CHRONIC PAIN
PHYSICAL THERAPY TREATMENT FUNDAMENTALS

7th Annual Prescription Drug Abuse & Heroine Symposium

Lina Avendano. PT, MHS, DPT, FAAOMPT

Doctor in Physical Therapy

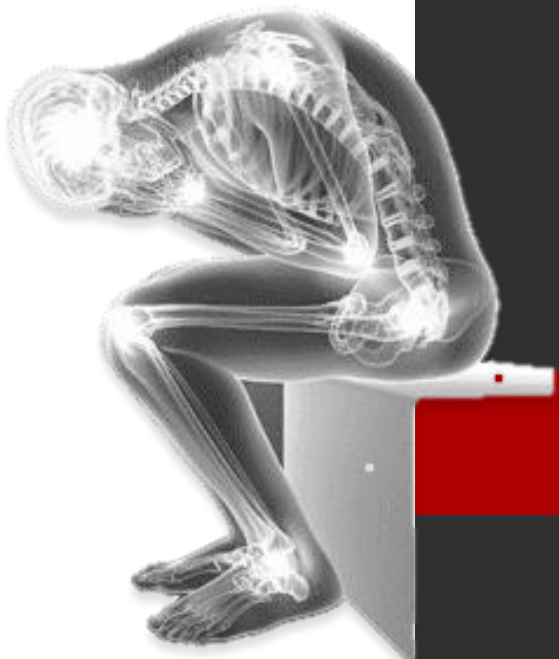
Certified Pain Specialist

Orthopedic Physical Therapy Specialist

Fellow American Academy of Orthopedic Manual Physical Therapists

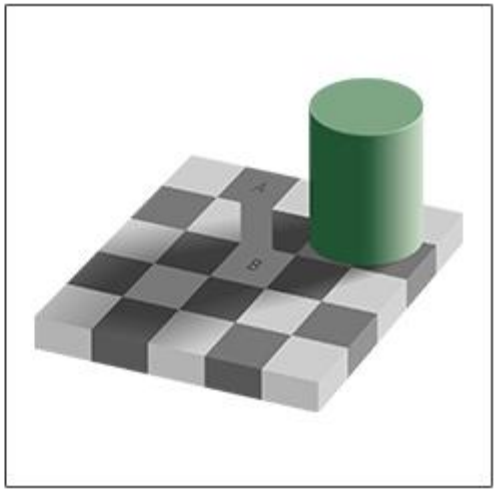
Clinic Coordinator

St Vincent Outpatient Physical Therapy



St. Vincent Health

Key Interventional concepts treating pain



"Pain is a **decision** by the brain based on perception of **threat**" (Melzack 2001, Mosely 2003)

Re-conceptualizing pain experience

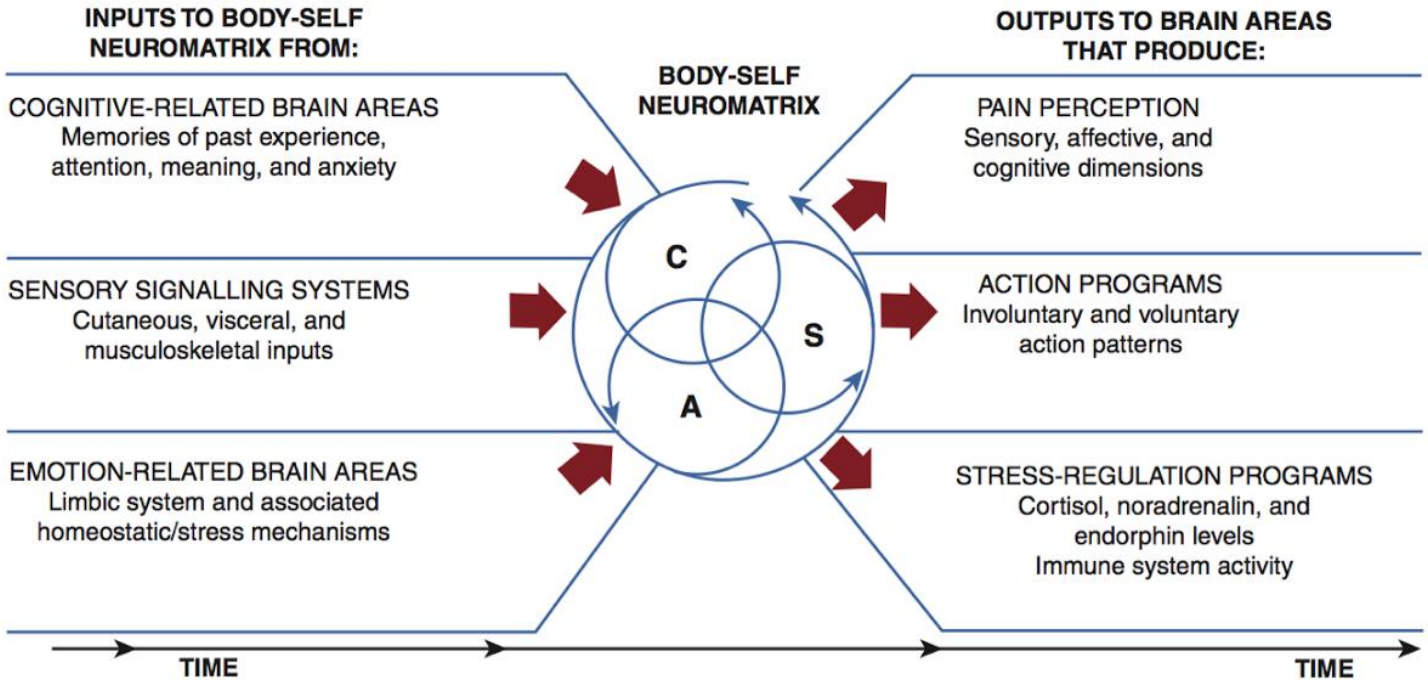


Image from Melzack. Evolution of the Neuromatrix theory of pain. Pain Practice, 2005.

