

Back Pain

Principles to Improve Outcomes
for Non-Surgical Pain

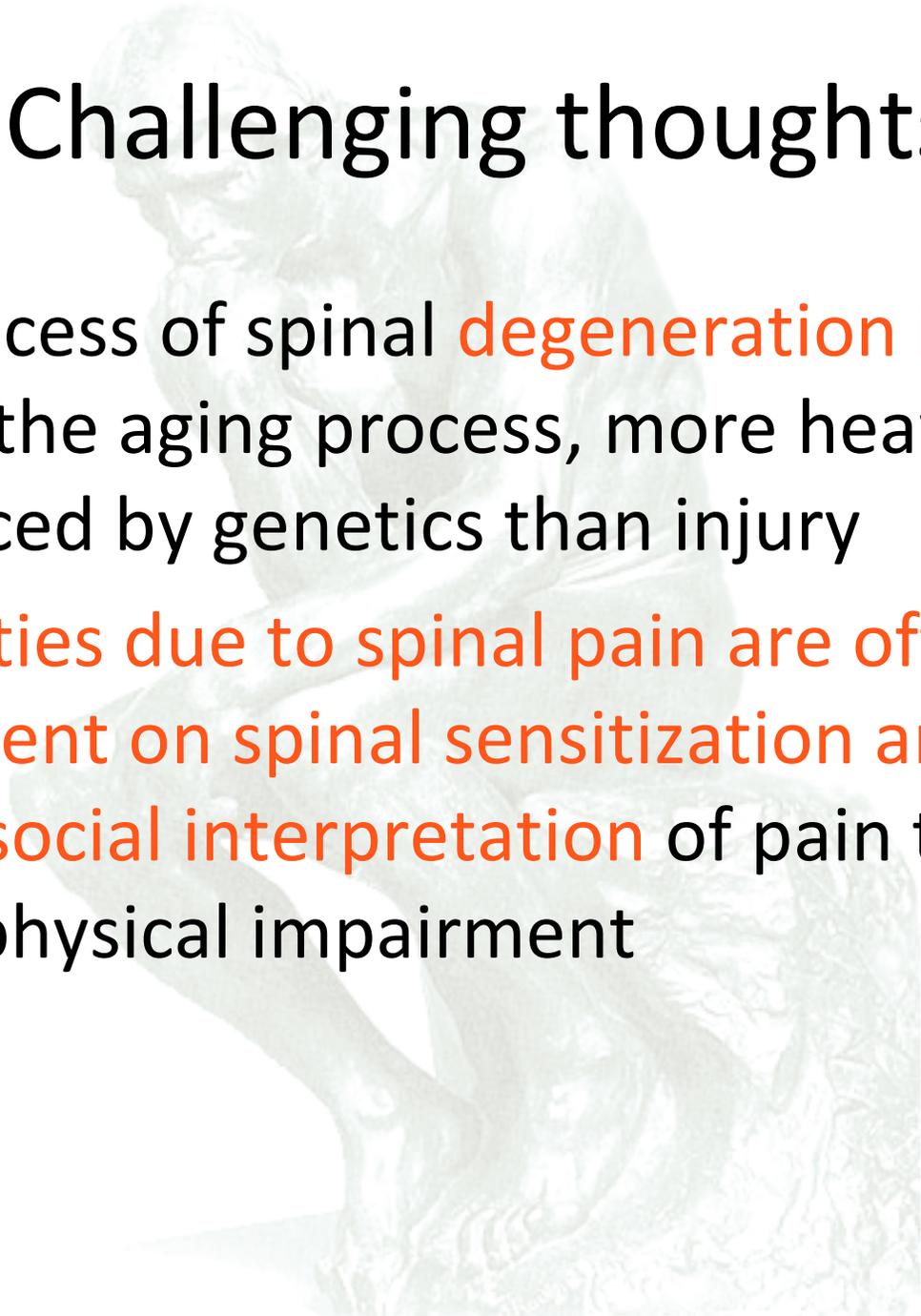
Brian Konowalchuk, MD, MPH

Outline

- Prevalence and Economics
- Anatomy and Physiology
- Genetics
- Imaging
- Psychosocial
- Narcotics
- Outcomes



Challenging thoughts



- The process of spinal **degeneration is a natural** part of the aging process, more heavily influenced by genetics than injury
- **Disabilities due to spinal pain are often more dependent on spinal sensitization and psychosocial interpretation** of pain than on actual physical impairment



Prevalence and Economic Considerations

Prevalence of LBP

- LBP Prevalence in developed nations:
 - Point prevalence
 - 12%–35%
 - Lifetime prevalence
 - 49%–80%
 - Maniadakis N, Gray A. The economic burden of back pain in the UK. *Pain* 2000;84:95–103.
 - Scovron ML, Szalski M, Nordin M, Melot C, Cucier D. Socioeconomic factors and back pain. *Spine* 1994;19: 129–37.
 - Frymoyer JW. Back pain and sciatica. *N Engl J Med* 1988;318:219– 300.
- United States up to 85% of the US population suffers at least one episode of LBP during their lifetime
 - Lively MW. Sports medicine approach to low back pain. *South Med J* 2002;95:642–6.
- Low-back pain appears to affect men and women equally

Prevalence cont.

- The course of LBP in an individual's lifetime is often recurrent, intermittent, and episodic
 - Mason V. The prevalence of back pain in Great Britain. Office of Population Censuses and Surveys. Social Survey Division. London: HMSO; 1994.
 - **Recurrence rates are high**
 - Chance of a recurrence within 1 year → 20%–44%
 - 80% of patients suffer a recurrence within 10 years of their first episode
 - National Institutes of Health. Research on low back pain and common spinal disorders. NIH Guide, Vol. 26. PA97 – 058. Bethesda (MD): National Institutes of Health; 1997.
- **For 5% of the adult population, LBP becomes a persistently disabling condition**
 - Croft P, Papageorgious A, McNally R. Health care needs assessment. Series 2. Oxon: Radcliffe Medical Press; 1997. p. 129– 81.

Prevalence cont.

- The **National Electronic Injury Surveillance System** was queried for all cases of low back pain presenting to emergency departments between 2004 and 2008.
 - Incidence rate of 1.39 per 1,000 person-years in the United States.
 - 3.15% of all emergency visits
 - 65% Injuries sustained at home
 - Bimodal distribution
 - peaks between 25 and 29 years of age (2.58/1,000 person-years)
 - 95 to 99 years of age (1.47/1,000)
 - No difference in overall rate by gender
 - However, when analyzed by 5-year age group
 - » males aged 10 to 49
 - » females aged 65 to 94 years had increased risk of low back pain than their opposite sex
 - When compared with Asian race, patients of black and white race were found to have significantly higher rates of low back pain.
 - Older patients were found to be at a greater risk of hospital admission for low back pain.

Is the Frequency of Low-back pain increasing?

- Data from a telephone survey
 - **5,357 households across North Carolina in 2006**
 - **Compared to 4,437 households in 1992**
- **Prevalence of chronic LBP**
 - **Increased from 4% in 1992 to 10% in 2006**
 - Evident for both men and women of all ages and black and white races
 - Symptom severity and general health status were similar for both years
- **number of people who saw a healthcare provider**
 - **Rose from 73% in 1992 to 84% in 2006**
- **Possible causes:**
 - *Rising rates of obesity and depression*
 - *Change in the type of work performed*
 - *Increased awareness of this chronic condition*
 - **REDUCED EXERCISE??**



Economics

Economic significance

- Where do the costs come from?
 - **Soft tissue** back pain, neck pain, and arm pain combined:
 - the *most common cause of disability and handicap in industrialized countries.*

Cost Trends

- Disabilities from low-back pain
 - Growth rate increasing
 - rate of growth **higher than virtually all other health problems**
 - Frymoyer JW, Cats-Baril L. An overview of the incidences and costs of low back pain. Orthop Clin N Am 1991;22:263– 71.
- 2% of the US workforce is compensated for back injuries every year
 - Andersson GB. Epidemiological features of chronic low back pain. Lancet 1999;354(9178):581–5.
- In 2005 Americans spent \$85.9 billion
 - Up from \$52.1 billion in 1997
 - Inflation-adjusted annual **medical costs increased from \$4,695 to \$6,096 per person**
 - That **money hasn't helped reduce the prevalence**
 - Feb. 13 (JAMA)

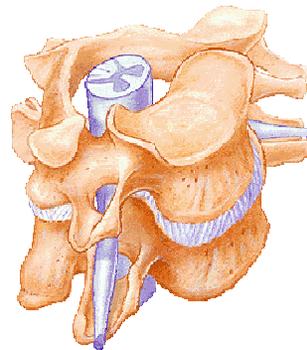
Cost Trends cont.

