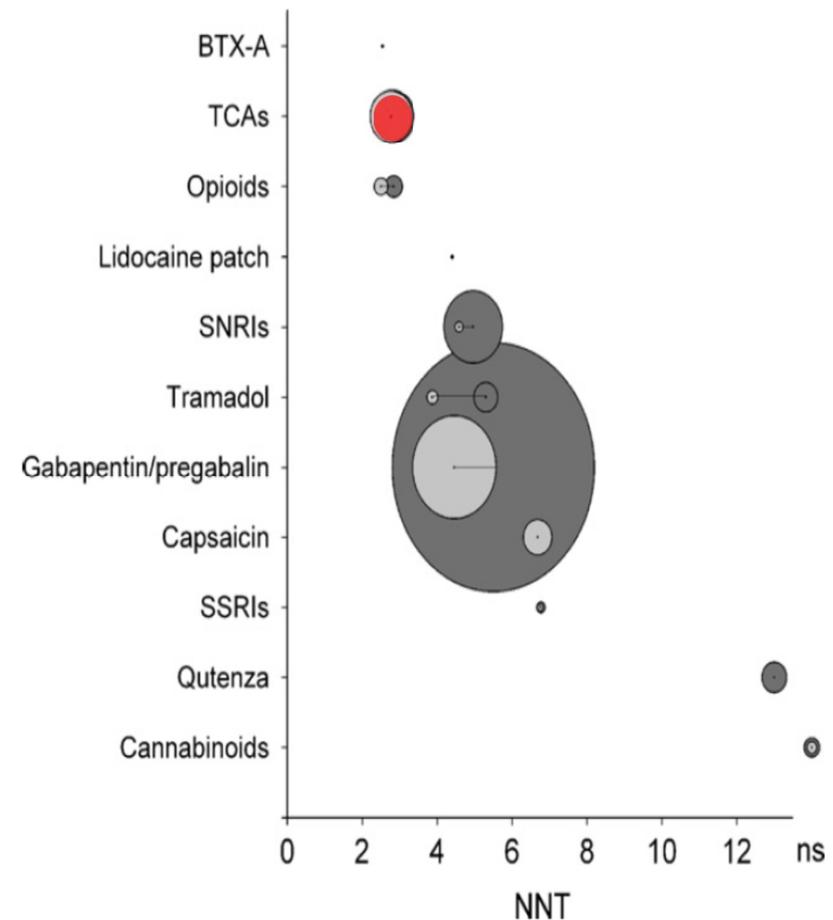
Schwangerschaft / Stillzeit:

- Amitryptilin 25-50mg sicher

Number Needed to Treat (NNT) bei neuropathischen Schmerzen



Finnerup NB et al. PAIN
2005

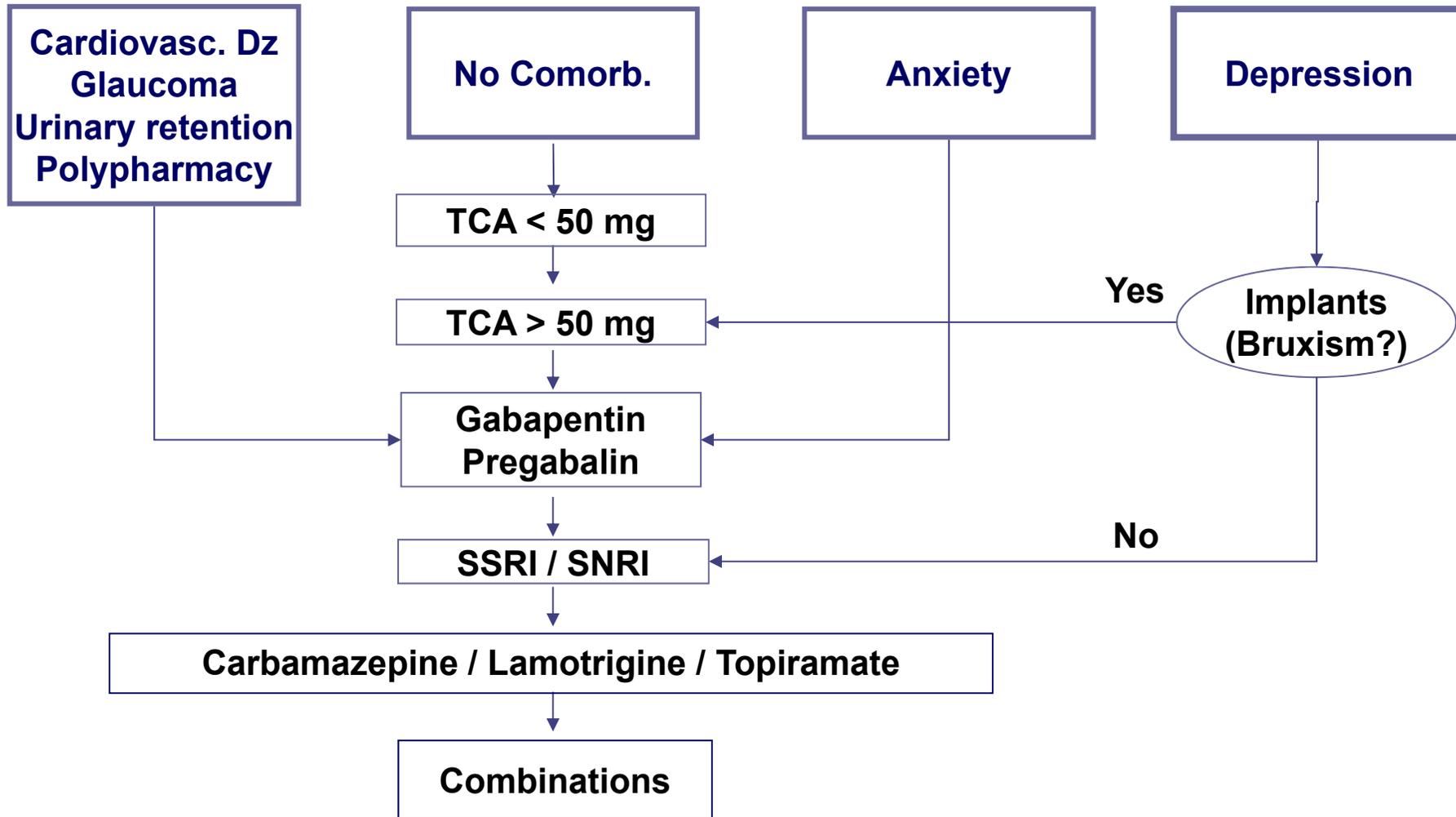


Finnerup NB et al. PAIN
2010

NNT: Notwendige Patientenzahl, um bei EINEM eine mind. 50%-ige Schmerzlinderung zu erreichen.

(Die grauen Kreise bei 2010 bilden die Befunde von 2005 ab.)

