**Kevin Wilhite, MPT,DMT,CEAS is a Physical Therapist for SSM Health Physical Therapy with 20 years of clinical experience. He has achieved board certification in orthopedic physical therapy and completed his Orthopedic Manual Therapy certification in October of 2011 and Residency/Doctorate in December of 2017. Kevin specializes in treating injured workers, being able to provide the continuum of care from pre-employment testing, post-injury/post-surgical treatment, to work conditioning and FCE's.**

**Kevin is the WorkStrategies Manager for SSM Health Physical Therapy and oversees all clinical aspects of care and quality related to the treatment of injured workers and programs for employers. His role is to help coordinate and implement training and education regarding the treatment of this specific population with the overall goal of controlling visit utilization while achieving return to work goals efficiently.**

**He earned a Master of Physical Therapy degree from the University of Missouri-Columbia in 2001 and achieved Board certification in orthopedics through the APTA in 2011.**
**Post-graduate training includes:**
**Spinal and Extremity mobilization and manipulation courses**
**Work Hardening and Work Conditioning coursework**
**FCE training, Job Analysis and Ergonomics training, POET test administration**
**WorkSTEPS and WorkWell certified for pre-employment testing**
**CEAS certification (Certified Ergonomics Assessment Specialist)**

MISA Conference 2021

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# Getting In Front of The Problem: Early Identification and Improved Management of High Risk Work Injuries

Kevin Wilhite, MPT,DMT,CEAS
SSM Health Physical Therapy

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# Objectives

- Identify high risk cases early and establish expectations sooner of all parties
- Understand pain mechanisms and pain physiology as it relates to the workers' compensation case
- Review best practices for managing high risk cases

# PAIN KNOWLEDGE

**The more people know about pain, the less pain they experience.**

Sample of T/F questions:

- 1. Pain only occurs when you have tissue injury.
- 2. The brain decides when you will experience pain.
- 3. Nerves adapt by increasing their resting level of excitement.
- 4. Nerves have to connect a body part to your brain in order for that body part to be in pain.
- 5. When you are injured, the environment that you are in will have an effect on the amount of pain you experience.

Pain Neurophysiology Questionnaire (Moseley 2003)

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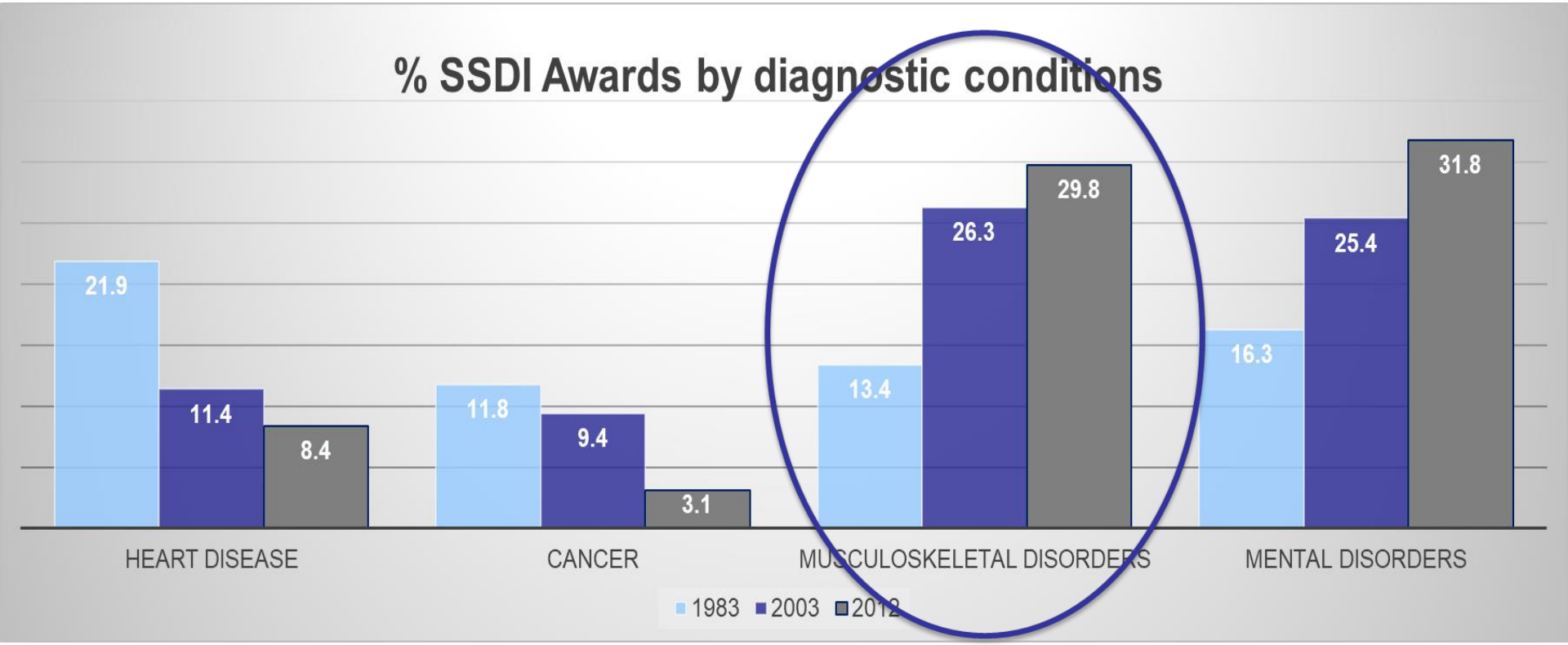
# Do we need to change?

- US Medical Costs (2016)
  - Back and Neck Pain- $134 Billion
  - Diabetes- $111 Billion
  - Ischemic Heart Disease- $89 Billion
- US Medical Costs (2013)
  - Diabetes- $101.4 Billion
  - Ischemic Heart Disease- $88.1 Billion
  - Low Back and Neck Pain- $87.6 Billion

Dieleman J. US health care spending by payer and health condition, 1996-2016. JAMA. 2020;323(9):863-884.

# The changing face of permanent work disability




Franklin, G. M., Wickizer, T. M., Coe, N. B., & Fulton-Kehoe, D. (2015). Workers' compensation: poor quality health care and the growing disability problem in the United States. American journal of industrial medicine, 58(3), 245-251.

# Musculoskeletal Pain and Workers' Compensation

- Claims leaders ranked **psychosocial issues as the No. 1 barrier to successful claim outcomes**, according to Chicago-based managed care solutions provider Rising Medical Solutions' 2016 Workers Compensation Benchmarking Study.

# Fear Is Greatest Predictor of Chronic Pain

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- Analysis of Lockton's database, with over $16 billion in workers' compensation claims and 65 million transactions found:
- **The average lost-time claim costs 3.5 times more when words such as "fear" and "afraid" are recorded in adjuster conversations.**
  - Claims with fear words account for 75% of claims > $50,000 and 84% of claims > $100,000.
  - Nearly 60% of all workers' compensation costs are driven by claimants who experience fear.

# Fear

## SAMPLING OF ADJUSTER NOTES

"She told me she was **SCARED** about her future and felt she needed to speak to someone."

"The employee is **WORRIED** that the employer will fire him after he is returned to work."

"The injured worker is **AFRAID** to lose money by taking time off work for doctor's appointments."

"He is somewhat reluctant to commit because he is **AFRAID** of surgery."

"The employee reports extreme distressing thoughts, such as tearful, **ANXIOUS,** angry, and at times, overwhelmed by the current situation, which he perceives to be never-ending."

LOCKTON

# What risk factors are associated with transition to chronicity?

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## Most Frequent Risk Factors

- Higher pain intensity
- Higher body weight
- Carrying heavy loads at work
- Difficult working positions
- Depression

## Predictive Factors

- Maladaptive behavior strategies
- General anxiety
- Functional limitation during the episode
- Smoking
- Particularly physical work

Nieminen LK Prognostic factors for pain chronicity in low back pain: a systematic review. 6 (2021) e919.
Pain Reports Musculoskeletal Review www.painreportsonline.com

# Orebro/OMSQ-12

- Low, Moderate or High Risk
- 57-72 is Moderate
- High risk, > 72, need psychosocially informed care in addition to traditional techniques
- Assesses Five domains
  - Misc.
  - Pain
  - Function
  - Psychological
  - Fear-Avoidance

C.P. Gabel et al. / Manual Therapy 18 (2013) 378–385

**Örebro Musculoskeletal Screening Questionnaire**
**12-Item Short Form (ÖMSQ-12)**

NAME:_____ Date:_____ Problem:_____

1. When did your current pain or problem start? Check (✓) one.
☐ 0-1 weeks [1] ☐ 1-2 weeks [2] ☐ 3-4 weeks [3] ☐ 4-5 weeks [4] ☐ 6-8 weeks [5]
☐ 9-11 weeks [6] ☐ 3-6 months [7] ☐ 6-9 months [8] ☐ 9-12 months [9] ☐ over 1 year [10]

2. Rate how much of a burden it is to perform all the things you need to do in a normal day.
0 1 2 3 4 5 6 7 8 9 10
*Not at all* *Extremely*

3. For the last 2-3 days, rate on average how bothersome your pain or problem is.
0 1 2 3 4 5 6 7 8 9 10
*Not at all* *Extremely*

4. For the last 2-3 days, what percentage of the day do you notice your pain or problem?
0 10 20 30 40 50 60 70 80 90 100
*Never* *All the time*

**We also need a bit more information on your thoughts and feelings.**

5. During the past 2-3 days, rate how tense or anxious you have felt.
0 1 2 3 4 5 6 7 8 9 10
*Not at all* *Extremely*

6. During the past 2-3 days, rate how "depressed" or "down" you have felt.
0 1 2 3 4 5 6 7 8 9 10
*Not at all* *Extremely*

7. What do you think is the risk that your current pain or problem will not improve?
0 1 2 3 4 5 6 7 8 9 10
*No risk* *Very large risk*

8. Think of your life; rate how satisfied you are with your current situation. [10-x]
0 1 2 3 4 5 6 7 8 9 10
*Not at all* *Extremely*

**How true are the next two statements for you?**

9. Physical activity makes my pain or problem worse.
0 1 2 3 4 5 6 7 8 9 10
*Not at all* *Extremely*

10. I should not do my normal daily routine or work with my present pain or problem.
0 1 2 3 4 5 6 7 8 9 10
*Not at all* *Extremely*

**Help us to better understand your current physical abilities.** [10-x]

11. I can walk for an hour or participate in my normal light recreational or sporting activities.
0 1 2 3 4 5 6 7 8 9 10
*Not at all* *Completely Normal*

12. I manage my daily routine and social activities (eg. shopping or transport or see friends).
0 1 2 3 4 5 6 7 8 9 10
*Not at all* *Completely Normal*

**Therapist's Notes:** Questions scores = 0-10, **EXCEPT** 8, 11&12 where score = **10-x**

Scores: 1-7=_____; 9-10=_____; 8,11&12=_____ TOTAL=_____

**Fig. 2.** The short-form Örebro Musculoskeletal Screening Questionnaire (ÖMSQ-12).

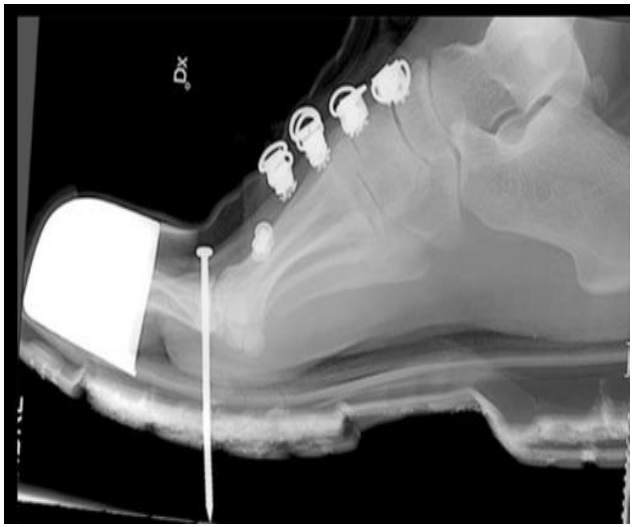
# Biological Pain Model

- Assumes all pain has a distinct physiological cause
- Involves a search for a cause
- “Find it and fix it” approach
- Works well for the treatment of acute pain
  - Pain is considered a symptom of the initial injury


**Pain = Nociception = Injury**

# Definitions

- "PAIN: An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or defined in such terms". (IASP) http://www.iasp-pain.org/

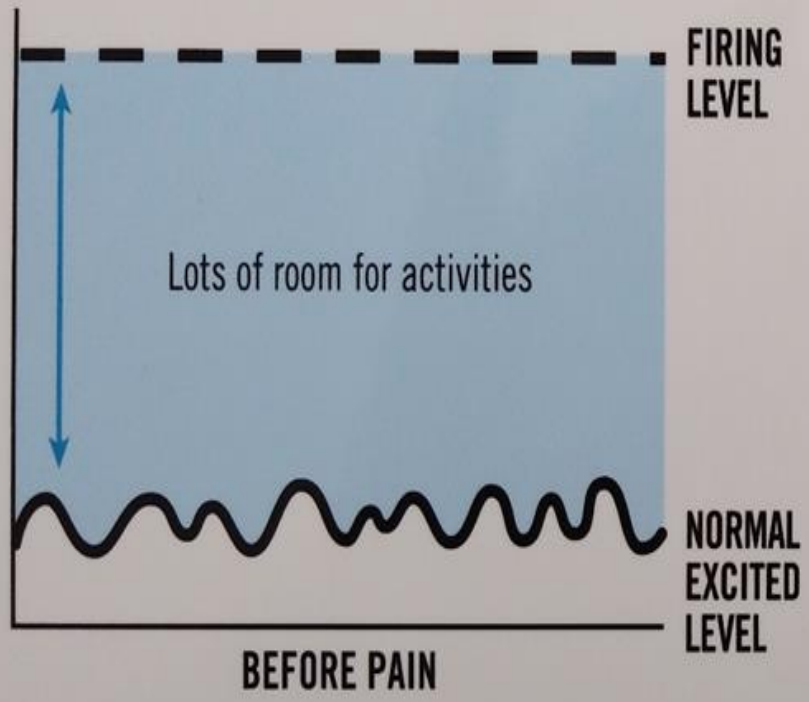


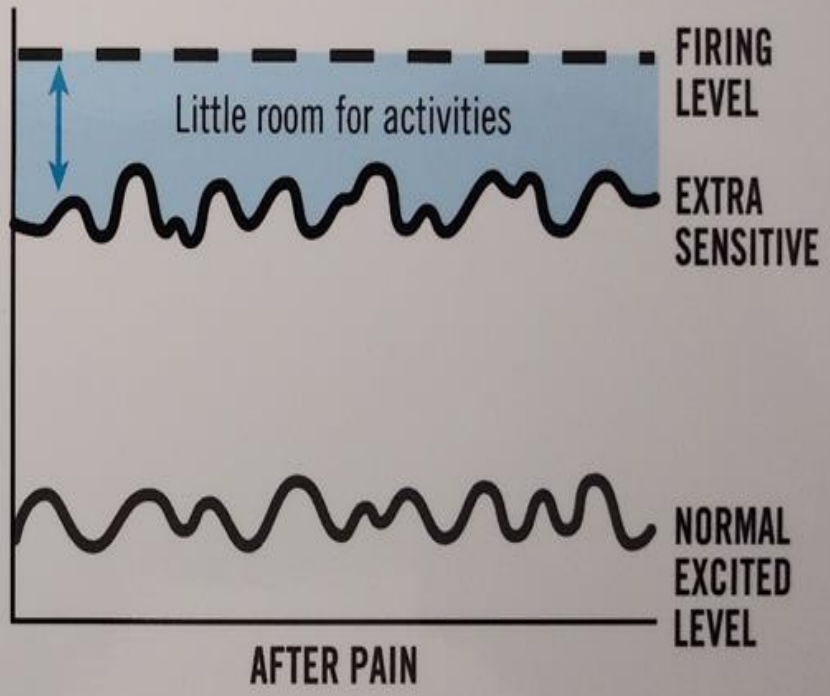
# What is Central Sensitization?

**Central sensitization** is defined as ‘‘an amplification of neural signaling within the central nervous system that elicits pain hypersensitivity’’

It presents:

- Allodynia
  - A painful response to a stimulus that is usually considered ‘‘non-noxious’’
- Hyperalgesia
  - An increased response to a noxious stimulus, in widespread locations in addition to areas associated with the underlying pain disorder



# PAIN IS IN THE BRAIN!!
# (but not in the mind)

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- P.S. The parentheses portion is key!!
- It is output, not input (shark attack victim)
- It is threat driven (farmer combine accident)
- In ACUTE/GOOD pain, tissues signal the brain and then stop (ankle sprain)
- In CHRONIC/NOT SO GOOD pain, tissues signal the brain occasionally (lumbar fusion)

CHRONIC PAIN IS NOT IMAGINED PAIN!!

# Neuromatrix Theory

Sensory, cognitive, motivational ➡ pain perception, action, stress regulation



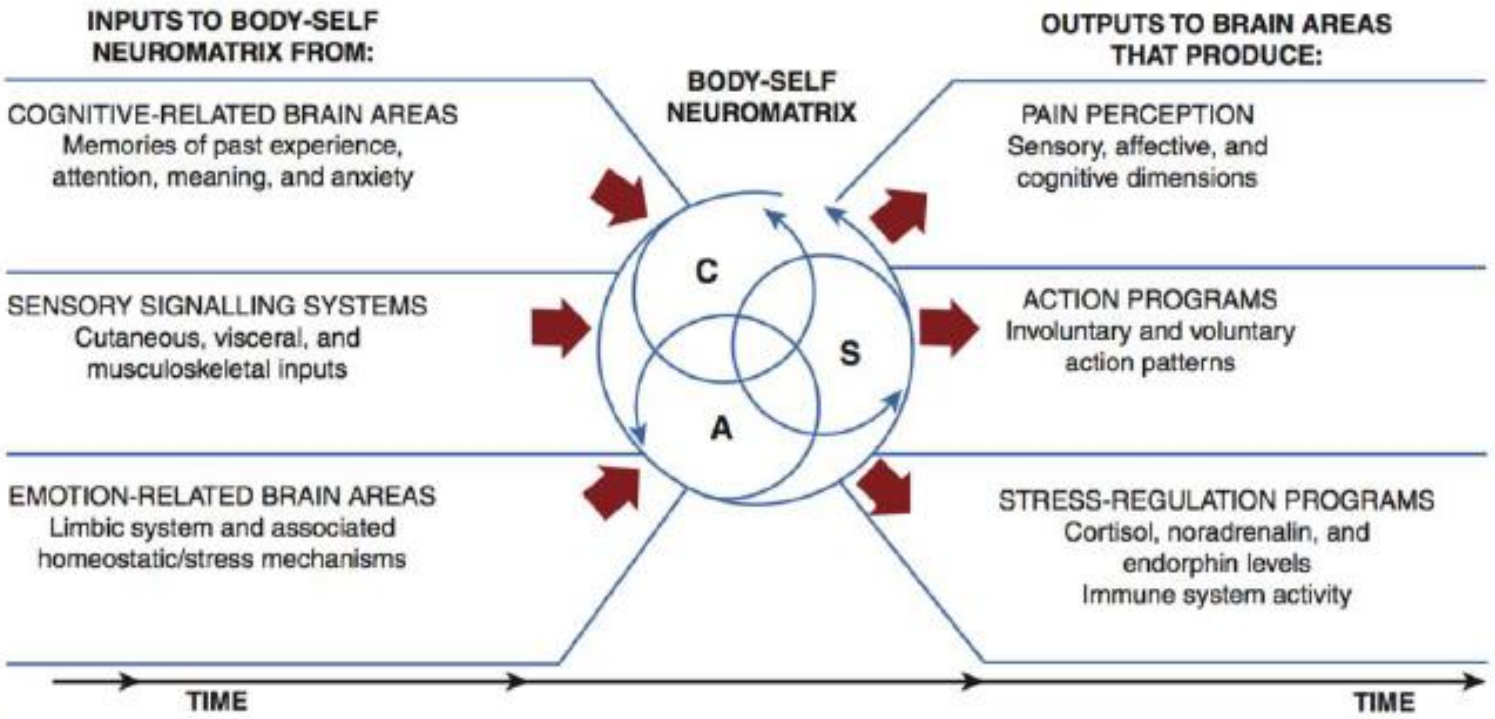


**Fig. 1.3 Factors that contribute to the patterns of activity generated by the body-self neuromatrix, which is composed of sensory, affective, and cognitive neuromodules.** The output patterns from the neuromatrix produce the multiple dimensions of pain experience, as well as concurrent homeostatic and behavioral responses. *(From Melzack R: Pain and the neuromatrix in the brain, J Dent Educ 65:1378–1382, 2001.)*

# Summary of Pain Neurobiology

- Models of pain/theories have shaped our treatment approaches
- Acute pain is normal and protective
- Chronic pain is a nervous system disease a product of maladaptive plasticity
- Central and peripheral nervous system are highly modifiable/plastic (peripheral and central), and present with discrete characteristics
- Immune, neurochemicals, genetics, psychological, social and lifestyle all play a role in pain
- Pain is best approached from a biopsychosocial model taking into account the complex nature of pain

# Pain in the Workers' Compensation Case

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- It should be respected in the patient
- It can be improved with appropriate medications
- With very high levels of pain and disability, a multidisciplinary approach is likely to be needed, and the rehab process is likely to be protracted
- It can be managed and even improved with Evidence Based Physical Therapy including Graded Exercise, Cognitive Behavioral Techniques, and Education
- It takes a team and an advocate

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# This includes Employers!!