- LBP is the **most expensive cause of work-related disability** in people under the age of 45 years
 - average cost of a workers' compensation claim of \$8,300
 - **2X the average cost (\$4,075)**
 - Leigh JP, Markowitz S, Fahs M, Shin C, Landrigan P. Cost of occupational injuries and illnesses. Costs of occupational injuries and illnesses. NIOSH Final Report; 1996.
- Less than 10% of disability claims for LBP account for 65%–85% of the cost
 - Hashemi L, Webster BS, Clancy EA. Trends in disability duration and cost of workers' compensation low back pain claims (1988– 1996). J Occup Environ Med 1998;40(12):1110–9.
- Medical costs
 - account for **less than half of total health and productivity-related costs of LBP**
 - Goetzel RZ, Guindon AM, Turshen JJ, Ozminkowski RJ. Health and productivity management—establishing key performance measures, benchmarks, and best practices. J Occup Environ Med 2001;43:10– 7.

Anatomy and Physiology

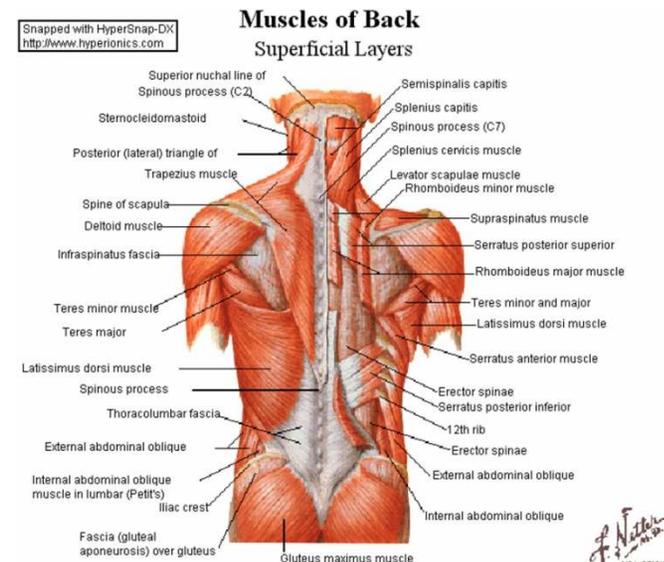
Spinal Anatomy

- In general, the back and neck includes the spine and the soft tissues that surround the cervical spine.
 - These **soft tissues** include:
 - nerves, muscles, ligaments, tendons, and blood vessels.

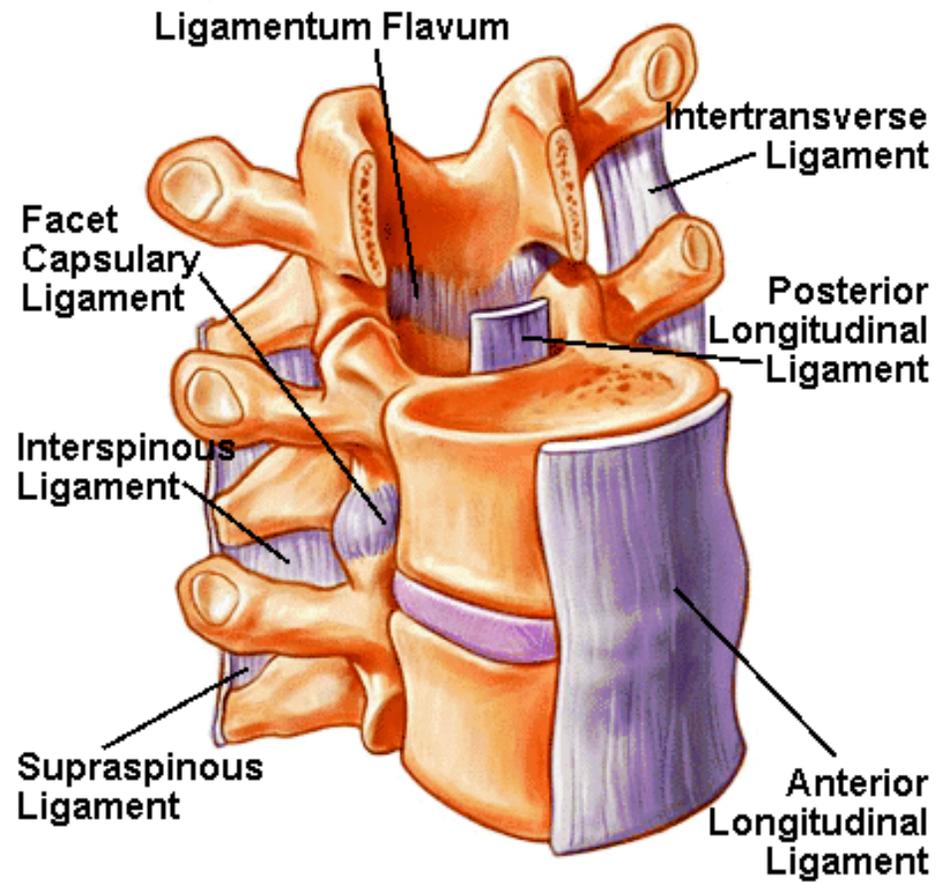


- **Spinal segment.**

- A spinal segment is made up of:
 - two vertebrae
 - the intervertebral disc between the vertebrae
 - the two nerve roots, one from each side that "branch off of" the spine.
- One pair of **spinal nerves** exits through the gap between the vertebrae in each segment.

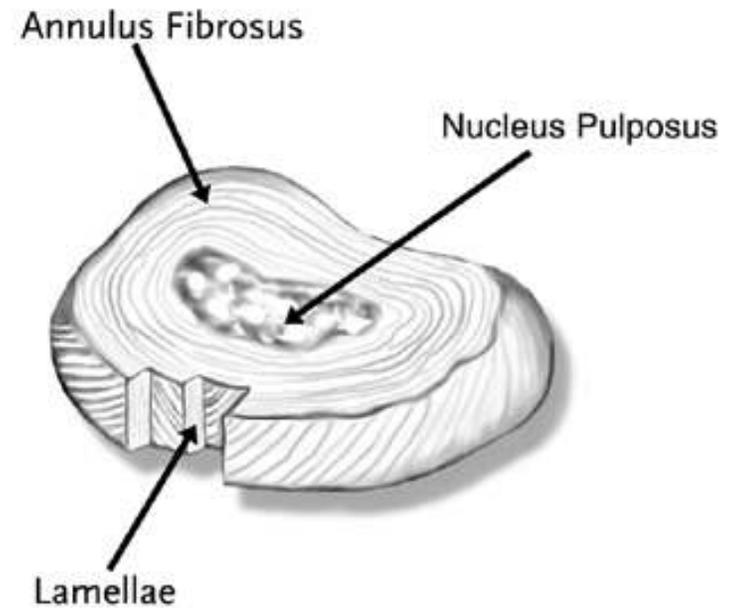


Anatomy of the “Spinal Unit”



