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Re-Attaching The Focus on Body Mechanics and Ergonomics

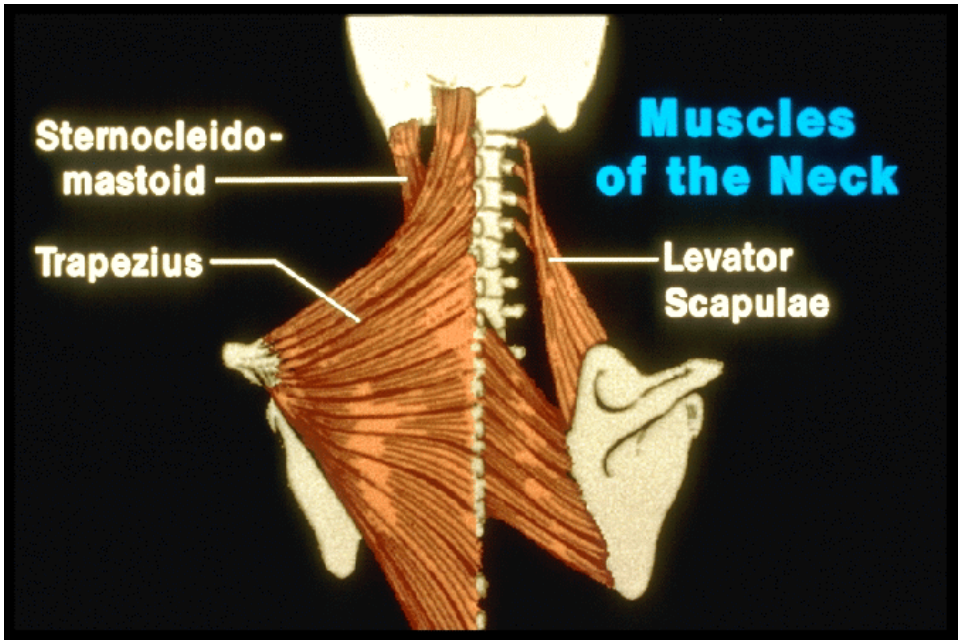
…Taking Care of Your Darn Self!!

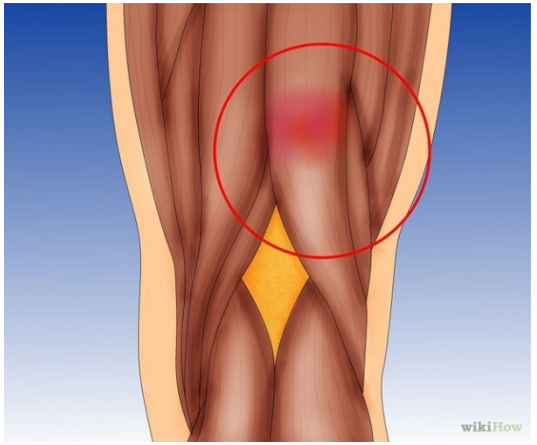
By: George Matos, CAT(C), CSEP-CPT, RCRT, BA Kin
Musculoskeletal Injury Prevention Specialist
Occupational & Environmental Health & Safety – HSC Unit

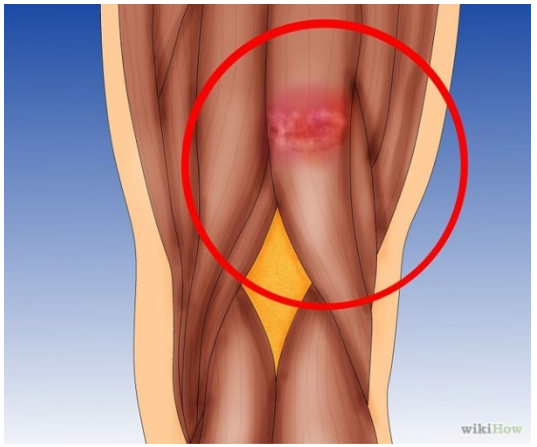
Musculoskeletal Injury

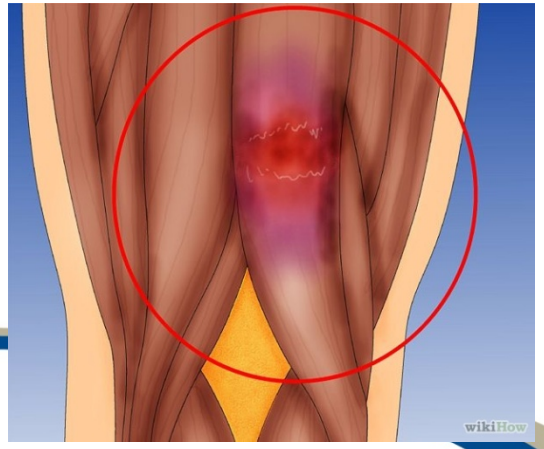
- **Definition: Injury or disorder of the muscles, tendons, ligaments, joints, nerves, blood vessels or related soft tissue**
- **Can be a sprain, strain, inflammation**
- **Referred to as an RSI**

