09.18.09--PT Lab Notes

Wednesday, September 09, 2009
7:33 AM

- Shoulder
  - Ranges of Motion
    - Flexion= approx 180°
    - Abduction= approx 180°
  - Supraspinatus and middle head of deltoid abduct shoulder
    - To test: have patient abduct arm and test against resistance
  - Anterior head of deltoid
    - To test: abduct and externally rotate arm. Test against resistance
  - Posterior head of deltoid
    - To test: abduct and internally rotate arm. Test against resistance
  - Upper region of trap
    - To test: raise shoulder toward ear and bring ear toward shoulder. Have patient resist you as you try to pull the shoulder and head apart.
  - Latissimus Dorsi (extension and internal rotation of shoulder)
    - If it is tight, you expect flexion to be limited (flexion will not reach 180°)
    - To test: have patient lay on back and put shoulder through flexion range (above head)
    - End feel should be springy
  - Pecs (internal rotation and abduction)
    - If this muscle is tight, it will pull the scapula forward
  - Pec Minor
    - Tight muscle will cause shoulder to be drawn upward
    - To test: patient is supine. Have patient contract this muscle (shoulders toward the ceiling and together). Have patient resist as you try to push down on the shoulders
  - Teres Minor and Infraspinatus--external rotation of the shoulder
  - Supraspinatus--internal rotation of shoulder
    - You should do these tests against gravity.
    - Have patient lay on stomach; internal and externally rotate arm against resistance
  - Trap (Middle and lower heads)
    - Scapula has to elevate and rotate to allow GH joint to fctn
    - Middle head: patients arm is abducted with thumb up. Patient draws scapula medially and then you push down while patient resists.
    - Lower head: patients arm is abducted and slightly raised above 90°. Patient resists as doctor tries to push arm down

09.18.09--PT Notes

Friday, September 18, 2009
8:26 AM

- The moment that a patient sees the doctor they are in phase I of rehab
  - This is a very acute condition. The patient has a lot of pain and a reduce ROM
  - Goals of phase I
    - Reduce pain (this is what the patient cares about)
    - Improve or maintain range of motion
    - Maintain strength/prevent atrophy
  - Treatment choices
    - P: physiological therapeutics (modalities: Ultrasound, interferential, etc)
    - I: Isometrics
      - We can begin strengthening and exercising in phase I of care.
      - We need to prevent more atrophy. We are not worried about strengthening in this phase
    - M: Manipulation/mobilization
      - Grades 1-4 mobilizations
    - P: passive range of motion (PROM)
      - We are in the pain free range. We do not encourage them to push into pain.

- Phase II of rehab
  - Goals of phase II
    - Continue to reduce pain to approx 50%
    - Increase in ROM--in phase II you want full active range of motion
    - Improve strength
  - Rehab
    - Modalities can still be used
    - Exercises
      - You can continue isometric exercises
      - You can also add some Proprioceptive Neuromuscular facilitation (PNF) and active assisted range of motion (AAROM)
      - AAROM: have the patient assist themselves in doing the ranges of motion
        - Can use a cane, broom, ruler, etc to help push the extremity when doing active range of motion
- Phase III of rehab
  - To get to phase III, patient must have full, pain free active range of motion
  - Goals of phase III
    - Pain free AROM
    - Full ROM
    - Muscle testing will be full

  - Supraspinatus impingement
    - Supraspinatus becomes impinged by the coracoid process.
    - When doing abduction there will be a painful arc; however the entire range will not be painful
    - Mobilization
      - This is a stretch of the capsule
      - Manipulation is a stretch of the capsule past the physiological range
      - Phase I= gentle oscillation
      - Phase II= a little more motion into the painfree range

    - Pendulum exercise is a very good exercise for your shoulder patients to do at home

- PNF (Prorioceptive Neuromuscular facilitation)
    - You are not isolating one particular muscle for one particular function. You are starting in one position and ending in another position

09.25.09--PT Notes

Friday, September 25, 2009
8:47 AM

- Shoulder
  - Middle head of trap
    - Prone, arm to 90°, pull scap toward spine. Ask patient to hold and push toward floor
  - Inferior head of trap
    - Prone, arm to 90, pull scap inferiorly, do test same as previous
- Elbow
  - Extensor carpi radialis longus
    - Extend elbow with palm down, have patient flex wrist up.
    - Have patient hold and dr tries to move from this position
  - Extensor carpi radialis brevis
    - Bend elbow for brevis
  - Flexor carpi ulnaris
    - Arm extended with palm up, have patient flex wrist up and hold. Dr tries to move from this position

- Biceps
  - Long head of biceps is tested differently.
  - Extend arm with palm up. Dr pushes down
  - This is a good test for tendonitis of long head of biceps
- Triceps
  - Don't have to do against gravity
  - Can just do general screen in same position as biceps test

- Pec Major length
  - done supine
  - Should be able to abduct arm to 90
- Lat length
  - Done supine
  - Should be able to raise arm over head to approx 180
  - To get this motion the scapula must elevate

- <u>Phase 1 of care</u>
  - 1st month of care: ice, passive ROM, manipulation/mobilization
  - Mobilization:
    - Grade 1=1 light oscillation to open it up
    - Grade 4=stretch, go down to end of ROM and feel capsule
    - Grade 5=5 manipulation

- isometric exercise= there is a 20° overlap

10.02.09--PT Notes

Friday, October 02, 2009
8:29 AM

Lab Notes

- Neck flexors
  - Longus coli, Longus capitis, SCM , Scalenes
  - General Screen:
    - Patient supine, watch them flex neck (chin to chest) and note any disruptions
  - Test:
    - Patient supine, lift head off the table and apply AP pressure. Ask patient to resist to test strength
- Neck Extensors
  - Rectus capitis, semispinalis capitis & cervicis
  - General screen:
    - Patient is seated, apply pressure at the back of the patients head and ask them to resist to test strength
  - Test:
    - Patient prone, extend and rotate head ipsilaterally. Stabilize and push straight down on head. Ask patient to resist

- Upper Trap
  - Patient supine. Cup occiput with one hand and place other hand on the patients shoulder. Take patient into flexion and contralateral rotation and feel for muscle tension (length assessment)
- Levator Scap
  - Same position as test for upper trap except patient places their own hand under occiput. You hold patients head and hand and perform test as before

Classroom Notes

- Components of strength
  - Number of muscle fibers you have + diameter

- Two types of muscle fibers
  - Fast and slow
  - Most core muscles are slow
  - What increases when you have hypertrophy--muscle fiber diamater (actin and myosin)

- In the first phase of therapy, we work mostly on maintaining strength. We don't do any real strength training
  - The first 20% of gain in muscle is for coordination
  - We do not lose the ability to gain muscle strength as we age. You just have to remember the other challenges (other patholgies, DJD, etc)
  - 1% drop in strength after age 25

- