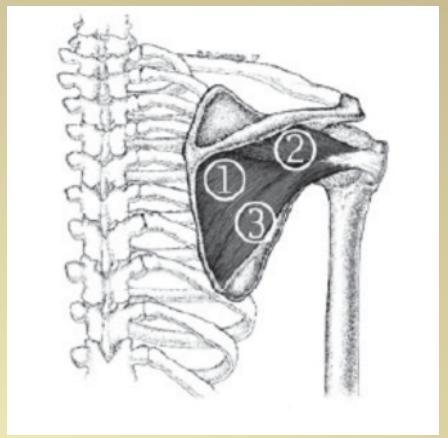


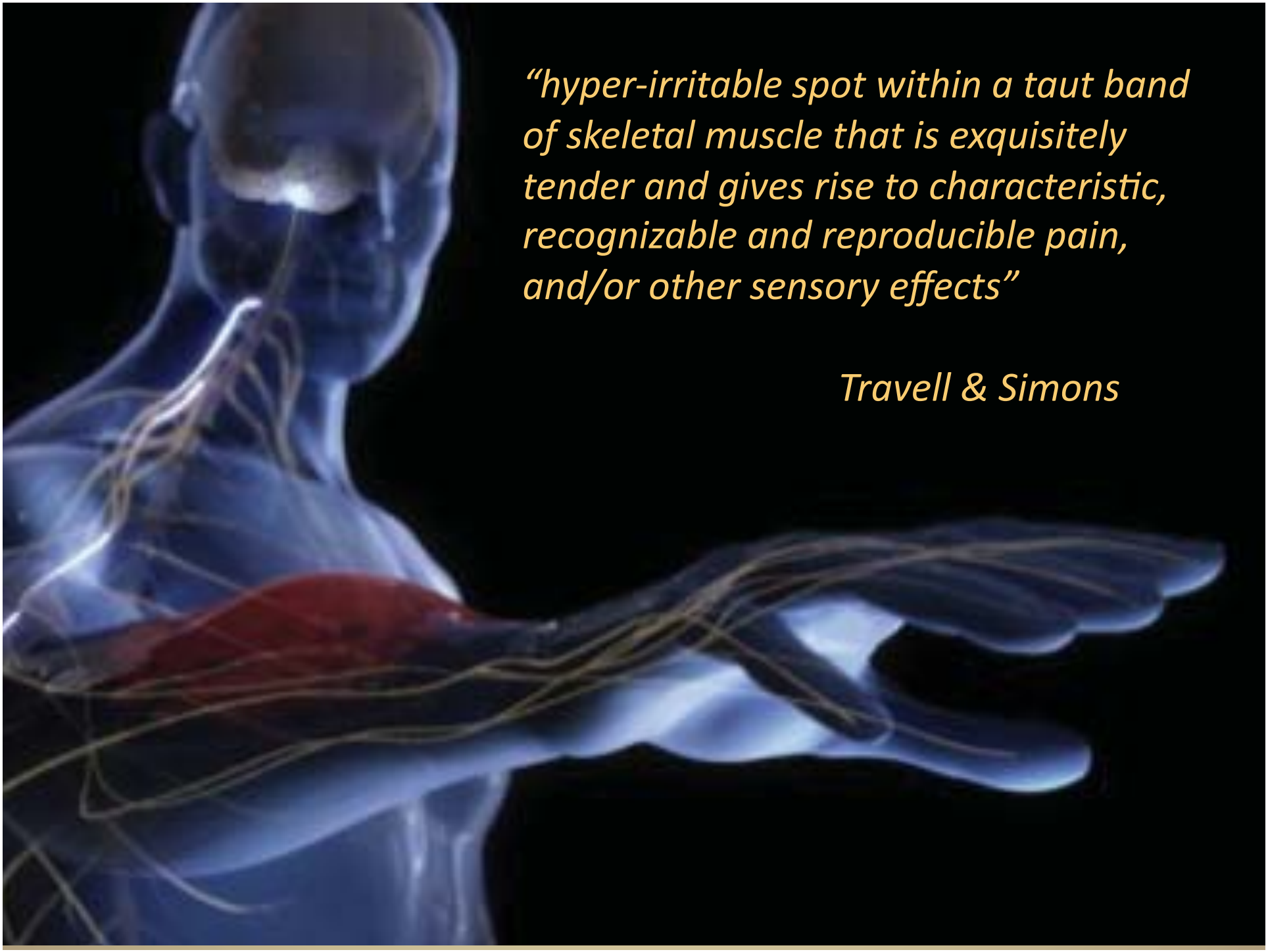
MYOFASCIAL TRIGGER POINTS:

Clinical Significance & Central Sensitization

Katie Adams, CNMT, CMTPT
360 NeuroMuscular Therapy

www360nmt.com


HAVE YOU SEEN THIS WIZARD?
AZKABAN PRISON
3 9 0
APPROACH WITH EXTREME CAUTION!
DO NOT ATTEMPT TO USE MAGIC AGAINST THIS MAN!
ARTHUR B. G
GENTS' FURNISHING
BOSTON.


“hyper-irritable spot within a taut band of skeletal muscle that is exquisitely tender and gives rise to characteristic, recognizable and reproducible pain, and/or other sensory effects”

Travell & Simons

ENIGMATIC

Shah J, Gilliams E. Uncovering the biochemical milieu of myofascial trigger points using in vivo microdialysis: An application of muscle pain concepts to myofascial pain syndrome. *JBodyw Mov Ther*. 2008;12:371-384.

Sikdar S, Shah JP, Gebreab T, et al. Novel applications of ultrasound technology to visualize and characterize myo-fascial trigger points and surrounding soft tissue. *Arch Phys Med Rehabil.* Nov 2009;90(11):1829-1838

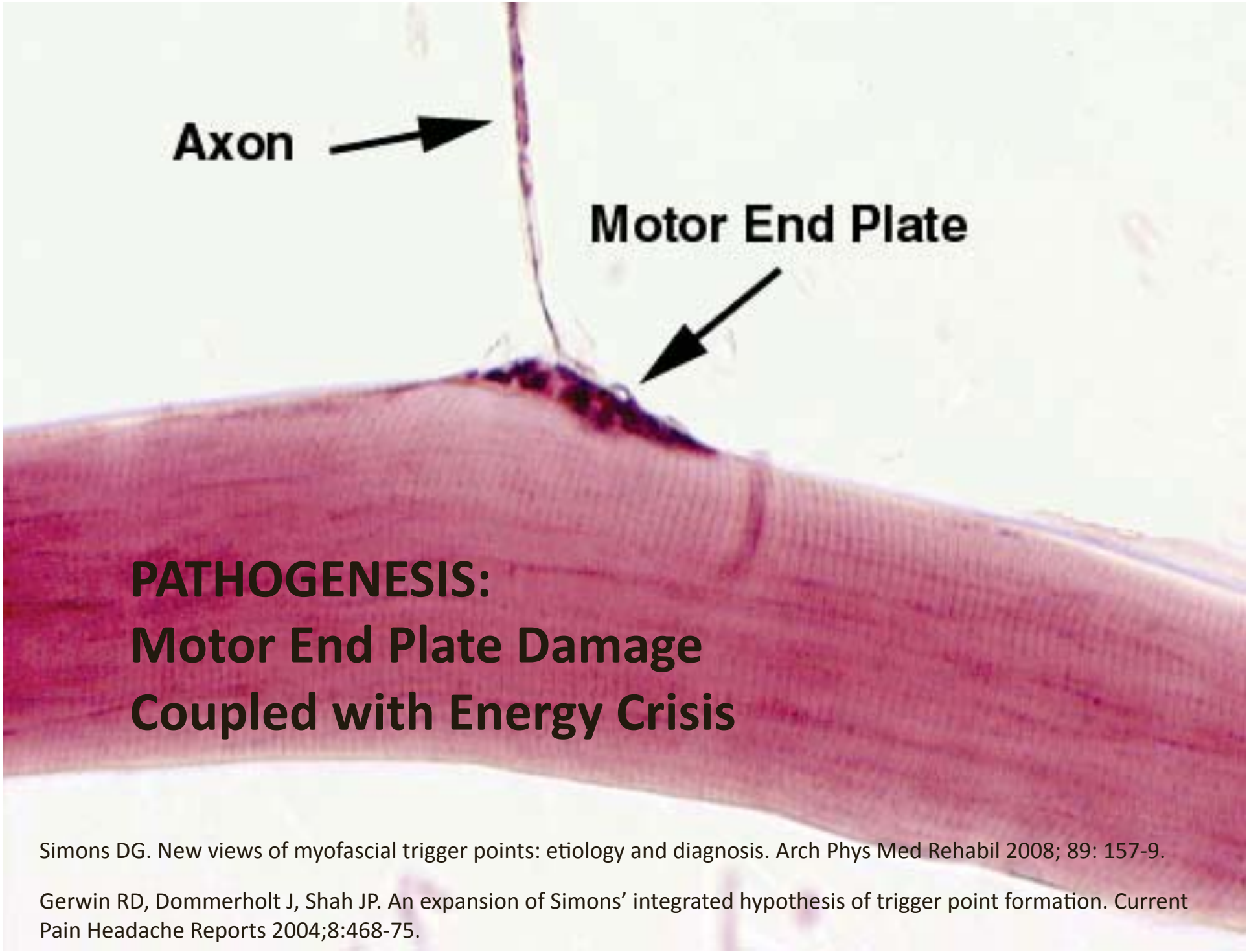
MYOFASCIAL PAIN SYNDROME

painful condition caused by active trigger points

Muscle Pain, 2010, Mense & Gerwin

- Acute Overuse
- Direct Trauma
- Faulty Biomechanics
- Posture Dysfunction
- Persistent Muscular Contraction
- Prolonged Immobility or Overuse
- Psychological Stress