Pharmacotherapeutic algorithm for neuropathic / myogenic pain



CYP2C9 metabolized: Diclofenac, Ibuprofen, Naproxen and Piroxicam

CYP2D6 metabolized: Amitriptyline, Nortriptyline, Doxepin, Imipramin

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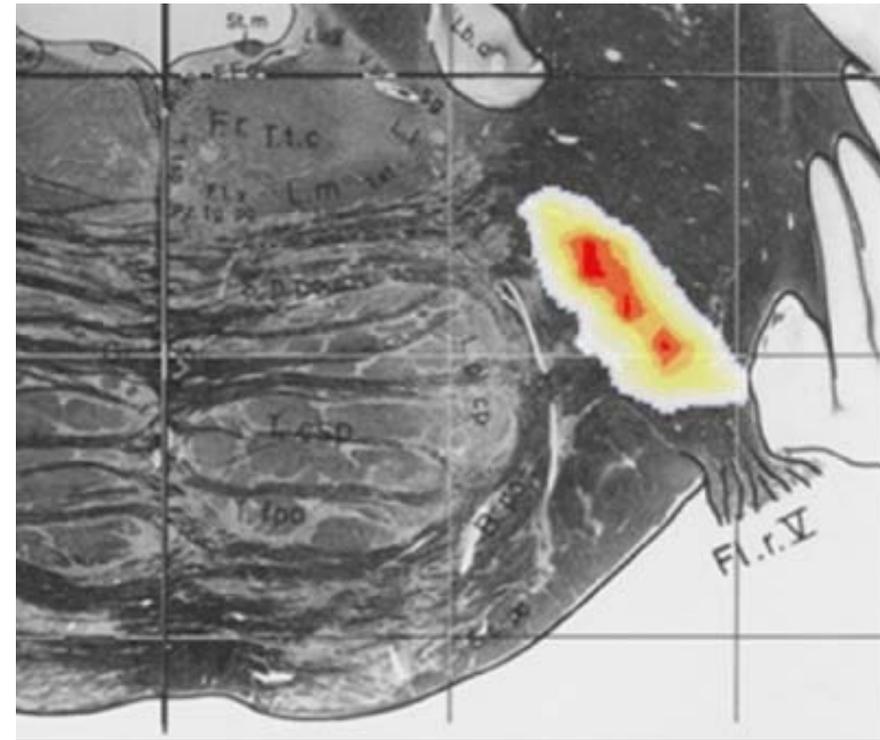
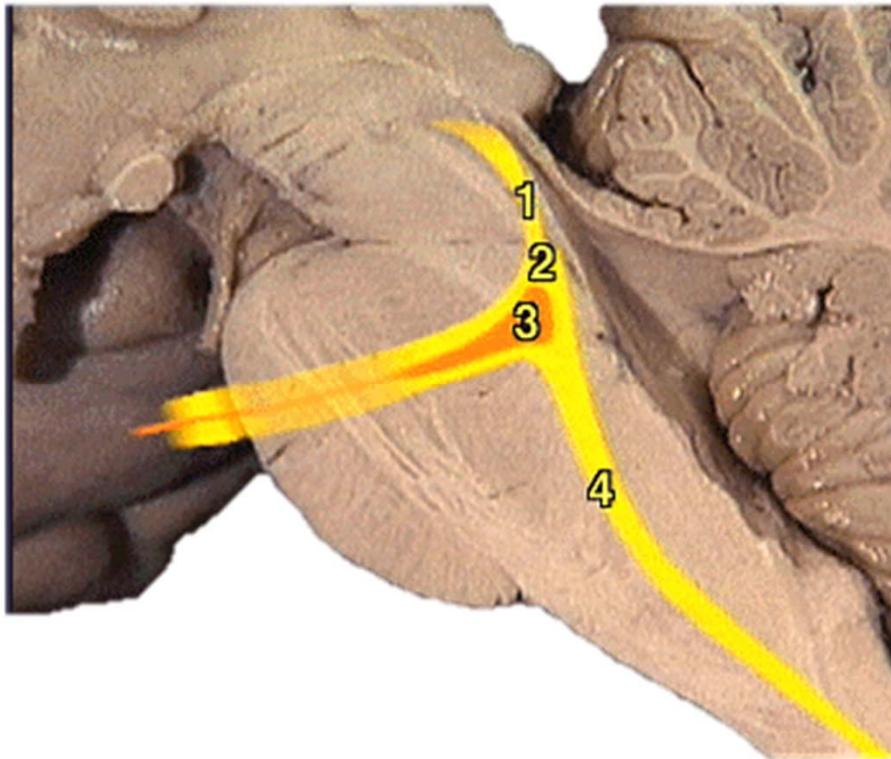
13.1.2.3 Painful post-traumatic trigeminal neuropathy

→ attributed to **multiple sclerosis (MS)** plaque

13.1.2.5 Painful trigeminal neuropathy attributed to space-occupying lesion

13.1.2.6 Painful trigeminal neuropathy attributed to other disorder

TN in Multiple Sklerose



Intrapontine area of maximal probability of lesion in MS patients with TN (N=50; voxel-based analysis of the MRI)

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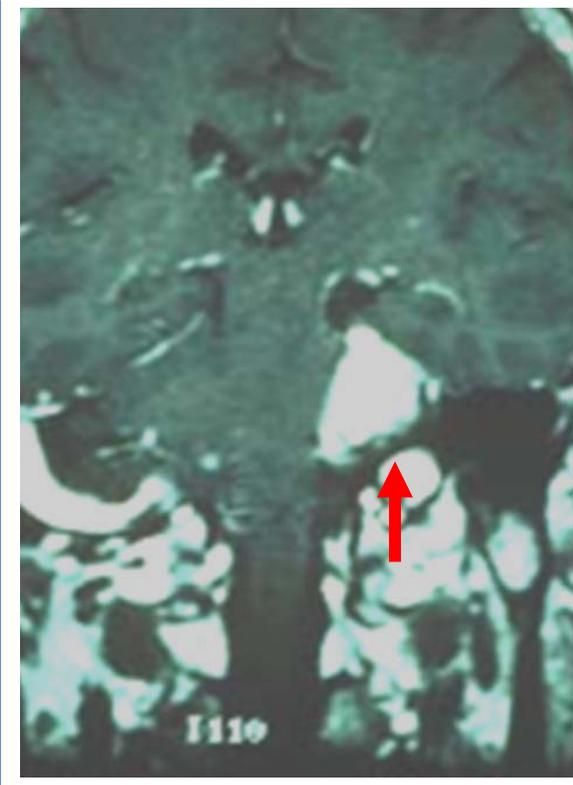
Raumforderung → Neuropathie