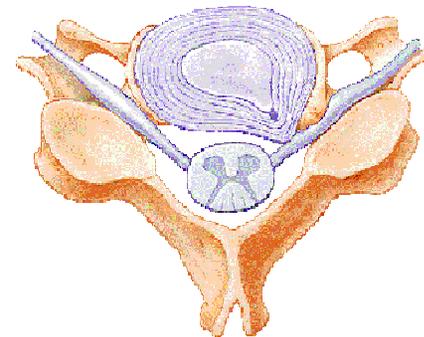
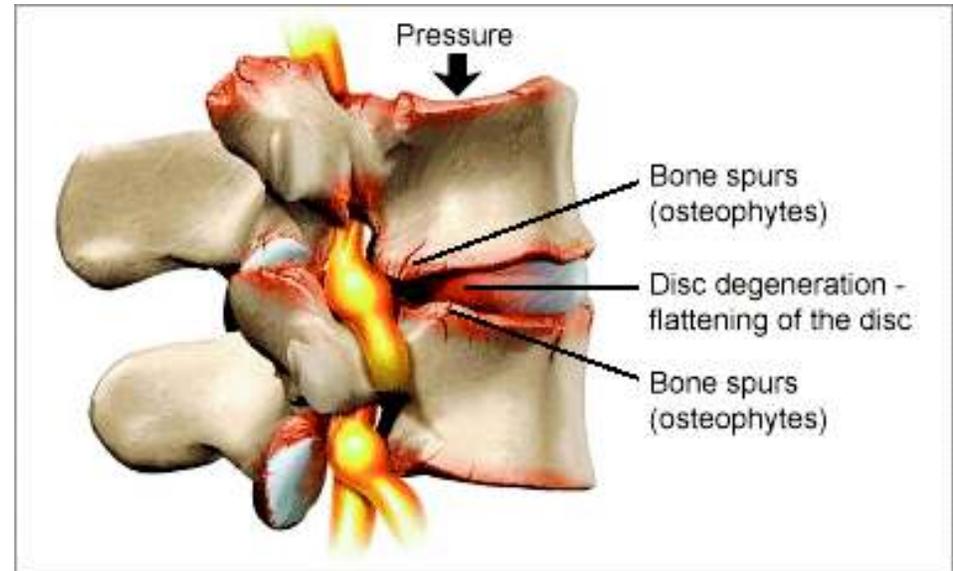
Spinal Anatomy cont..

- **Intervertebral Disc characteristics**
 - Viscoelastic
 - Absorbs energy
 - Moves with 6 degrees of freedom



Degenerative Spondylosis

- **Degenerative disc disease**
 - “natural process of the spine's degeneration”
 - As the body ages
 - muscles, joints, and bones weaken and degenerate
 - leads to the symptoms of degenerative disc disease



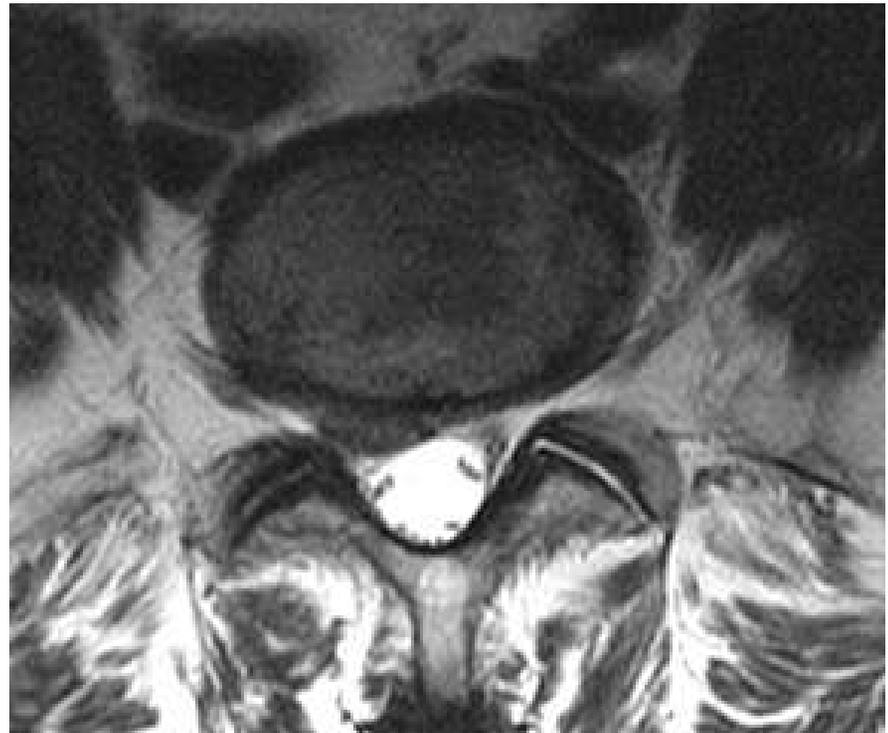
Imaging

Disc Degeneration

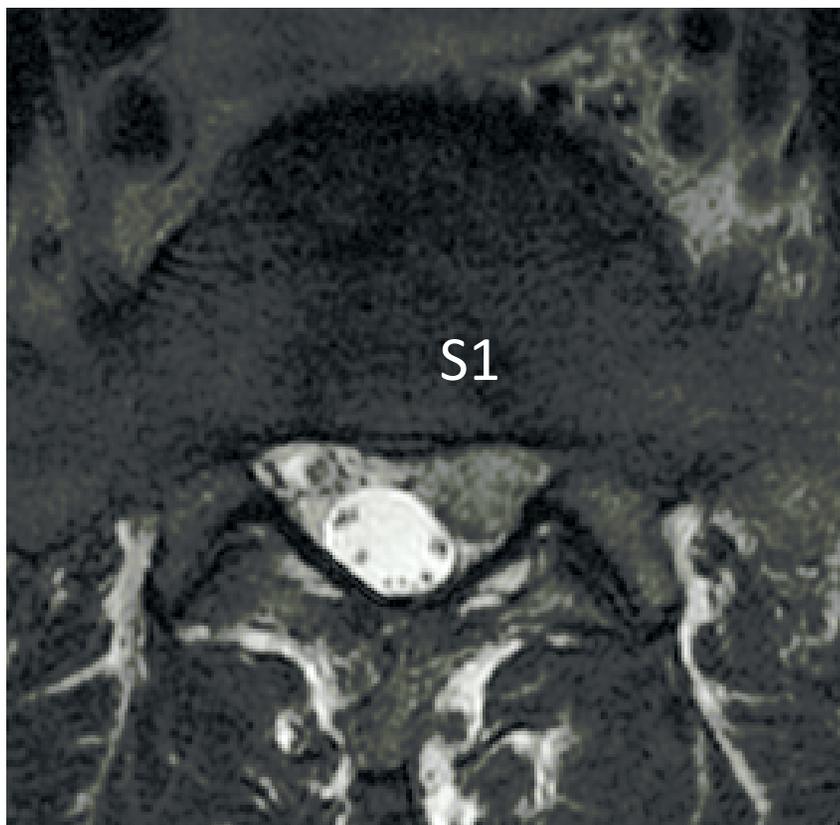
- MRI:
 - Loss of **T2 signal**
 - due to proteoglycan, water loss
 - **Annular tears:**
 - high T2 signal
 - Loss of disc height
 - Endplate changes



Disc Protrusion



Disc Extrusion



Comment on the MRI

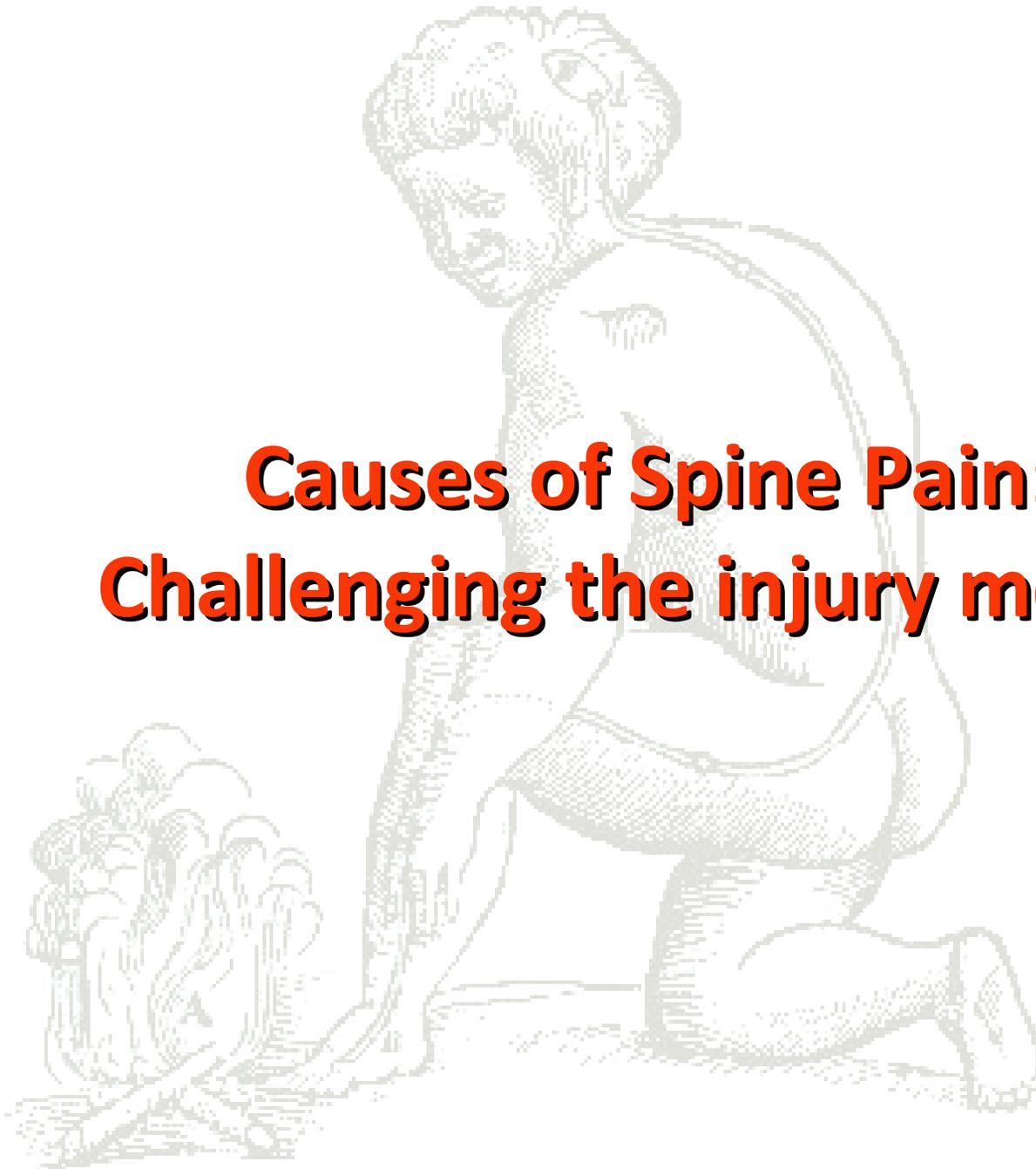
*“If you have a pristine spine at mid-life,
that is distinctly abnormal”*