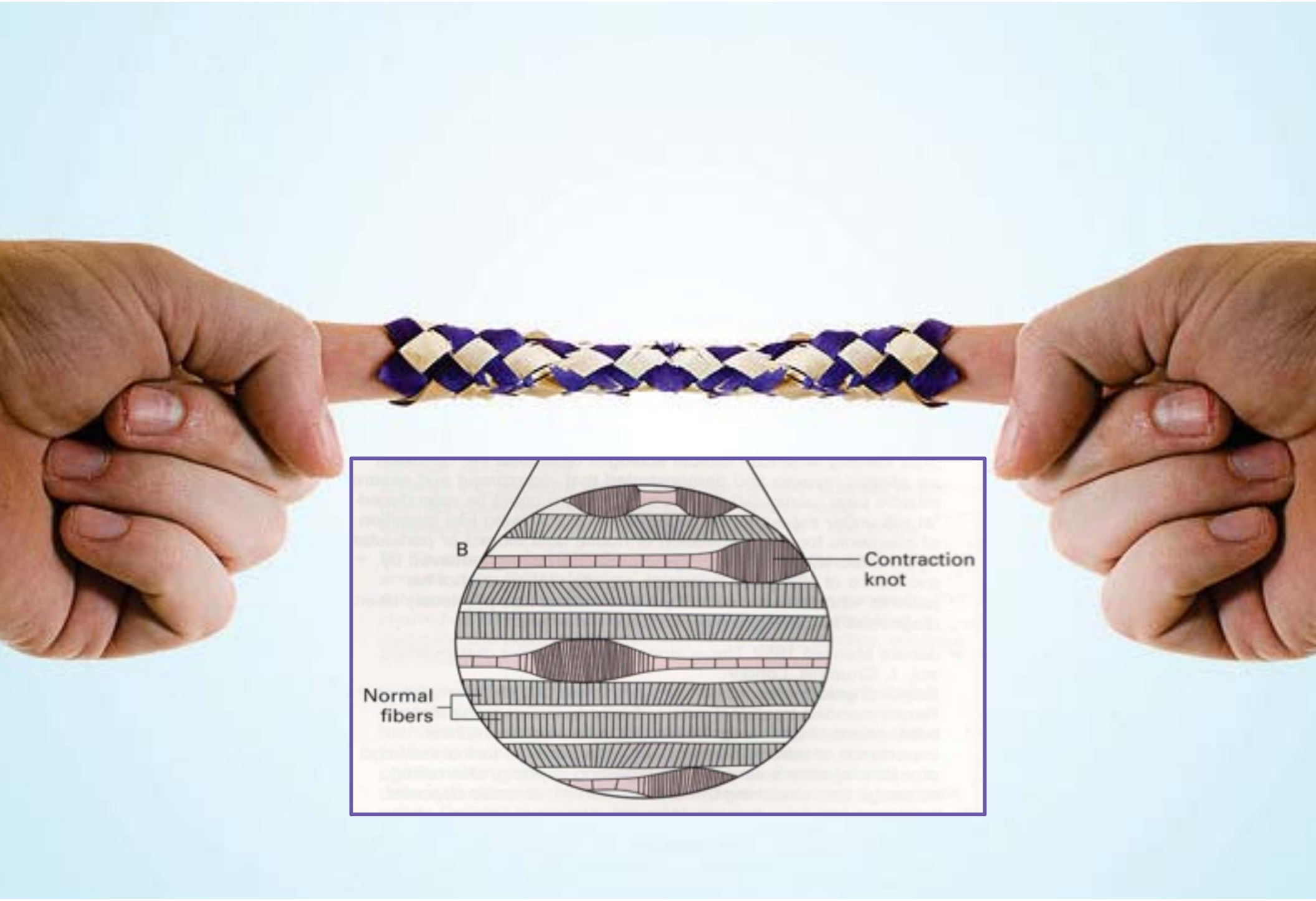
Dommerholt J, Huijbregts, P. *Myofascial Trigger Points: Pathophysiology and Evidence-Informed Diagnosis and Management,* (Jones and Bartlett, 2011).



PATHOGENESIS:
Motor End Plate Damage Coupled with Energy Crisis

Simons DG. New views of myofascial trigger points: etiology and diagnosis. Arch Phys Med Rehabil 2008; 89: 157-9.

Gerwin RD, Dommerholt J, Shah JP. An expansion of Simons' integrated hypothesis of trigger point formation. Current Pain Headache Reports 2004;8:468-75.


B
Contraction knot
Normal fibers

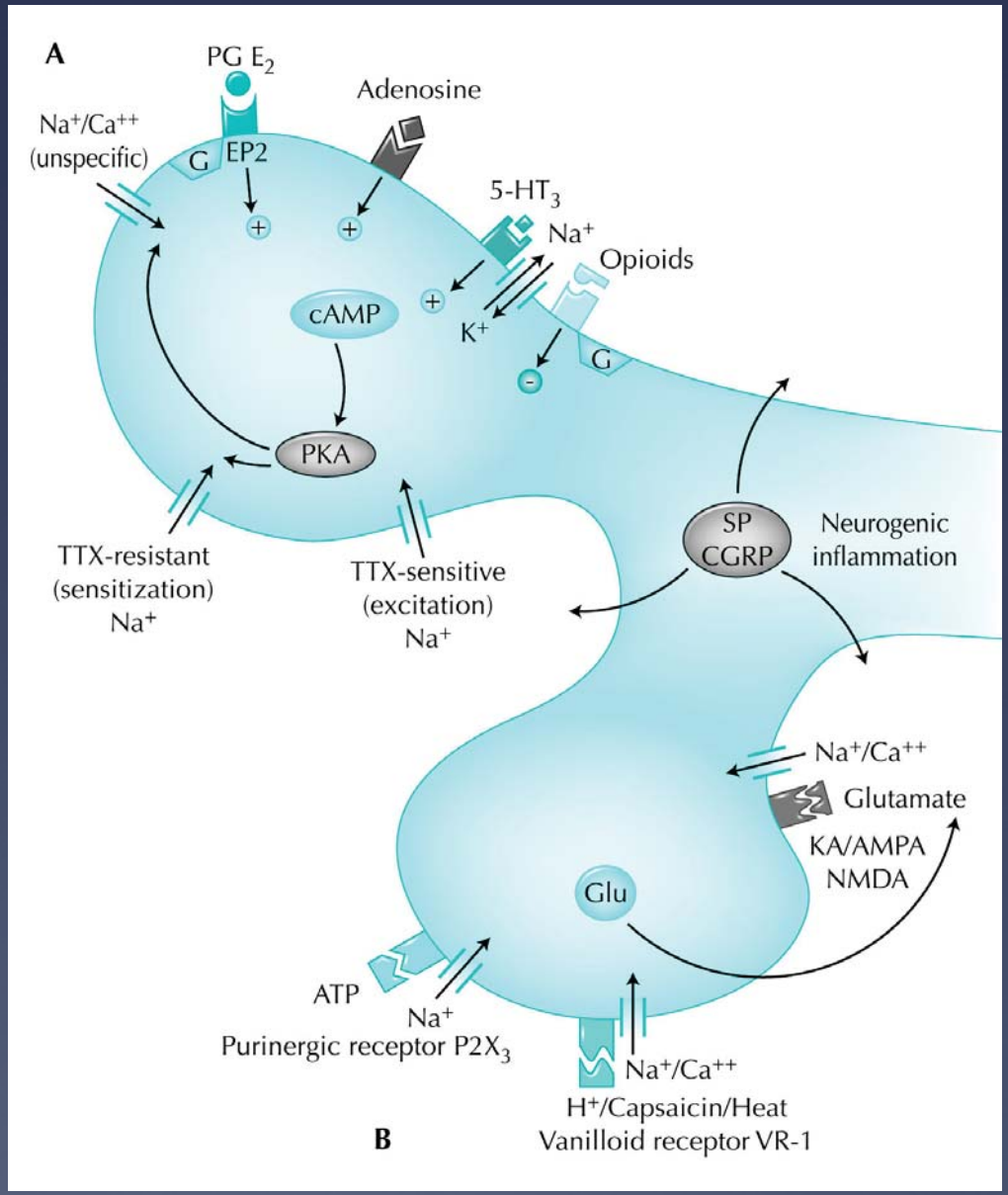
DOMMERHOLT

Trigger points are peripheral sources of persistent nociceptive input, which can excite muscle nociceptors. Nociceptive input from muscle is particularly effective in inducing neuroplastic changes in the spinal dorsal horn and likely in the brainstem.

