Exercise for Treating Chronic Pain

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www.onsmd.com
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Who am I and where did I come from?

- Born in Rochester, NY
- Medical School:
  - New York Medical College, Valhalla
- Physical Medicine and Rehabilitation, Board Certified 2014
  - Residency at Mount Sinai Hospital, NY
- Sports Medicine (ABFM), Board Certified 2014
  - Fellowship at Mount Sinai Hospital, NY
Objectives

• Brief review of chronic pain
• Exercise
• Exercise treatments for chronic pain
• Prevention of pain
• Steps to get started
A Quick Word of Caution

• This lecture is **NOT** intended to replace individualized medical advice
What is Chronic Pain?

- **Acute pain** is normal sensation triggered in the nervous system to alert you to possible injury.

- **Chronic pain** is often different:
  - Pain signals keep firing in the nervous system for weeks, months, even years.
  - There may have been an initial injury or an ongoing cause of pain (ex: arthritis, cancer).
  - But some people suffer chronic pain in the absence of any past injury or evidence of body damage.

- PAINMED.ORG
### Chronic Pain is Common

<table>
<thead>
<tr>
<th>Condition</th>
<th>Number of Patients in U.S.</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chronic Pain</strong></td>
<td>100 million</td>
<td>Institute of Medicine</td>
</tr>
<tr>
<td>Diabetes</td>
<td>25.8 million</td>
<td>American Diabetes Assoc.</td>
</tr>
<tr>
<td>Coronary Heart Disease</td>
<td>16.3 million</td>
<td>AHA</td>
</tr>
<tr>
<td>Cancer</td>
<td>11.9 million</td>
<td>American Cancer Society</td>
</tr>
<tr>
<td>Stroke</td>
<td>7.0 million</td>
<td>AHA</td>
</tr>
</tbody>
</table>

- Institute of Medicine Report from the Committee on Advancing Pain Research, Care, and Education: *Relieving Pain in America, A Blueprint for Transforming Prevention, Care, Education and Research*. The National Academies Press, 2011.
## Where is the pain felt?

<table>
<thead>
<tr>
<th>Location</th>
<th>Prevalence</th>
<th>Duration &gt;3 months</th>
<th>Occurs on &gt;Half Days</th>
<th>High Impact on Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headache</td>
<td>40%</td>
<td>66%</td>
<td>16%</td>
<td>11%</td>
</tr>
<tr>
<td>Abdomen</td>
<td>23%</td>
<td>67%</td>
<td>30%</td>
<td>18%</td>
</tr>
<tr>
<td><strong>Back</strong></td>
<td><strong>39%</strong></td>
<td><strong>81%</strong></td>
<td><strong>45%</strong></td>
<td><strong>32%</strong></td>
</tr>
<tr>
<td>Neck</td>
<td>31%</td>
<td>81%</td>
<td>47%</td>
<td>32%</td>
</tr>
<tr>
<td>Shoulder</td>
<td>29%</td>
<td>79%</td>
<td>51%</td>
<td>33%</td>
</tr>
<tr>
<td>Hand/Wrist</td>
<td>23%</td>
<td>77%</td>
<td>52%</td>
<td>37%</td>
</tr>
<tr>
<td>Hip/Knee</td>
<td>28%</td>
<td>83%</td>
<td>55%</td>
<td>40%</td>
</tr>
<tr>
<td>Ankle/Foot</td>
<td>17%</td>
<td>80%</td>
<td>61%</td>
<td>42%</td>
</tr>
</tbody>
</table>

Back pain

• Back pain is a leading cause of disability in Americans

• More than 26 million Americans experience frequent back pain.

• Adults with low back pain are often in worse physical and mental health than people who do not have low back pain.

• Adults reporting low back pain were 3x as likely to be in fair or poor health and >4x as likely to experience serious psychological distress

• http://www.cdc.gov/nchs/data/hus/hus06.pdf
Pain is expensive

- U.S. Annual health care costs; $560 billion to $635 billion (in 2010 dollars)

Institute of Medicine Report from the Committee on Advancing Pain Research, Care, and Education: Relieving Pain in America, A Blueprint for Transforming Prevention, Care, Education and Research. The National Academies Press, 2011.
Poor sleep

• An estimated **20% of American adults** (42 million people) report that pain or physical discomfort disrupts their sleep a few nights a week or more

Typical Chronic Pain Treatment Options

- Rest
- Topical modalities (heat, ice, TENS, E-Stim)
- Topical medications
- Acupuncture
- Chiropractic care
- Oral medications (Tylenol, NSAIDs, gabapentin, Opioids)
- Physical Therapy
- Injections
- Surgery
Chronic Pain and Long Term Pain Medication

• 51% felt they had little or no control over their pain.
• 60% experience breakthrough pain one or more times daily, severely impacting their quality of life and overall well-being.
• 59% reported an impact on their overall enjoyment of life.