- Early Workplace Communication and Problem Solving to Prevent Back Disability: Results of a Randomized Controlled Trial Among High-Risk Workers ***and*** Their Supervisors: J Occup Rehabili (2016) 26:150-159
- Steven J. Linton, Katja Boersma, Michal Traczyk, William Shaw, Michael Nicholas

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# Key Highlights

- Evaluated Risk and intervention administered to those with high risk
- Intervention being studied included the injured worker and their immediate supervisor
- Randomized into a (1) worker and workplace treatment package or (2) treatment as usual based on current guideline
- Main outcomes were absence due to pain, health care utilization, perceived health, pain rating

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# Interventions

- Treatment as Usual (TAU): Evidenced-based medical care (MD, RN, PT, Psychologist, Exercise, etc.)
- Worker and Workplace Package (WWP): Education on Biopsychosocial model of pain, Problem solving skills workshop, Motivational Interviewing, Communication skills training, Role play

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# Results (6 month follow up)

- Work Absence Due to Pain: WWP group reduced absent work day by ½ with mean of 4.1 days missed. TAU group mean of 15.4 days missed.
- Health Care Utilization: TAU group was 4x more likely to continue to seek care for pain versus the WWP group
- Perceived Health Scores: WWP group showed steady improvement in health scores, TAU group declined
- Pain Ratings: Both groups rated pain as less intense but no difference between groups

# Treatment Options for High Risk Cases

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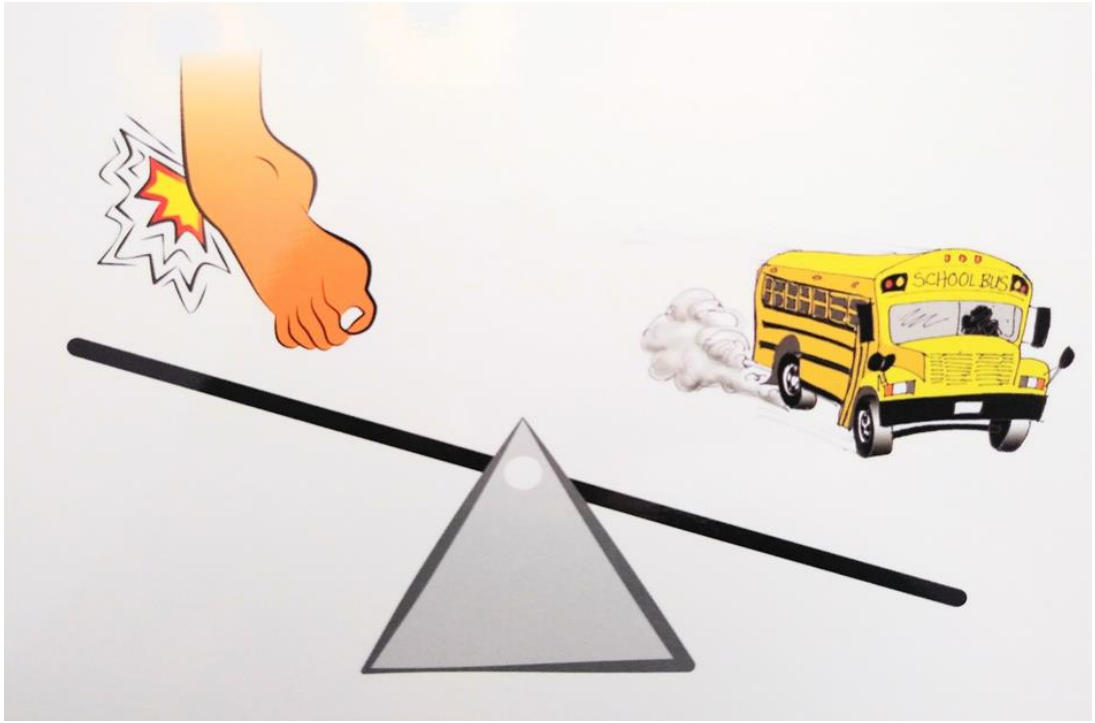
# Identify the Dominant Pain Issue

| Dominant Pain Mechanism | | |
|---|---|---|
| **Nociceptive Pain** | **Peripheral Pain** | **Central Sensitization Pain** |
| Pain localized to the area of injury/ dysfunction | Dermatomal or myotomal pattern | Disproportionate, non-mechanical, unpredictable pain pattern |
| Clear, proportionate, mechanical aggravating and easing factors. | History of nerve pathology or compromise | Strong association to mal-adaptive psychosocial factors (negative emotions or poor self efficacy, etc.) |
| Antalgic postures/movement patterns | Pain provocation with loading or compressing nerve tissue | Diffuse non-anatomical pattern |