Dommerholt J, Dry needling – peripheral and central considerations. *J Manual and Manipulative Therapy* 2011; 19:223-237.

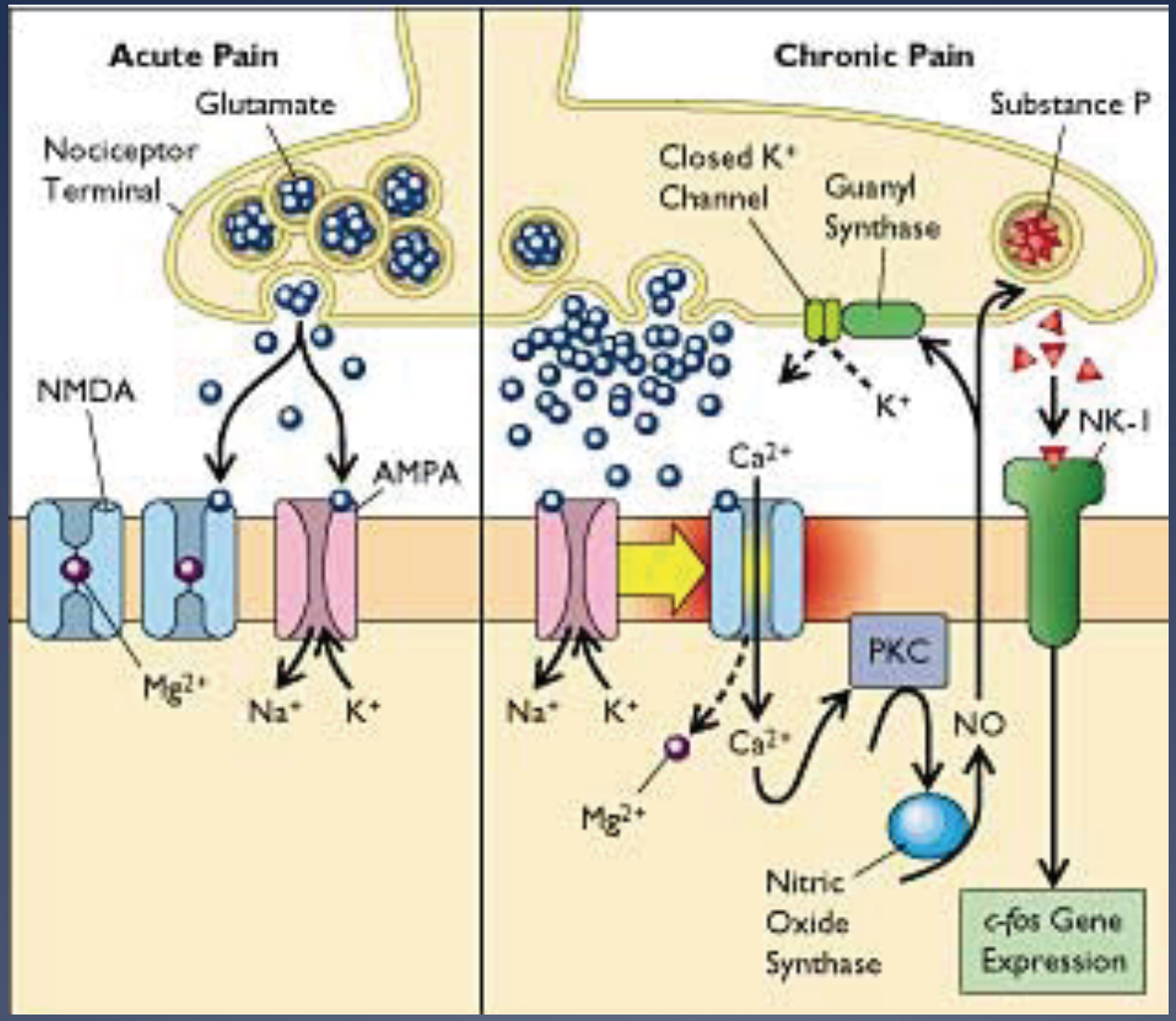
WIND UP

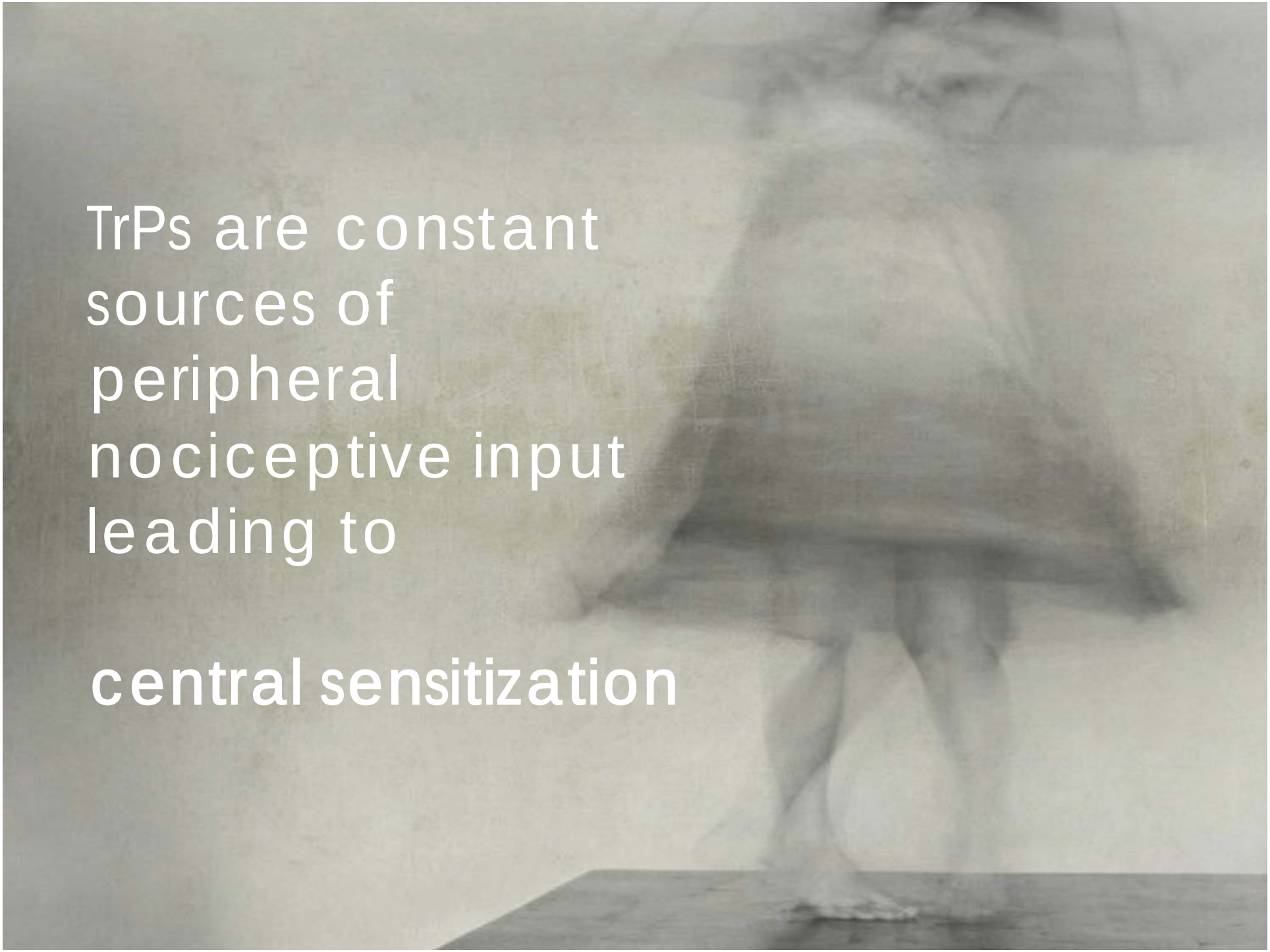
- Sustained noxious stimuli (Every 1-2 s)
- Persistent depolarization is first step in sensitization
- NMDA receptor