Pain is an alarm reporting a threat

- Pain intensity does not equal severity
- Tissues heal, even discs. (Autio, Karppinen et al, 2006, Masui, Yukawa, 2005)
- Pain can occur in the absence of tissue injury, or remain well after tissue has healed

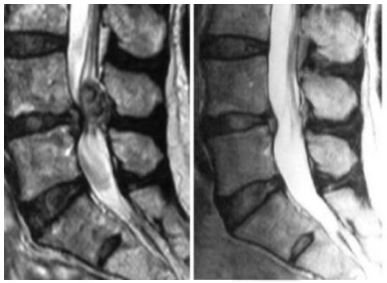


Fig. 1

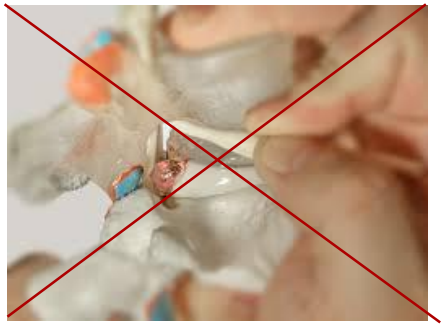
Resolution of a massive extrusion with disc sequestration after six months.

- Aprox 40% “normal” have bulging disc on MRI (Viedman, 2003), Alyas et al 2007)
- 40% symptomatic people have RC tears (Reilly, 2006)
- 35% collegiate basketball players without pain in the knee have significant abnormalities on MRI (Major, 2002)
- Little correlation between arthritis on imaging an pain (Taylor, 1986,1987)

HOW HEALTHCARE PROVIDERS CAN LOWER THE ALARM:

"THE FEAR OF PAIN IS MORE DISABLING THAT THE PAIN ITSELF"

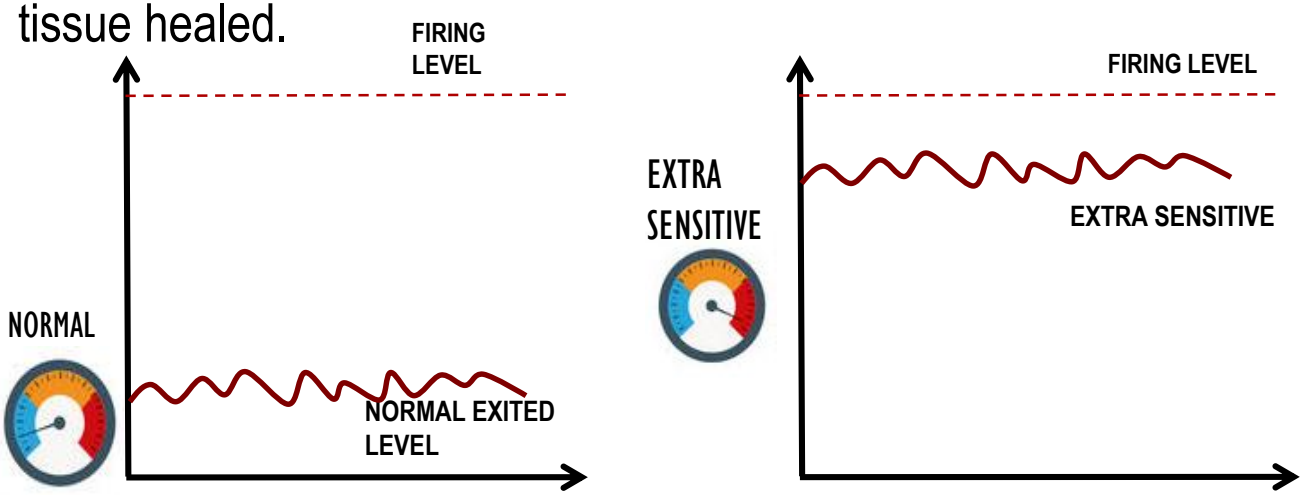
- Reinforcing that there is normality within abnormality
- De-emphasizing pathoanatomical explanations
- Educating on multifactorial aspects of pain (psychosocial/ emotional/ overall health, weight, sleep)
- Encouraging a multidisciplinary approach

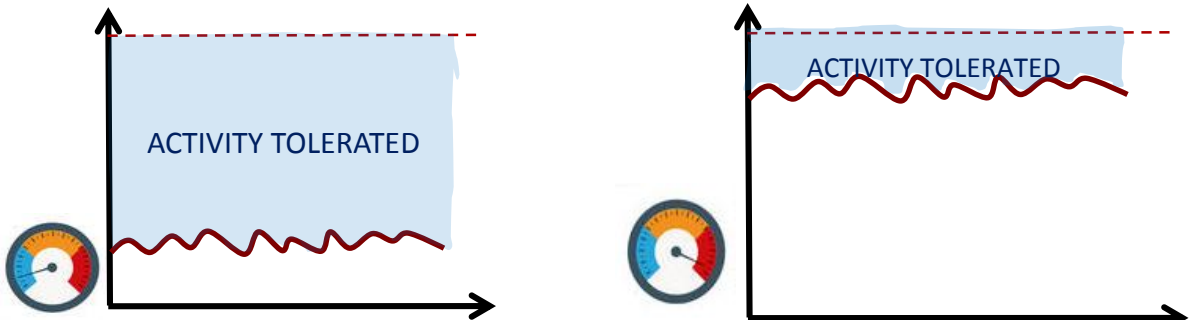


Persistence of pain when tissue heals…

SENSITIVE NERVOUS SYSTEM…

Body's alarm system stays in alarm mode and moves to a panic mode even after tissue healed.





Persistence of pain through sensitive nervous system

Alterations in interpretation

Alteration in modulation of pain in the brain and in the periphery at the neurophysiological level

Cortical changes in chronic pain

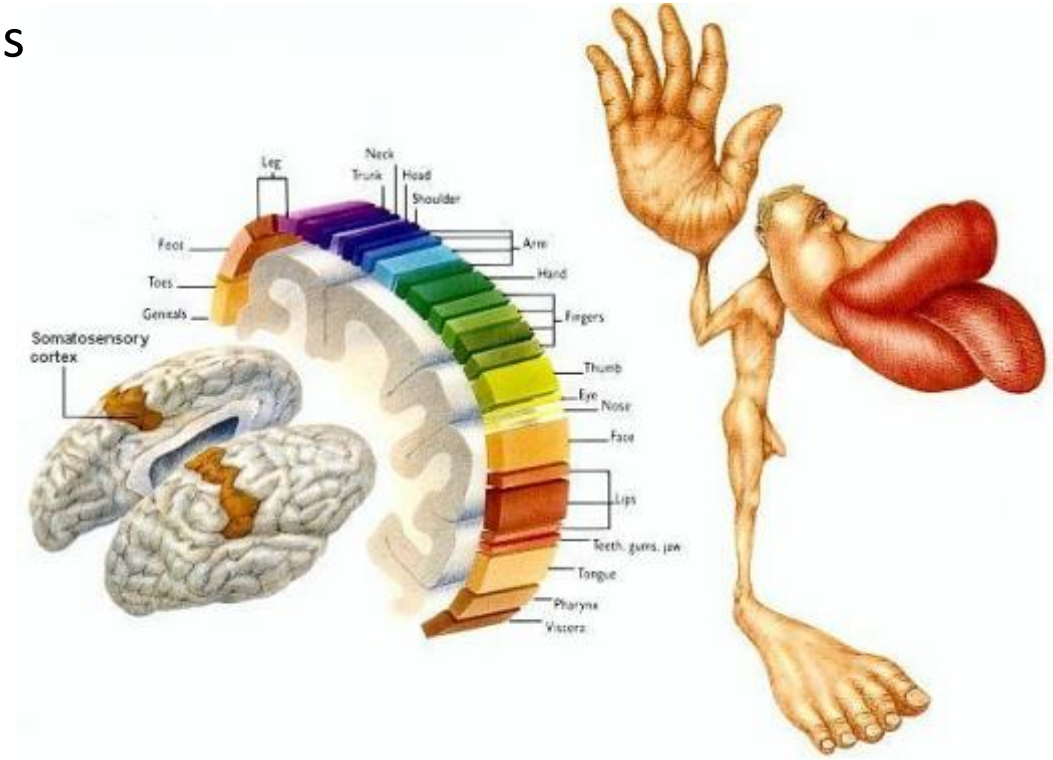
- Changes in concentration, attention and memory (George et al, 2016)
- Left / right discrimination deficits
- Changes in body representation and tactile acuity

