



PSYCHONEUROIMMUNOLOGY IN ACTION:  
 BEHAVIOURAL NEUROMODULATION FOR CHRONIC PAIN – IT’S A LOT MORE FUN THAN YOU MIGHT THINK.

Randolph Sparks  
 Psychologist



○ A few basics:


- Pain is real
- Pain = Danger
- Survival and immune system interaction




“We believe that all pain experiences are normal and are an excellent though unpleasant response to what your body judges to be a threatening situation. We believe that even if problems do exist in your joints, muscles, bones, ligaments, nerves, immune system or anywhere else, it won’t hurt if your brain thinks you are not in danger...”

In exactly the same way, even if no problems whatsoever exist in your body tissues, nerves or immune system, it will still hurt if your brain thinks you are in danger. It is as simple, and as difficult, as that”

(Lorimer & Mosely, 2006)






Survival trumps higher order processes

- Pleasure
- Curiosity
- Positive emotions
- Sense of self
- Process new info

- Breath
- Eat
- Sleep
- Survival: Fight or Flight



FIGHT OR FLIGHT

- Continual “threat” messages with chronic pain – continual activation of HPA-Axis
- Cognitive – Attention, interpretations, beliefs
  - Positive info irrelevant
  - Instant categorisation – B&W thinking
  - Threat – catastrophise, interpret threat
- Emotional – Fear, anger, vigilance
- Behavioural - Avoidance
- **Chronic pain = Chronic stress**

FIGHT OR FLIGHT

- Chemical and physical changes
  - Release of Cortisol and Adrenaline
  - Heart rate and circulation
  - Breathing
  - Muscle tension
  - Liver releases sugar, cholesterol, fatty acids
  - Sweating
  - Immune response compromised

- Chronic Pain as an Immune Response
- Immune response = Immobilize!

- When you have the flu ...
  - Pain
  - Stiffness
  - Fatigue
  - Mood
  - Temperature

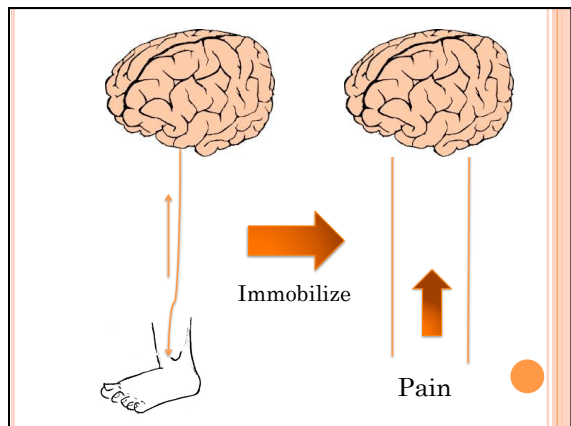
Same symptoms for pain flare-up.

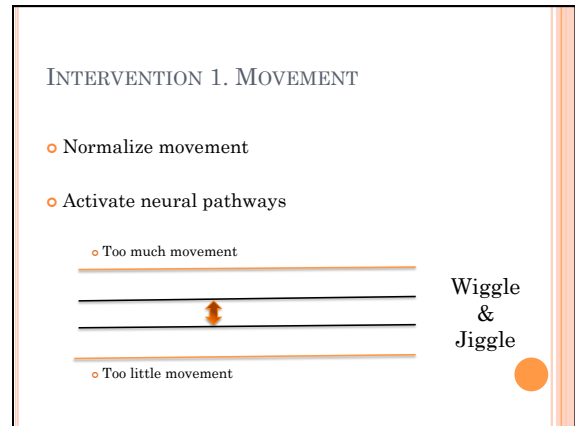
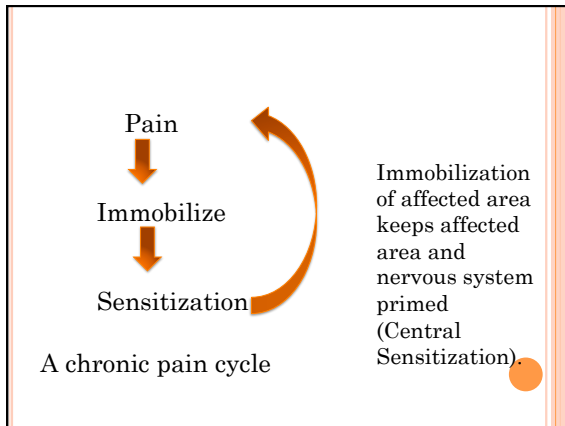
Pain flare-up can be viewed as immune response.