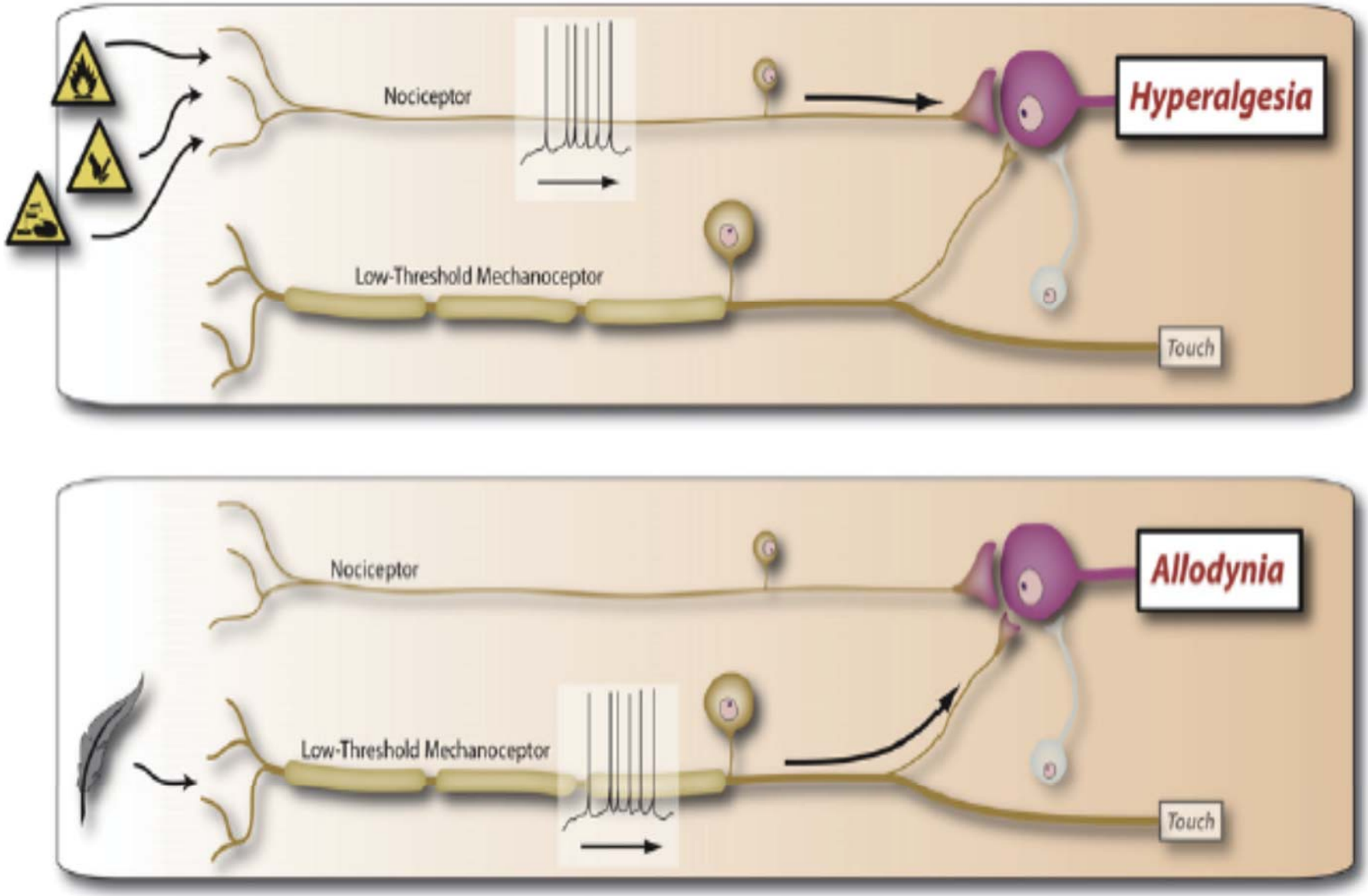
Mense: The Pathogensis of Muscle Pain, *Current Pain and Headache Reports 2003, 7:419-425*

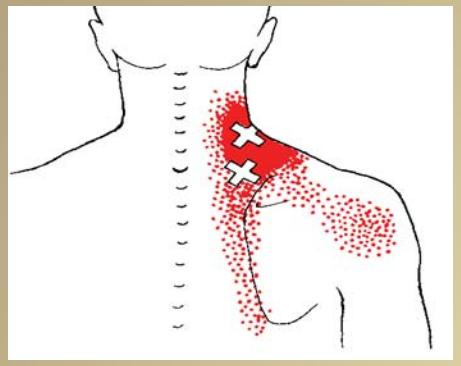
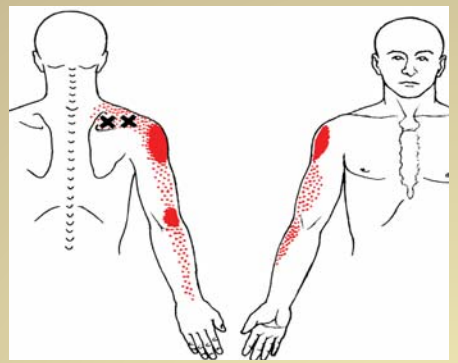
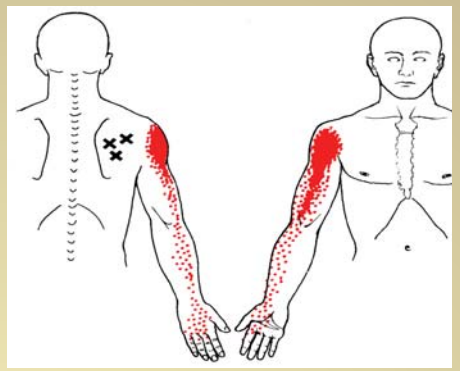
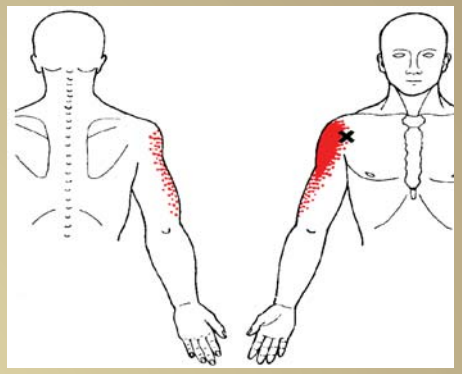
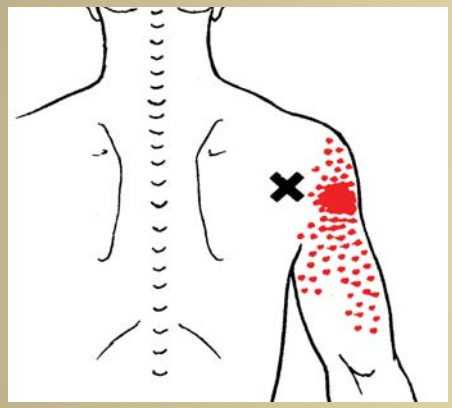
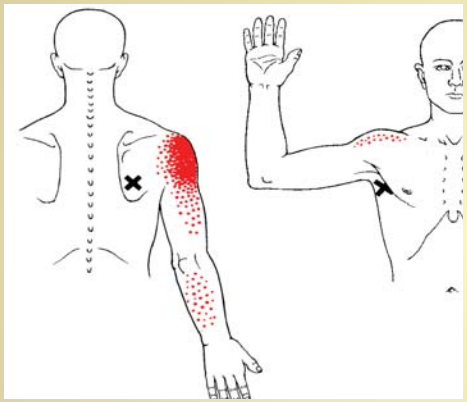
Central Sensitization




TrPs are constant
sources of
peripheral
nociceptive input
leading to
central sensitization

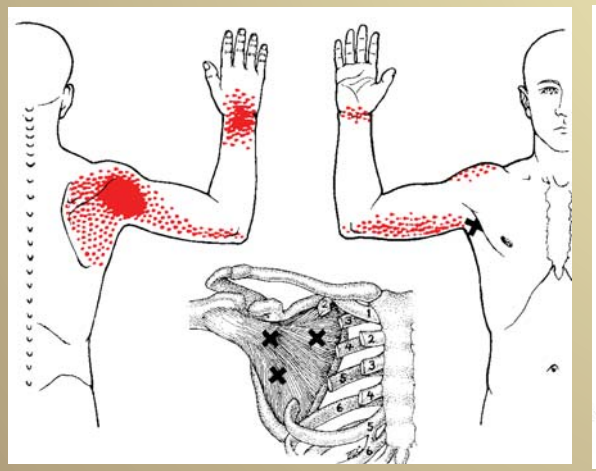
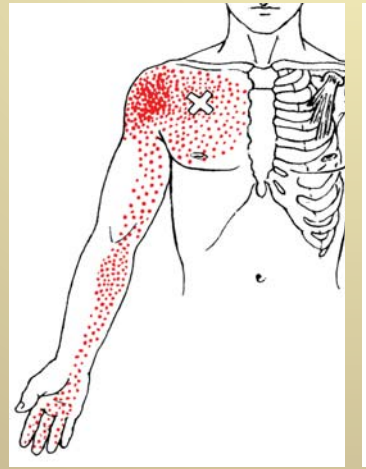
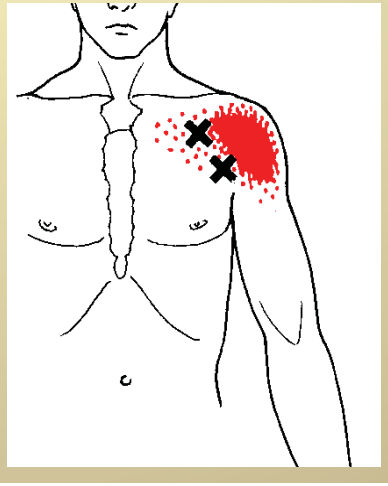
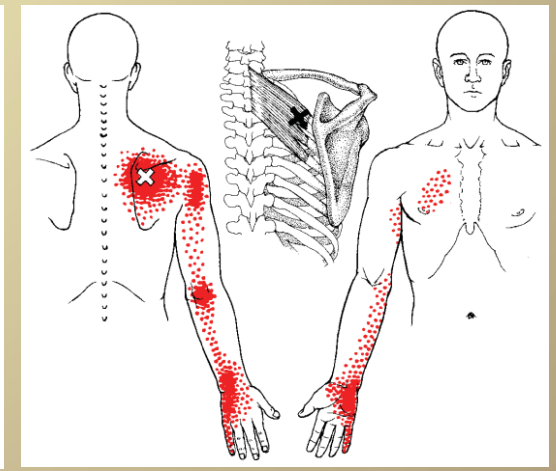
Central Sensitization