Muscle Injury

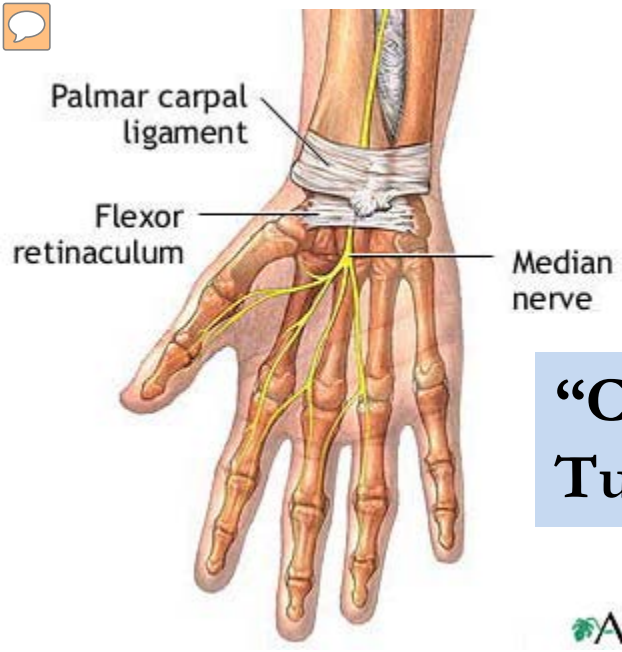




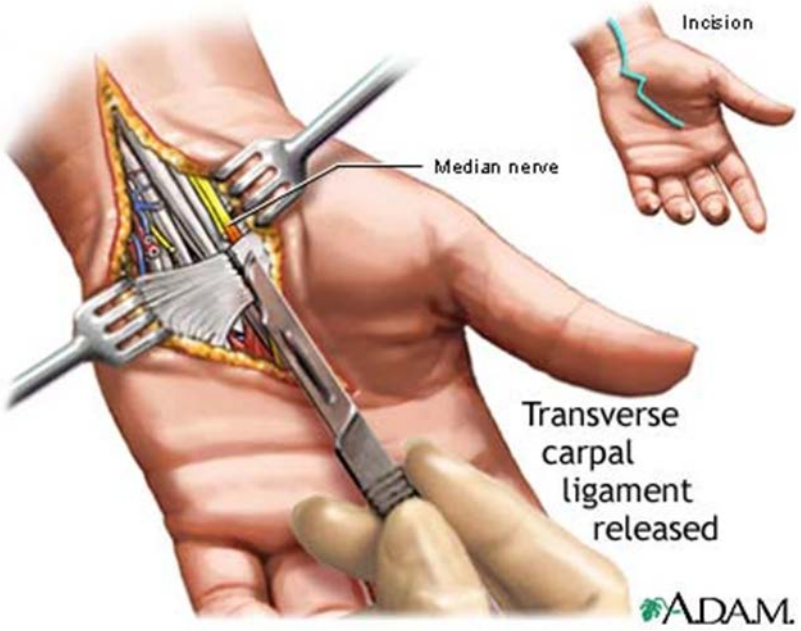




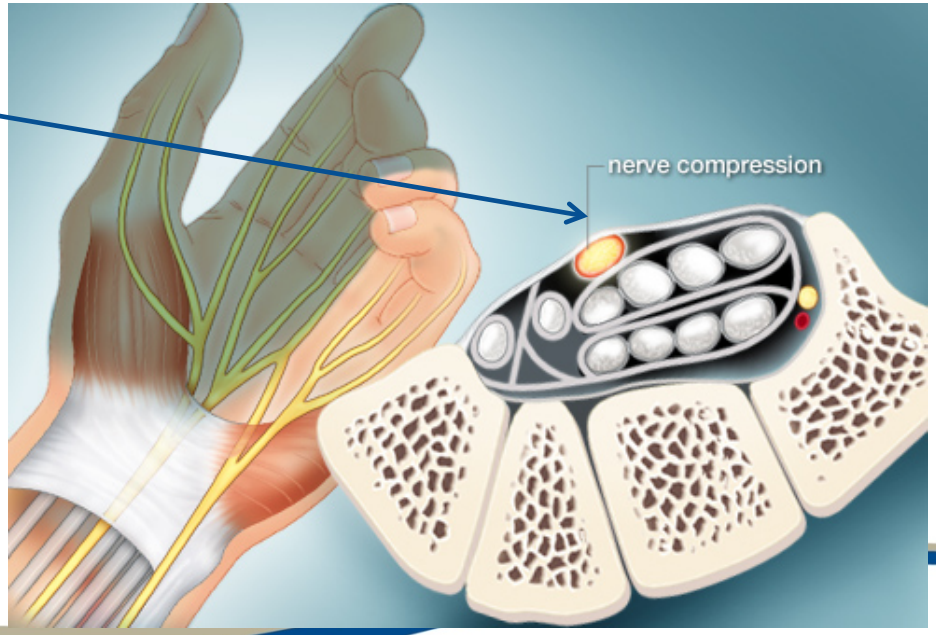
- Muscles run in segments
  - Some from shoulder blade to base of skull
  - These muscles may become easily over loaded