*(Smart et al. 2012)*

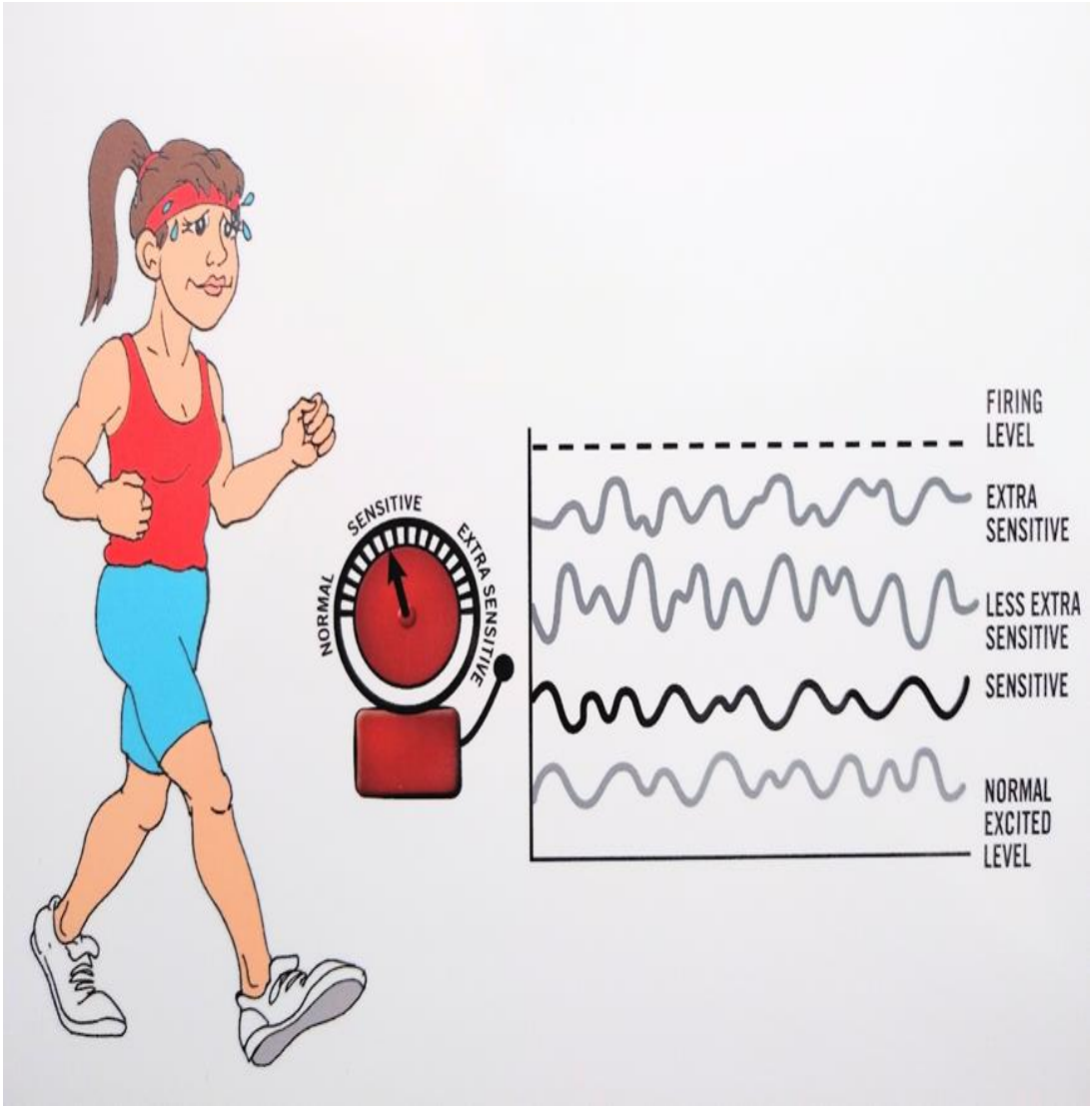
# Pain and the Brain




***Education***: Patient was educated on the concept of pain as an output of the brain, including nociception versus pain, inhibition and facilitation, and threat value using metaphors.

