MUSCULOSKELETAL INJURIES AND CARE FOR ARTISTS

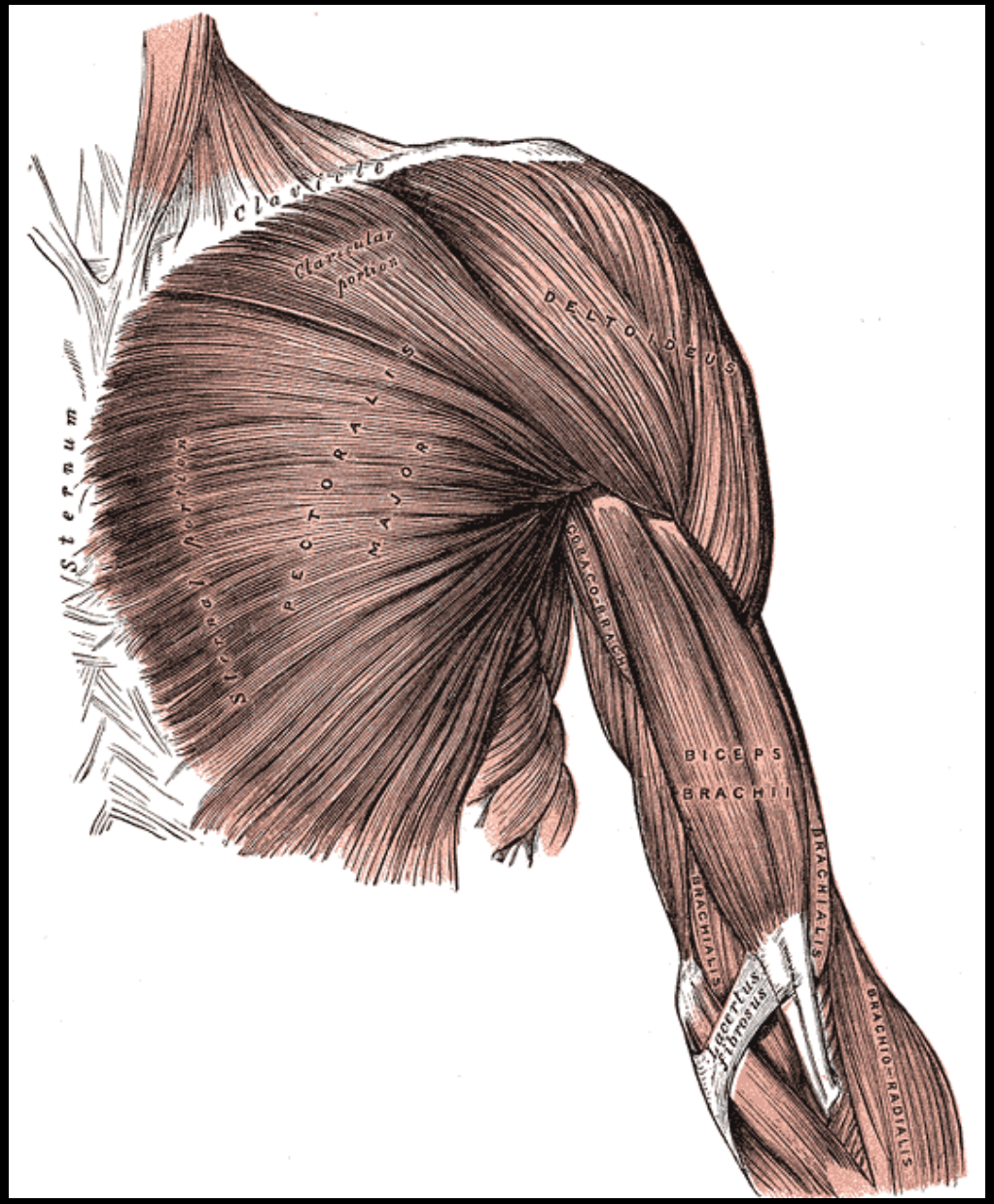
Taking care of the best (and most expensive) asset you have!

YOUR MUSCULOSKELETAL SYSTEM

- Includes all of the muscles, tendons, ligaments, bones, cartilage, and other connective tissues
- Not only the parts (anatomy), but also how they work together (physiology)
- Prevention is so much better than treatment!
  - That said, sometimes people just get hurt, and that's why we have professionals who can help us to heal

WHICH PROFESSIONALS ARE WE TALKING ABOUT?

