Healthy Spine
Safe Lifting

SAND2014-3065C

Strategies for Injury Prevention

Health Benefits & Compensation Employee Services
HBE

LifeDesign Center

Outline

- Important Facts
- What are Ergonomic Injuries (CTD & MSD)
- Risk Factors & Stressors
- OSHA Log 2013
- Impairments treated by Physical Therapists @ Sandia
- Practical session (lifting / posture)
  - 3 stations: Box, Golfer's and Alternate Lift
- Strength and Stretches – LDC
- Stress - effects on Health & Spine
- Recap

Surprising Facts

- 31 million Americans will experience low-back pain at any given time. [1]
- Experts estimate that as many as 80% of the population will experience a back problem at some time in their life.[2]
- Back pain is one of the most common reasons for missed work.
- United States ranks 37th in HEALTH according to World Health Organization (WHO) but **spends the MOST for healthcare**

Used with permission from GKirkwood @ New Mexico Chiropractic Center – Albq., NM 1/17/14

What are Ergonomic Injuries?

Cumulative Trauma Disorder (CTD)
and
Musculoskeletal Disorders (MSD)

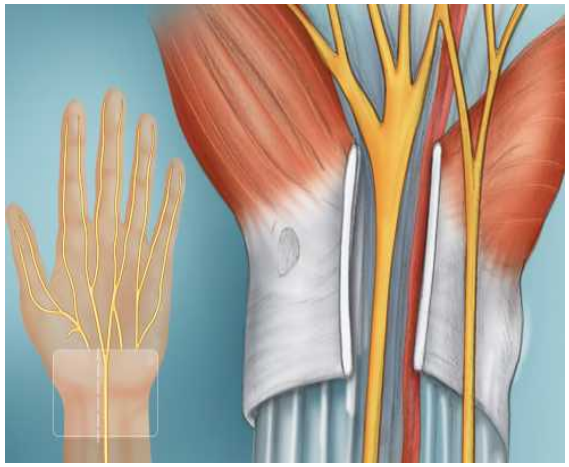
- CTD & MSD are used interchangeably
- Wear and tear on the tendons, muscles and sensitive nerve tissue cased by *continuous use* over an *extended period of time*

Personal/medical conditions may increase the risk of injury

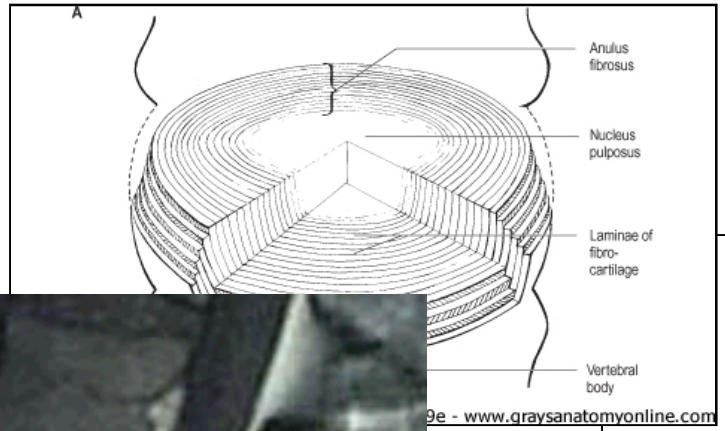
- Diabetes
- Rheumatoid Arthritis
- Thyroid disease
- Gout
- Obesity
- Smoking
- Previous Injuries