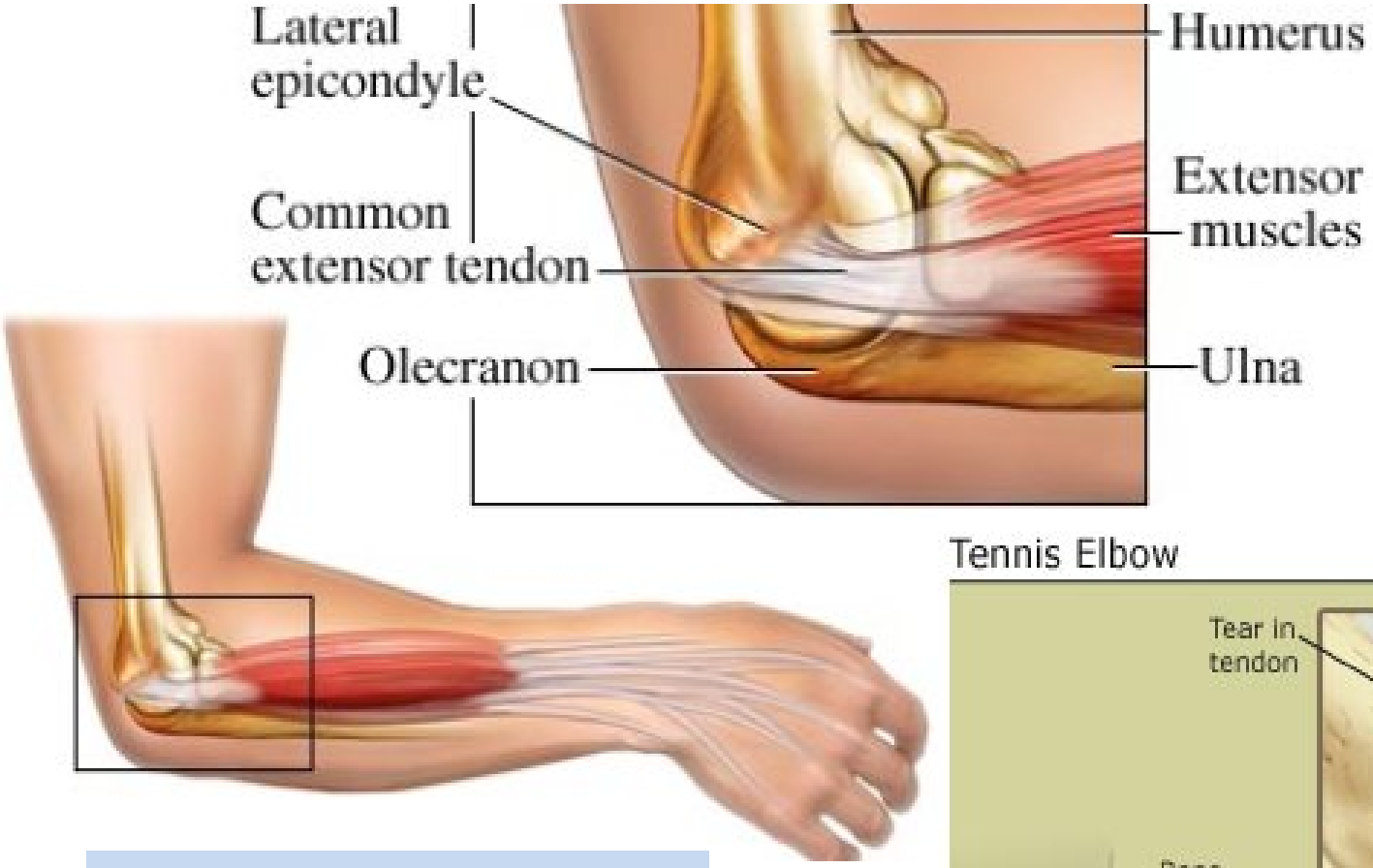


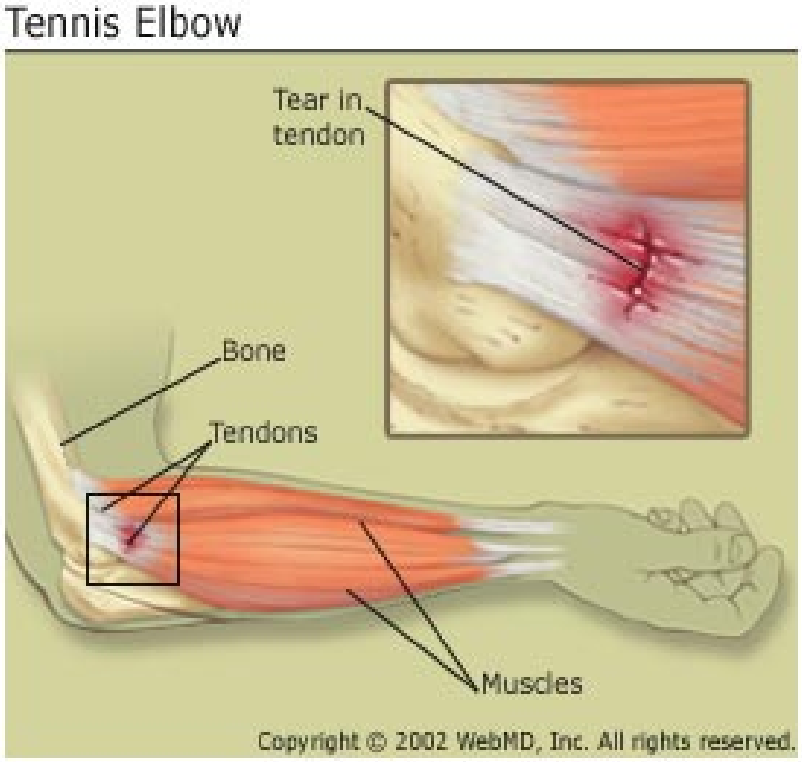
"CTS" Carpal Tunnel Syndrome



Median Nerve Squeezed in Carpal Tunnel





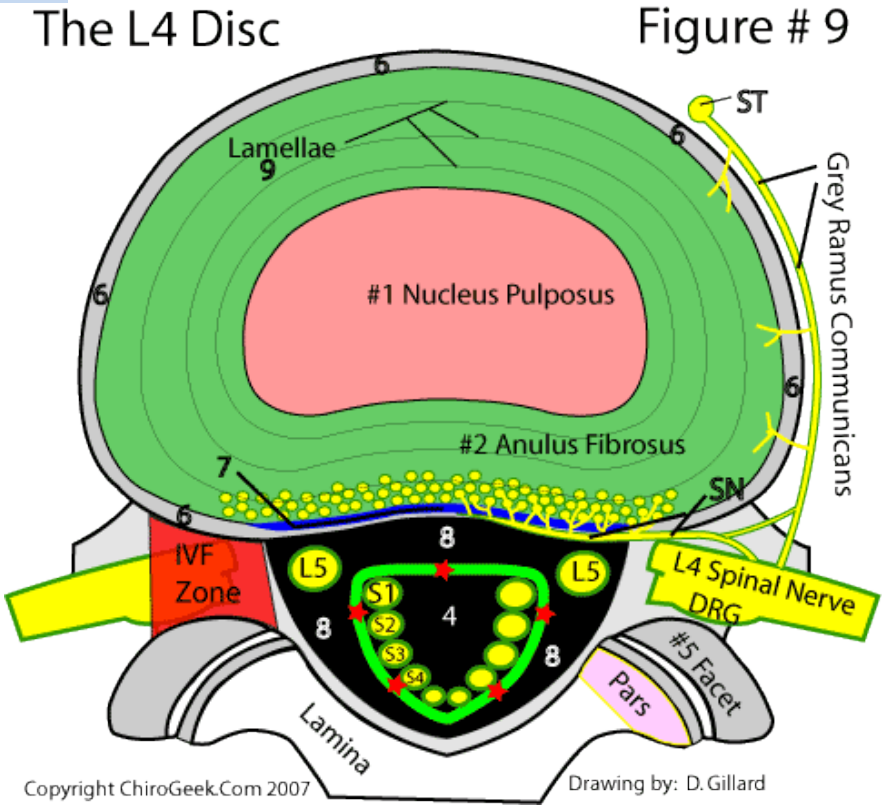


"Tennis Elbow"
Lateral Epicondylitis

Vertebral Disc

- **The inter-vertebral discs lie between the vertebral bodies, separated from them by a thin cartilaginous endplate and consisting of two main regions, the nucleus pulposus and an outer, firm, collagenous annulus fibrosus**

- **The role of the inter-vertebral discs is mechanical. They are the joints of the spine, enabling it to bend and twist in all directions.**



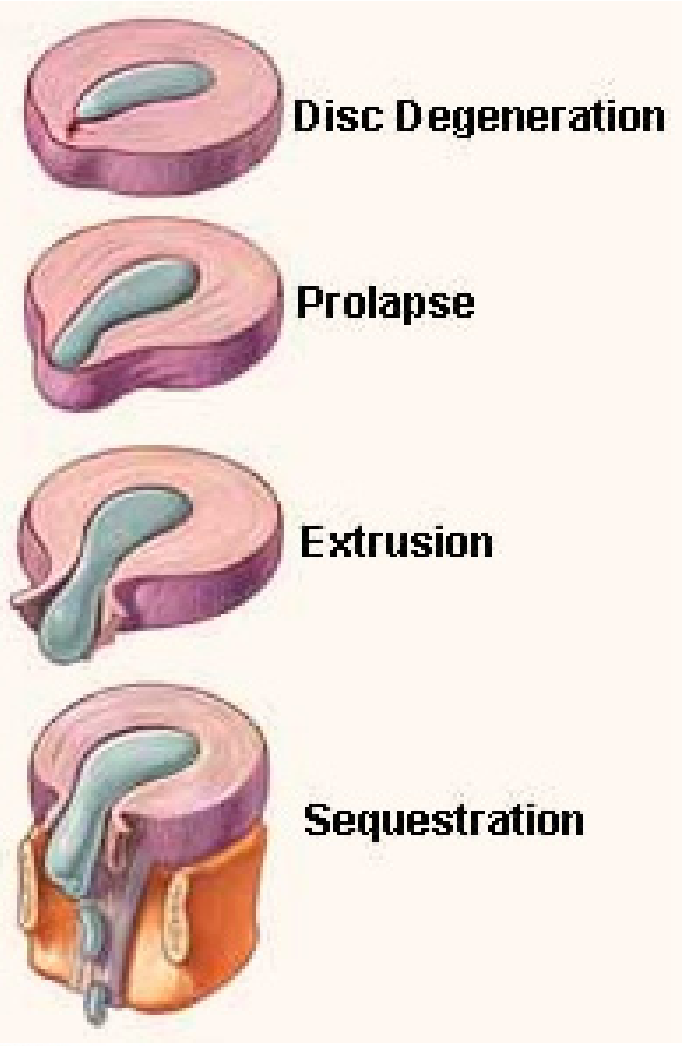
Stages of a Disc Injury

1) Disc Degeneration: chemical changes associated with aging causes discs to weaken, but without a herniation.

2) Prolapse: the form or position of the disc changes with some slight impingement into the spinal canal. Also called a bulge or protrusion.

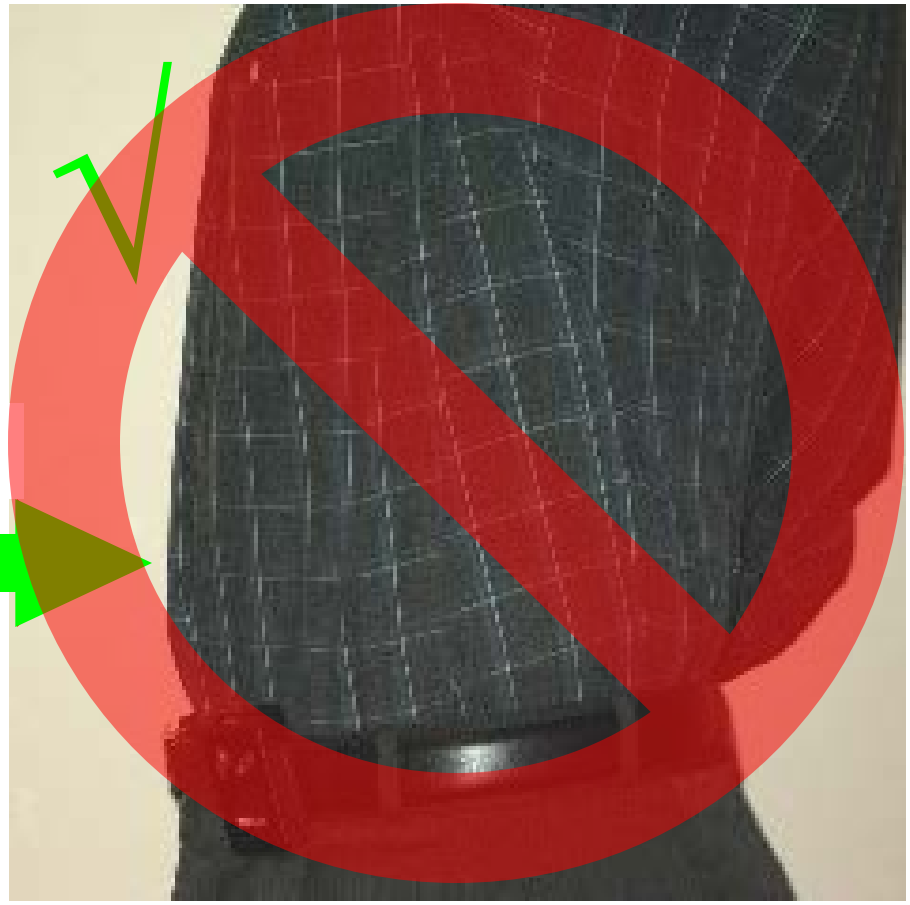
3) Extrusion: the gel-like nucleus pulposes breaks through the tire-like wall (annulus fibrosus) but remains within the disc.