- Medical doctors
- Physical therapists
- Occupational therapists
- Athletic trainers
- Many different kinds of support staff that help with diagnosing and treating injuries



WHAT ARE WE TALKING ABOUT?

There are 3 types of muscle:

- Smooth
- Striated
- Cardiac

Muscle fibers are stimulated by nerves and contract. Muscles contracting all in the same direction (mostly) help to move a part of the body.

https://www.youtube.com/watch?v=VVL-8zr2hk4

ANATOMY, CONTINUED

- Joints are the point of articulation (movement/connection) between two bones
- Ligaments connect bone to bone
- Tendons connects muscle to bone
- Cartilage
  - Hyaline cartilage is stiff but somewhat flexible
  - Elastic cartilage is very flexible
  - Fibrocartilage resists compression

MORE ANATOMY

- Fascia is connective tissue that helps separate organs and muscles from one another
- Bones
  - Compact bone tissue is very dense, and mostly on the outside of the bone
  - Spongy bone tissue is constructed of struts and plates and fairly open comparatively
  - 206 bones in the human body, the smallest located in your ear and the largest in your thigh

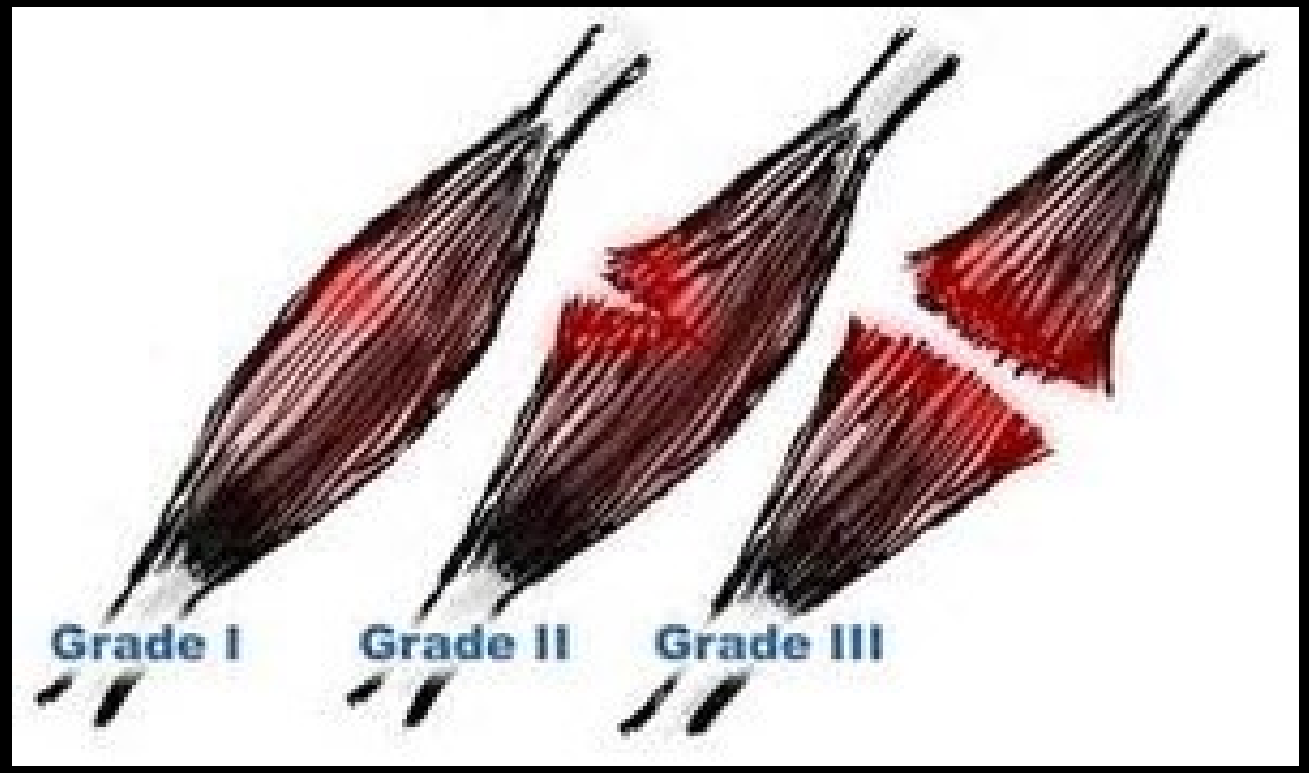
TWO MAIN WAYS TO GET INJURED

Acute injuries

- Happen suddenly, usually from a single event
- More traumatic, though the injuries can range in severity
- Macro-trauma