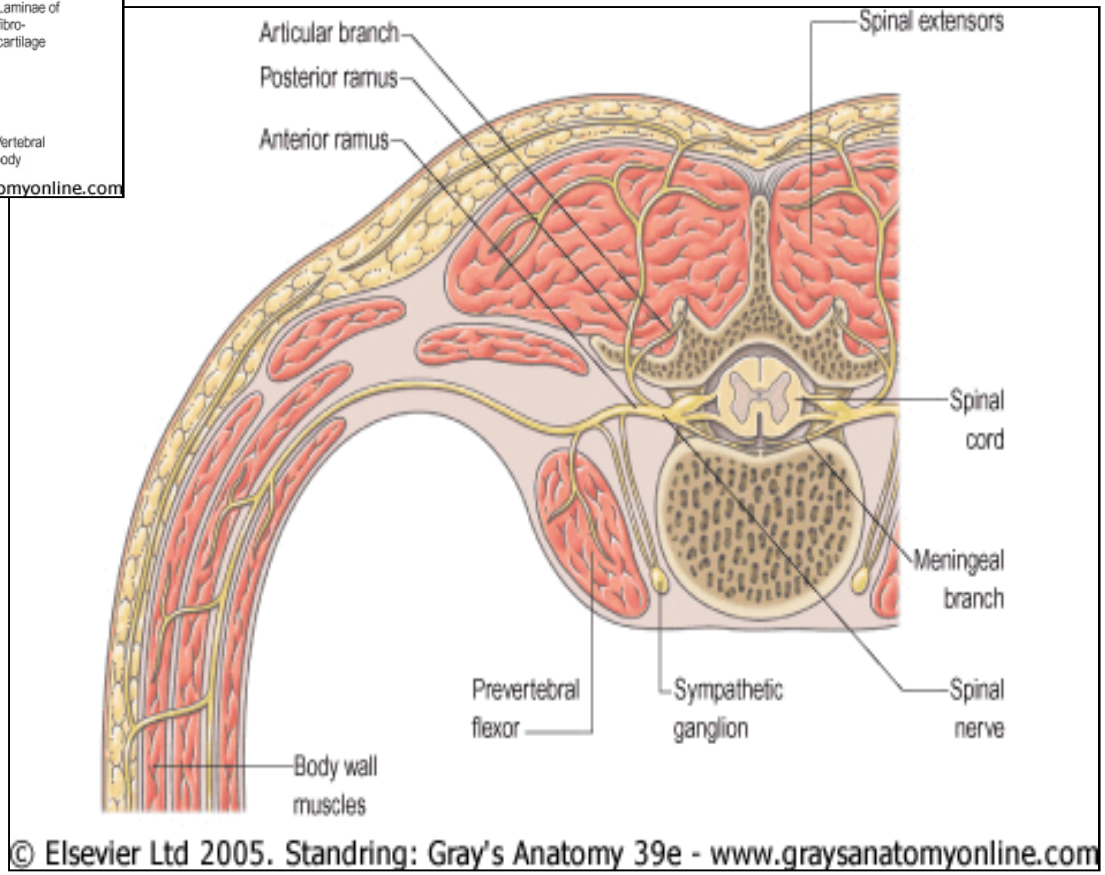
Common MSDs (CTDs)

- ***Spine***
  - Bulged/herniated disc
  - Sciatica
- ***Neurovascular***
  - Thoracic outlet syndrome (aka frozen shoulder)
- ***Tendons***
  - Tendonitis
  - Epicondylitis (aka tennis elbow)
- ***Nerve***
  - CTS - carpal tunnel syndrome
    - pressure on nerve @ hand/wrist
  - Cubital tunnel syndrome
    - pressure on nerve @ elbow



What is Affected?





Stressors, Signs & Symptoms

- Lifestyle of uncontrolled deadlines
- Aches and pains that don't go away with rest or exercise
- Cold, numb or tingling fingers
  - Stressors:
    - Psychosocial
    - Contact
    - Environmental

Contributors

- Postural Habits / Poor Body Mechanics
- Behaviors
- Attitude / Stress / Lifestyle Habits
- Physical Work Environment
- Physical Condition: Strength/Flexibility/ Endurance
- Physical Trauma
- Previous Injury

