Lower back pain aka the most interesting topic in the world.
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• Bachelor of Science
• Major: Interdisciplinary Health Services
• Minor: Psychology
• College of Health and Human Services
• Lee Honors College
• Interest in Physical Therapy
Lower Back Pain

WHAT IS IT?!?!

- Preventable and Treatable
- Pain in low back
- Affects daily routine or specific activities
- Access and affordability of health care
- Lumbar, Sacral, sometimes associated with Thoracic
- Common among young adults, older adults and elders, and comes in several forms with various symptoms
- Can be related to problems with nerves or discs, inflammation of tissue or ligaments, tightness of muscle or, as in most cases, a combination
P.a.i.n

• Perception
• Alarm
• Input
• Nerves/Nervous System
CNS
- Brain and Spinal Cord
- Spinal Cord receives messages from sensory nerves
- Spinal cord sends messages to brain and to pain site
- Brain analyzes message
- Brain comes up with new message to reduce or rid of painful experience

PNS
- Autonomic and Somatic Nervous Systems
- Receives/ sends sensory input

Neurons
because slightly different alarm systems can be activated when nerves are damaged.
Perception

- Depends on environmental, emotional and other factors
- Your body relies on these sensory cues to effectively deal with pain
- These sensory cues allow your body to understand what is happening and how to best adjust to the situation
Environment

How your environment is effected with lower back pain...

- Work
- Family
- Responsibilities...
Work with Lower Back Pain

- Work environment changes perception of pain
- Expectations from boss or colleagues
- Fear of pain or consequences
- New Zealand study
  - Tested why rural workers with reoccurring LBP continue to work
  - Results: “Just carry on”, “Love the land”, “can do” attitude
- LBP accepted as lifelong, “a part of everyday life”
  - Increased self-efficacy
  - Changed perception and approach to treatment
Fear-Avoidance Model

- Overly fearful people are likely to end up with chronic pain
- Avoid movement and activity
- Avoid provoking pain
- Tend to maintain avoidance behaviors even when pain is gone
- Increases tolerance of stimulus and leads to increase withdrawal from normal activities
- Unhealthy coping strategies
a) NOCICEPTION

Nociception

- Pain from tissues at the end of a neuron
- Nerve endings are excited
- Chemical or mechanical processes excite nerve endings
- For tissue to hurt, must be innervated by nerve endings

b) PERIPHERAL

Peripheral

- Nerves connect brain to spinal cord and tissues
- Dorsal Root Ganglion (DRG)
  - Contains nuclei
  - Initial evaluation of message
- 1) Autonomic Nervous System
  - Internal organs
  - Responses to stress
- 2) Somatic Nervous System
  - Skin and voluntary muscles
Nociception

- Pain from tissues at the end of a neuron
- Nerve endings are excited!!
- Chemical or Mechanical processes excite nerve endings
- For tissue to hurt, must be innervated by nerve endings
Nociception: Membrane Potential

- Depending on input or stimulus, level of resting potential can be altered
- Everyone has different threshold for activation of action potential
- Inflammation, breathing patterns or pain perception
Peripheral

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Alarm

- Pain acts as an alarm system for your body.
- Protects body against further damage.
- Provides guidance.
Treatment

Alternative
- Tai Chi
- Yoga
- Meditation

BOTH
- Breathing
- Biofeedback
- Massage
- Spinal Manipulation

Physical Therapy
- Manual Therapy
- Exercise
- Education
Alternative Methods

- Preventative approach to treatment
- Strengthening bone and muscle mass
- Enhance controlled breathing
- Educating people on how to stay in present moment and release tension by targeting pain
- "a group of diverse medical and health care systems, practices and products that are not currently considered part of conventional medicine" (Brannon, Feist & Updegraff, 2010)
- Research shows yoga providing several benefits for low back pain
YOGA

- Mind-body practice
- Physical postures, breathing, meditation
- GOAL: to balance mind, body and spirit
- “Controlled breathing fosters relaxation”
- Hatha yoga is most common form
- Focuses attention and concentration on body
- Allows mind to be clear of other busy thoughts
Yoga Study

- Study done at WVU
- 90 adults - age 23-66
- All suffering from chronic LBP
- Half practiced Iyengar Yoga
- Half with "usual medical care"
- Iyengar group saw 29% reduction in functional disability, 42% reduction of pain, 46% reduction of depressive symptoms in 24 weeks

In the journals: Yoga therapy helps relieve chronic lower back pain. (2009, 11). Harvard Health
Physical Therapy

- Manual Therapy
- Examination, Evaluation, Planning
- Teach, Research, Consultate
- “Review patients’ medical histories, and measure patient’s strength, range of motion, balance, coordination, muscle performance, and motor function”
- Modalities: Electrical stimulation, ice, heat
BOTH

• Both use several similar techniques
• Breathing is a common yet complicated one

• Breathing pattern disorders
  • i.e. Hyperventilation
  • Leads to negative psychological, biochemical, neurological and biomechanical influences

• Ventilation INCREASES $\rightarrow$ CO2 output increases $\rightarrow$ Hb less likely to release O2 into tissues
Healthcare
Education

• Importance of prevention and understanding risks
• PT needs to identify client’s ability to learn, understand and grasp health concepts
• “Understand pain so you don’t fear it”
• Can apply knowledge to problems at hand
• PT’s role in clients perception of pain:
  • To educate
  • Word choice
• Client’s role:
  • Responsible for becoming educated
  • Communication with therapist on goals and expectations
- Responsible for becoming educated
- Communication with therapist on goals and expectations

Health Literacy
- Vital component of education within health care
- Higher education and income = better health and longevity
- Focus is on long-term care and other areas of health care rather than community, primary and preventative services
- There is a need for more balanced health literacy rates
- First step is identifying and defining health disparities

Health Disparities
- "a particular type of health difference that is closely linked with social, economic, and/or environmental factors"
Health Disparity

- “a particular type of health difference that is closely linked with social, economic, and/or environmental disadvantage” (Brannon, Feist, Updegraff, 2010)
- Racial and economic are most prevalent
- Lack of insurance, difficulty in obtaining access to care, higher infant mortality rates, lower health literacy
- U.S. is making movements for more affordable and quality care!!
Patient Protection and Affordable Care Act

- Health care costs risen from 5.3% of GDP to 17.6% in 2009
- 46.7 million are without coverage
- Employers limiting health benefits
- Addresses consumer protections, employer-providing insurance and vulnerable populations access to care
- Financial barriers of preventative care are diminished
- Employers can afford health care coverage, so they can provide for their employers
- Medicaid is expanded to non-medicare eligible persons
- Intentions: expand coverage and provide better health care coverage with more accessibility and improved quality
Healthcare Coverage

- "Direct Access" vs. Referral
- We have the potential for lower health care costs if we understand it
Recap

• Low back pain is treatable!
• One of most common forms of pain
• Prevalent case within PT clinics
• P.A.I.N.
• Perception, Alert, Input, Nerves/Nervous System
• PPACA and several other health care reforms are sweeping the nation!
• Holistic and complementary approaches to treatment are beneficial and successful

Thank you!
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