**Kleiner Infarkt
laterale Pons**

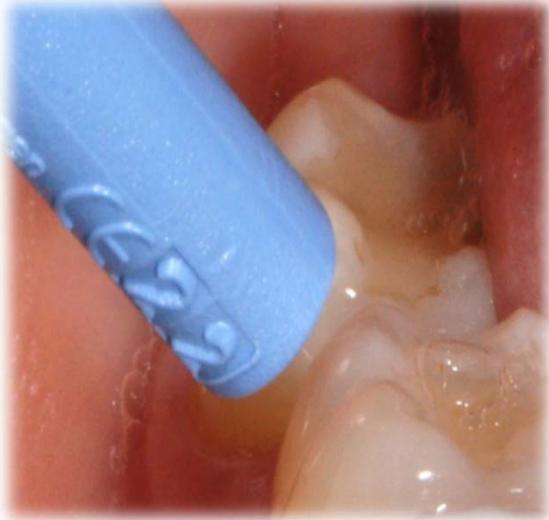


**Kompression
durch
Gefäßdilataion**

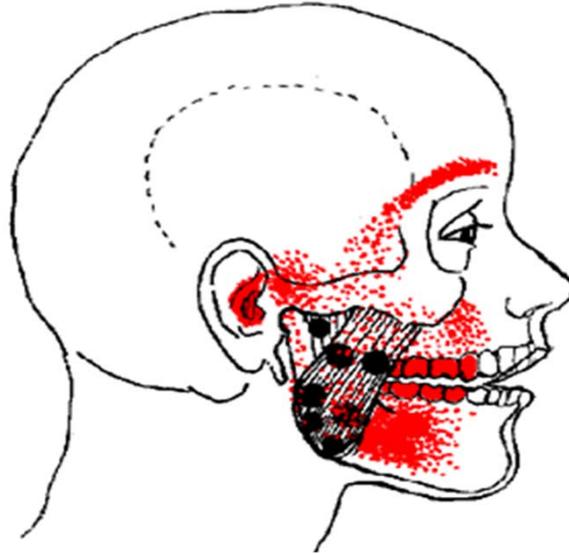
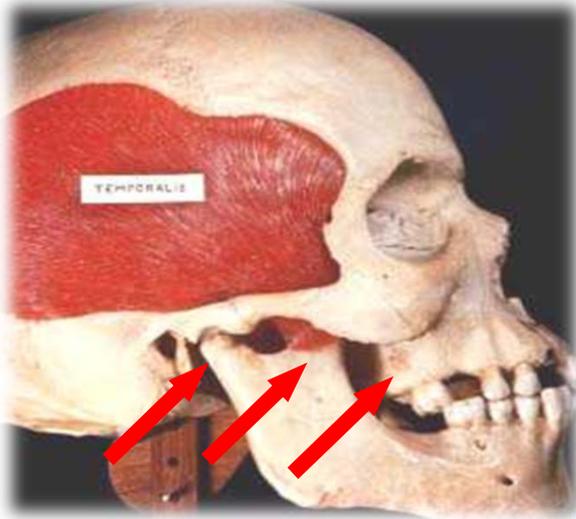


Meningeom

Relevanz *klinischer* Befundung



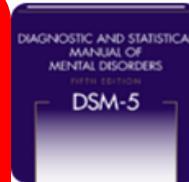
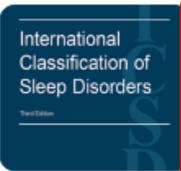
Relevanz *klinischer* Befundung



Auf den Punkt gebracht



Klassifikationssysteme Zahnmed.



Kontext

- ↗ Tonus
- Kaugummi kauen
- Parafunktion
- Musikinstrument

Kontext

- Stress
- Erwartungen
- Zeitmangel
- Konflikte
- Finanznot
- Verlusterlebnis

Blitzartige Schmerzen → MRT

Anamnese

Befundung

Klinische
Diagnose(n)

Zusatz-
Ablärung(e)

Diagnose
festigen

Reevaluation
(unter Therapie)

Orofaziale Schmerzen haben viele Gesichter



Zahnmedizin

CMD

Neurologie

Mischformen