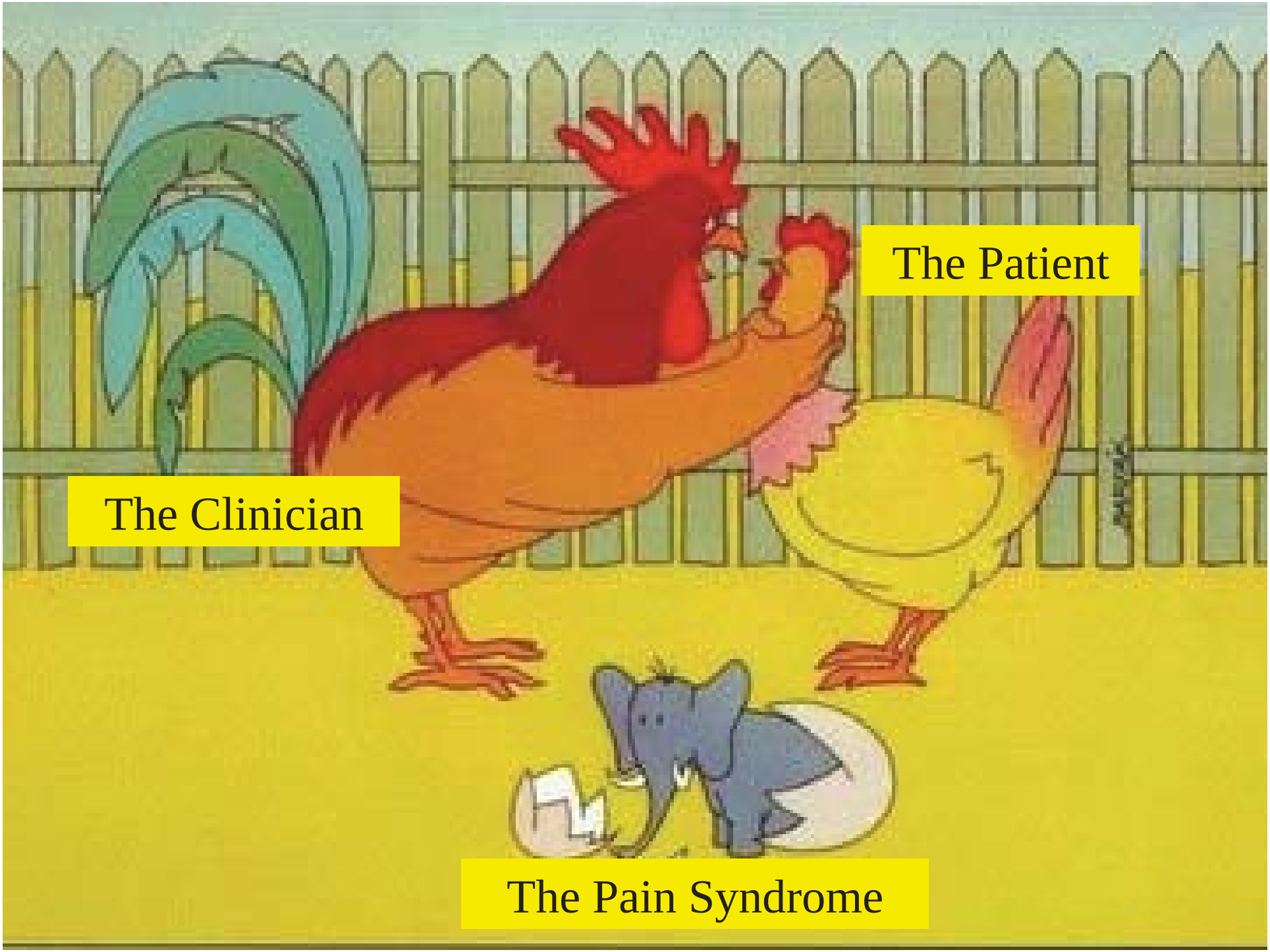


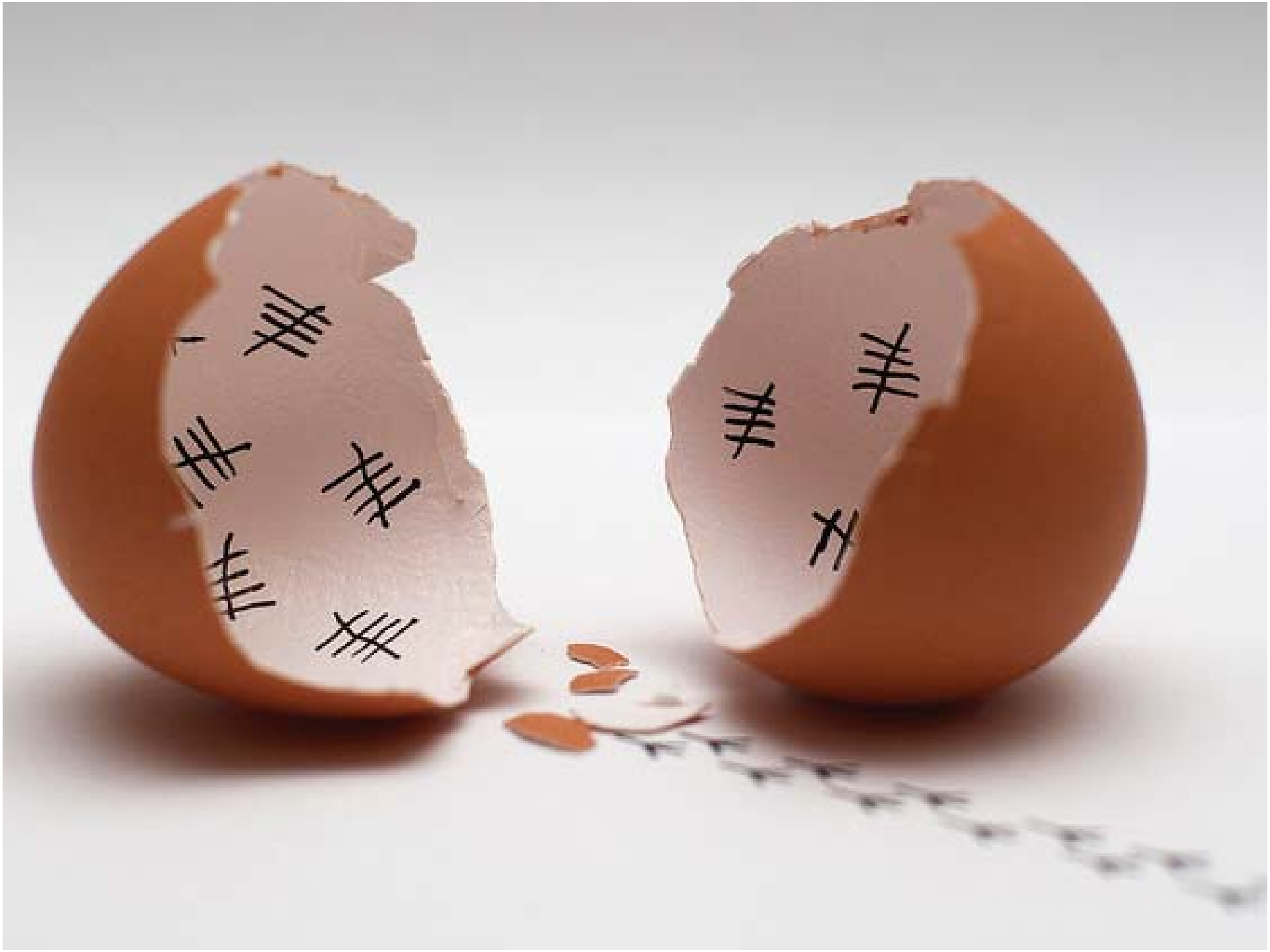







75%

Clinical Application of Neuromuscular Techniques, Vol. 1, the upper body, 2nd edn. L Chaitow, J DeLany, 2008. Churchill Livingstone/Elsevier, Edinburgh, p. 102