2006 Voices of Chronic Pain Survey. (American Pain Foundation)
Now what?

• “Hey Doc, I tried everything and still have pain”
Goals When Living with Chronic Pain

• Reduce pain level to manageable levels
  – ‘Curing’ chronic pain or becoming pain free is often unrealistic in many chronic pain conditions

• Perform Activities of Daily Living (ADLs) independently with greater easy and comfort

• Participate in recreational and various activities you enjoy
  – May be different for every person
Exercise and Increased Activity Level

• What type of exercise or activity?
• Frequency
• Duration of each session
• Duration of total program
• How do I get started?
Is Exercise Dangerous?

• There is no conclusive evidence in the medical literature that exercise or activity cause harm and should be avoided in **chronic pain conditions**
“Won’t Exercise Make My Pain Worse?”

- INACTIVITY MAKES PAIN WORSE
- Even in acute back pain, bedrest for any longer than a day or two tends to result in greater pain
Risk Factors for Developing pain

• In 1999, British researchers studied 2,715 adults without back pain

• It was not physical activity that increased the risk of low back pain later on – but poor health and being overweight
Back pain
Low Back Pain

- 2011 Italian study for chronic low back pain
- 261 people
- 310 patients
- 12 month physical activity program
- Normal activity
- Significantly improved overall health and pain
Low Back Pain

- Sixty-one randomized controlled trials including 6390 participants:
  - Exercise therapy appears to be effective at decreasing pain and improving function in adults with chronic low-back pain, particularly in healthcare populations.
  - In subacute low-back pain there is some evidence that a graded activity program improves absenteeism outcomes.

Return to work

• In 1992 Swedish researchers randomized 103 low back pain sufferers out of work on disability
  
  Exercise program
  
  Returned to work much faster
  
  Usual care

• A 2000 study in Finland and a 2005 Swiss study came to similar conclusions
• 2010 review of 61 studies involving 6,390 people agreed
Chronic/Recurrent Low back pain – Back School

• 19 Randomized control trials which included 3584 patients were included in a review.

• Authors conclusion:
• There is moderate evidence suggesting that back schools:
  – Reduce pain
  – Improve function
  – Return-to-work status
    • Compared to exercises, manipulation, myofascial therapy, advice, placebo or waiting list controls

Back School

• Educational program teaches:
  – Back care
  – Posture
  – Body mechanics
  – Back exercises (core strengthening, abdominal exercises)
  – Activity programs
  – Prevention techniques

• Back school works only as well as you make it work by applying your back-care knowledge on a regular basis.
# Total Body Resistance Exercise Program - LBP

<table>
<thead>
<tr>
<th>Total Body Resistance Exercise Program</th>
<th>Lumbar Extensor Program</th>
<th>Control Group</th>
</tr>
</thead>
</table>

Greatest reduction in perceived disability
Greatest reduction in pain severity

Pilates and Low Back pain

- Decreased pain and increased function with Pilates compared to usual care and physical activity in the short term (<6 months)
- Pilates is equivalent to other forms of exercise in terms of pain relief

Iyengar yoga and Low Back Pain

Iyengar Yoga

Standard Core strengthening and stretching

- Better pain reduction
- Increased measured Health Related Quality of Life (HRQOL).

Preventing Low back pain

• Review of 13 articles
• Moderate quality evidence
  – Post-treatment exercises were more effective than no intervention
  – Reducing the rate of recurrences at one year.
  – Two studies demonstrated continue benefit for two years follow-up
• Conflicting evidence was found for treatment exercise.
  – To me, exercise=good

Choi BKL, Verbeek JH, Tam WWS, Jiang JY. Exercises for prevention of recurrences of low-back pain. Cochrane Database of Systematic Reviews 2010, Issue 1
Fibromyalgia

• Clinical syndrome of diffuse muscular pain:
  – Chronic
  – Non-inflammatory
  – Muscular tender points

• No true damage to peripheral tissue

• Associated with headaches, chronic fatigue, irritable bowel syndrome, depression
Fibromyalgia – Resistance Training

• Moderate and moderate to high intensity resistance training improves:
  – Function
  – Pain
  – Tenderness
  – Muscle strength

Fibromyalgia

- Supervised aerobic exercise training has beneficial effects on physical capacity and FMS symptoms.¹

- Eight weeks of aerobic exercise was superior to moderate-intensity resistance training for improving pain in women with fibromyalgia.²

Fibromyalgia

• Medications have not been shown to provide any greater benefit than exercise

• "Aerobic exercise is the most effective weapon we have; healthy people profit from continuous physical exercise, and so do patients with fibromyalgia.” Dr. Hauser (European League Against Rheumatism Congress 2014).