LBP patients perform poorly (twice as long) on tasks in which they are required to judge the direction of spinal movement (Moseley, 2011)

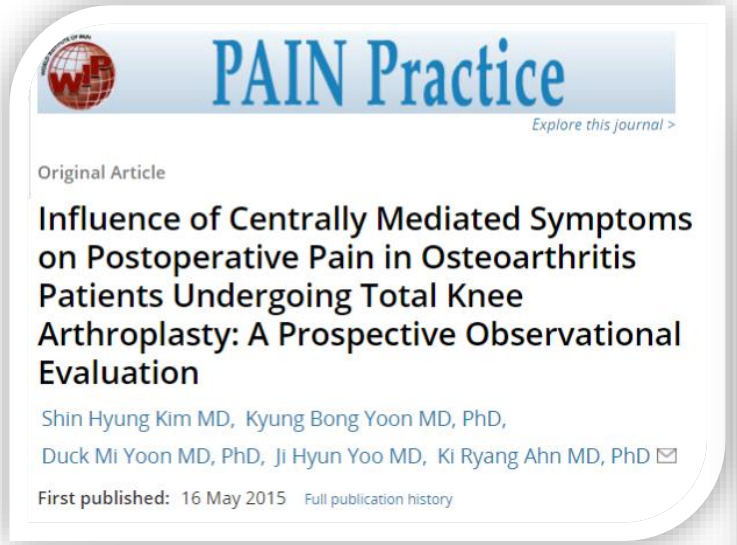
Body representation and cortical reorganization.

- Impaired spatial and proprioceptive acuity
- Indistinct body map
- Changes in body representation can take in as little as 30 minutes

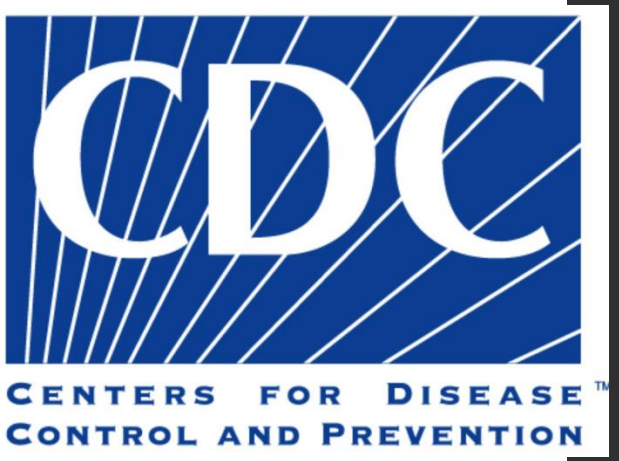
  (Stavrinou et al. 2007)