- Often what we see on the MRI was present before the patient started to hurt, and will be present after the patient feels better.

Utility of Early Imaging

- Carragee, *Spine Journal* 2006
 - 5 year prospective observation study
 - baseline MRI in asymptomatic patients
 - MRI after (6-12 weeks) acute LBP episode
 - < 5% of MRI scans showed clinically relevant new findings
 - Findings on MRI after acute LBP episode unlikely to be new structural change
 - Only direct evidence of root compression in pts with corresponding radicular pain useful

Causes of Spine Pain: Challenging the injury model



We are starting to understand a more liberating model of spinal pain which fits much more comfortably with what we know works for the treatment of acute low-back pain...

James Rainville, MD

Injury Model of Disc Degeneration and Back Pain

- Abnormal/asymmetrical stresses and strains
- Repetitive movements
- Acute overload
- Acceleration of degeneration
- *Results in abrupt failure of spinal structures*



Evidence to **Support Injury Model**

- Most injured workers
 - report incident associated with onset of symptoms
- “Injury Model” is ***engrained in our societal wisdom*** about low back pain
- Engrained in ***beliefs of most medical providers*** (PCPs, PTs, Spine Specialists)

Implications of Injury Model

- Injury can be prevented
 - Activity avoidance may lead to injury avoidance
 - Work restrictions reduce risk
 - Ergonomical interventions will significantly reduce risk

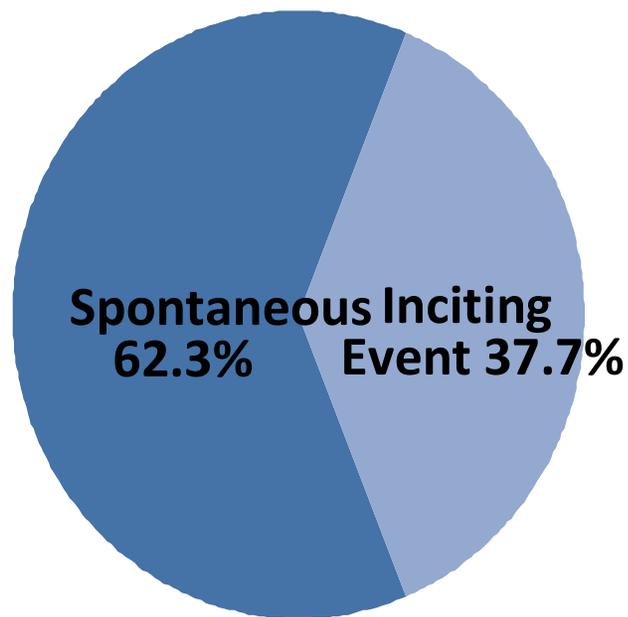
Evidence to Refute Injury Model

- Ergonomic interventions have not produced substantial reduction of back/neck injuries
 - Grooten, Work, 2007
 - Hartvigsen, Occ Envir Med 2005
- Activity avoidance offers no advantage over continued activities
 - Hagen, Spine 2002
- Work restrictions do not lead to greater RTW success
 - Hall, Spine 1994

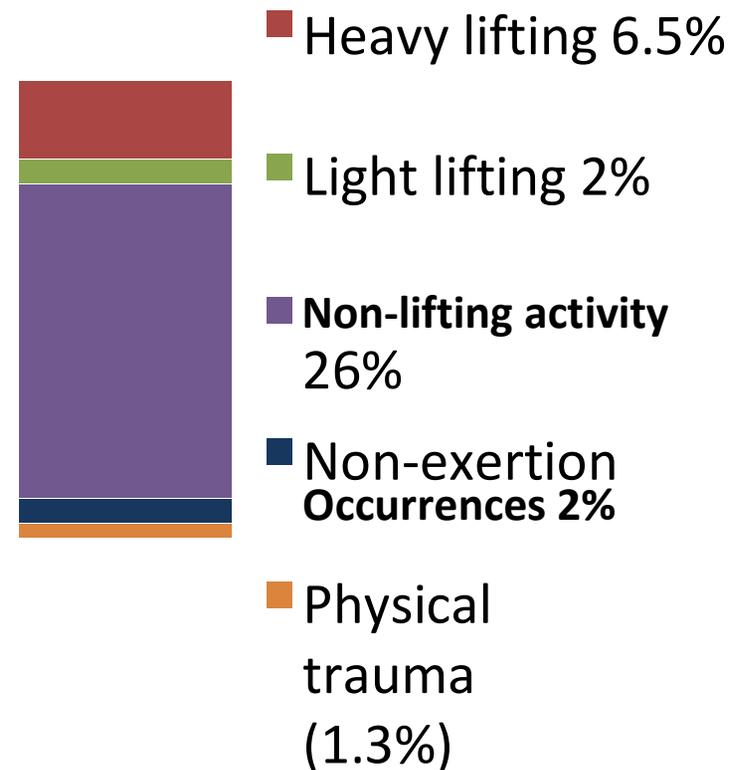
Onset of LBP and Sciatica (disc herniation)

- 70% of people cannot identify anything associated with onset of LB symptoms

— Hall, Spine 2005



Suri, ISSLS 2009



The process of aging



The aging MRI



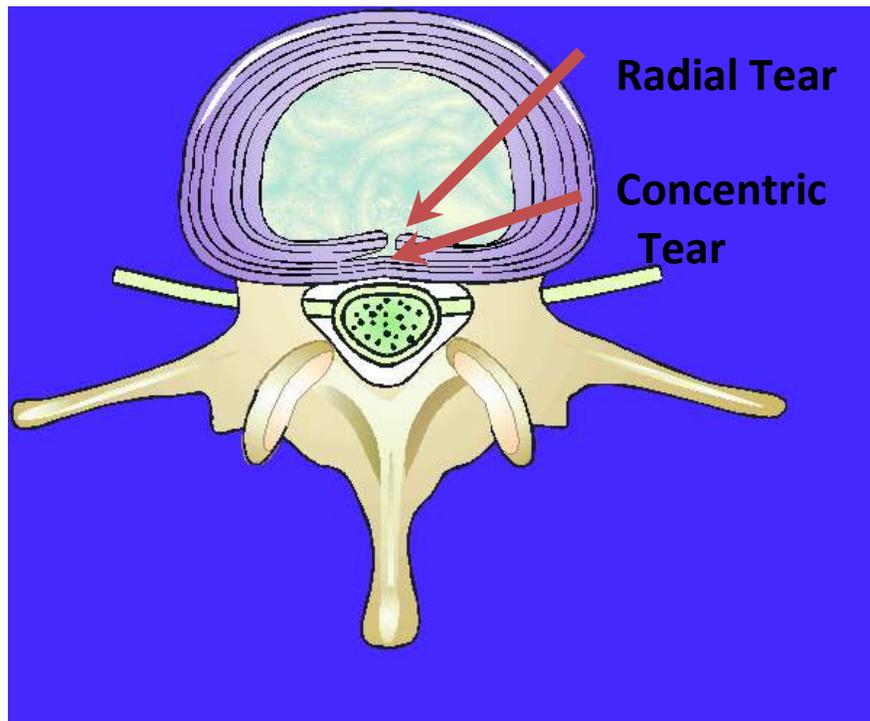
The Primary Etiology of Disc Degeneration