4) Sequestration or Sequestered Disc: the nucleus pulposus breaks through the annulus fibrosus and lies outside the disc in the spinal canal




ddd
DynamicDiscDesigns
Realistic Spinal Disc Models

Active Abdominals



- Helps support your back
  - Makes you stronger!
- Bring stomach IN slightly & contract like you are coughing
  - Remember to breathe!
- Contract BEFORE moving and HOLD until finished

Body Mechanics and Ergonomic Positioning

Identifying Risk Factors

- Awkward Posture

(is any deviation from the ideal working posture)

- Reaching behind
- Twisting
- Working overhead
- Kneeling
- Forward or backward bending
- Squatting

- Repetition
- Direct Contact
- Forceful Movement
- Gripping

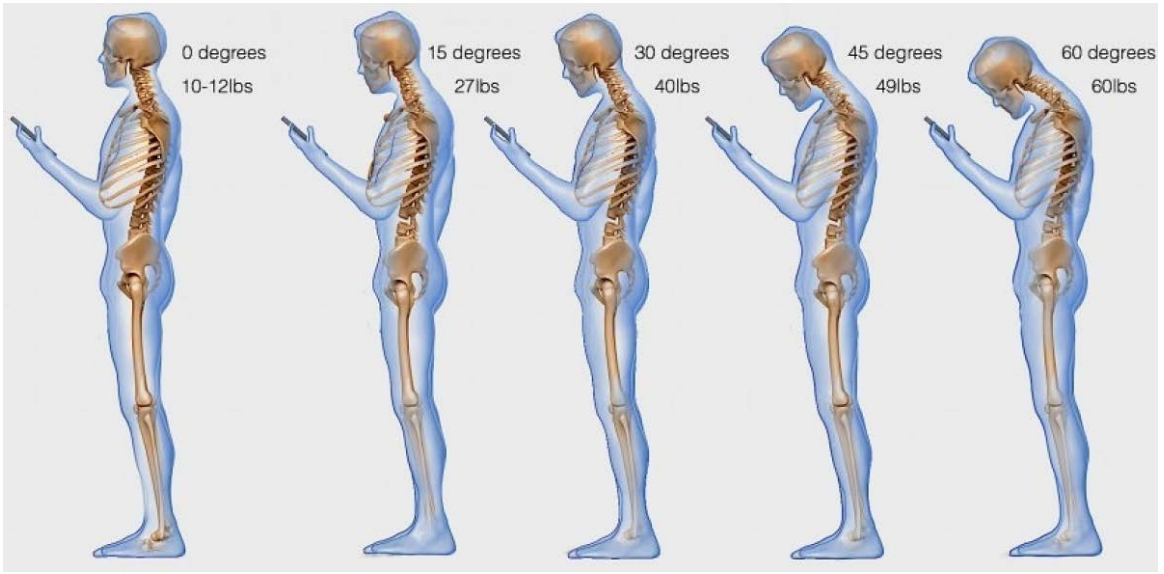
- Static Loading or Sustained Exertions
- Contact Stress
- Poorly Fitted Gloves

Identifying Risk Factors

Work Related Musculoskeletal Pain Among Ophthalmologists: A systematic review of the literature and the development of an educational module for residents

- Self-reported work related musculoskeletal pain occurred in 50-80% of ophthalmologists across all studies.
- Up to 8% of those required surgery
- 9% had to stop operating due to chronic pain
- Repetitive tasks
- Force of movement
- Awkward postures
- Were all identified as high risk factors associated with musculoskeletal pain specific to ophthalmologists.
- ***There exists no formal training component on ergonomics for ophthalmology in the current resident curriculum. Educating resident ophthalmologists about long term work-related musculoskeletal injury prevention is essential***

DON'T BLAME TECHNOLOGY!



http://www.cbc.ca/news/health/text-neck-study-1.4071191

Smartphone-related neck p...

CBCnews | Health

Smartphone-related neck pain on the increase

Spine specialists recommend holding phone at eye level or taking a break from texting to head off pain

Thomson Reuters | Posted: Apr 14, 2017 11:49 AM ET | Last Updated: Apr 14, 2017 11:49 AM ET

The angle at which people hold their heads while texting on a smartphone is causing widespread neck and upper back pain, specialists say. (Reuters)

2993 shares

Spine surgeons are noticing an increase in patients with neck and upper back pain, likely related to poor posture during prolonged smartphone use, according to a recent report.

Some patients, particularly young patients who shouldn't yet have back and neck issues, are reporting disk hernias and alignment problems, the study authors write in The Spine Journal.

In an X-ray, the neck typically curves backward, and what we're seeing is that the curve is being reversed as people look down at their phones for hours each day, said study coauthor Dr. Todd Lanman, a spinal neurosurgeon at Cedars-Sinai Medical Centre in Los Angeles.

"By the time patients get to me, they're already in bad pain and have disc issues," he told Reuters Health.

The real concern is that we don't know what this means down the road for kids today who use phones all day.

Doctors recommend texting with two hands and holding the phone at eye level. (Jason Reed/Reuters)

Lanman and co-author Dr. Jason Cuellar, an orthopedic spine surgeon at Cedars-Sinai, write that people often look down when using their smartphones, particularly when texting, as compared to browsing online or watching videos.

It's the way you hold your neck

Previous studies have also found that people hold their necks at around 45 degrees, and it becomes even worse as they sit, versus standing, the study team writes. The impact on the spine increases at higher flexed postures, they add.

While in a neutral position looking forward, the head weighs 4.5 to 5.5 kilograms. At a 15-degree flex, it feels like 12 kilograms. The stress on the spine increases by degree, and at 60 degrees, it's 27 kilograms.

"For today's users, will an eight-year-old need surgery at age 28?" Lanman said.

"In kids who have spines that are still growing and not developed, we're not sure what to expect or if this could change normal anatomies," he told Reuters Health.

- How smartphones are rewiring our brains
- This year, we'll probably need a little space from our smartphones