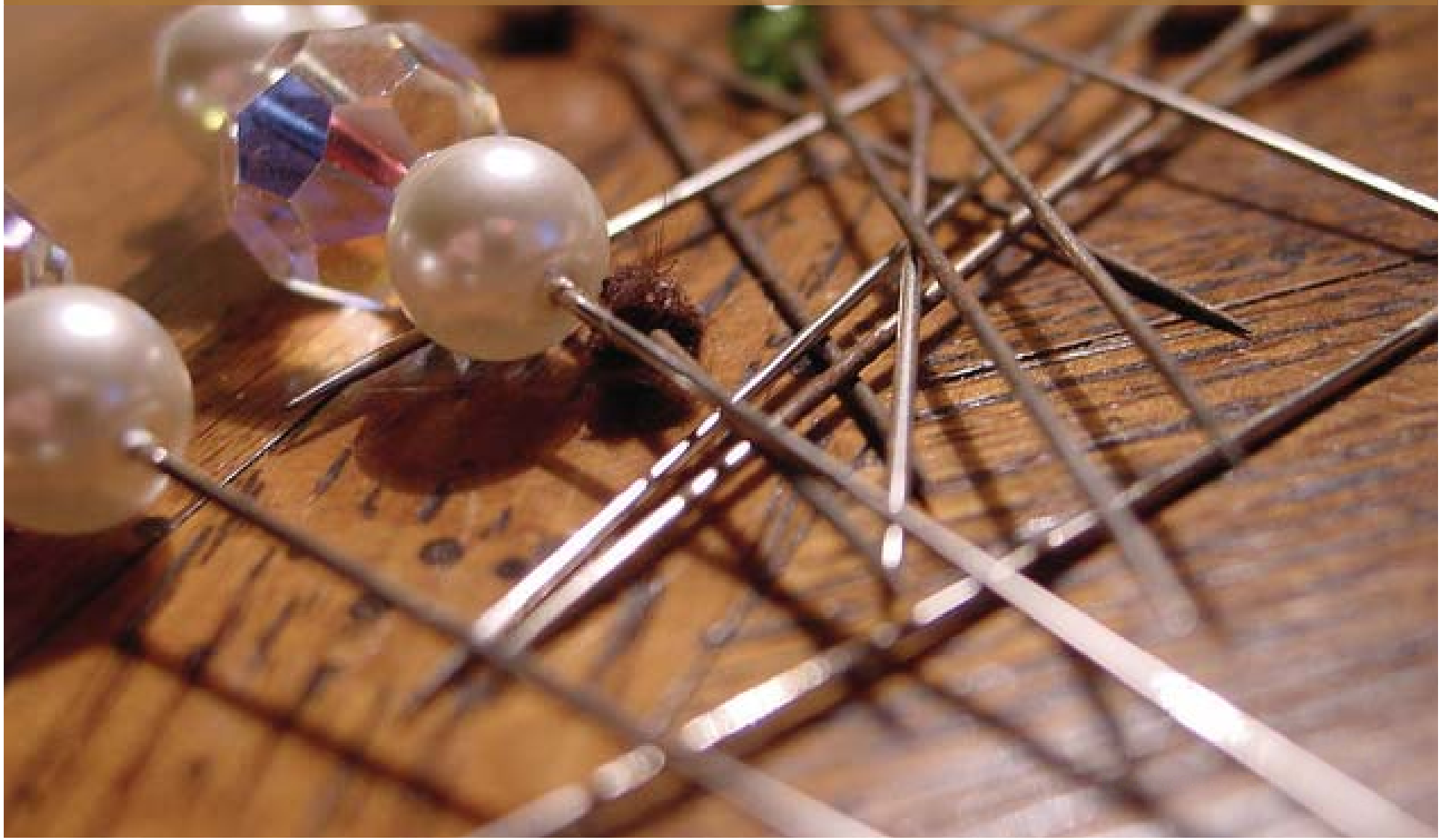






The Patient
The Clinician
The Pain Syndrome




TREATMENT
HAS TO
INTERRUPT
NOCICEPTIVE
SIGNALS

IN THE EARLY 1800's PHYSICIANS USED NEEDLES, INCLUDING LADIES' HAT PINS, TO TREAT TENDER POINTS IN THE LOW BACK REGION (CHURCHILL 1821; ELLIOTSON 1827; CHURCHILL 1828; OSLER 1912)



DRY NEEDLING AND/OR MANUAL TRIGGER POINT DE-ACTIVATION

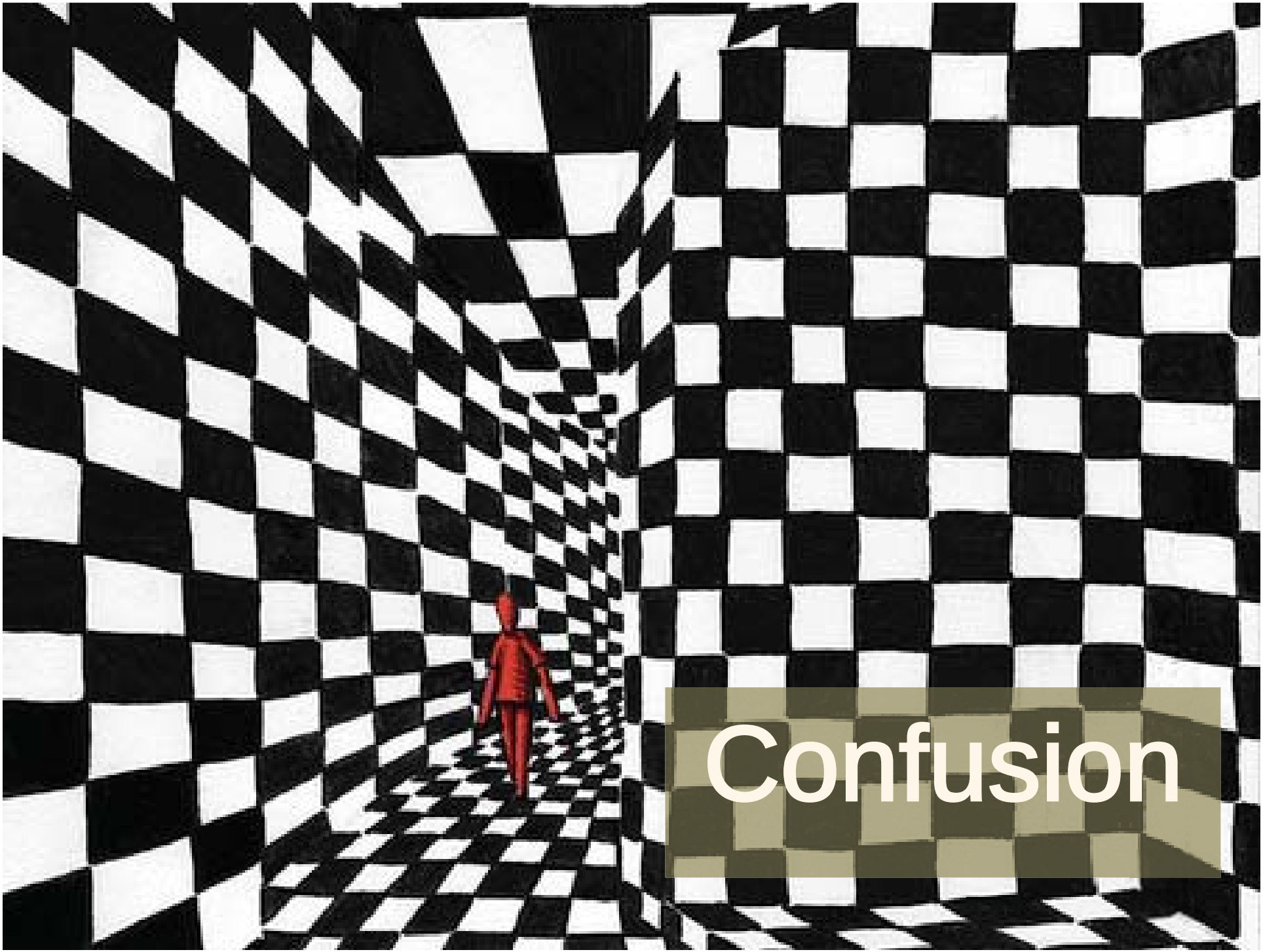
- reverses some aspects of Central Sensitization
- alters chemical environment of Trigger Points
- improves ROM
- improves muscle activation patterns