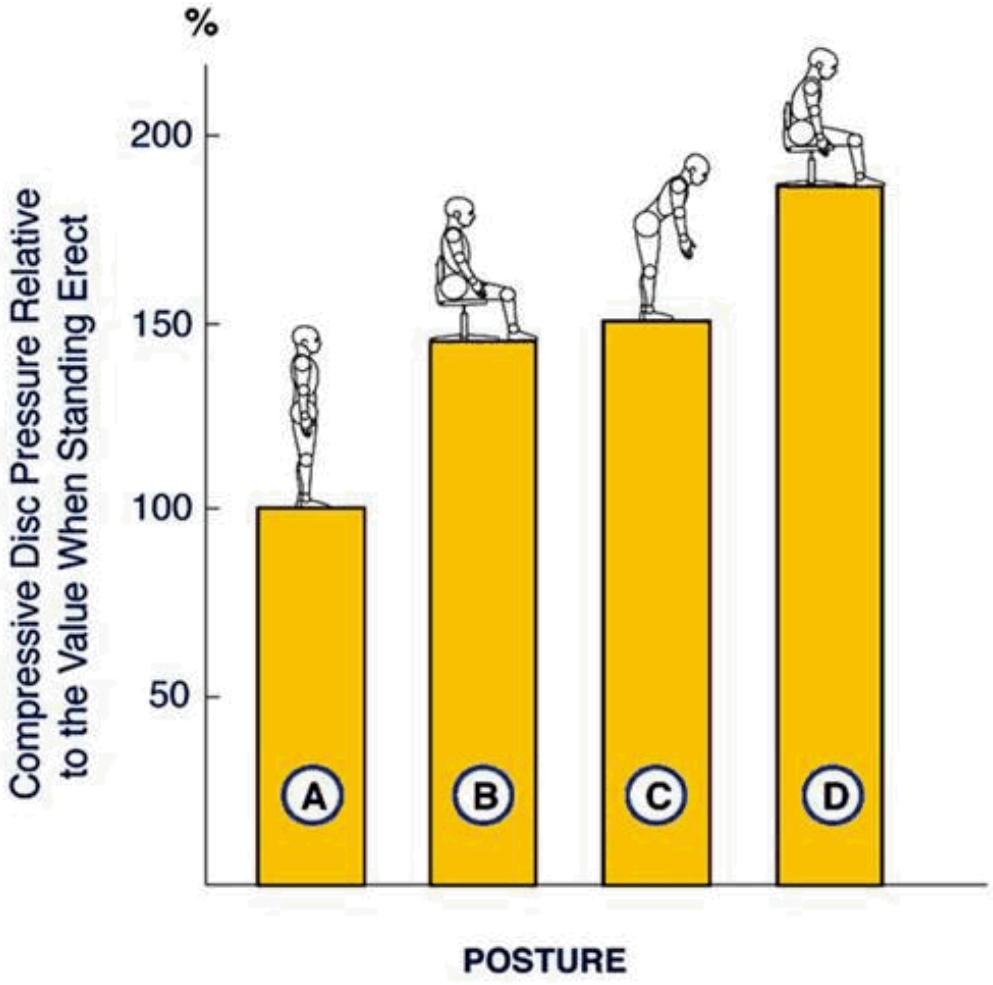
OSHA Log 2013

14 (Ergonomic) *Recordables*

- **Rep. Motion Typing**
  - 6 out of 7 had office location changes (<1.5 yrs)
- **Lifting/Pushing/Pulling/Overexertion**
  - 3 out of 7 (office move incidents)
    - No 'back class' completions for those 3
  - 2 out of 7 ('travel' related – offsite locations)

Sit vs. stand

(vertebral compression)



Pressure in the lumbar disks while sitting increase 50% compared to standing*

Forward flexion and rotation increase spinal/disk pressure by almost 200%*

*Used with permission from GKirkwood @ New Mexico Chiropractic Center – Albq., NM 1/17/14