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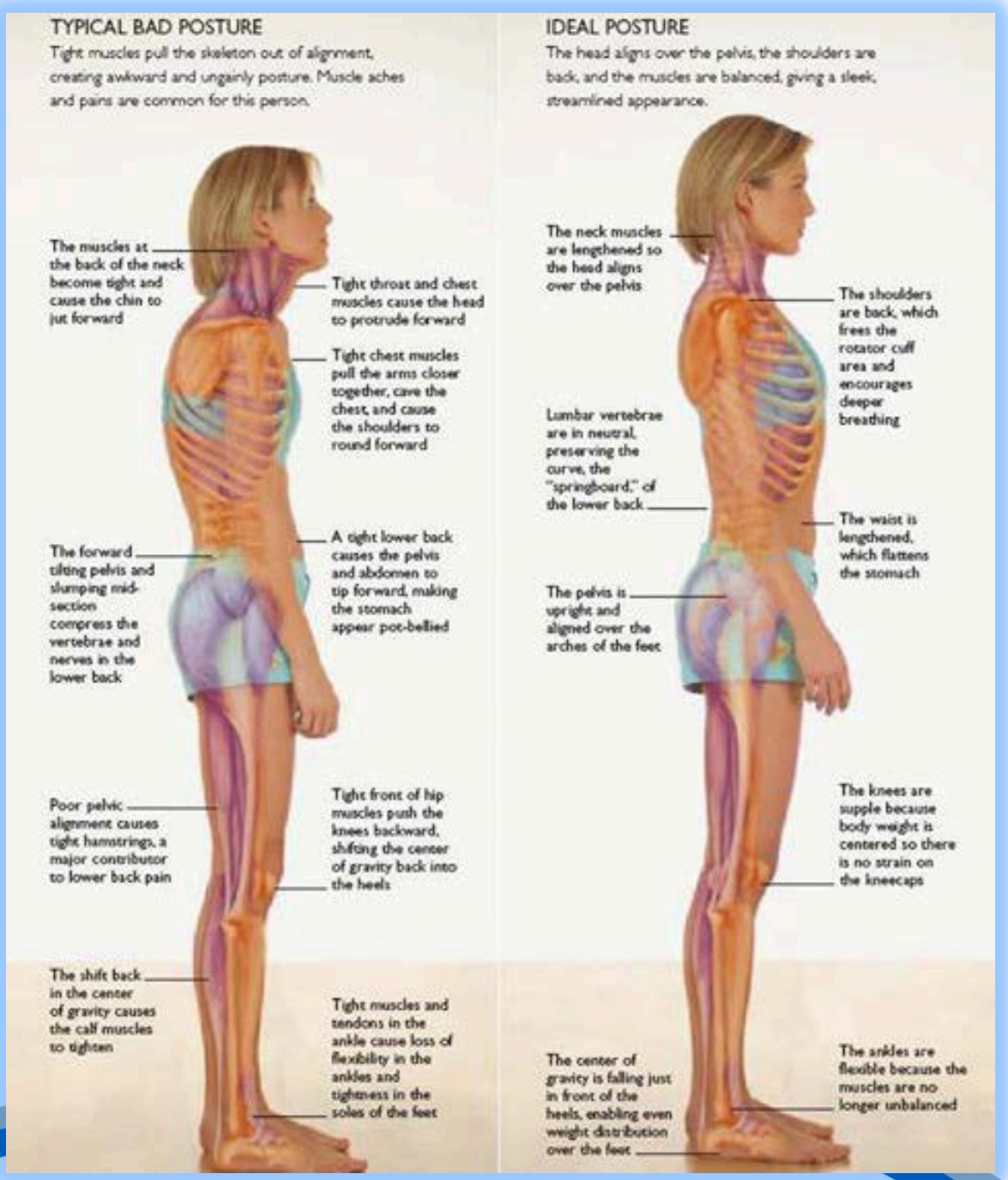
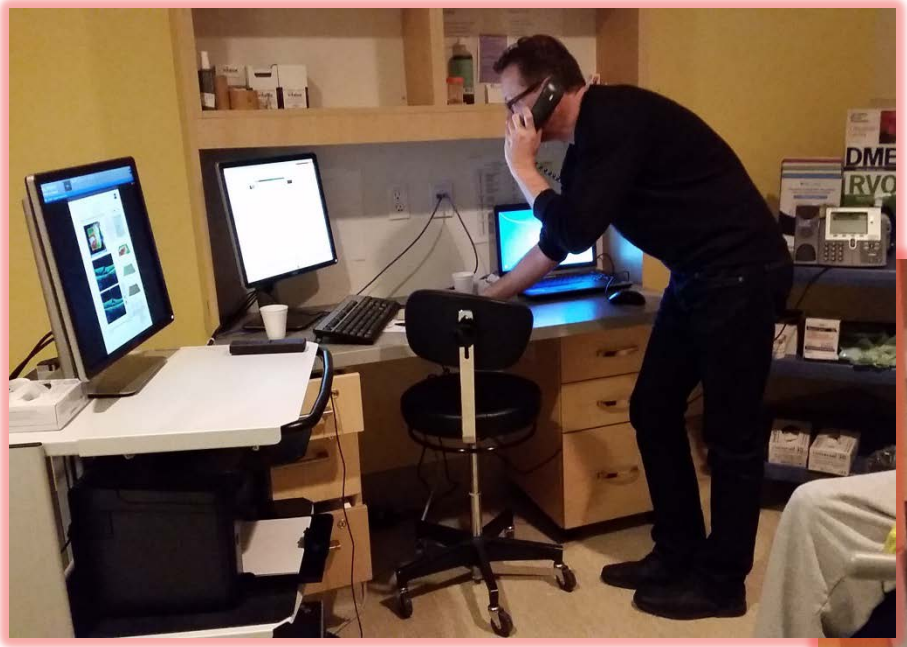
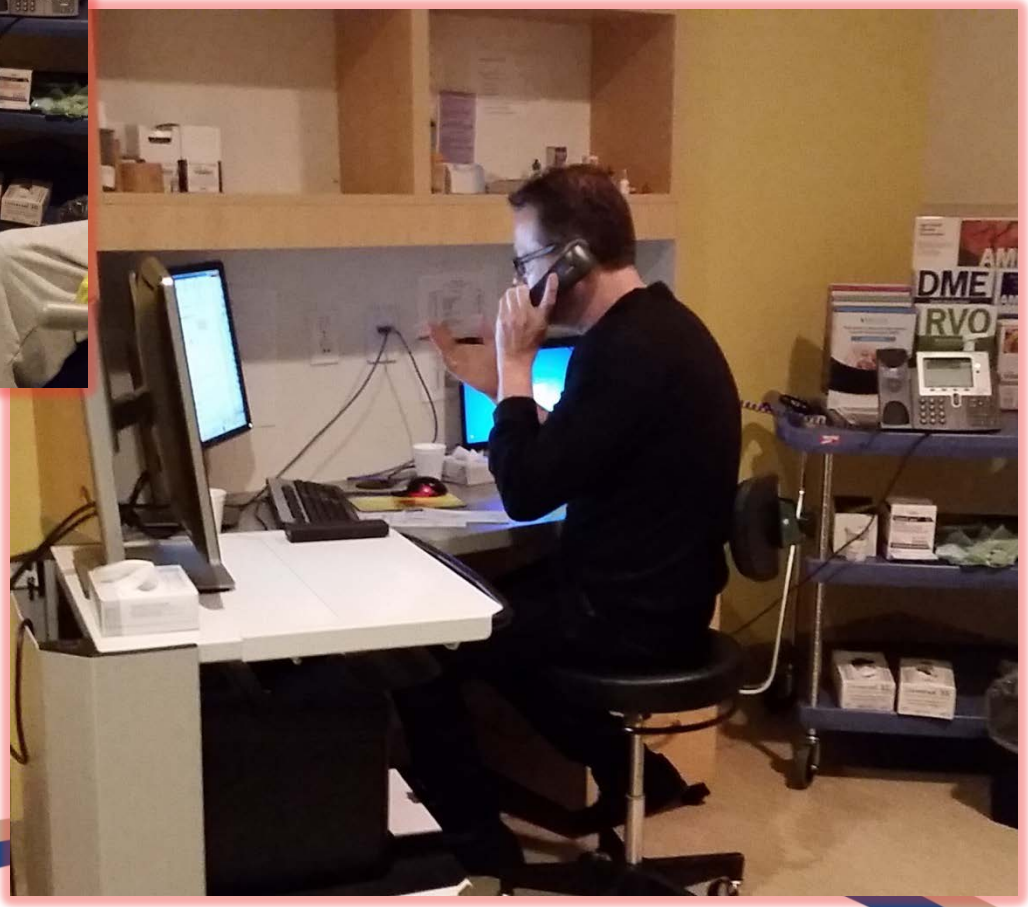
NEUTRALIZE POSTURES



