The Muscular System

- **Characteristics of Muscles**
  - ________ – ability to respond to a stimulus (i.e.: nerve impulse)
  - ________ – muscle fibers that are stimulated by nerves contract (become shorter) and causes movement
  - ________ – ability to be stretched
  - ________ – allows the muscle to return to its original shape after it has been stretched

- **Three types of muscles**
  - ________ (involuntary) – cannot be controlled by will.
  - ________ – control the contractions of the heart.
  - ________ (Voluntary) – can be controlled by will.

- **Function of Skeletal muscles**
  - Attach to bones to provide voluntary __________
    - Tendons: strong, tough connective cords
    - Fascia: tough, sheet-like membrane
  - Produce ______ and __________ for the body
  - Help maintain __________
  - ________ internal organs

- **Function of Smooth Muscle**
  - Called smooth muscle because they are unmarked by striations
  - Unattached to bones, act slowly, do not tire easily and can remain __________ for a long time
  - Not under __________ control so they are also called involuntary muscles
  - Found in walls of internal __________

- **Function of cardiac muscle**
- Found only in the _________ muscle
- Requires a _____________ supply of _____________ to function
- Cardiac muscle cells begin to die after 30 ____________ of oxygen cut-off

**Definitions**

- ____________: 
  - Moving a body part toward the midline
- ____________: 
  - Moving a body part away from the midline
- ____________: 
  - Decreasing the angle between two bones or bending body parts
- ____________: 
  - Increasing the angle between two bones or straightening the body part
- ____________: 
  - Turning a body part around its own axis
- ____________: 
  - Moving in a circle at a joint

**State of _________ contraction is called:**

- _______________ ________

**Loss of muscle tone occurs when muscles are not used for a long period of time. Muscles _________ (shrink in size and lose strength) and results in:**

- _______________

**___________ _______ is the most common type of contracture seen, but fingers, knees and other joints can be affected**

- **MUSCLES YOU NEED TO KNOW THE FUNCTIONS OF:**
  - Biceps – _________ lower arm
- Deltoid – _________ arm; injection site
- Sternocleidomastoid – turns ______
- Gastrocnemius – flexes sole of _________
- Latissimus dorsi – _________ & _________ upper arm
- Pectoralis major – _________ and _________ upper arm
- intercostals – moves ribs for breathing
- Trapezius – extends ________, moves _________
- Triceps – _________ lower arm
- Gluteus maximus – extends _________; injection site
- Sartorius – _________ thigh, flexes _____
- Vastus lateralis – extends leg
- Rectus abdominus – _________ the abdomen
- Rectus femoris – flexes _________ & extends lower _________
- Tibialis anterior – flexes and inverts _________

Chronic, widespread pain in specific muscle site; numbness and tingling in arms or legs; headaches

- Cause unknown
- Treat symptoms – pain relief; stress reduction and muscle relaxers

Group of inherited diseases that cause chronic, progressive muscle atrophy resulting in total disability and early death

- No cure
- Treatment used to slow progression of disease
Chronic condition where nerve impulses are not transmitted correctly leading to progressive muscular weakness and paralysis; affects respiratory muscles and can be fatal

- Cause unknown
- Treatment is supportive

Sudden, painful involuntary muscle contractions

- Caused from overexertion, low electrolytes or poor circulation
- Treat by applying gentle pressure and stretching of the affected muscle

Overstretching of a muscle or tendon frequently in legs, back or arms

- Caused by sudden muscle exertion
- Treated by resting, muscle relaxants, or pain medications, elevation of extremity and applying hot/cold compresses

**RANGE OF MOTION**

- ????? WHY ?????
- Done to _____________ health of the musculoskeletal system (muscle/skeleton)
- Each joint and muscle is moved through its full range for patients with limited ability to move
- Administered by: PT, RN, Assistant, or other authorized personnel (with training)
- Done to prevent problems caused by lack of movement
- Problems from lack of movement
- ____________
  - Tightening and shortening of a muscle resulting in a permanent flexing of a joint
- ____________ ____________
  - Muscles become weak and joints become stiff
- ___________ impairment
  - Blood clots and pressure ulcers can develop

- ___________ loss
  - Especially calcium from the bones making bones brittle and easily to be fractured

- Other problems
  - Poor appetite; ___________; urinary infections; respiratory problems; and pneumonia

- Types of ROM
  - ___________ ROM
    - Performed by patients who are able to move each joint without assistance
  - ___________ ___________ ROM
    - Patient actively moves the joints but receives assistance to complete the entire range
  - ___________ ROM
    - Another person moves each joint for a patient who is not able to exercise
  - ___________ ROM
    - Exercises are performed by a PT against resistance

- Definitions
  - ___________ – moving away from midline
  - ___________ – moving toward midline
  - ___________ – bending of body part
  - ___________ – straightening of body part
  - ___________ – moving around its own axis
  - ___________ – moving in a circle at a joint

- Principles to follow
  - Movement should be ___________ and ___________
  - Support provided to the parts ___________ and ___________ the joint being exercised
Never force a joint beyond its ROM or to the point of __________

STOP if a person complains of pain

Perform each movement ___________ times

Encourage patient to ____________ as much as possible

Prevent patient ____________

Keep door closed and patient screened off

Use correct _______ ____________

Body Mechanics

4 main reasons...

Muscles work best when used correctly

Correct use of muscles makes lifting, pulling and pushing ____________

Prevents unnecessary __________ and __________ therefore, saves energy

Prevents __________ to self

8 rules of good body mechanics

Maintain broad base of ____________ (8-10 in.)

Bend from ______ and knees to get close to object

Use _______________ muscles: shoulders, arms, hips, thighs

Use weight of body to help __________/________

Carry heavy objects _______

Avoid ___________ body; turn whole body when changing direction

Avoid ______________ for long periods

Get _________ if object is too heavy