

Pain Education and Yoga

Changing Lives with Modern Pain Science
And Movement

Jackie Orent-Nathan, APRN-BC
Pain Management
Derry Medical Center
Derry, NH

Objectives

- Understand the Neuromatrix Theory of Pain
- Appreciate how pain sufferers can use that theory to influence their pain
- List an evidence based physical modality that is effective in reducing pain and disability

Disclosures

none

Today's Journey

- Structure of Group Medical Visit Model
- Value of Modern Pain Science Education
- Review of Old Pain Science
- Discuss Modern Pain Science
- Explain Pain: Understanding Pain using tools from Lorimer Moseley and David Butler
- Yoga Practice for Pain Management
- Patient Testimonials

Group Medical Visit Model

- Group has similar medical needs or conditions
- Meet for an extended appointment with a health care provider



Group Medical Visits

"...is Medicare payment for CPT code 99213, or other similar evaluation and management codes, dependent upon the service being provided in a private exam room or can these codes be billed if the identical service is provided in front of other patients in the course of a shared medical appointment?"

From AAFP website

Group Medical Visits

The response from CMS was

"...under existing CPT codes and Medicare rules, a physician could furnish a medically necessary face-to-face E/M visit (CPT code 99213 or similar code depending on level of complexity) to a patient that is observed by other patients. From a payment perspective, there is no prohibition on group members observing while a physician provides a service to another beneficiary." The letter went on to state that any activities of the group (including group counseling activities) should not impact the level of code reported for the individual patient.

Group Medical Visits

Some private payers have instructed physicians to bill an office visit (99201-99215) based on the entire group visit. For compliance purposes, we recommend that you ask for these instructions in writing and keep them on file as you would any other advice from a payer.

Where each individual patient is provided a medically necessary, one-on-one encounter, in addition to the time in the group discussions, there should be no problem in billing for the visit based solely on the documented services provided in a direct one-on-one encounter.

Modern Pain Science and Yoga Group Medical Visit Format

90 minute class

- 45 minutes: pain education
- 45 minutes: movement: gentle yoga/meditation



Modern Pain Science Education

8 studies comprising 6 high-quality RCTs, 1 pseudo-RCT, and 1 comparative study involving 401 subjects

CONCLUSIONS: For chronic MSK pain disorders, there is compelling evidence that an educational strategy addressing neurophysiology and neurobiology of pain can have a positive effect on pain, disability, catastrophization, and physical performance

Louw A, Diener J, Butler DS, Puenteadura EJ. (2011). The effect of neuroscience education on pain, disability, anxiety, and stress in chronic musculoskeletal pain. *Arch Phys Rehabil.* Dec;92(12):2041-56.

Modern Pain Science Education

one-to-one education session for chronic LBP patients (n=121)

.Evaluation: relationship between change in pain cognition survey of pain attitudes (SOPA)
pain catastrophising scale (PCS)

.Evaluation: change in physical performance
(measured by the straight leg raise (SLR) and standing forward bending)

Results: There was a strong relationship between cognitive change and change in straight leg raise (SLR) and forward bending ($r=0.88$ and 0.79 , respectively, $P<0.01$), mostly explained by change in the conviction that pain means tissue damage and catastrophising

Moseley GL. (2004) Evidence for a direct relationship between cognitive and physical change during an education intervention in people with chronic low back pain. *Eur J Pain.* Feb;8(1):39-45

Modern Pain Science Education

Neurophysiological Pain Education for Patients With Chronic Low Back Pain
A Systematic Review and Meta-Analysis

AIM

- evaluate the effect of neurophysiological pain education (NPE) for patients with CLBP, measured through pain, disability and behavioral attitudes. A second aim was to investigate the effect of different types of NPE in order to identify the effective type for different subgroups of CLBP patients

Conclusion

- moderate evidence supporting the hypothesis that NPE has a small to moderate effect on pain and low evidence of a small to moderate effect on disability immediately after the intervention. NPE has a small to moderate effect on pain and disability at 3 months follow-up in patients with CLBP.

Tegner, H. et al.(2018). Neurophysiological Pain Education for Patients With Chronic Low Back Pain: A Systematic Review and Meta Analysis. *The Clinical Journal of Pain*, Volume 34 - Issue 8 - p 778-786

Gate Control Theory

Melzack and Wall

- Pain messages from the PNS activate
 - small unmyelinated C-fibers
 - Large myelinated A-B fibers send messages about harmless stimuli
- Psychological factors play a role in modulating nociceptive inputs
 - Attention, past learning, an understanding of the meaning of the situation
- Brain is not changeable

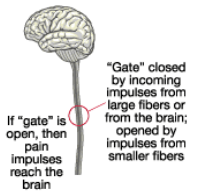
Melzack, R.(1993) Pain and the brain. *APS Journal*2(3): 172-174, reprinted from the Department of Psychology, McGill University, Montreal, Quebec, Canada

Gate Control Theory

Melzack and Wall

- GATE: substantia gelatinosa (dorsal horn in the spinal cord)
- Large-fiber activity inhibits (or closes) the gate
- small-fiber activity facilitates (or opens) the gate
- descending fibers could also modulate this gate

THE GATE-CONTROL THEORY OF PAIN



If "gate" is open, then pain impulses reach the brain

"Gate" closed by incoming impulses from large fibers or from the brain; opened by impulses from smaller fibers

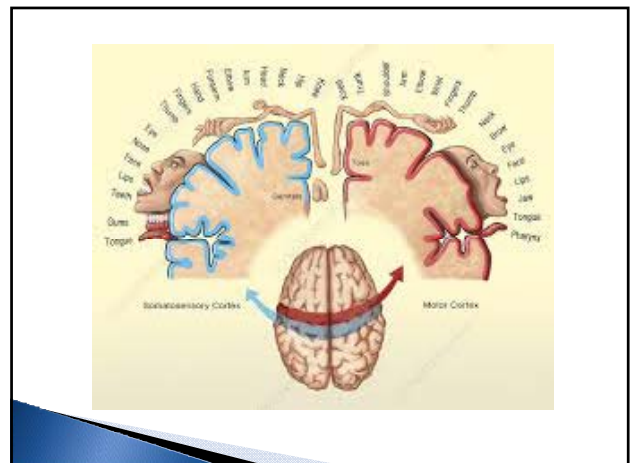


From the Gate Control Theory to the Neuromatrix Theory

Ronald Melzack

- Neuromatrix (widely distributed neural network in the brain)
 - Active neuromatrix that underlies perception of the body
 - Neuromatrix representing the missing limb produces an abnormal pattern of nerve impulses

Melzack, R.(1993). Pain and the brain. *APS Journal*2(3): 172-174, 1993 reprinted from the Department of Psychology, McGill University, Montreal, Quebec, Canada



Neuromatrix Theory

Ronald Melzack

.Central Nervous System is where pain is produced and that multiple parts of the brain and spinal cord work together in response to stimuli from the body and environment to create the experience of pain

.The brain and spinal cord are what produce pain, not tissue damage



Modern Pain Science

Pain is about protection against threats to our survival



Body in mind – the role of the brain in chronic pain' at Mind & Its Potential 2011



EXPLAIN PAIN

Lorimer Moseley & David Butler

We do not have pain receptors or pain nerves, we have danger sensors

Various sensors are embedded in the membrane of neurons to detect danger

Danger sensors detect:

- .mechanical forces
- .chemical forces
- .temperature changes

What's more important than danger messages coming from the body is what your brain thinks those messages mean

EXPLAIN PAIN

Lorimer Moseley & David Butler

- .Pain relies on many different factors and it is the brain that decides whether something hurts or not, 100% of the time, with NO exceptions
- .Pain relies on CONTEXT (location, situation, setting, beliefs, values, understanding, knowledge)

EXPLAIN PAIN

Lorimer Moseley & David Butler

- .The brain holds many virtual bodies
- .Virtual bodies let us know where our actual body is in space
- .Phantom limb pain
 - .The virtual leg and the relationship of the leg to the rest of the body is still represented in the brain

Butler, DS, Moseley L. (2013) *Explain Pain*. Adelaide, Australia: Noigroup Publications.

EXPLAIN PAIN


Lorimer Moseley & David Butler

Pain and the state of the tissues of the body have a variable relationship

Damaged tissue does not always cause pain

Pain does not always reflect damage

Lorimer Moseley 'Body in mind: the role of the brain in chronic pain' at Mind & Its Potential 2011



A PERCEIVED PAIN EXPERIENCE

A builder aged 29 came to the accident and emergency department having jumped down on to a 15 cm nail. As the smallest movement of the nail was possible he was excruciated with ferocious and medullary pain. The nail was then pulled out from below. When his foot was removed a miraculous cure appeared to have taken place. Despite entering proximal to the steel toe, the nail had penetrated between the toes, the foot was entirely uninjured.

Despite no tissue damage, the patient experienced extreme pain and had to be sedated.

Case report from the British Medical Journal (BMJ), 1995.

EXPLAIN PAIN

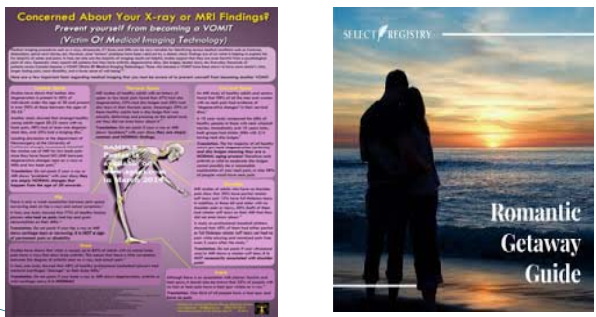
Lorimer Moseley & David Butler

Anything that suggests you need protecting takes pain up

Anything that suggests you don't takes pain down

EXPLAIN PAIN

Lorimer Moseley & David Butler



Concerned About Your X-ray or MRI Findings?
Prevent yourself from becoming a VOMIT (Victim Of Medical Imaging Technology)

Romantic Getaway Guide

EXPLAIN PAIN

Lorimer Moseley & David Butler

DIM= *danger in me*
Anything that is dangerous to your body tissues, life, lifestyle, job, happiness, your day to day function—a threat to who you are as a person

SIM= *safety in me*
Anything that makes you feel stronger, better, healthier, more confident, more sure and certain

Moseley, G.L., Butler, D.S. (2017) *Explain Pain Handbook*. Adelaide, Australia. Noigroup Publications

EXPLAIN PAIN

Lorimer Moseley & David Butler

DIM Examples:

- Belief that my body is deteriorating
- Hearing that my new MRI shows degeneration
- Thinking that pain is just going to keep getting worse
- Believing that movement will cause more damage
- Avoiding movement/moving abnormally
- Believing that everyone in my family is destined to have back pain/deteriorating joints
- Depressed/anxious mood
- Seeing pictures of my wrecked car from the accident that led to my chronic neck pain

Table 2
Age-specific prevalence estimates of degenerative spine imaging findings in asymptomatic patients⁸

Imaging Finding	Age (yr)							
	20	30	40	50	60	70	80	
Disk degeneration	37%	52%	68%	80%	88%	93%	96%	
Disk signal loss	17%	33%	54%	73%	86%	94%	97%	
Disk height loss	24%	34%	45%	56%	67%	76%	84%	
Disk bulge	30%	40%	50%	60%	69%	77%	84%	
Disk protrusion	29%	31%	33%	36%	38%	40%	43%	
Annular fissure	19%	20%	22%	23%	25%	27%	29%	
Facet degeneration	4%	9%	18%	32%	50%	69%	83%	
Spondylolisthesis	3%	5%	8%	14%	23%	35%	50%	

EXPLAIN PAIN

Lorimer Moseley & David Butler

SIM examples:

- Hearing that my MRI does not show any dangerous findings
- Understanding my pain
- Knowing that age related changes in my spine are normal and don't correlate with my pain
- Believing that I have control over my pain
- Spending time with caring family members/friends
- Feeling optimistic
- Understanding that movement is helpful
- Listening to music