We Appreciate MRI

- Process of **Apoptosis**
 - Cell mediated changes in disc
 - Abnormalities of the collagen fibrils
 - Delamination of the mid to outer annulus
 - Radial fissures (tears)
 - **Distortion of the annulus, etc**
 - **Annular tears**
 - **Loss of proteoglycans in the nucleus pulposus**
 - **Disc desiccation and collapse**



Structural Failure of the Annulus



- Age 30
 - everyone has concentric tears
 - 75 percent radial tears
- **Ability to maintain annulus tension is less than intradiscal pressure**

Predictors of Disc Degeneration

- Lawrence
 - **10% of women aged 20-29 years experienced disc degeneration.**
 - definition included both disc space narrowing and osteophytosis
- Miller, *et al.*
 - in a cadaveric sample, found that **disc degeneration and spinal osteoarthritis initiated in the third decade of life.**

Predictors of Disc Degeneration cont.

- Not our relationship to activity, rather....
 - It's in our genes:
 - MR study of 250 pairs of identical and non-identical twins
 - Predicting disc degeneration by **heritability**
 - Lumbar spine - 74%
 - » Sambrook, Arthritis Rheum 1999

Predictors of Disc Degeneration cont.

- *Ryan's* case comparison of two identical twins
 - Twin one
 - spent his life working in light activity
 - non-smoker
 - fit
 - did not drink alcohol
 - Twin two
 - spent his life in heavy physical labor
 - was a smoker
 - drank alcohol
 - less fit
 - *Both suffered nearly identical lumbar degeneration and stenosis and suffered from similar clinical syndromes*

Psychosocial and Neurological Factors in the Pain Experience



“The regional musculoskeletal disorders are intermittent and remittent predicaments of life.

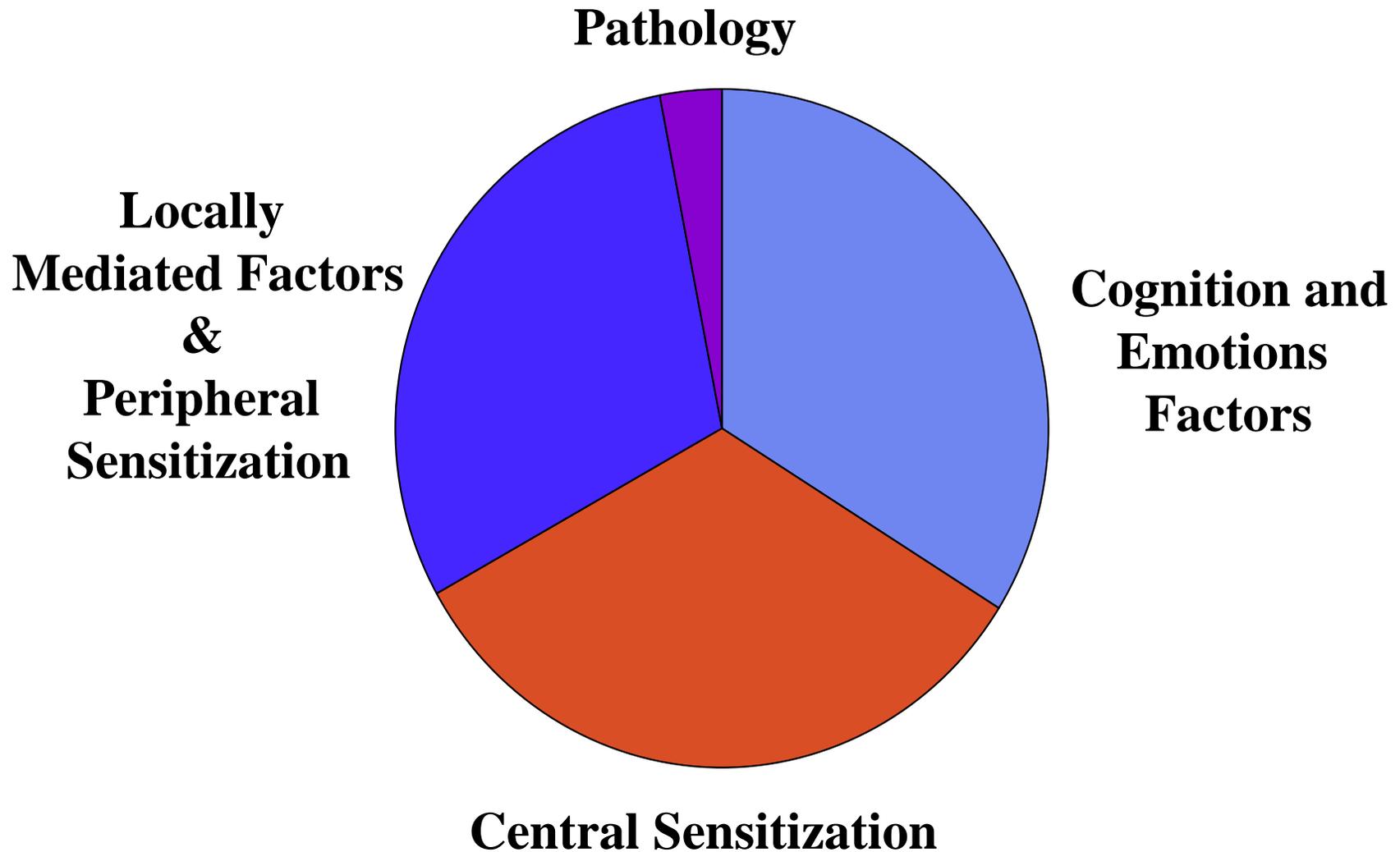
It is distinctly abnormal to live two years without an important backache, or three years without important neck and arm pain, or five years without important knee pain...

the majority of us manage with these predicaments without seeking care from medical or other providers...

the need to choose a provider is driven by psychosocial confounders that impede the ability of people to cope on their own...”

Norton Hadler, MD

Components of the Pain Experience



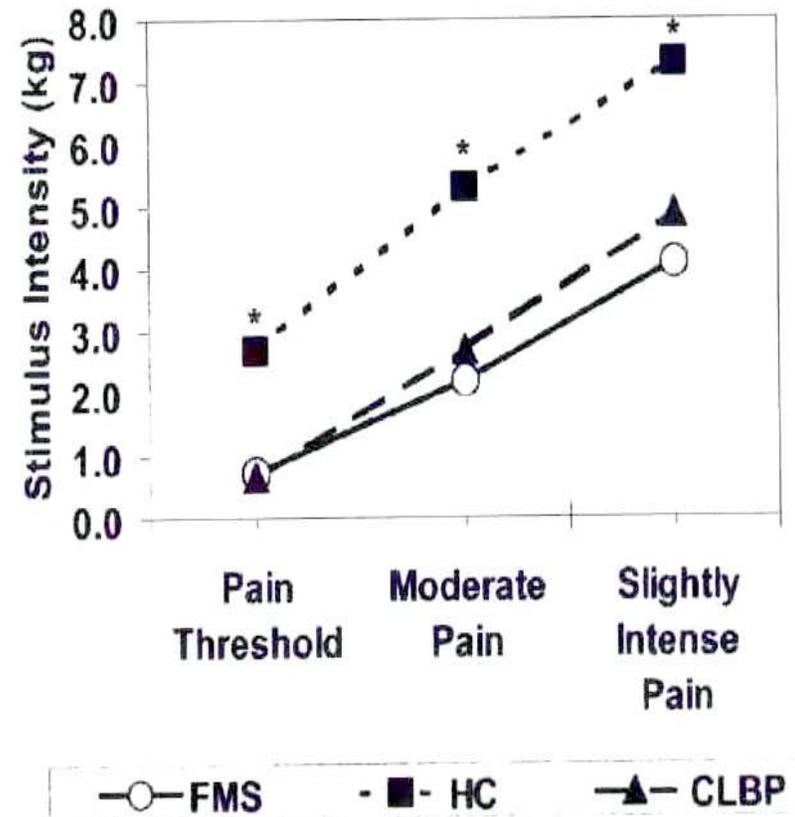
Pathological pain

- Most patients (HCPs) believe that pain is important!
 - Pain is an indication of tissue damage or harm (**high threshold pain**)
 - It is logical to avoid activities that are painful because they are harmful
 - This is true for high threshold pain