Overuse

- Chronic injuries that happen over time
- Can sometimes take longer to diagnose if a link is not immediately known
- Micro-trauma



MUSCLE STRAINS

Tears in the muscle or tendon fibers

Factors that lead to strains include:

- Inadequate warm-up
- Excessive muscle tightness
- Overuse/inadequate recovery
- Previous injury
- Faulty technique

TREATMENT FOR MUSCLE STRAIN

- RICE protocol
  - Rest, ice, compression, elevation

- Some doctors advice against using common pain medications in the first 48 hours because of the increased risk of bleeding/hemorrhage

- Physical therapy

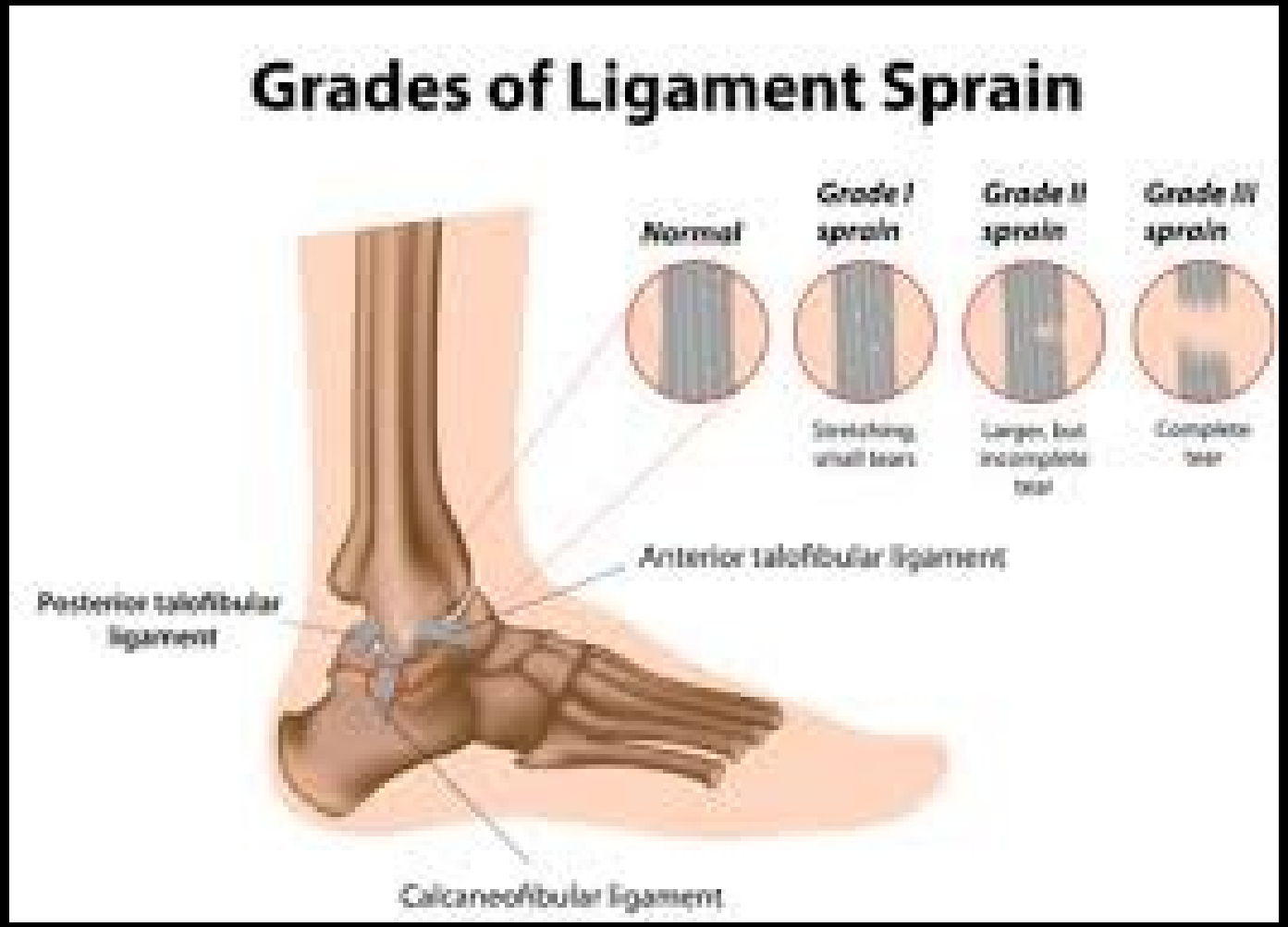
CONTUSION (BRUISE)