Impairments

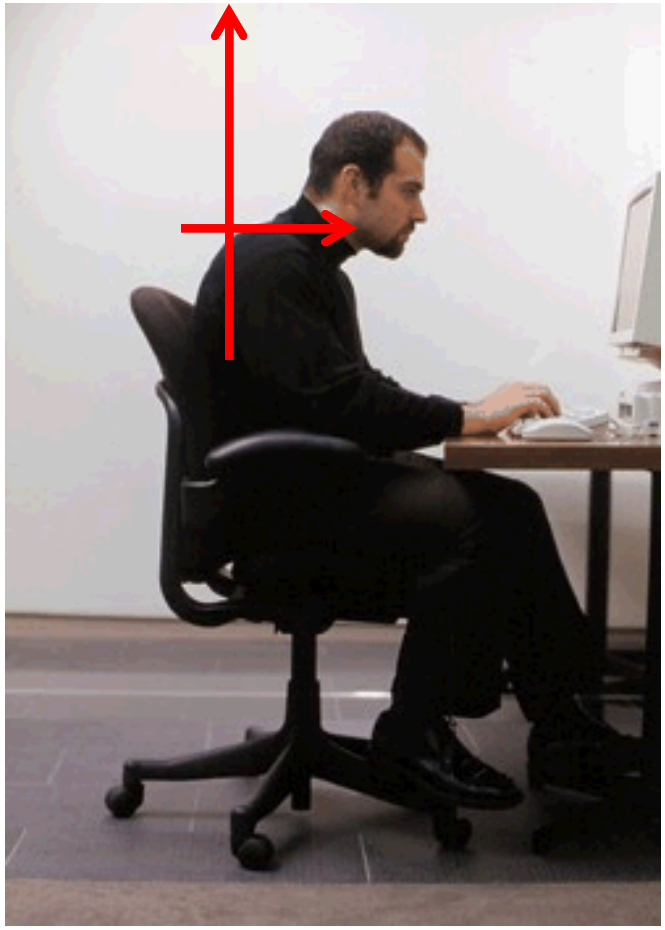
SNL/CA's Physical Therapists

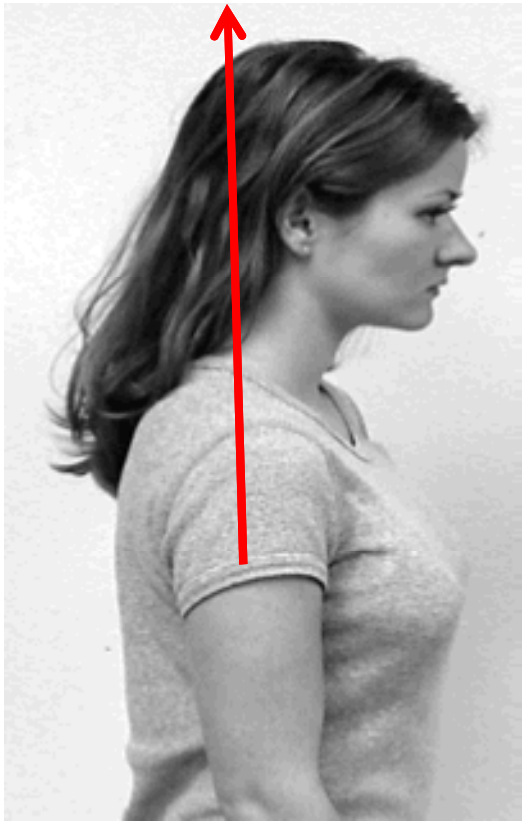
- Back 24%
- Elbow and forearm 22%
- Shoulder 20%
- Neck 16%
- Hip 7%
- Foot and ankle 6%
- Misc. 5%

What should you do ?