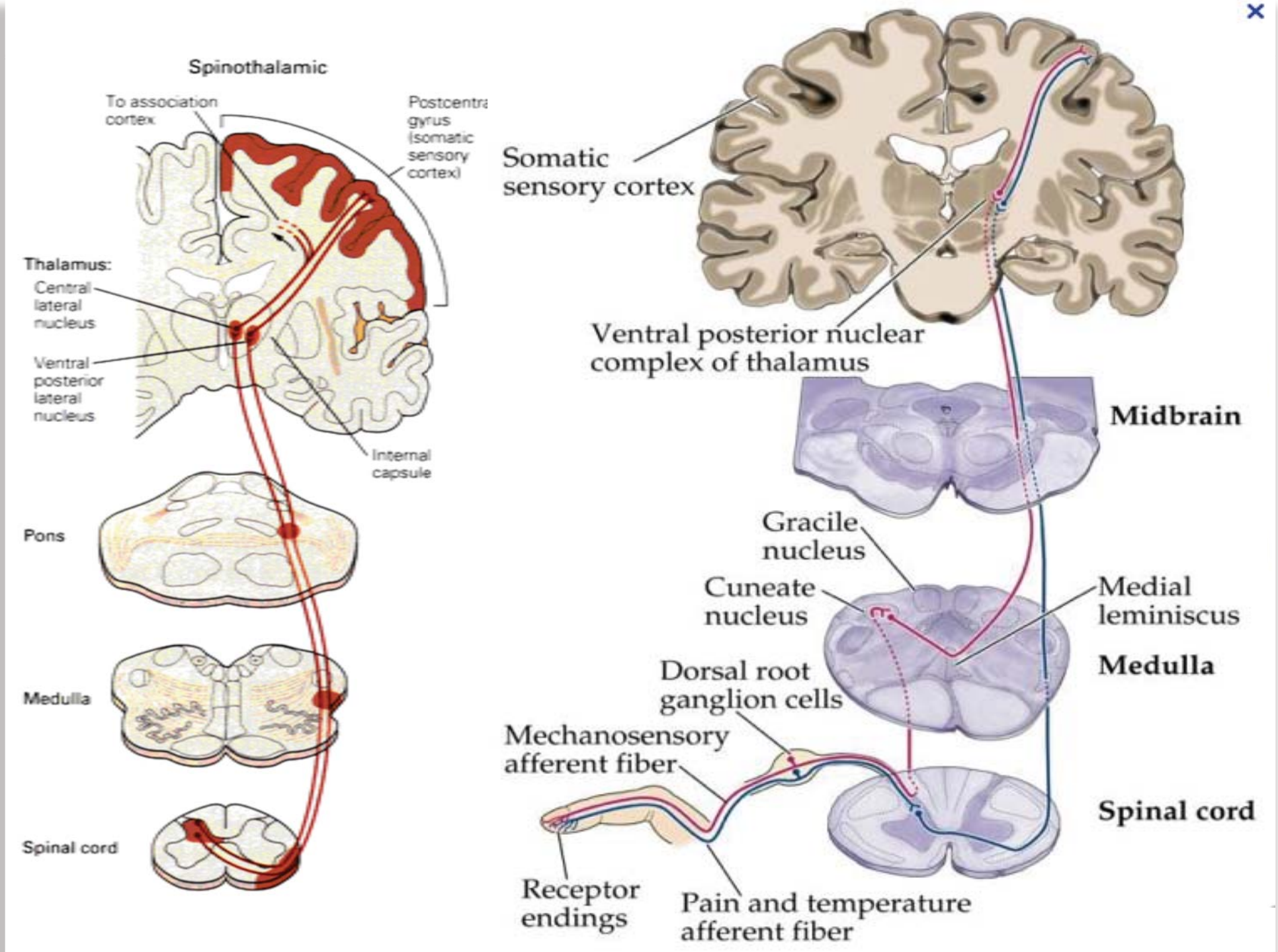
Dommerholt J, Huijbregts, P. *Myofascial Trigger Points: Pathophysiology and Evidence-Informed Diagnosis and Management,* (Jones and Bartlett, 2011) pp.129-153.

Lucas KR, Polus BI, Rich PS. Latent myofascial trigger points: Their effects on muscle activation and movement efficiency. *J Bodyw Mov Ther*. 2004;8:160-166

The Janet G. Travell, MD
Seminar Series℠

Dry Needling: Gluteus Medius


Confusion


Spinothalamic
To association cortex
Postcentral gyrus (somatic sensory cortex)
Thalamus:
Central lateral nucleus
Ventral posterior lateral nucleus
Internal capsule
Pons
Medulla
Spinal cord
Somatic sensory cortex
Ventral posterior nuclear complex of thalamus
Midbrain
Gracile nucleus
Cuneate nucleus
Medial leminiscus
Medulla
Dorsal root ganglion cells
Mechanosensory afferent fiber
Spinal cord
Receptor endings
Pain and temperature afferent fiber

Bjorkedal E, Flaten MA, Expectations of increased and decreased pain explain the effect of conditioned pain modulation in females. *J Pain Research 2012; 5:290-300.*

Change perception of pain

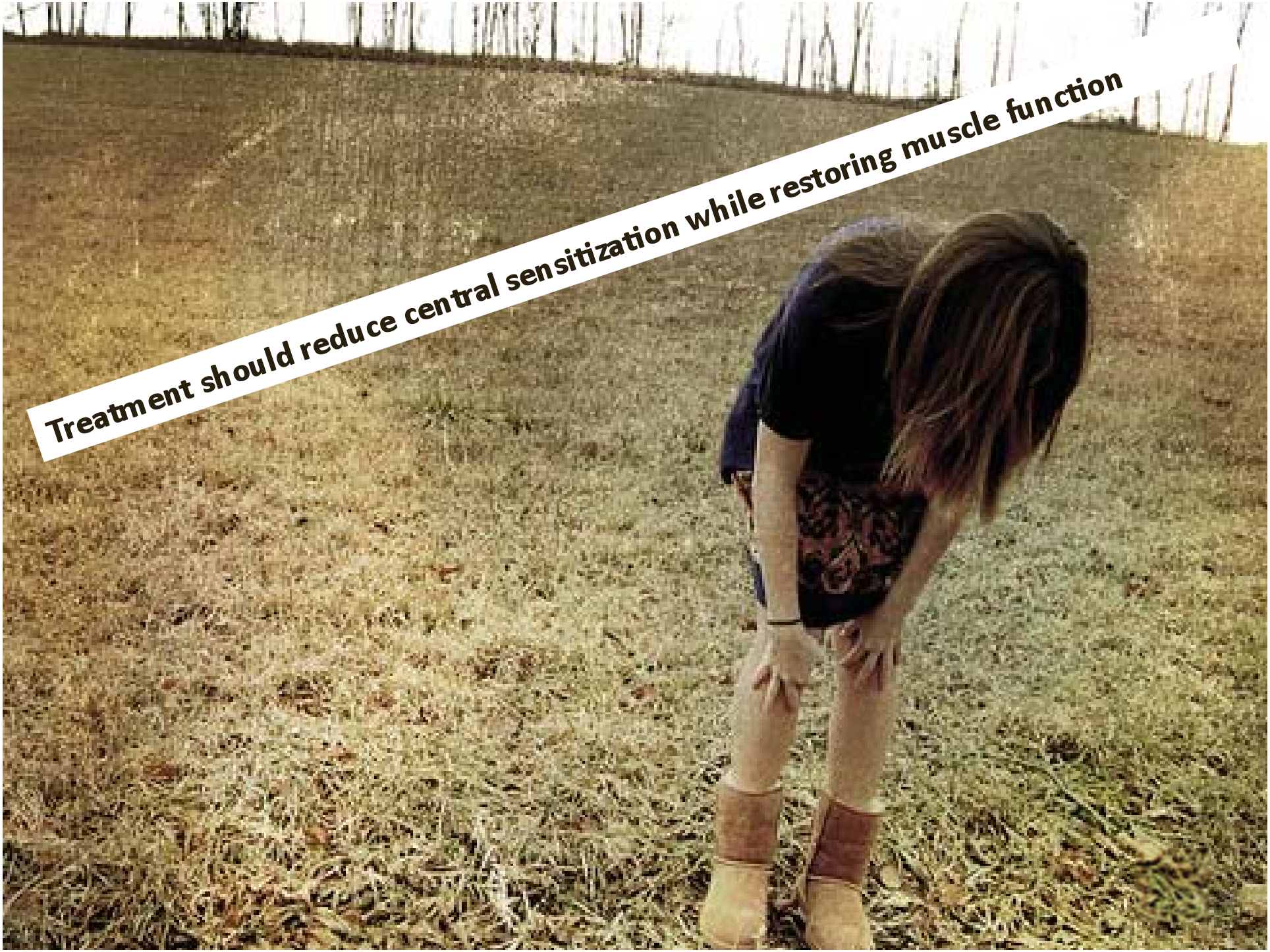
Provide counter-stimuli:

- Spiky tools
- Spray and stretch
- Ice & heat
- Vibration, jostling
- Rhythmic movement
- Breathwork
- Laughter

Trigger Point de-activation

- Flat compression
- Pincer palpation
- Myofascial release
- Reinforcement glides
- Passive stretching
- Active stretching


2007Nov18 23:26
Gen
SmP
L38
Local Twitch Response
Vastus lateralis
Left
.274
MI
0.5
1/2 Actual
Speed
3.9
2D
Gen
L/R
U/D
10
Biopsy
Dual