Neck Pain

- Review of 31 articles

- There is strong evidence of benefit favoring a multimodal care approach of exercise combined with mobilizations or manipulations for subacute and chronic MND with or without headache in the short and long term.

Chronic Knee Pain

• Osteoarthritis

• Multiple Studies show increasing quadriceps strength reduces pain and reduces recurrence of knee pain.
Aquatic exercise for the treatment of knee and hip osteoarthritis.

• Aquatic exercise appears to have some beneficial short-term effects for patients with hip and/or knee OA

• Low impact

Rheumatologic Disease

• Rheumatoid Arthritis:
  – Inflammatory auto-immune disease

• Based on the evidence, aerobic capacity training combined with muscle strength training is recommended as routine practice in patients with RA.

• Tai Chi does not exacerbate symptoms of rheumatoid arthritis. In addition, Tai Chi has statistically significant benefits on lower extremity range of motion.

Prevention

• Exercise is a great way to prevent chronic pain.
• The epidemiological evidence is overwhelming
Prevention Starts in Early Years

• In 1997, Danish researchers tracked 640 school children over 25 years
  – Those who were physically active for at least three hours a week had a lower life-time risk of back pain.

• Interest in sports and exercise during leisure time is often established in the adolescent period.
• Continuing physical activity in adulthood may reduce low back problems.
• Therefore, it seems important to encourage youth to participate in physical activity.

Prevention

• In 1998, Finnish researchers studied 498 adults and found that the fittest people had the lowest risk of back problems.
Prevention

• 2011 study of 46,533 adults, Norwegian researchers found that among young and middle-aged people, the prevalence of chronic pain was **10-12 percent** lower for exercisers.

• The difference was even bigger – **21 to 38 percent** – among women aged 65 or older and, with slightly less dramatic numbers, among older men

**Landmark T, Romundstad P, Borchgrevink PC, Kaasa S, Dale O. Associations between recreational exercise and chronic pain in the general population: evidence from the HUNT 3 study.** *Pain.* 2011 Oct;152(10):2241-7. doi:
Adherance to Exercise

• Review of 42 trials with 8243 participants, mainly with osteoarthritis and spinal pain.
• Interventions such as supervised or individualized exercise therapy and self-management techniques may enhance exercise adherence.
• Accountability
  – Partner
  – Trainer
  – Set a schedule and stick to it

Does running cause arthritis?

• A study presented at the annual meeting of the American College of Rheumatology Nov 2014.
• Recreational running at any ages does not appear to contribute to development of osteoarthritis.
• In fact, it may even be protective in prevent OA.
• In people who do not have knee OA, there is no reason to restrict participation in habitual running at any time for fear of harming the knee joint.
• Does not apply to people who already have knee OA.
Non-pain related benefits

- Low level of physical activity increases mortality more so than smoking, obesity, hypertension, high cholesterol
- Active 80 year olds have a lower risk of death than inactive 60 year olds.
- Reduce mortality and risk of recurrent breast cancer by 50%
- Lower risk of colon cancer by over 60%
- Reduce The risk of Alzheimer’s disease by 40%
- Lower risk of stroke, developing diabetes and treating diabetes

How Do I Begin?
How Do I Begin?

• You should have a check up with your primary care physician prior to starting any new exercise routine
• Mention you are going to be increasing your activity level and starting to exercise
• Tell them if you have every had any previously problems when exercising
• Chest pain, Shortness of Breath, Fainting while working out, Family History
How Do I Begin?

• Start with an activity that you are familiar with and have done in the past
• If nothing comes to mind, start by going on short walks

• START SLOW!!
Conclusion

• Chronic pain is common
• Exercise and activity are very effective treatments
• Physical activity is protective in preventing chronic pain
• No magical single treatment, just start an activity that you enjoy
• Remember that inactivity can make pain worse
• By default, any activity is better than none!
• The best exercise routine is the one you will actually do
Online Resources

• Exercise is Medicine
• www.health.gov/paguidelines
• www.cdc.gov/physicalactivity/everyone/guidelines/index.html

• THANK YOU!