Changes in the brain occurs in common conditions



PHYSICAL THERAPY FIRST OPTION FOR CHRONIC PAIN

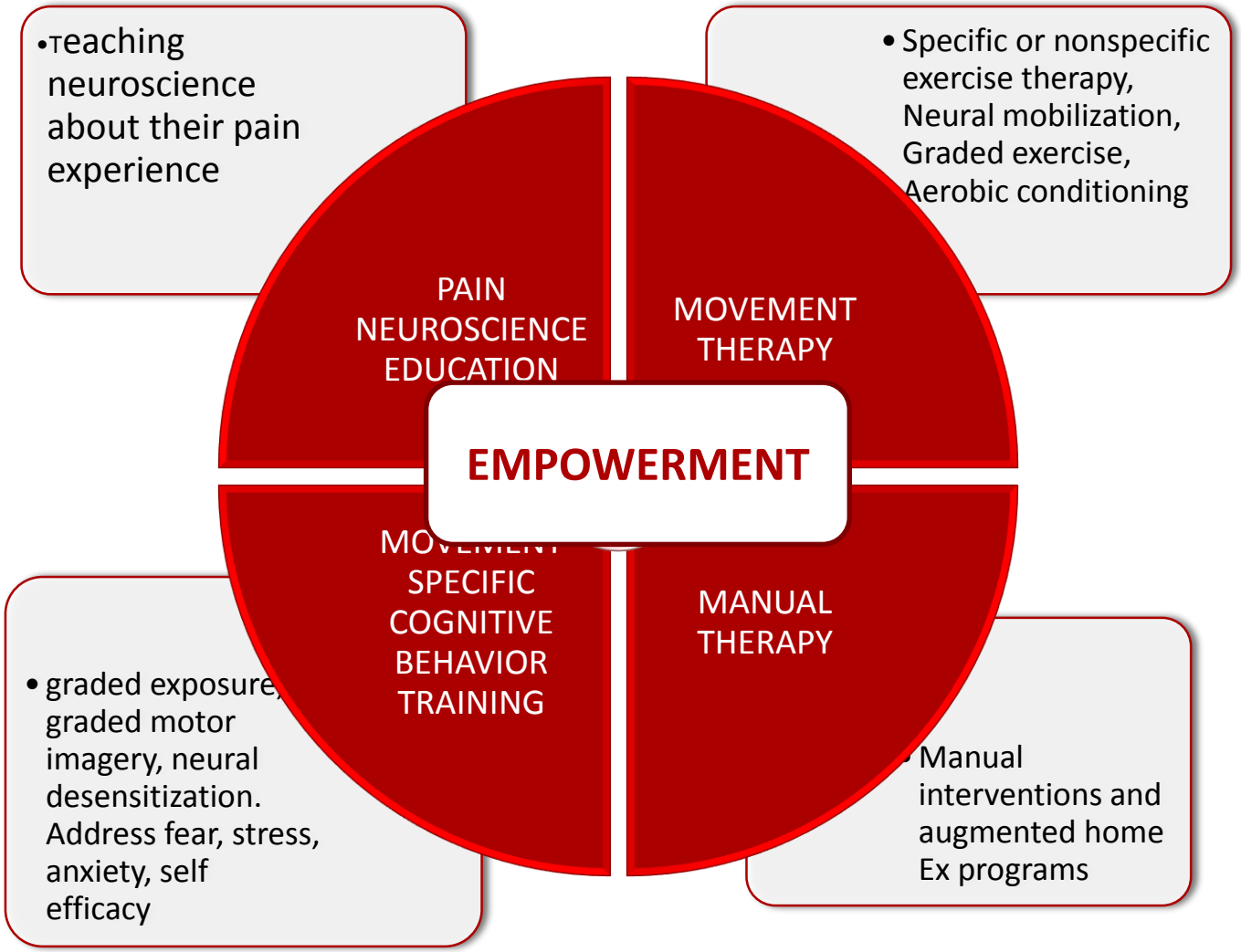


CDC Guideline for Prescribing Opioids for Chronic Pain
Recommendations and Reports / March 18, 2016 / 65(1);1–49

- **Physical Therapy should be First-Line Treatment for Chronic Pain over opioids treatments.**

…. nonopioid therapies should be "tried and optimized" before considering an opioid prescription as well as during reassessment of a patient who has received a prescription for opioids.

Hallmarks of PT intervention



Explaining pain to patients through neuroscience

Sensitivity

Pain mechanisms

Neuroplasticity

Thoughts

Expectations

Beliefs

Experiences

Effectiveness of Neuroscience education

Immediate, one and 3 month of post op changes in:

- Pain,
- Catastrophyzation
- Fear avoidance
- Function
- Physical movement
- Beliefs regarding lumbar surgery

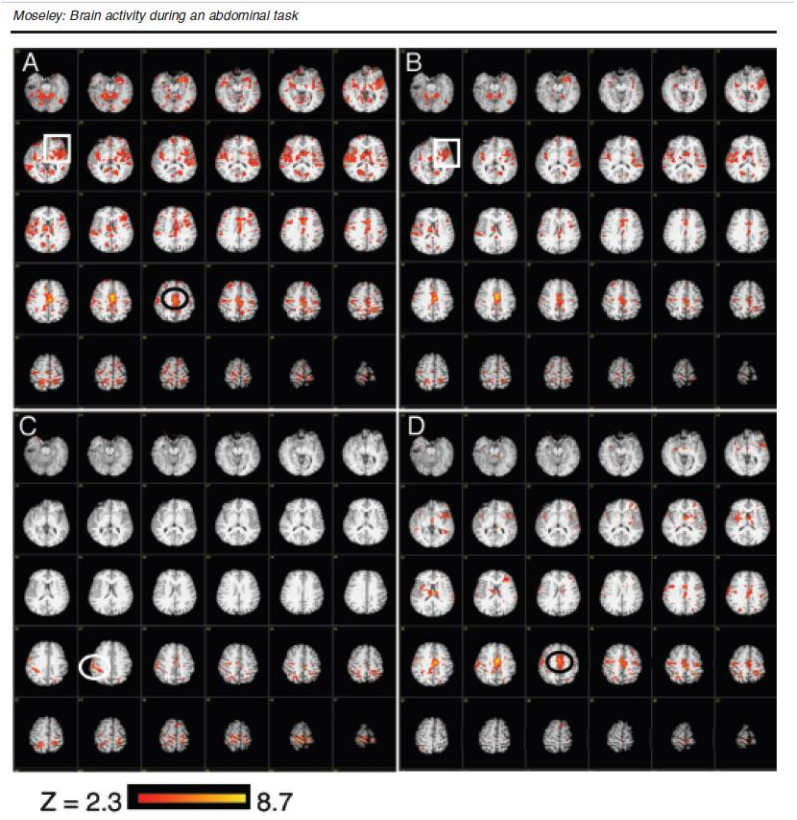
The short term effects of preoperative neuroscience education for lumbar radiculopathy: A case series

Adriaan Louw, PT, PhD,[1] Ina Diener, PT, PhD,[2] Emilio J. Puentedura, PT, DPT, PhD[3]

[1]International Spine and Pain Institute, Story City, IA, USA, [2]University Stellenbosch and University Western Cape, Stellenbosch, South Africa, [3]University of Nevada Las Vegas, School of Allied Health Sciences, Department of Physical Therapy

ISASS INTERNATIONAL SOCIETY for the ADVANCEMENT of SPINE SURGERY
INTERNATIONAL JOURNAL of SPINE SURGERY
this article ISASS the Journal submit

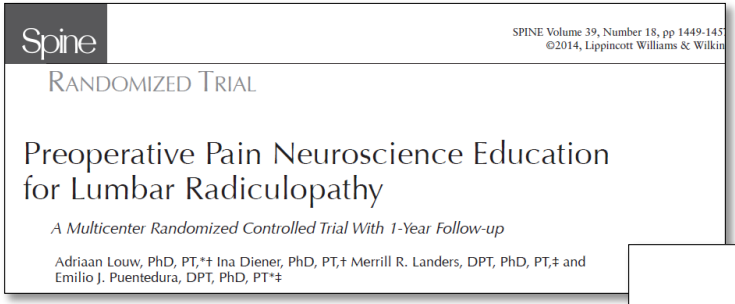
BRAIN ACTIVATION



Widespread brain activity during an abdominal task markedly reduced after pain physiology education: *f*MRI evaluation of a single patient with chronic low back pain

G Lorimer Moseley
Department of Physiotherapy, Royal Brisbane and Women's Hospital & The University of Queensland, Brisbane