Central Sensitization

- Neurological phenomena
 - Pain is induced by lower than normal stimulation threshold (not tissue damage)
 - **Low-threshold pain**
 - Distinct from high threshold pain
 - Biologically useless

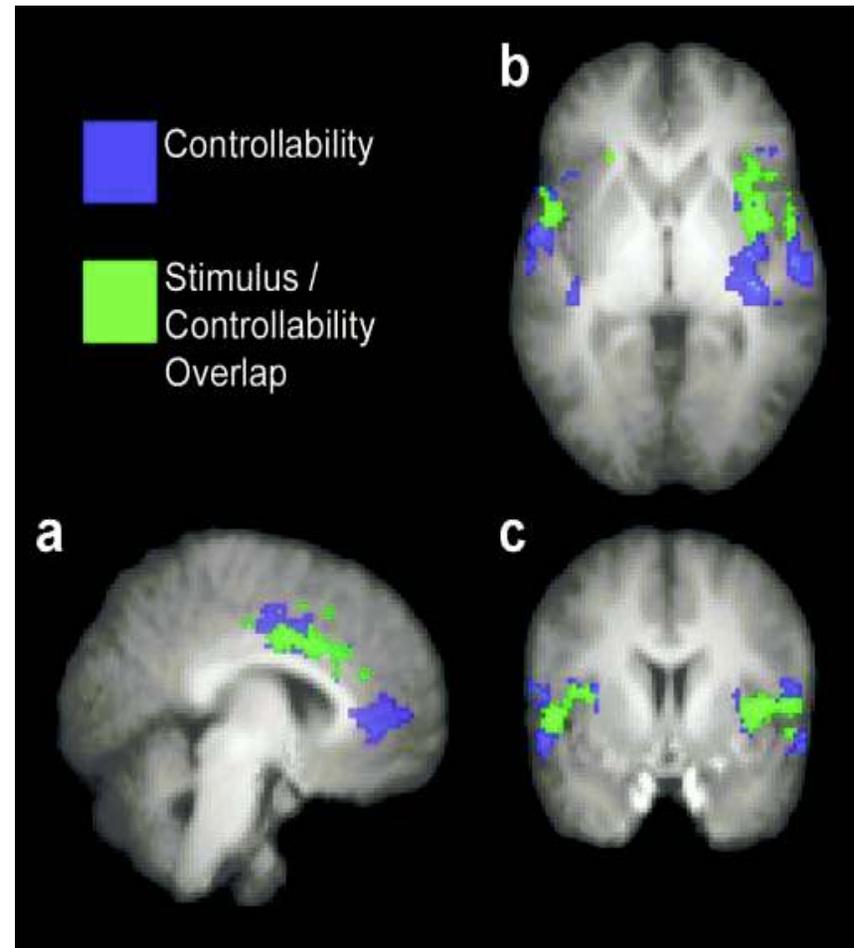


Central Pain Processing is Enhanced by Cognition

- Central Pain Processing is Enhanced by Cognition

– Cognitive / emotional factors lower the threshold to painful stimuli

» Salomons et al, J of Neuroscience, 2004



Cognitive/psychosocial factors have a direct impact on LBP incidence and recovery

– Poor recovery is associated with

- Job dissatisfaction
 - » Westrin 1970; Magora 1973; Svensson and Andersson 1983; Bergenudd and Nilsson 1988; Hoogendoorn et al. 2000.
- Poor relationship with immediate supervisors
 - » Hoogendoorn et al. 2000, 2001; NRC 2001.
 - » Devereux et al. 2004; Waters et al. 2007.
 - » Waters et al. 2007.
- High **monotony at work**
 - » Svensson and Andersson 1983, while a study by Bergqvist-Ullman and Larsson 1977.
- Perceived inadequacy of income
- lack of control over one's job
- Unpleasant work environments
 - » Bongers et al. 1993; NRC 2001; Bernard 1997; Snook 2008.

Effect of eliminating compensation for pain and suffering on the outcome of insurance claims for whiplash injury.

Alberta Centre for Injury Control and Research

▪ BACKGROUND AND METHODS:

- On January 1, 1995 Saskatchewan, Canada

– Tort-compensation system in was changed to a no-fault system

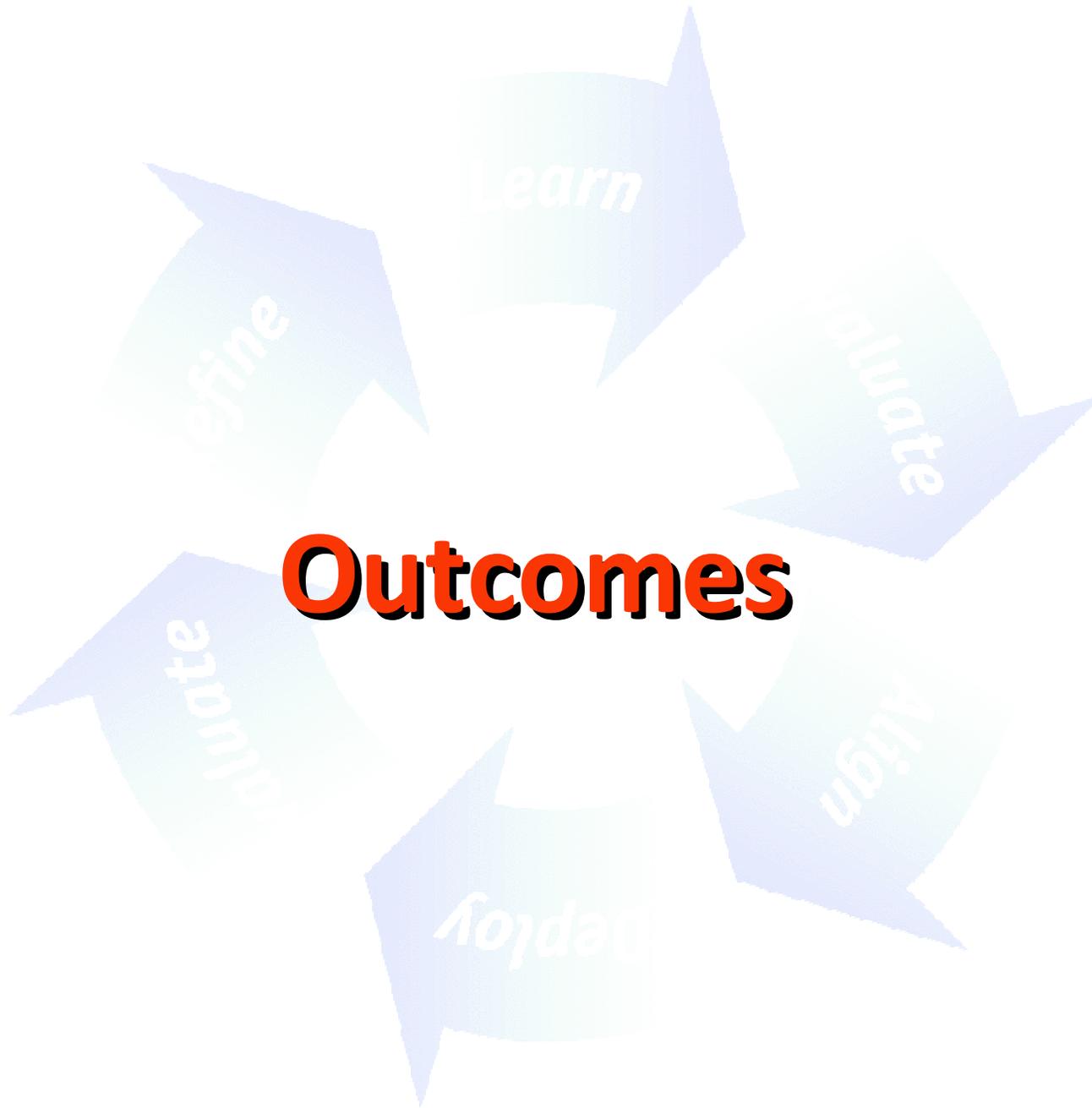
- » To determine whether this change was associated with a decrease in claims and improved recovery after whiplash injury, they studied a population-based cohort in 1995.