- Occurs when blunt trauma causes the capillaries in the muscles to break or leak
- Usually not harmful unless there is an underlying medical condition like hemophilia or they are indicative of more serious trauma
- Ice and rest can help if pain persists

MUSCLE CRAMPS

- Involuntary contraction of muscle fibers
- Can occur just about anywhere in the body
- Can be very painful, or just annoying depending on the severity and longevity of the cramp

- May be caused by
  - Dehydration
  - Overuse
  - Low potassium or sodium levels
  - ??
- Treatments include:
  - Massage
  - Heat or ice
  - B vitamins



LIGAMENT SPRAIN

Stretching or tearing of ligament fibers

Factors leading to sprain include:

- Poor equipment
- Poor technique
- Overuse/fatigue

TREATMENT FOR SPRAN

- RICE protocol
- Immobilization
- Physical therapy
- Extreme cases may require surgery

WHY DO MUSCLES GET SORE?

- Working muscles causes fibers to break down (destruction phase)
- Specialized cells removed dead muscle fibers, and lysosomal fibers create a protective temporary membrane
- During the repair and remodeling phase, new myofibers are created, new blood vessels formed, and nerve ending grow into once damaged areas. This can take quite a long time.

CARTILAGE TEARS

- Can happen acutely or over time
- Can occur in any joint in the body
- Cartilage cannot repair or replace itself
- Treatments include
  - Surgery to replace damaged cartilage with healthy cartilage
  - Physical therapy to identify techniques that can reduce pain or prevent further damage
  - Joint replacement surgery

DEM BONES, DEM BONES

- https://www.youtube.com/watch?v=h5dYvPruBFY

BONE BREAKS AND FRACTURES

Seven types of fracture:

- Green stick
- Compression
- Transverse
- Spiral
- Oblique
- Comminuted
- Segmental

TREATMENT FOR FRACTURES

- Immobilization
- Surgery
- Traction
- Medications to control inflammation and pain can be used
- Some bones, like the pelvis, also have blood vessels running through them, so breaking these bones can cause major internal bleeding

STRESS FRACTURES

- Tiny cracks in a bone from repetitive force, such as dancing or running
- May occur by increasing the intensity of an exercise or activity too quickly, before the bone has time to grow in strength to resist the force adequately
- Treatment includes rest and stopping an activity until bones can heal, then gradually starting the activity again at a slower pace

DISLOCATION

- Occurs in a joint
- Can be concomitant with other injuries, like muscle strain or ligament sprain
- Treatment includes
  - Reducation
  - Immobilization
  - Surgery
  - Physical therapy

PREVENTING SKELETAL INJURIES

- Calcium!
- Load-bearing exercises
- Adequate rest and recovery time
- Work toward proper technique
- Use good equipment
- Manage chronic illnesses that could contribute to bone loss or poor muscle tone

REPETITIVE MOTION INJURIES

Also called repetitive stress injuries, cumulative trauma disorders, and overuse syndrome

Two of the most common types are carpal tunnel syndrome and tendinitis

Injury occurs over time to both the muscle system and the nervous system

Often thought about in relation to office or factory work, but artists are very susceptible

WHAT IS IT?

- Over time, using your body, particularly your limbs and neck, with the same kind of motion leads to inflammation and micro injuries to the area
- Can be caused by vibrations, forceful exertions/heavy lifting, sustained awkward positioning, and repetitive eccentric contractions
- Nerves become compressed by inflammation, causing numbness, tingling, and pain in the effected areas

TREATMENT FOR RSI

- Begin treatment as early as possible, as delaying treatment could lead to further injury or permanent injury
- NSAIDs
- Steroids
- Surgery to relieve pressure around the nerve

PREVENTION OF RSI

- Take frequent breaks
- Improve your posture
- Improve muscle tone and skeletal strength (also related to posture)
- Consider your position when working
  - For pianists, consider bench height and posture
  - For painters, consider the height of your canvas in relation to your body and how you stand or sit
  - For other instrumentalists consider hand position, posture, and release of tension in your hands and arms

QUESTIONS?

HOW CAN YOU WORK THIS WEEK TO IMPROVE YOUR MUSCULOSKELETAL HAPPINESS?

Brainstorm some ideas that you can implement in your classes this week.