Utilization benefits of NE


Spine

SPINE Volume 39, Number 18, pp 1449-145
©2014, Lippincott Williams & Wilkin

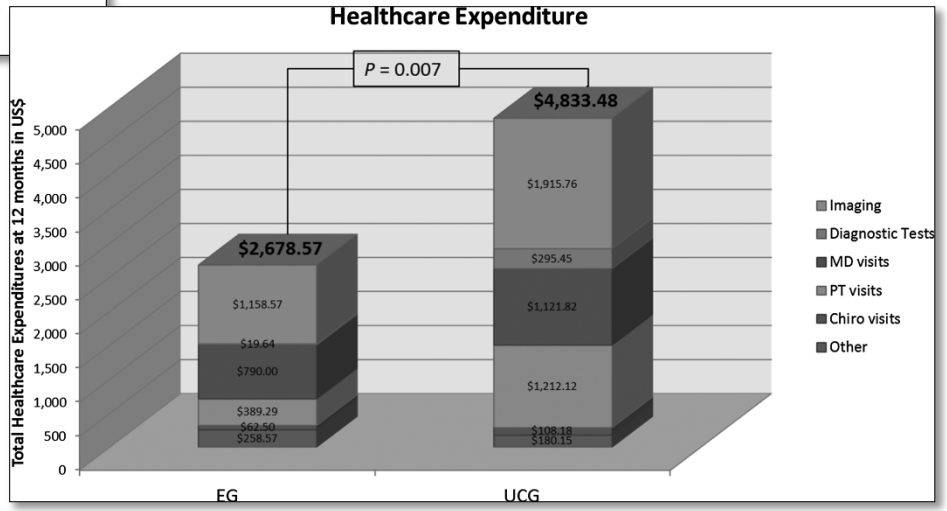
RANDOMIZED TRIAL

Preoperative Pain Neuroscience Education for Lumbar Radiculopathy

A Multicenter Randomized Controlled Trial With 1-Year Follow-up

Adriaan Louw, PhD, PT,*† Ina Diener, PhD, PT,† Merrill R. Landers, DPT, PhD, PT,‡ and Emilio J. Puentedura, DPT, PhD, PT*‡

- Similar pain ratings and function.
- Increased satisfaction /met expectation with surgery.
- Patients felt better prepared.
- Used 45% less health care services.

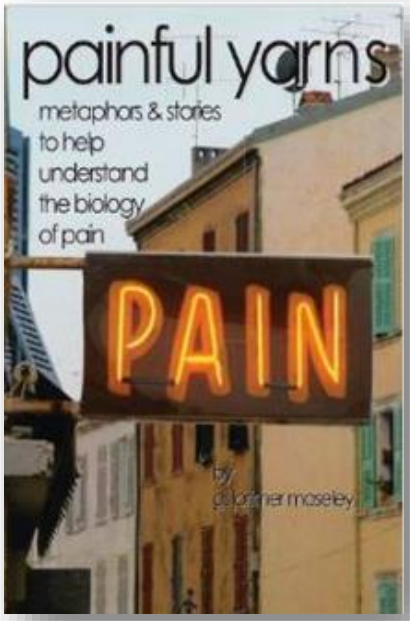


Louw et al. Preoperative pain neuroscience education for lumbar radiculopathy. Spine 2014

HOW WE DELIVER THE MESSAGE - Metaphors and stories

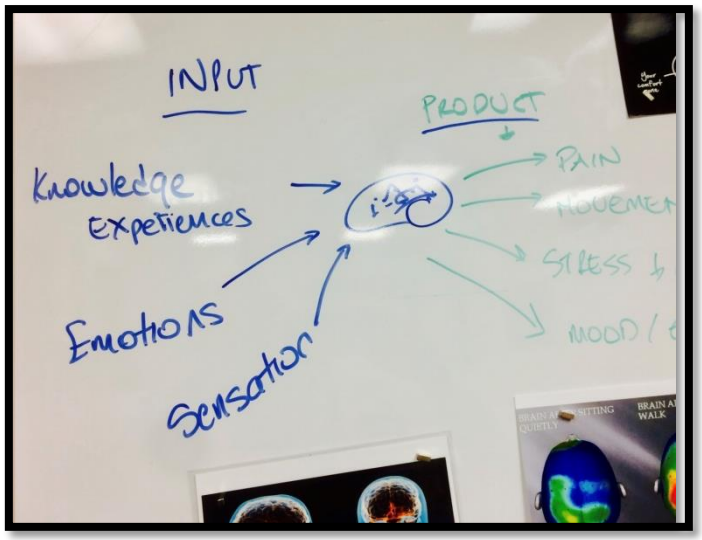
People learn when they can relate to a story…

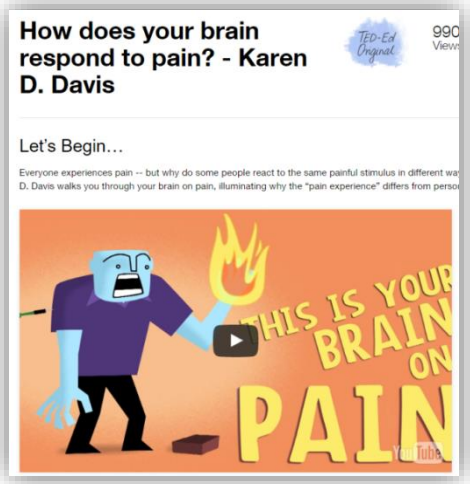
Physicians who use more metaphors and analogies elicit better patient ratings of communication (Casarett, 2010)



- Home alarm system to explain sensitivity
- Brain as the CEO role in our bodies, etc

VISUALS AND VIDEOS





EXERCISE AND MOVEMENT THERAPY

- Body representation
- Tactile accuracy
- Endorphin production
- Cardiovascular function
- Sleep, stress and anxiety modulation
- Self efficacy and re-assurance
- Endocrine and immune function
- Neuroplastic functions:

  memory and attention gain

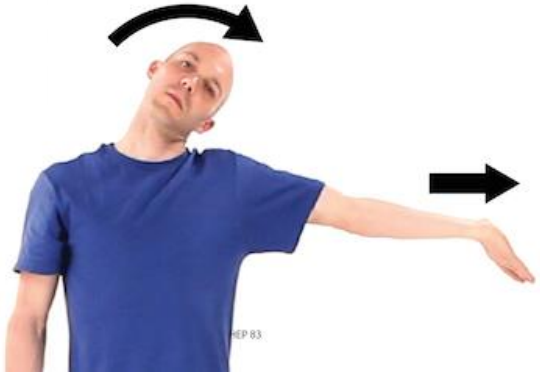
Specificity of exercise program

SPECIFIC PROGRAMS

AEROBIC AND ENDURANCE PROGRAMS

Treating Nerve and Nerve sensitivity

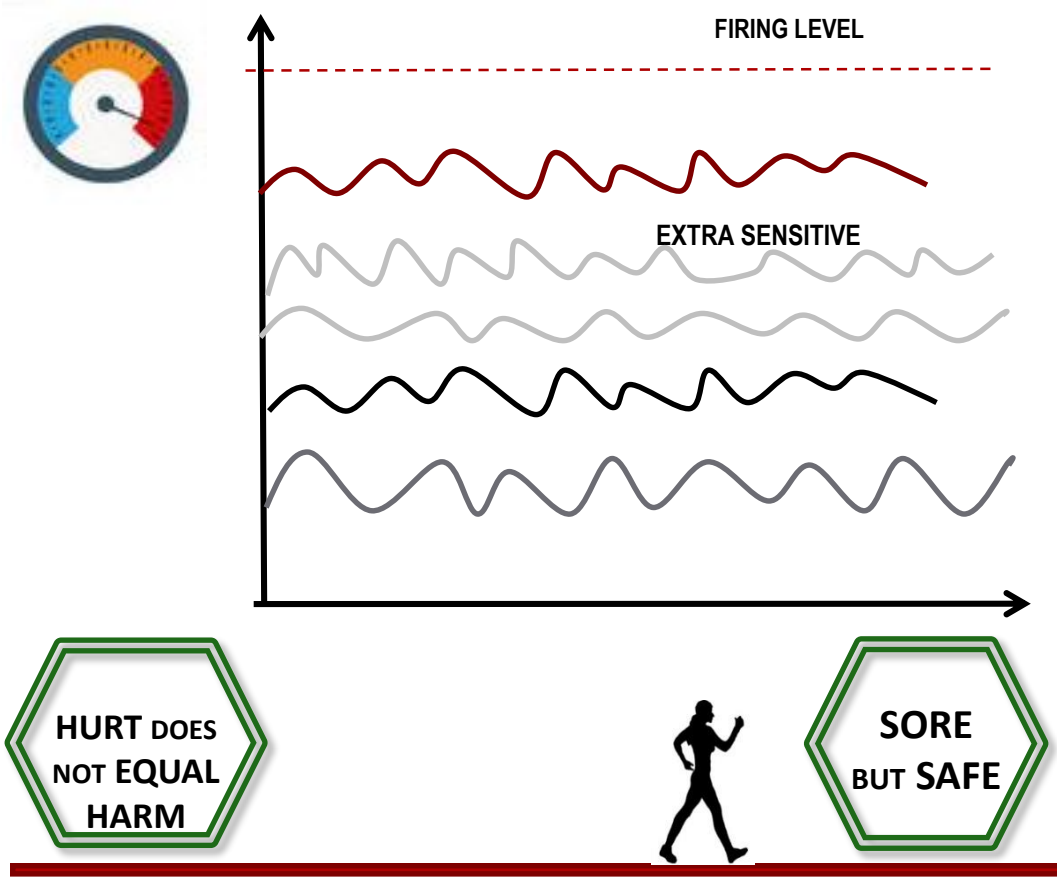
- Interventions addressing neural dynamics and manual mobilization are helpful in this patient along with the pharmacological approach



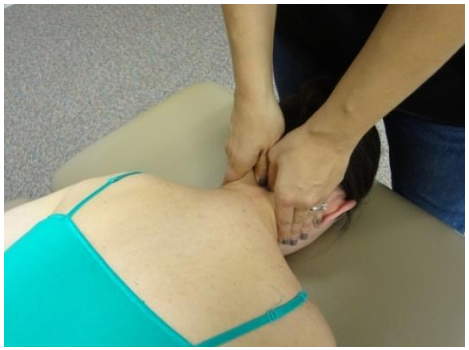
Images from Medbridge Education. 2016

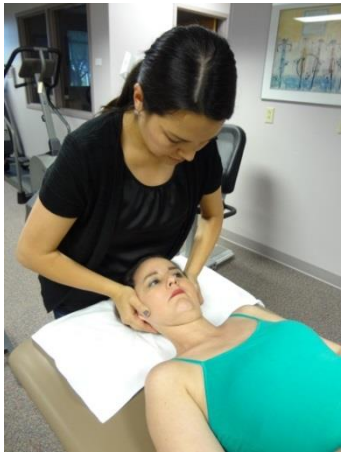
Graded exercise

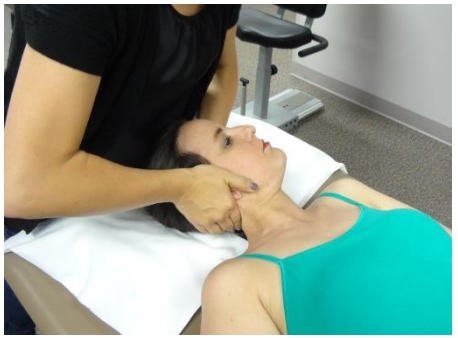
- Exercise and physical activity increase using specific goal setting and quota.
- Exercise sessions consist of flexibility, strength, cardiovascular training.

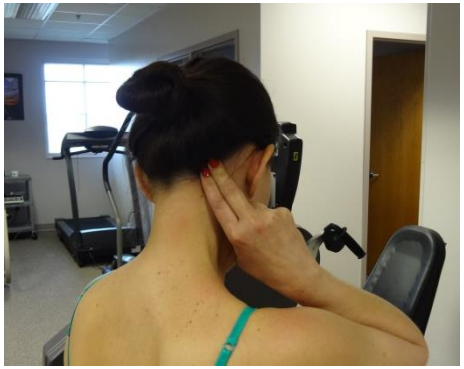


MANUAL THERAPY









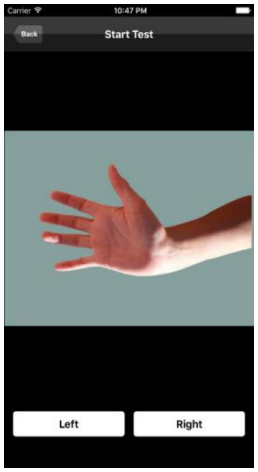
CBT
Cognitive Behavioral Therapy
Applied to Movement

Graded Exposure

- Address activities that are fearful to the patient by slowly confronting it within a safe or modified environment.

CORTICAL RETRAINING

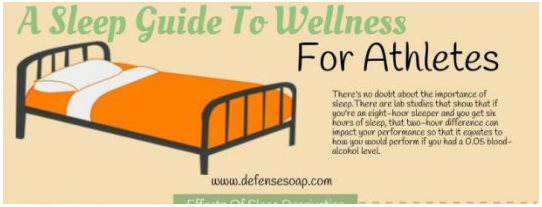
- Mirror therapy
- Laterality training
- Body recognition
- Sensory discrimination

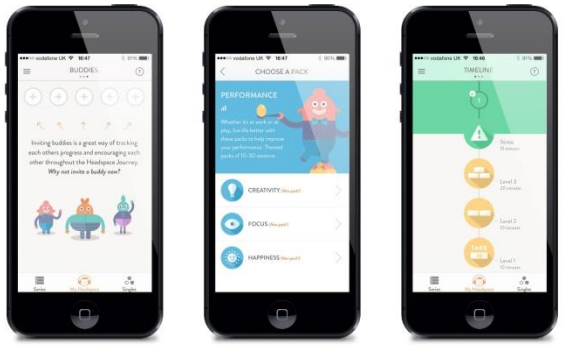


ADDITIONAL INTERVENTIONS

COPING STRATEGIES

- Visualization
- Relaxation
- Journaling
- Mindfulness based stress reduction
- Breathing control
- Anxiety and stress
- Sleep hygiene





OTHER STRATEGIES

- Maximize **recovery expectations** and coping behaviors

"Poor recovery expectations, avoidance behavior and endurance behavior are predictive of poor outcome in C LBP population." *(Iles, 2009, Hasenbringand Verbunt, 2010*

- Maximize the **placebo effect** (endogenous pain mechanism)

"Sham surgery in orthopedics is just as effective as actual surgery in reducing pain and disability"(Moseley 2002, Buchbinder, Osborne et al, 2009, Kallmes, Comstock et al, 2009).

Pain Med. 2016 Jul 11. pii: pnw164. [Epub ahead of print]

Sham Surgery in Orthopedics: A Systematic Review of the Literature.

Louw A[1], Diener I[2], Fernández-de-Las-Peñas C[3], Puentedura EJ[4].

OTHER STRATEGIES

USE OF HEALING LANGUAGE

- Wrinkles in the inside
- Normal changes
- Pain perception, pain experience
- Recovery
- Sensitive system

"Degenerative terms are associated with poor prognosis" *(Sloan and Walsh 2010)*
"Pathological models framework increase fear in patients" *(Morr, Shanti, 2010)*

WORDS THAT HARM

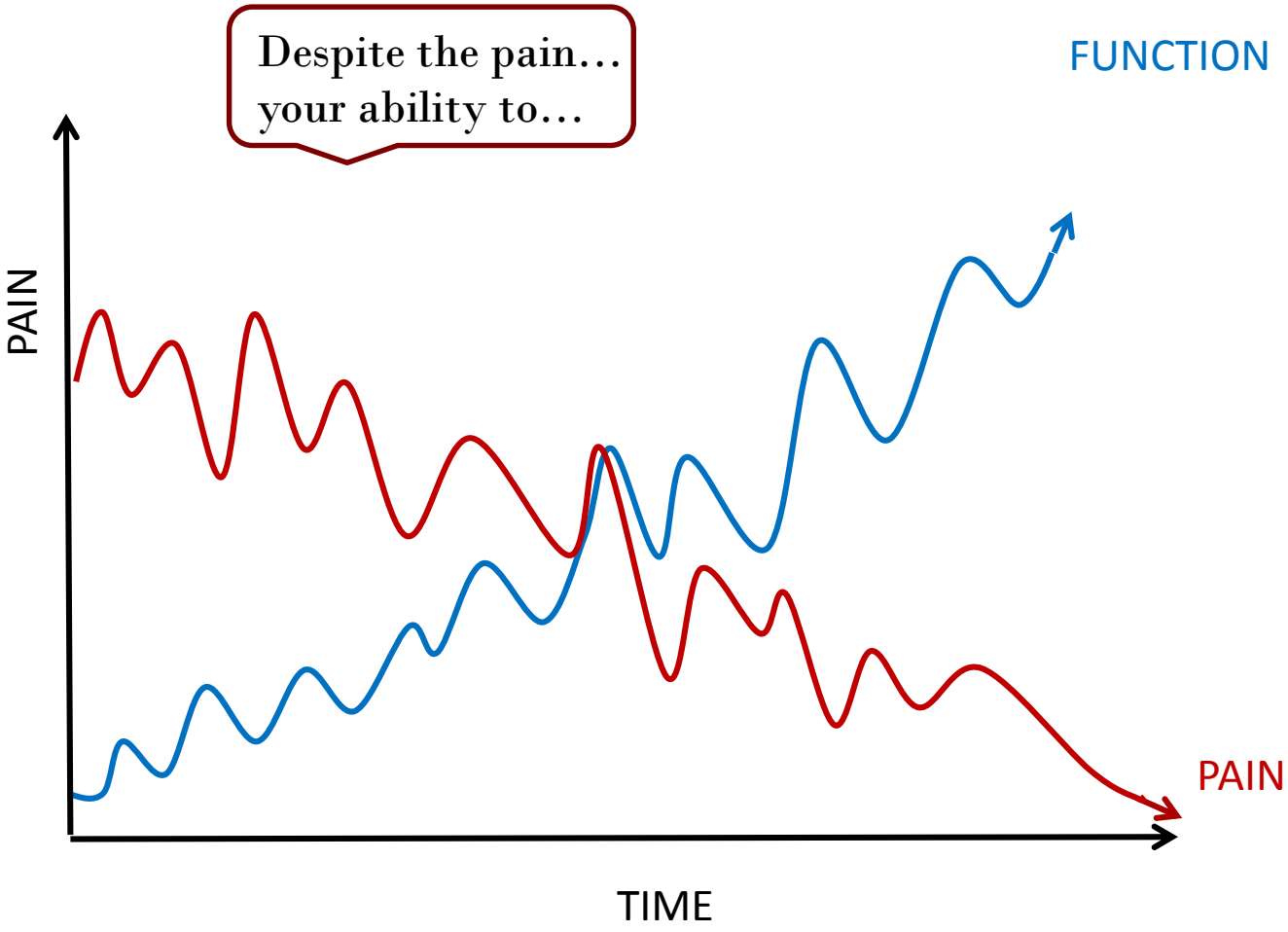
- Degeneration
- Bulging
- Osteoarthritis
- Herniation

OTHER STRATEGIES

Motivational Interviewing

- Reflective listening
- Assist them searching and finding the driver/ goals and motivations
- Affirmations and Reaffirmation
- Showing empathy

EMPHASIZE FUNCTION, …..not pain



EPISODE of CARE

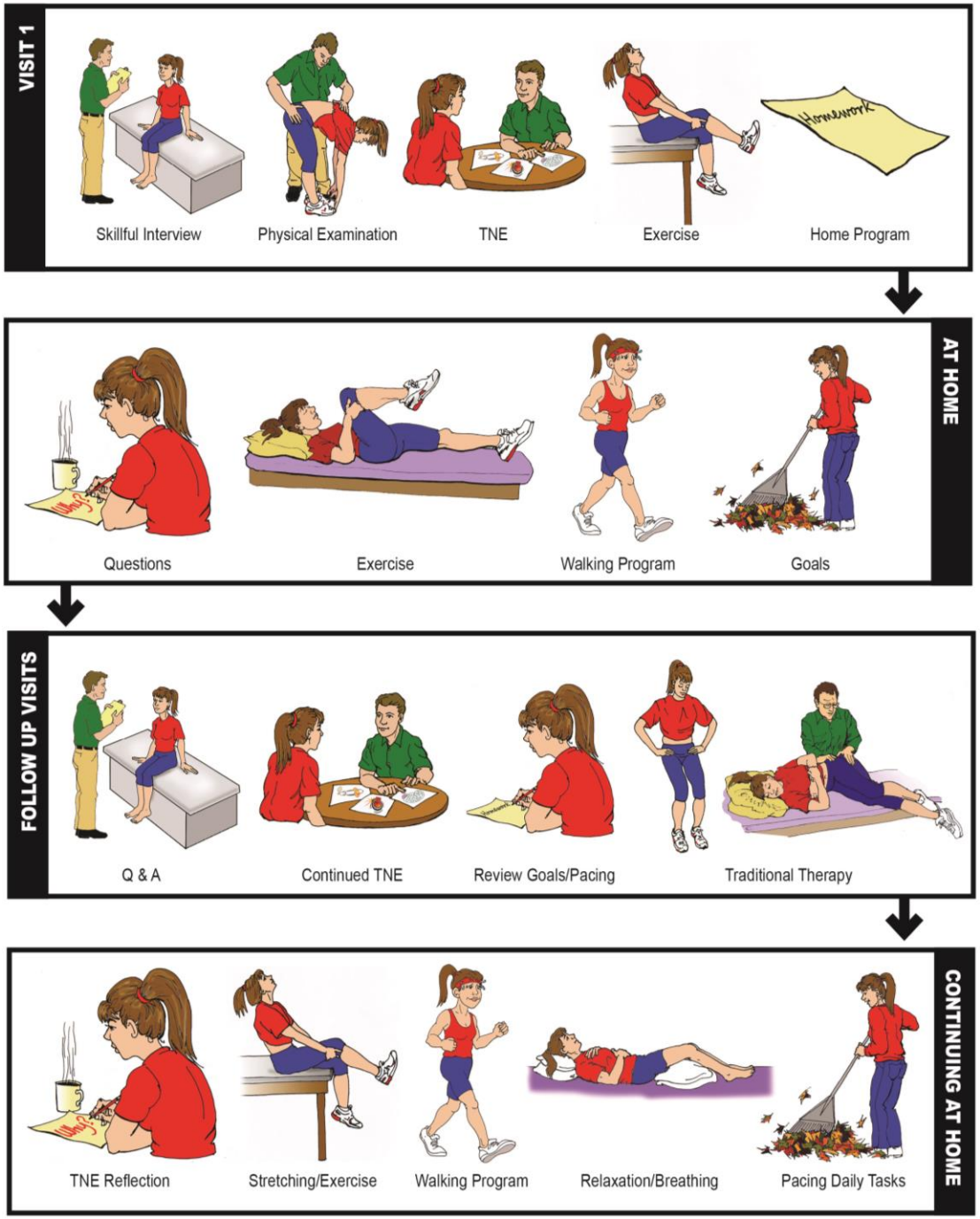


Image from Louw. ISPI TNE Focus on Function.

References

- Casarett D, Pickard A, Fishman JM, et al. Can metaphors and analogies improve communication with seriously ill patients?J Palliat Med. 2010 Mar;13(3):255-60
- Gifford, L. S. (1998). Pain, the tissues and the nervous system. Physiotherapy, 84, 27-33
- Hasenbring MI, Verbunt JA. Fear-avoidance and endurance-related responses to pain: new models of behavior and their consequences for clinical practice. Clin J Pain. 2010 Nov-Dec;26(9):747-53.
- Louw A, Diener I, Fernández-de-Las-Peñas C, Puentedura EJ. Sham Surgery in Orthopedics: A Systematic Review of the Literature. Pain Med. 2016 Jul 11. pii: pnw164
- Louw A, Puentedura EJ, Diene. Preoperative education for lumbar surgery for radiculopathy. South African Journal of Physiotherapy, L. C. (2009). 65(2), 3-8
- Louw A, Diener, Landers MR, Puentedura EJ. (2014) Preoperative pain neuroscience education for lumbar radiculopathy: a multicenter randomized controlled trial with 1-year follow-up. Spine. 2014 Aug 15;39(18):1449-57
- Melzack R. (2001) Pain and the neuromatrix in the brain. J Dent Educ. Dec;65(12):1378-82.
- Morr S, Shanti N, Carrer A, et al. Quality of information concerning cervical disc herniation on the Internet. Spine J. 2010 Apr;10(4):350-4

- Prochaska JO, DiClemente CC. Stages of change in the modification of problem behaviors. *Progress in Behavioral Modification.* 1992;28:183-218
- Puentedura, Louw A. Louw, A. et al. A neuroscience approach to managing athletes with low back pain. Phys Ther Sport. 2012 Aug;13(3):123-33.
- Raudenbush, Bryan; Canter. Pain Threshold and Tolerance Differences Among Intercollegiate Athletes: Implication of Past Sports Injuries and Willingness to Compete Among Sports Teams. North American Journal of Psychology . 2012, Vol. 14 Issue 1, p85-94. 10p. 3
- Simotas AC, Shen T. Neck pain in demolition derby drivers. Arch Phys Med Rehabil. 2005 Apr;86(4):693-6.
- Sloan TJ, Walsh DA. Explanatory and diagnostic labels and perceived prognosis in chronic low back pain. Spine . 2010 Oct 1;35(21):E1120-5
- Wilson D, Williams M, Butler D. Language and the pain experience. Physiother Res Int. 2009 Mar;14(1):56-65

THANK YOU.

Guillermo Cutrone, PT, DSc, FAAOMPT

South College
(865) 251-1725 /FAX (865) 288-5901
CELL (317) 828-9359
gcutrone@southcollegetn.edu

Lina Avendano PT, MHS, DPT, FAAOMPT

St Vincent Outpatient Physical Therapy
14828 Greyhound Ct St 150. Carmel, IN
TEL 317/ 582 9226 / FAX 582- 9037
Lina.Avendano@stvincent.org