– RESULTS:

- The **median time from the date of injury to the closure decreased from 433 days to 194 days and 203 days** (male vs. female), respectively.

– CONCLUSIONS:

- The **elimination of compensation for pain and suffering is associated with a decreased incidence and improved prognosis** of whiplash injury.
- The intensity of neck pain, the level of physical functioning, and the presence or absence of **depressive symptoms** were strongly associated with the time to claim closure in both systems.
 - *When treating patients with neck pain, clinicians need to recognize that it is more than a physical problem and that its prognosis is influenced by broader determinants of health.*



Outcomes

Outcomes

- **What works?**

- Approximately **80%–90% of LBP recover within 3 months** regardless of the treatment pursued

- » Lively MW. Sports medicine approach to low back pain. *South Med J* 2002;95:642–6.

- **Emphasis on treating patients' fears** and empowering them to resume normal activity

- Cost of treatment is lower
- Patient satisfaction higher

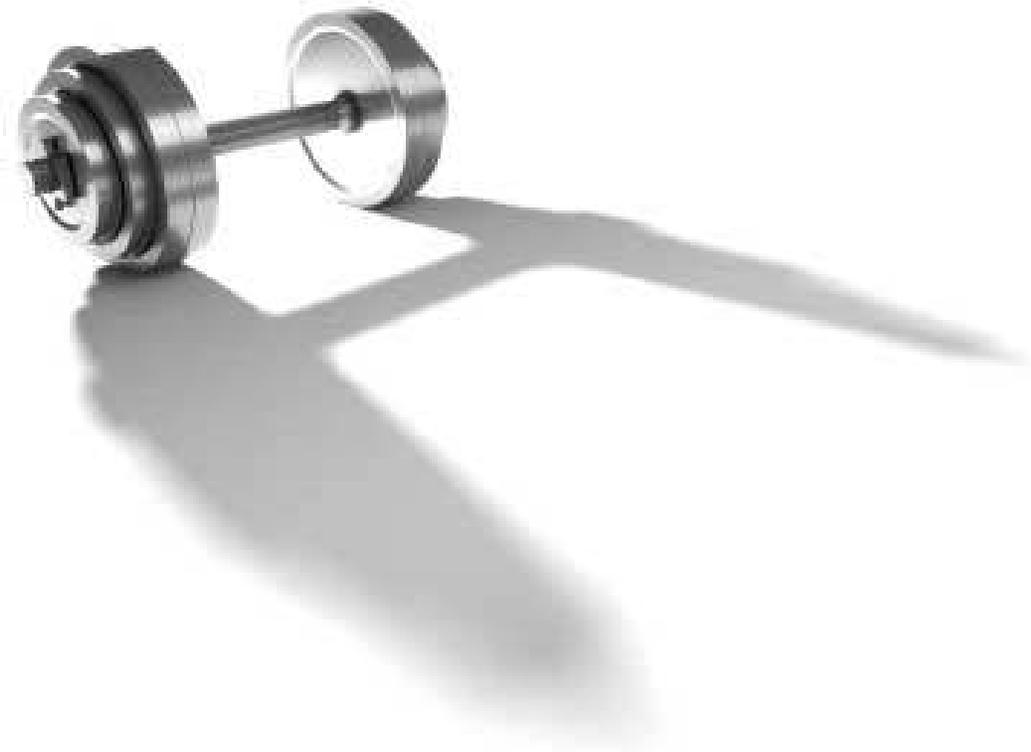
- » McGuirk B, King W, Govind J, Lowry J, Bogduk N. Safety, efficacy, and cost-effectiveness of evidence based guidelines for the management of acute low back pain in primary care. *Spine* 2001;26:2615–22.

- **Multidisciplinary treatment programs** have evidence of effectiveness

- » Jauhiainen M, Hurri H, et al. Multidisciplinary biopsychosocial rehabilitation for subacute low back pain among working age adults. *Cochrane Database Syst Review* 2003;(2):CD002193.

- » Skouen JS, Grasdal AL, Haldorsen EM, Ursin H. Relative cost-effectiveness of extensive and light multidisciplinary treatment programs versus treatment as usual for patient with chronic low back pain on longterm sick leave. *Spine* 2002;27:901–10.

Exercise and Low-back Pain



Exercise and LBP

- Exercise has **repeatedly demonstrated a positive impact** on chronic back pain
 - Fewer painful months per year
 - Dochin et al, 1990.
 - lower incidence of back pain.
 - Cakinak 2004, Widhe 2001, Harreby 1997, Croft 1999.
- Reduced kinesiophobia/kinesiodynia and fear of injury
 - JOSPT 2007.
- Measurably reduced sick leave
 - Lindstrom et al, 1992.
- Possibly, the avoidance of surgery
 - Nelson et al, 1999.

USA Today

Here's a twist to managing back pain: Push your muscles

June 9, 2009

By Janice Lloyd, USA TODAY

“The answer to managing nagging back pain might prove counterintuitive: A new study suggests pushing those sore muscles with weight training and improving overall body strength could help, researchers say. Weightlifting enhanced quality of life for back-pain patients by as much as 28%, says a study done at the University of Alberta and presented at the American College of Sports Medicine.”

- Reasons cited:
 - Increased strength and stamina → reduced fatigue and injury
 - "Exercising is counterintuitive based on how you feel," Kell says. "It hurts, so you want to stop. We associate pain with something being wrong or getting worse, so we think we should rest more often. But really what happens if they get up and exercise with low back pain, the joints loosen up and feel better."

Kell's Study

- University of Alberta
 - 240 men and women with chronic lower-back pain
 - exercise four days a week
 - better quality of life
 - 28% less pain
 - 36% less disability
 - **Pain levels decreased by:**
 - 28%
 - exercise four days a week
 - 18%
 - three days a week
 - 14%
 - two days a week.
 - The **quality of life rose:**
 - 28%, 22% and 16% respectively

Rainville Studies

- Evidence that **exercise slows spinal degeneration**

» Rainville, 2007.

Outcomes cont.

- **What does not work**

- Approximately **50% of spine surgeries in the United States may be unnecessary** and fail to relieve patients' pain in the long term

- » Klein BJ, Radecki RT, Foris MP, Feil EI, Hickey ME. Bridging the gap between science and practice in managing low back pain: a comprehensive spine care system in a health maintenance organization setting. Spine 2000;25(6):738– 40.

- The numbers of laminectomies, discectomies, and lumbar spinal fusions performed continues to increase steadily

- » Lee P. The economic impact of musculoskeletal disorders. Qual Life Res 1994;3(Supp 1):S85–91.

Outcomes cont.

– Bed rest

- Most commonly prescribed treatment
- No positive impact

» Deyo RA, Diehl AK, Rosenthal M. How many days of bed rest for acute low back pain? A randomized clinical trial. *N Engl J Med* 1986;315:1064–70.

– Acupuncture

- does not seem to have a sustained effect on back pain

» van Tulder MW, Cherkin DC, Berman B, Lao L, Koes BW. The effectiveness of acupuncture in the management of acute and chronic low back pain. A systematic review within the framework of the Cochrane Collaboration Back Review Group. *Spine* 1999;24(11): 1113–23.

The longer a worker is off work, the more complex the condition becomes



Immediacy - The need to deal with work related claims in a timely manner

California Workers' Compensation Institute study

- 2008
 - Doctors prescribed opioids in 25% of all back injury cases without spinal cord involvement.
 - These back injuries were typically sprains and strains.
 - 44% of dollars paid and 32% of prescriptions written for narcotics are for claims involving back injuries.

California Workers' Compensation Institute study cont.