EXPLAIN PAIN

Lorimer Moseley & David Butler

You will have pain when your brain concludes that there is more credible evidence of danger related to your body than there is credible evidence of safety

Moseley, G.L., Butler, D.S. (2017) Explain Pain Handbook. Adelaide, Australia. Noigroup Publications

NEUROPLASTICITY/BIOPLASTICITY

- Brains are capability of adapting/Systems are capable of adapting
 - My Brain and other body systems adapted to protect me from danger and became overprotective
- Bioplasticity got me into chronic pain and Bioplasticity can get me out
 - My brain and other body systems can adapt back to a normal state of protection if I remove DIMS and add SIMS


Moseley, G.L., Butler, D.S. (2017) Explain Pain Handbook. Adelaide, Australia. Noigroup Publications

Healthy Lifestyle Topics

- Sleep
- Nutrition (anti-inflammatory diet, weight management)
- Physical activity
- Stress Management
- Loneliness/lack of connection
- Loss of purpose/joy

YOGA

Mind-body and exercise practice that combines breath control, meditation, and movements to stretch and strengthen muscles



A study published in Annals of Internal Medicine found that among 313 people with chronic low back pain, a weekly yoga class increased mobility more than standard medical care for the condition

▶Practicing Yoga also improves mood and psychosocial well-being

Tilbrook, H.E. (2011). Yoga for Chronic Low Back Pain: A Randomized Trial. *Ann Intern Med.* 155(9):569-578.

Yoga for Back Pain

With few exceptions, previous studies and the recent randomized control trials (RCTs) indicate that yoga can reduce pain and disability, can be practiced safely, and is well received by participants. Some studies also indicate that yoga may improve psychological symptoms, but these effects are currently not as well established.

Douglas G. Chang,1, Jacquelyn A. Holt,1 Marisa Sklar,3 and Erik J. Groessl, (2016) Yoga as a treatment for chronic low back pain: A systematic review of the literature. *Orthop Rheumatol.* Jan 1; 3(1): 1-8.

Yoga and Gray Matter

Regular practice of yoga may have:

- .neuroprotective effects against whole brain age-related GM decline
- .more weekly regular yoga practice is associated with larger brain volume in areas involved in bodily representation, attention, self-relevant processing, visualization, and stress regulation

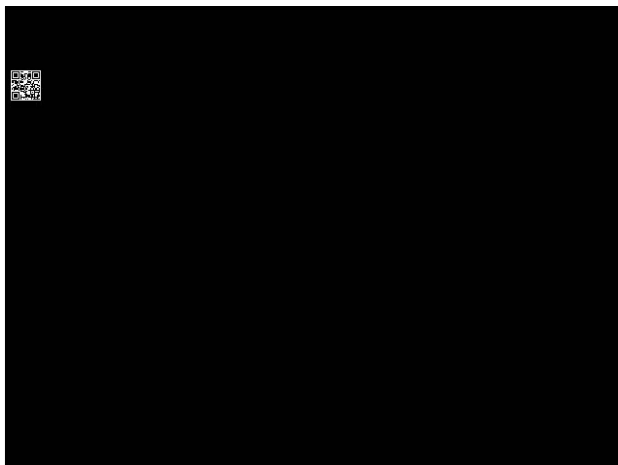
Villemure, C. Čeko, M., Colton, V.A., Bushnell, C. (2015) Neuroprotective effects of yoga practice: age-, experience-, and frequency-dependent plasticity. *Front Hum Neurosci.*; 9: 281.

Mindfulness and Brain Changes

Participation in MBSR is associated with changes in gray matter concentration in brain regions involved in:

- .learning and memory processes
- .emotion regulation
- .self-referential processing
- .perspective taking

Hölzel, B.K. et al. (2011). Mindfulness practice leads to increases in regional brain gray matter density. *Psychiatry Res.* Jan 30; 191(1): 36-43.




**A joyful heart
is a good medicine,
but a downcast spirit
dries up the bones.**

Proverbs 17:22

enjoyfullife11.wordpress.com