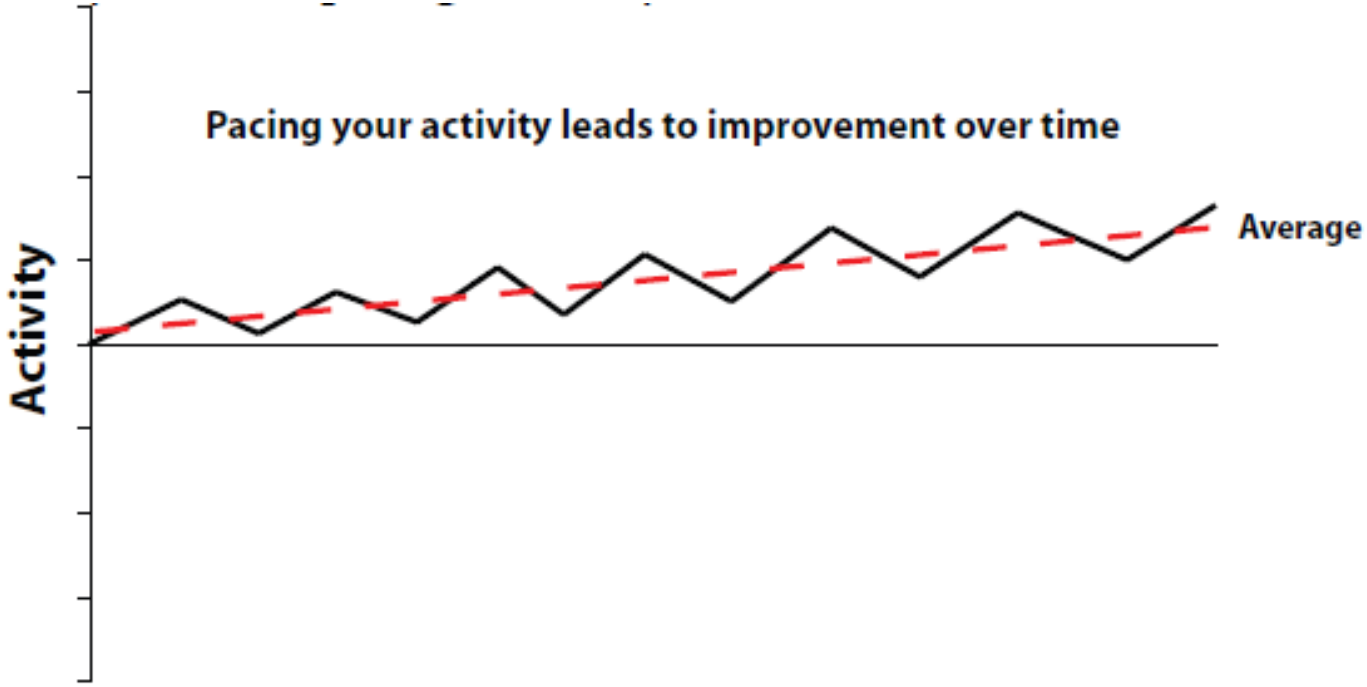
# Aerobic Exercise

- Just as effective as medications for Depression (Cochrane 2013)
- Pain Relief with activity in 50% VO2 max or HR around 100-105bpm for >10min. (Hoffman, Shepinski 2004)
- Doesn't have to be body part specific




***Education***: Patient was educated regarding endogenous mechanisms and strategies to increase the brain's production of chemicals which decrease pain, such as aerobic exercise and improved pain knowledge. The concepts of pacing and graded exposure were discussed. Sleep hygiene and diaphragmatic breathing topics introduced to help calm the nervous system and reduce stress.

# Pacing


Pacing your activity leads to improvement over time
Activity
Average

# Graded Exposure

- The activities a patient avoids determine the focus of treatment
- Pt's asked to identify activities that they are highly fearful of performing.
- Once identified the activities are incorporated into the therapy program
- Start at low level in comfortable position to begin the activity or perform steps or prep work at low level of fear
- The activity is increased to mildly increase fear and performed until fear subsides…

# Summary

**To best manage the complex workers' compensation case**

- Identify risk stratification early
- Understand and appreciate pain processes and psychosocial influences that occur and influence a claimant's behavior
- Adjust care to match pain mechanism and keep injured workers functioning to the best of their ability while they heal.
- For high risk patients, keep communication open with the entire care team

# Resources

- Motivational Interviewing Resource
  - https://new-learning.bmj.com/course/10051582%20

- Pain Neuroscience Education: Teaching People About Pain, 2nd edition, Orthopedic Physical Therapy, March 2018; Adriaan Louw, PT, PHD, CSMT

- You Tube: Understanding Pain - A 5 minute video