- Low back pain
 - Compared to 0 or 1 prescription, >7 narcotic prescriptions had:
 - 3x average claim cost
 - 2.7x more likely to be off work
 - 4.7x more days off work
 - Swedlow 2008

Denmark, 2006

- Danish Study
 - >10 000 patients with questionnaire
 - Adjusted for age, gender, anxiolytics, antidepressants, pain intensity
 - Opioid users still had:
 - Severe Pain
 - Unemployment
 - More health care use
 - Diminished quality of life
 - Conclusions: Opiate care failed in pain relief, improved function, improved quality of life
 - » Eriksen, 2006

Cochrane Collaboration

- The Cochrane Collaboration review of opioids for chronic low back pain similarly concluded:
 - “Despite concerns surrounding the use of opioids for long-term management for chronic LBP, there remain few high-quality trials assessing their efficacy...Based on our results, the benefit of opioids in clinical practice for the long-term management of chronic LBP remains questionable.”
 - In population-based studies, many patients receiving opioids for non-cancer pain have persistent high levels of pain and poor quality of life.
 - Patients with major depression and other psychiatric disorders:
 - more likely than others to initiate and to continue opioid therapy
 - more likely to misuse
 - less likely to experience analgesic benefit

Annals Internal Medicine

- 2007
 - Opioids are commonly prescribed for chronic back pain and may be efficacious for short-term pain relief
 - Long-term efficacy (16 weeks) is unclear
 - Substance use disorders are common in patients taking opioids for back pain
 - Aberrant medication-taking behaviors occur in up to 24% of cases

Function and Quality of Life

- *Pain 2000*
 - Whether long-term opioid treatment can improve patients' function or quality of life (QOL) is clearly a broader issue than whether opioids can reduce a pain score.
 - Surprisingly, only a few of the existing opioid studies have focused on this issue, and there are few available data.
 - » Becker N, Sjogren P, Bech P, Olsen AK, Eriksen J. Treatment outcome of chronic non-malignant pain patients managed in a danish multidisciplinary pain centre compared to general practice: a randomised controlled trial. *Pain* 2000; 84:203-211.
- *Curr Med Res Opin 2005*
 - Epidemiological studies report failure of opioids to improve QOL in chronic pain patients
 - » Devulder J, Richarz U, Nataraja SH. Impact of long-term use of opioids on quality of life in patients with chronic,non-malignant pain. *Curr Med Res Opin* 2005; 21:1555-1568.

Oklahoma Guidelines for Prescription of Opioid Medications for Acute and Chronic Pain

Physician Advisory Committee

- 2007
 - Developed guidelines for prescribing narcotics in workers' compensation cases.
 - Under Oklahoma's guidelines, a physician generally may not prescribe narcotics for acute pain for more than two to three weeks.

Liberty Mutual

Reducing Patient Risk

- 2009:

“the growing use of powerful narcotics in treating work-related lower back pain results in longer recovery times and higher treatment costs for injured workers.”

– At the very least, there is a clear correlation “between early narcotic prescribing and negative medical outcomes for disabled workers,” which suggests that “more intensive uses of narcotics may delay recovery.”

» *Reducing Patient Risk; Liberty Mutual Research Institute for Safety Webinar, The Negative Impacts of Growing Use of Narcotics in Treating Lower Back Pain, (2009).*

Spine Health

- November 2009
 - Patients suffering from chronic pain and depression are 3X more likely to receive long-term prescriptions for opioid medications than chronic sufferers who are not depressed.
 - *concerns about the potential implications of increased opioid use among the depressed population.*

General Hospital Psychiatry

- Nov 2009
 - researchers detailed the importance of opioid prescriptions for chronic pain and depression not becoming a sole replacement for other treatments of mental disorders.

International Association of Industrial Accident Boards and Commissions (IAIABC)

– 2009

- *IAIABC Seminar Seeks Solutions to Growing Narcotics Use in Workers' Compensation*

National Council on Compensation Insurance Study

- NCCI Study, 2009
 - “Several recent articles and studies also point to increased scrutiny of narcotics use.”
 - Researchers said that in at least one state diagnoses of "chronic pain" or "failed back syndrome" virtually guarantee that the claim involves over-prescription of narcotics because these are the diagnoses that justify the use of narcotics.
 - The study pointed out that additional research has found that overuse of narcotics has "shown adverse effects on the overall well-being and treatment of injured parties.”

Physician Training



“Requesting Source” Assumes that Physicians Can Answer those Questions Scientifically

- We can replace a hip
- We can perform coronary artery bypass
- We have developed insulin

Therefore:

- “Doctors must know **scientifically** how to answer questions about work capacity” (worker, employer, WCB, insurer expect answers)
- So a form is sent asking ; “**What can the worker do?**”

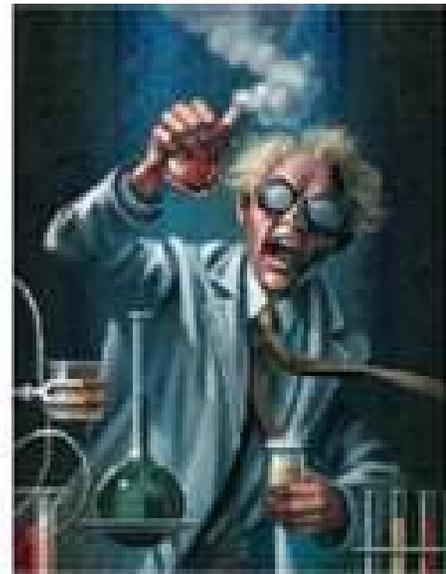
Physician Training is NOT

- How much can my patient lift with a sore back?
- What are the chances of re-injury ?
- “Doc, I really need a week or so off.”
- Forms, forms and forms

How does the “Real World Doc” decide if Joe Can Work With His Back Pain ?

Training ?

Science ?



Anecdotal Experience Leads to Self-Fulfilling Prophecies

- Dr A: “I usually declare patients like Joe **‘disabled’**. They usually don’t go back to work, and don’t any get better, **so I must be correct.**”
- Dr B: “I usually declare patients like Joe **fit to work**. They usually go back to work and do fine, **so I must be correct.**”
- Both are honest, well trained, and yet, they have **very different anecdotal experiences**



M. Twohy
5-21

"I've got a doctor's note. I'm not supposed to carry more than ten times my weight."

Reluctance to call Malingering

- Physician insecurity
- Patient “advocacy”
- Loyalty bind
- Inexperience
- CYA
- Effort
- What’s in it for the physician?

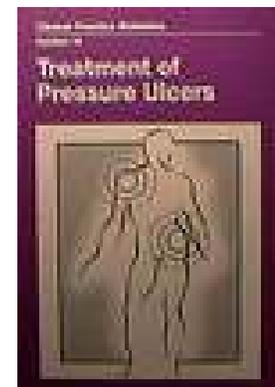


Final Messages

THIS IS THE END

AHCPR guidelines

- The AHCPR guidelines suggested that in the absence of red flags for serious underlying conditions,
 - diagnostic tests are rarely necessary (X-ray, MRI, etc.)
 - the best approach in the first four weeks:
 - » Reassurance
 - » promotion of activity (such as return to regular activities including work as soon as possible)
 - » use of over-the-counter medication
 - » Therapy/spinal manipulation for pain relief



Maintain Activity

- Adaptation Requires **Time**
 - **Keep busy** - *spread the misery around*
 - **Keep moving** - *prevent deconditioning*
 - **Keep Distracted** – *time passes more quickly*
 - **Keep working** - *make some money while you're miserable*

Avoid Iatrogenesis

- In the early stage of most **uncomplicated** musculoskeletal disorders
 - There are *iatrogenic risks* from over-investigation, over-treatment and inadvertent encouragement of a sick role during the acute stage of soft-tissue injury

Conclusions

- **Know your employees/clients**
 - Same symptom magnification and behavioral issues seen at work are also likely occurring in the workplace.
 - Know which employees will require high level of attention.
- **Know your physicians**
 - Know which physicians will “cater” to patients.
 - Contact physicians to let them know your concerns.
 - HIPPA issues with non-comp injuries
- **Be proactive in identifying secondary gain** issues and close the “loop-holes” early on.
 - Isolate the medical issue from psychosocial factors.
- **Request fitness-for-duty evaluations or 2nd opinions by trusted physicians early in the process.**

“For each ailment that doctors cure with medications,
(as I am told they do occasionally succeed in doing)
they produce 10 others in healthy individuals,
by inoculating them with
***that pathogenic agent 1000 times more virulent
than all the microbes--***

the idea that they are ill.”

Marcel Proust, *The Guermantes Way*

Yes, encourage continued home exercise and stretching





Mayo School of Continuous Professional Development

Essential Health and Mayo Clinic have collaborated to offer

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Thank You