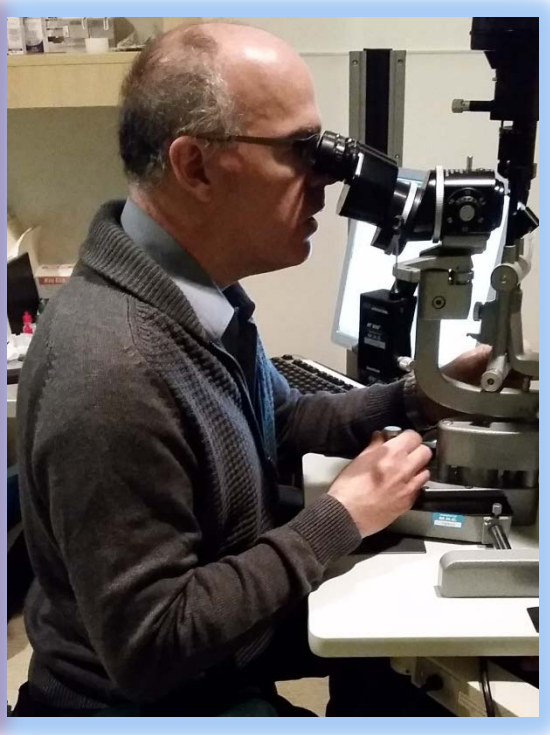
NEUTRALIZE POSTURES





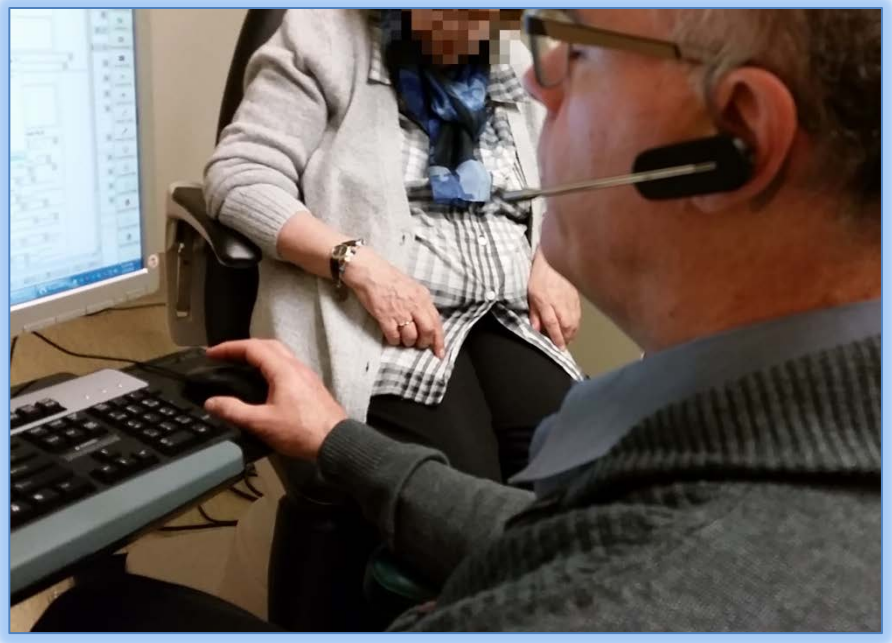
- Cervical Spine
- Thoracic Spine

ERGONOMIC INTERVENTION



BUT…

ERGONOMIC INTERVENTION



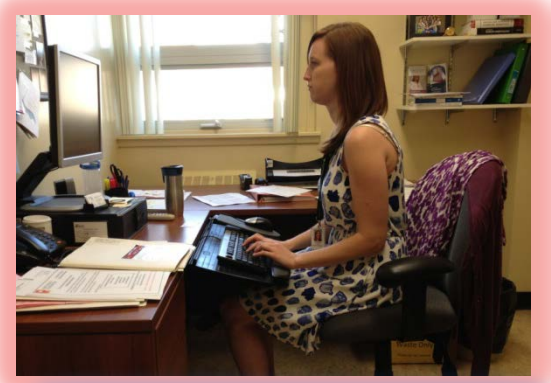
- Use of a headset to dictate, or receive phone calls
- Height adjustment of equipment should take you into consideration…not just your patient

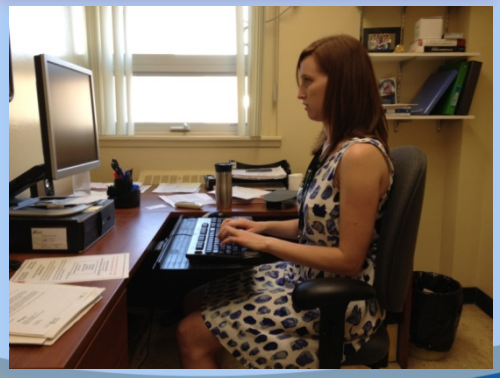
Neutralize Postures

- ***Wrists***
  - **Flexion – 0º**
  - **Extension – 0º**
  - **Ulnar Deviation – 0º**
  - **Radial Deviation – 0º**
  - **Pronation/Supination - 0º (for sustained work)**

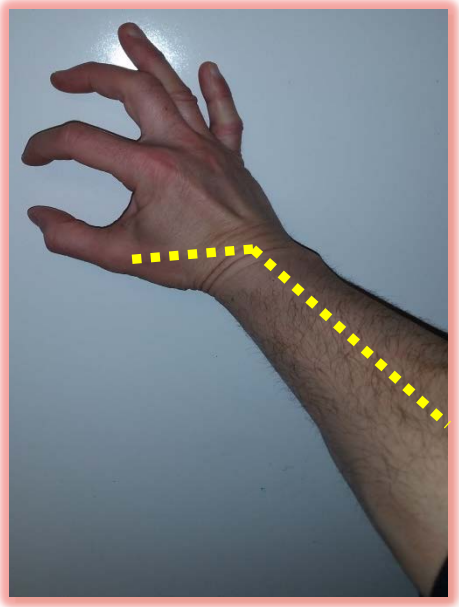
The following position is neutral and should be encouraged:

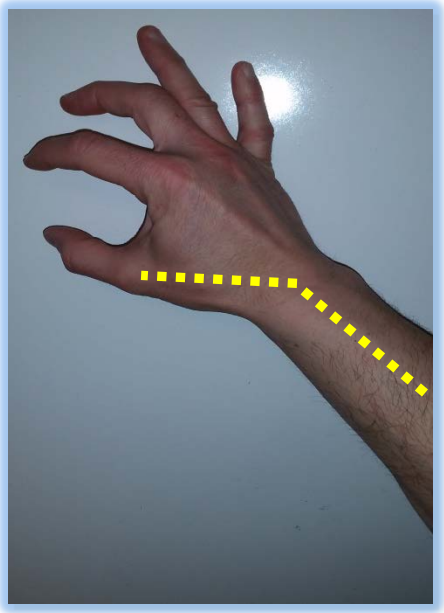
Neutral

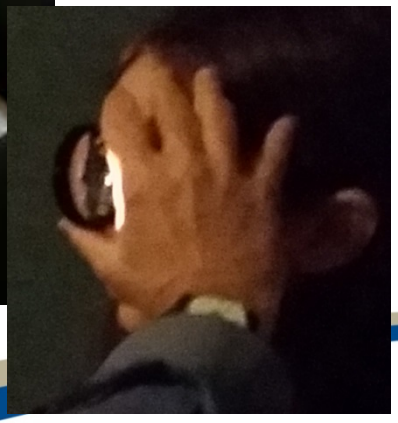


Neutralize Postures – Neutral Wrist

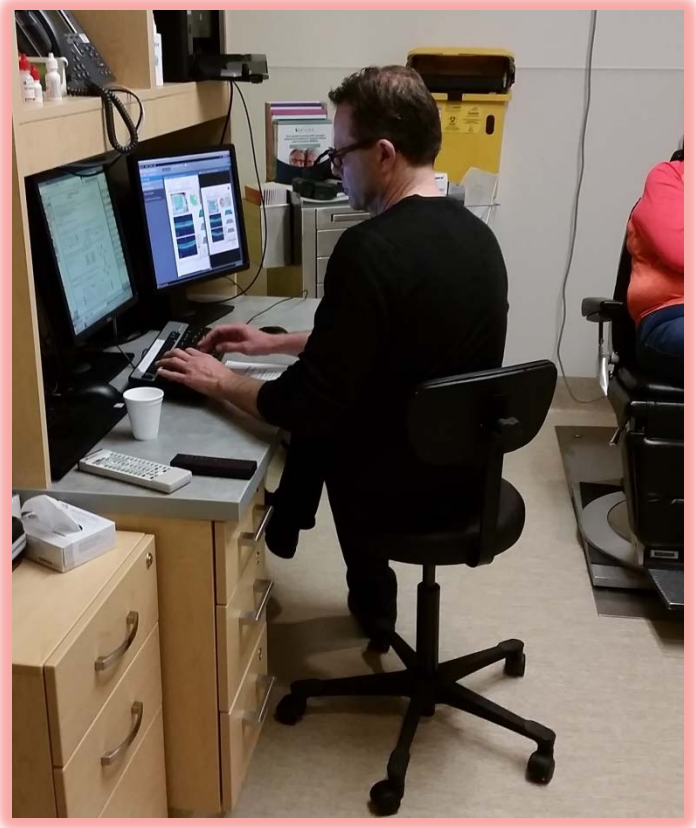


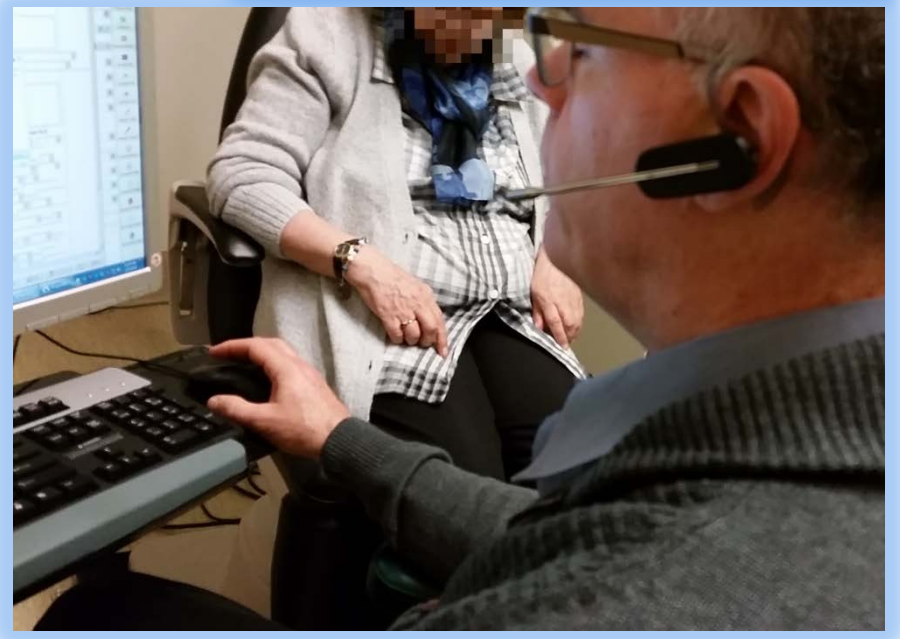




- **Although not always realistic, when possible, reduce radial deviation by increasing a bend with the elbow or repositioning your body**

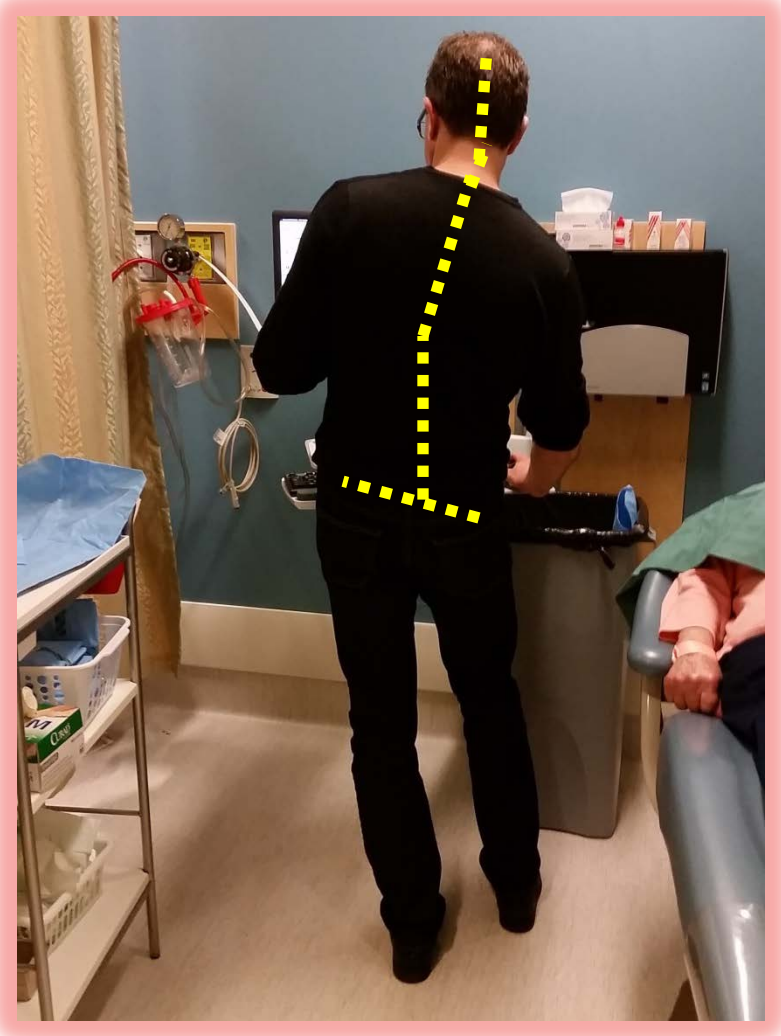
COMPUTER WORKSTATION





- The challenge in communicating with patient while on the computer

STANDING WORK STATION HEIGHTS

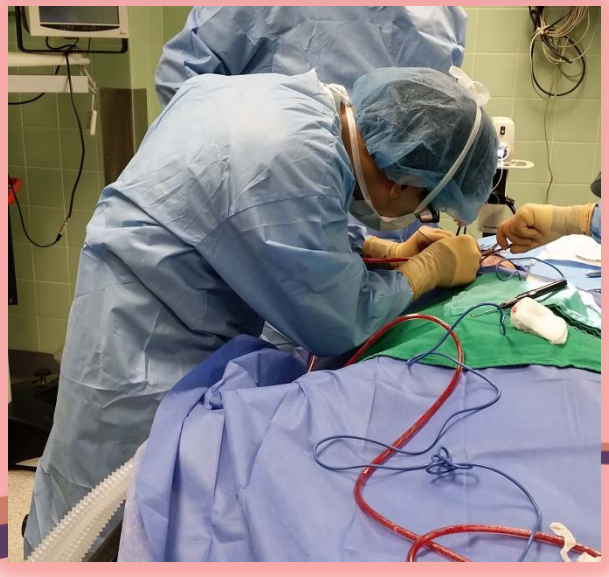


- When purchasing a “multi-user” wall mounted computer workstation, ensure that it is height adjustable and that everyone involved understands how to operate it.
- Assume a “power position” to put the load into your legs…although it may seem like you are carrying one

BODY POSITION CHANGES

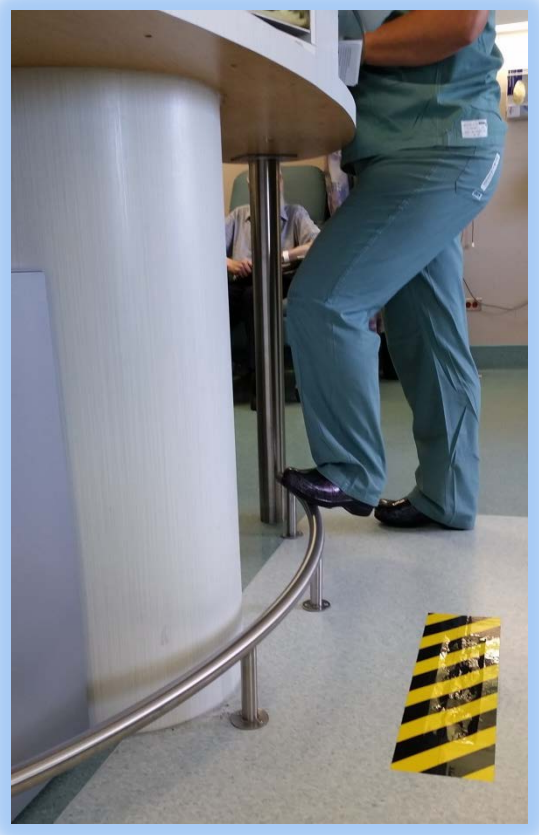
- **Draw one leg out to the side, as this can alleviate tension in the low back and allow you to lean slightly while maintaining a relatively neutral spine.**

STATIC LOADING



…which position is best??