- Request an ‘office’ ergonomic evaluation
- Request an **‘industrial’** ergonomic evaluation
- Sign up for Healthy Spine-Safe Lifting class (TEDS)
- Seek Medical assistance
  - *Don’t ignore the issue thinking it’s going to ‘go away’*

Forward Head / Shoulder





BREAK …

Stretches….

http://www.mayoclinic.com/health/stretching/WL00030&slide=8

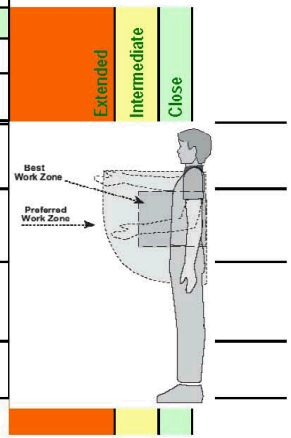
Healthy Postural Habits

- Try to find stable/stacked positions of comfort.
- Change positions frequently.
- Do the Opposite
- Check work area, car and home for ergonomic comfort and safety

Upper Limits for Safe Repetitive Lifting

< 2 Hours per Day with <60 Lifts per Hour
OR
>2 Hours per Day with <12 Lifts per Hour

Vertical Zone	Horizontal Zone[A] Extended: > 60 to 80 cm 24" to 31"	Intermediate: 30 to 60 cm 12" to 24"	Close: < 30 cm < 12"
Reach limit[C] or 30 cm (12") above shoulder to 8 cm (3") below shoulder height	No known safe limit for repetitive lifting[D]	(15 lbs) 7 kg	(35 lbs) 16 kg
Knuckle height[E] to below shoulder	(19 lbs) 9 kg	(35 lbs) 16 kg	(70 lbs) 32 kg
Middle shin to knuckle height[E]	(15 lbs) 7 kg	(30 lbs) 14 kg	(39 lbs) 18 kg
Floor to middle shin height	No known safe limit for repetitive lifting[D]	No known safe limit for repetitive lifting[D]	(30 lbs) 14 kg



Footnotes for Tables 1 - 3	
A.	Distance from midpoint between inner ankle bones and the load.
B.	Lifting tasks should not start or end at a horizontal reach distance more than 80 cm (31") from the midpoint between the inner ankle bones.
C.	Routine lifting tasks should not start or end at heights that are greater than 30 cm (12") above the shoulder or more than 180 cm (70.9 in, or 5' 10") above floor level.
D.	Routine lifting tasks should not be performed for extreme reaches indicated by the shaded cells in the table. While the available evidence does not permit identification of safe weight limits in the shaded regions, professional judgment may be used to determine if infrequent lifts of light weights may be safe.
E.	Anatomical landmark for knuckle height assumes the worker is standing erect with arms hanging at the sides.

ACGIH TLV Booklet

Practical Session

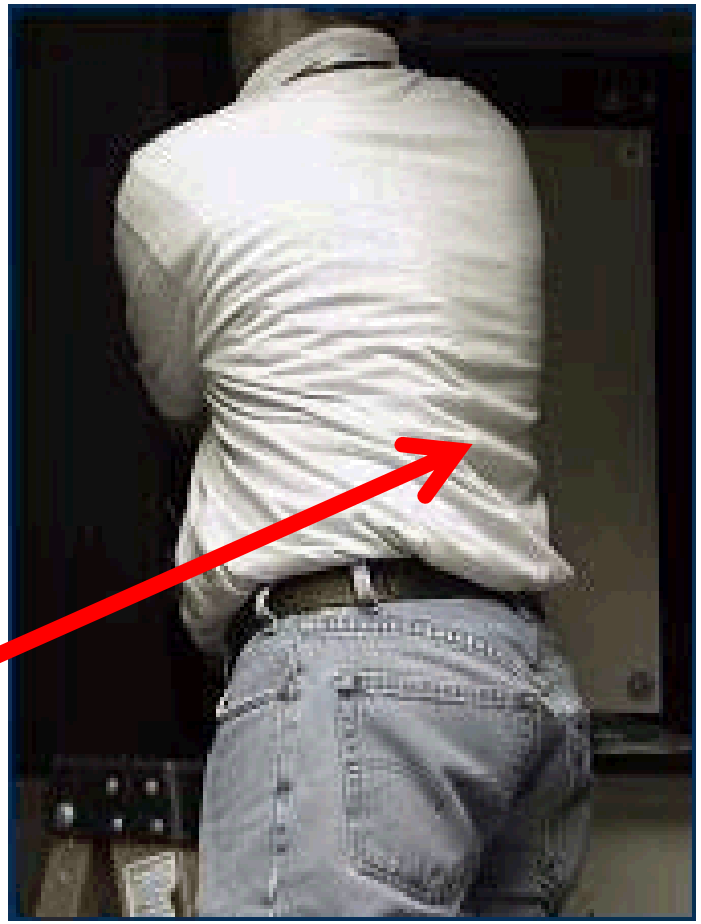
THINK FIRST:

- How much does the object weigh?
- One lift or multiple?
- Awkward?
- Lifting from where to where?
- Has it been a while since you lifted?
- Do you know how to use mechanical aids like dollies, lifts and carts?
- Do you need to ask for help?
- Bottom line question: Are you comfortable completing this task safely ?

Lift & Twist

- Engage abs
- Keep load close to your body
- Stay square to object with feet flat
- NEVER EVER lift & twist

(*evidence of twist*: notice wrinkles in shirt)



Conventional Lifting

Guidelines:

- **Engage Abs**
- Keep back straight
  - Maintain 3 curves
- Lift slowly using your glutes
- Don't twist
- Bend your knees
  - (do not extend knees over toes)
- Keep feet shoulder or hip-width apart
- Never ever twist

start demo lifting

Half Kneeling Lift

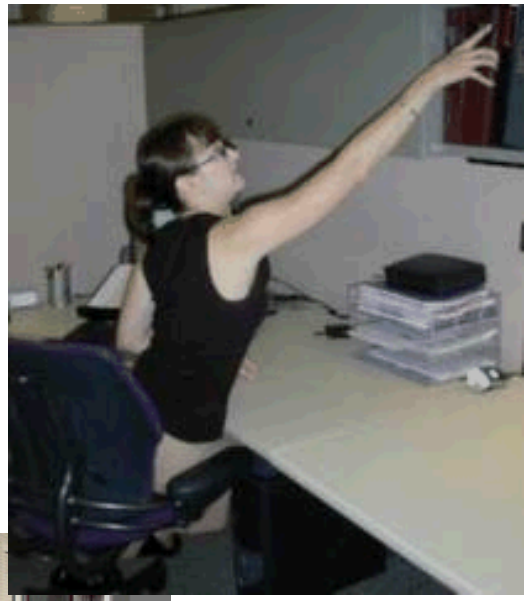


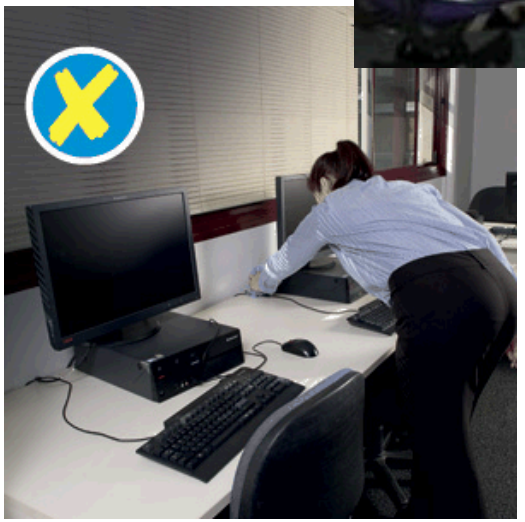
- Engage abs
- Lock low back into position
- Keep object close to the body and lower on to one knee being careful not to extend knee over toe
- The supporting knee should be bent 90 degrees (knee in line with ankle)

Golfer's Pickup *(single leg)*

- If *LEFT* foot forward, pick up item with *RIGHT* hand and visa versa
  - Slightly bend 'weighted' leg
- If needed, use non-reaching hand to support yourself on a stable object or thigh for balance

Reaching - avoid





LDC…

Stress & Health

When stressful situations go unresolved, the body is kept in a constant state of activation that causes:

- Increased wear & tear on biological systems
- Fatigue and damage set in
- Ability of the body to repair & defend itself
- Escalated risk of injury & disease

Stress & Your Spine

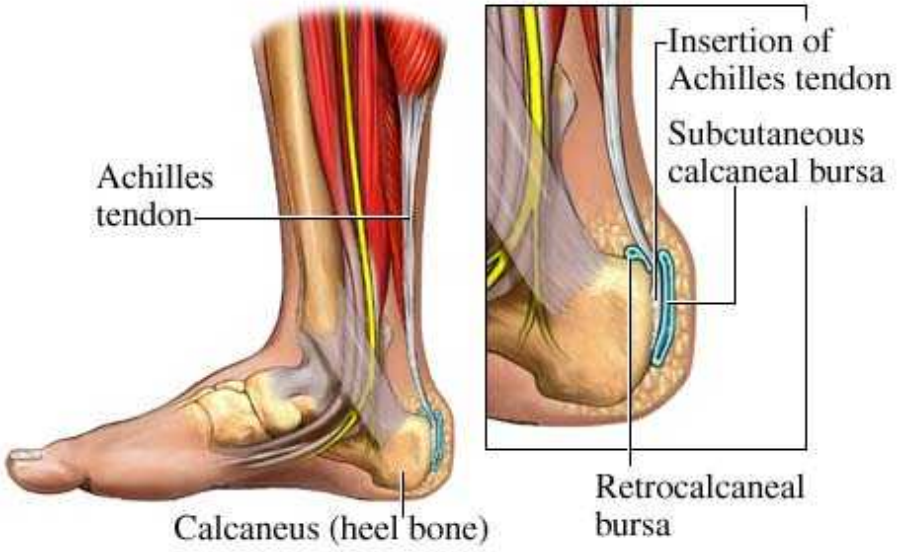
Tension & Impaired Blood Flow

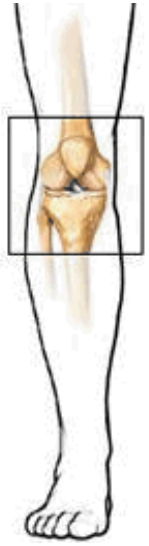
- Sustained contraction of muscles reduces blood flow
- Less nourishment and oxygen reach the muscles & surrounding tissues, preventing proper functioning
- Lack of oxygen may cause muscle spasm

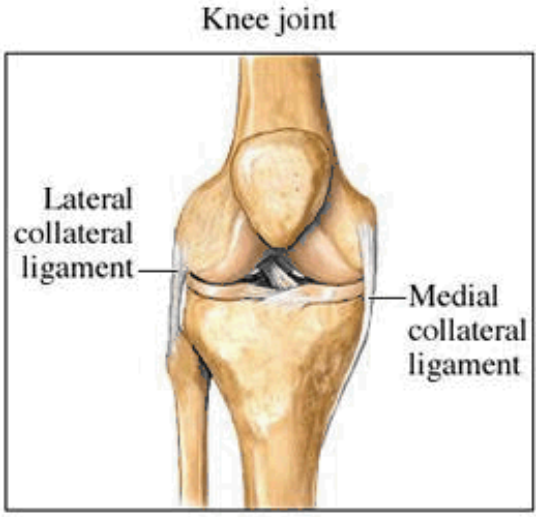
Stress & Your Spine

Muscle **Tension** & **Alignment**

- Because muscles and tendons attach to bones, muscle tension can pull unevenly on bony structures and may pull them out of alignment
- May cause lack of normal nerve transmission from the brain to tissues and cells – eventually leading to breakdown in tissues







DVD-A Bit about Backs…

Recap

1. Be **comfortable** with attempted weight
2. Get **help** if necessary
3. **Mechanical aids**
4. Area **clear** of objects
5. **Non-slip surface** / shoes
6. **Keep items close**
7. **Power zone** - knuckles to chest
8. Secure grip
9. **Engage abs**
10. **Never**….ever ‘Lift & Twist’