Pain mimics illness

MOVEMENT AND IMMOBILIZATION

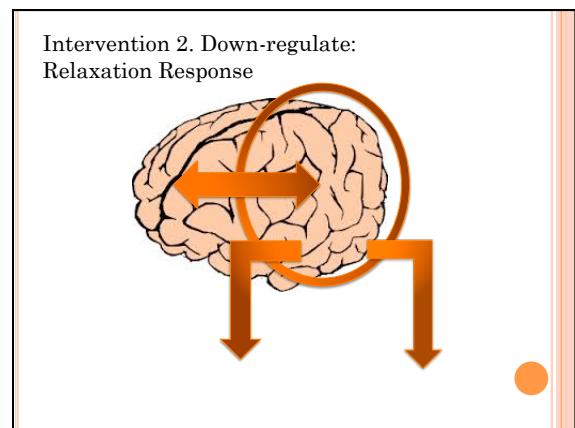
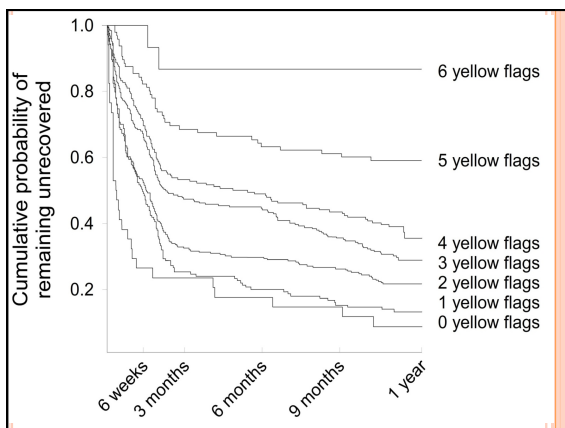
- What happens when we immobilize?
- Phantom limb phenomenon
  - Movement is information
  - Information can be pain





- ### INCREASING MOVEMENT
- Reduce fear of movement
  - Cognitive restructuring
  - Behavioural experiment
  - Reduce central sensitization
  - Normalize information flow
  - Return neural pathways to normal capacity

- ### ALLOSTATIC LOAD
- Load factors influence pain perception
  - Load compromises immune system
  - System Immobilizes to manage load



### DOWN-REGULATE

- Safe place
- Rapport
- Normalise


Therapist

Client


- Address load factors
  - Serenity prayer
  - Relaxation exercises
    - Breathing
    - PMR
    - Mindfulness
- Allow access to frontal lobes

### CHOICE AND THE OPERATING SYSTEM

- Choice as a pain modulator



### CHOICE AND THE OPERATING SYSTEM

Pre-chronic pain system	New Pain-based System
<b>GO = Normal</b>	Pain = <b>STOP</b>
<b>STOP =</b>	Pain = <b>GO</b>
<ul style="list-style-type: none"> <li>○ Acute injury</li> <li>○ Choice                             <ul style="list-style-type: none"> <li>• Quota                                     <ul style="list-style-type: none"> <li>○ Time</li> <li>○ Distance</li> <li>○ Repetition</li> </ul> </li> </ul> </li> </ul>	 Binary system replaces

### CHOICE AND THE OPERATING SYSTEM

- Pain is now functional to the operating system
- Now reliant on pain for decision making
  - Automatic (systemic)
  - Conscious
- Remember – pain = danger = stress = immune
  - Continual vigilance and activation of systems

How can we “get rid of” pain if it now controls and regulates our operating system?

### CHOICE AND THE OPERATING SYSTEM

#### INTERVENTION 3. PACING

- How to retrain the operating system:
- Pacing
  - Choice
  - Predictability
  - Behavioural experiments
    - Disconfirm hypotheses
    - Build self-efficacy through success
    - Enhance behavioural activation

### PACING

- Essential skillset for Pain Clients
- Choose physical activity
- Perform and measure up to point of pain
- Repeat and calculate average
- Reduce by 30%
- Perform regularly
- Good day – DO NO MORE
- Bad day – DO IT ANYWAY
- Gradually increase

### PACING

- Particular considerations with Chronic Pain
  - Planned
  - Gradual
  - Realistic goals
    - Break into smaller steps
    - Experience sense of achievement at each step, rather than only at the end
    - Reduce chance of “failure”
    - Avoid the Boom-Bust cycle

### INTERVENTIONS IN PI/BN APPROACH

- Down-regulate
- Increase movement
- Pacing
- These are additive to TAU

### STANDARD TREATMENT : CBT

- Don't forget the basics!
  - Education about pain
  - Relaxation training
  - Behavioural activation
  - Sleep hygiene
  - Cognitive intervention
  - Communication/Assertiveness skills
  - Multidisciplinary approach recommended
  - Individual/Group based



And remember:

Think Happy Thoughts!