TAKE A "LOAD" OFF



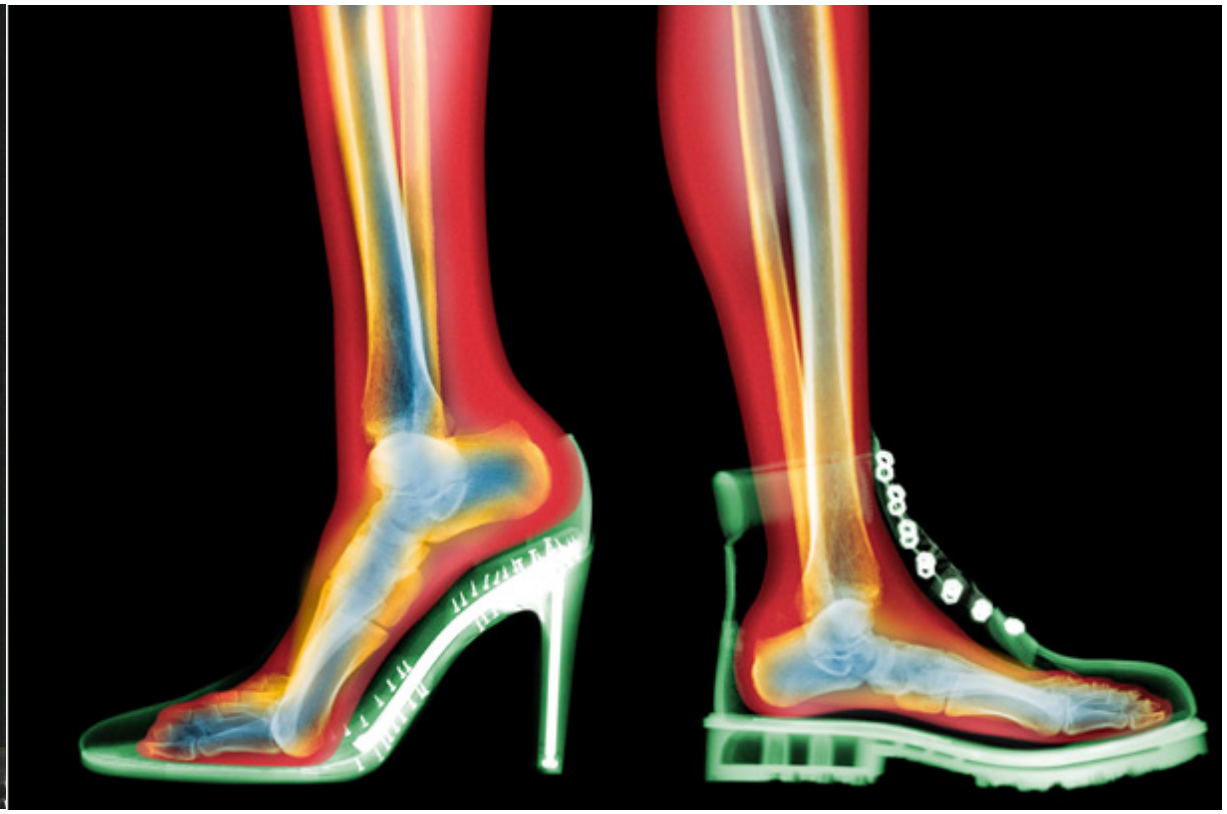
- **Merely supporting your feet when sitting is an ideal way to reduce ground-reaction force and associated stress on the lower limbs and back.**
- **Anti-Fatigue Mats, Foot Stools, Bars**

TEST YOUR KNOWLEDGE…

- What is a MSK?
- Name a RISK FACTOR associated with your profession?
- Name an ergonomic item that may reduce the potential for an MSK injury that can be used in your profession?
- What position change (when seated) will alleviate tension in the low back and allow you to lean slightly while maintaining a relatively neutral spine?

SOME EXTRAS

FOOT WEAR MATTERS



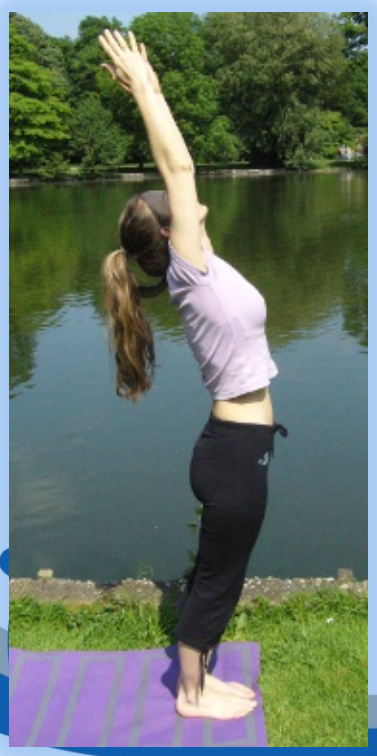
- **The shoes you wear on you feet can “defeat” the wear on your back**

FOOT WEAR

- When working with patients, consider the activities and “planes of movement” you go through in a given shift
- Are the shoes you currently use providing the support necessary to do your job safely?
- The use of a comfortable casual shoe with proper arch and heel support that laces up and is specifically designed to support the foot for many directions of movement is ideal.
- The use of “Anti-Fatigue” insoles can reduce musculoskeletal fatigue.

Fit for Work …yes I S.A.I.D it!

Healthcare workers have jobs demanding various levels of physicality, it is imperative to regularly engage in physical movement in order to perform our jobs safely.



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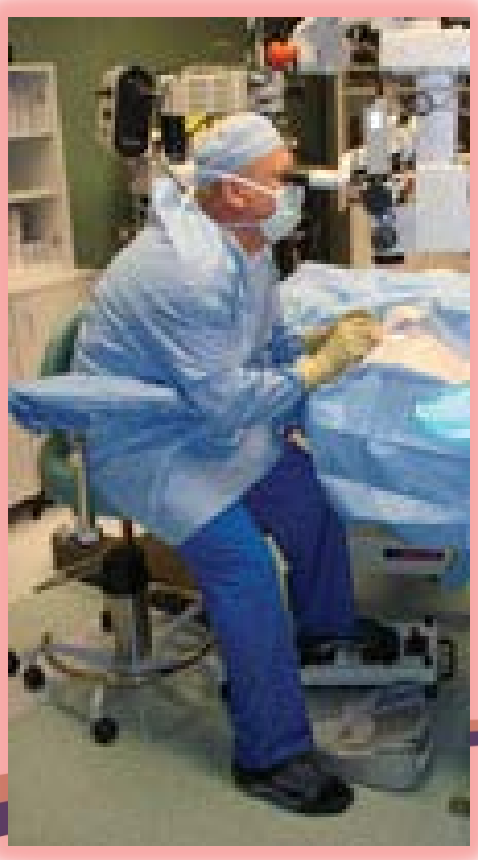
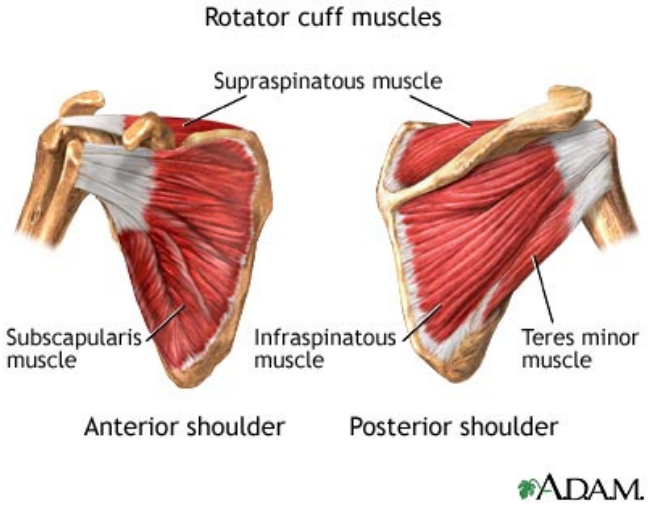


OR

MOVING/STRETCHING/CONDITIONING AT WORK-REST-PLAY

- Make it functional and do-able
- Stretch muscles in the opposite direction than work demanded of them
- Focus on muscle groups stressed performing work




QUESTIONS?