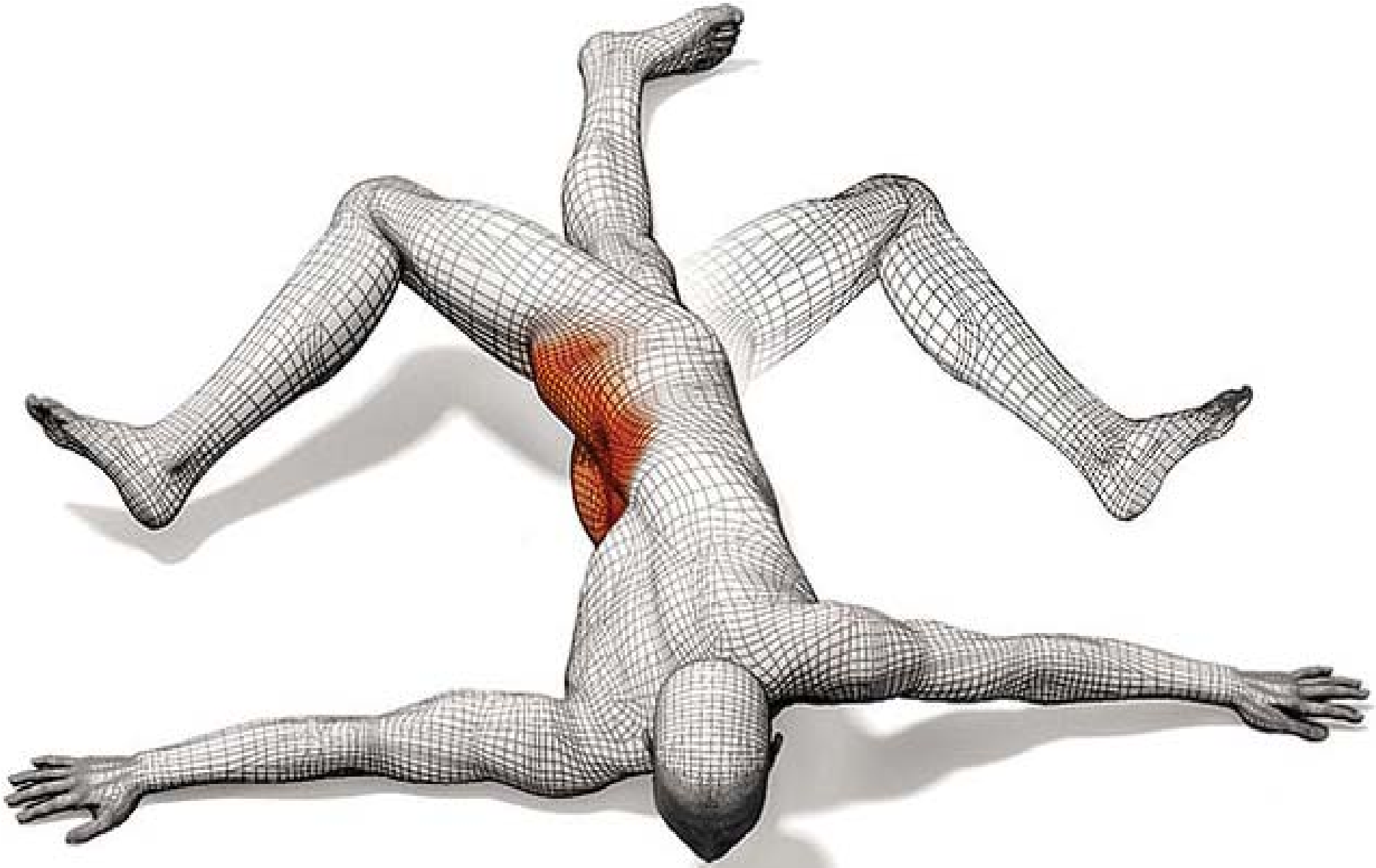

Treatment should reduce central sensitization while restoring muscle function


Provide stimulus the brain does not perceive as nociceptive

PATIENT EDUCATION

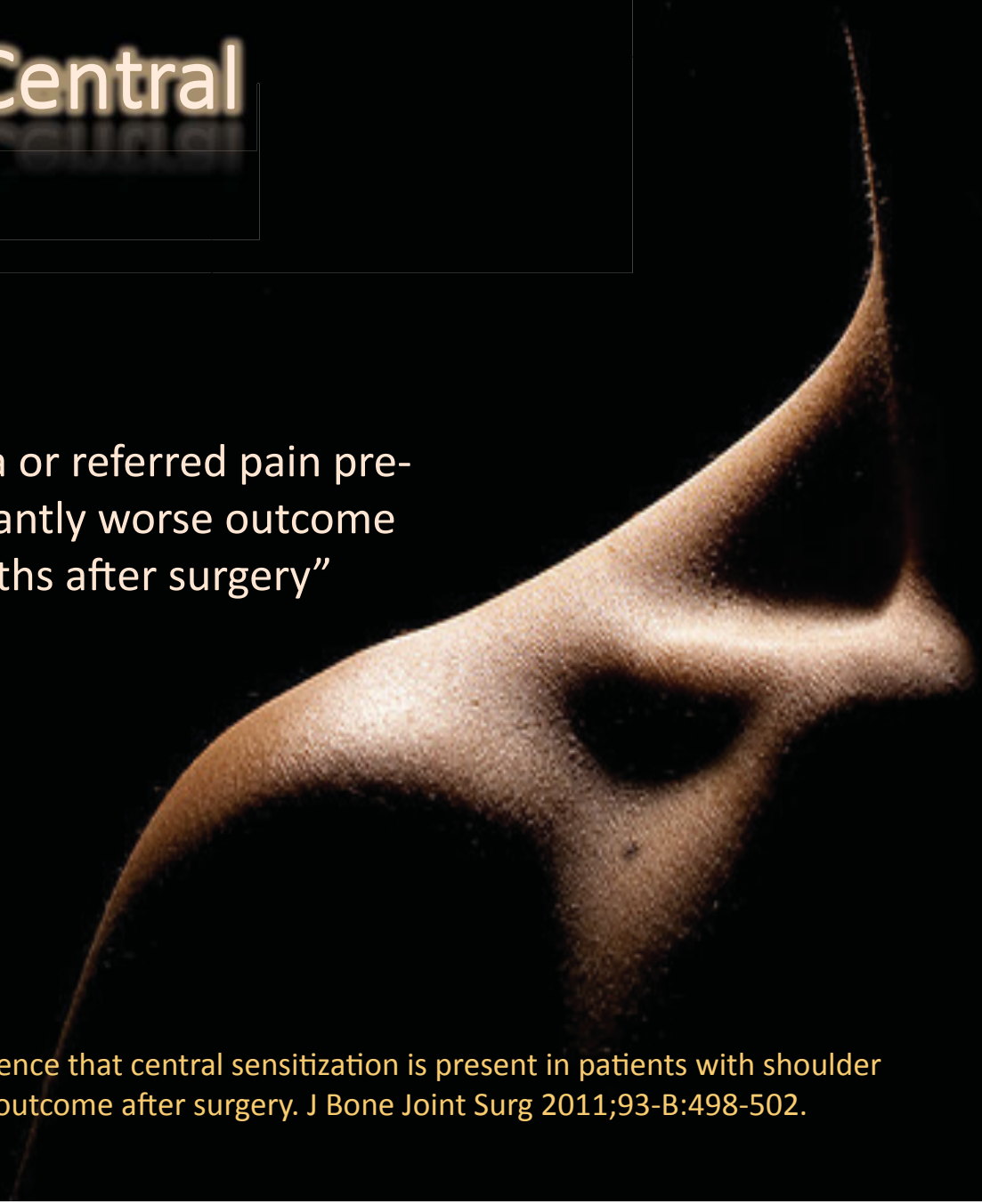

Treatment takes time

NEUROPLASTICITY



Butler, D: Manual therapy in a neuroplastic world. JOSPT 42(2012) A24-A27.

Pre-Operative Central Sensitization



"presence of either hyperalgesia or referred pain pre-operatively resulted in a significantly worse outcome from decompression three months after surgery"

Gwilym, SE, Oag, HCL, Tracey I, Carr AJ: Evidence that central sensitization is present in patients with shoulder impingement syndrome and influences the outcome after surgery. J Bone Joint Surg 2011;93-B:498-502.

Bron *et al. BMC Medicine* 2011, **9**:8
http://www.biomedcentral.com/1741-7015/9/8

BMC Medicine

RESEARCH ARTICLE Open Access

Treatment of myofascial trigger points in patients with chronic shoulder pain: a randomized, controlled trial

Carel Bron[1,2*], Arthur de Gast[3], Jan Dommerholt[4], Boudewijn Stegenga[5], Michel Wensing[1], Rob AB Oostendorp[1]

- Evaluated the effectiveness of a 12 week comprehensive PT treatment program inclusive of MTrP deactivation
- Intervention group had better outcomes on all measures (DASH, VAS-P and GPE scores used)
- 55% clinically relevant improvement in shoulder pain

Fascia: The Tensional Network of the Human Body

R Schleip, T Findley, L Chaitow, P Huijing 2012. Churchill Livingstone/Elsevier


REPLACE
FEAR OF
HE UNKNOWN
ITH
URIOSITY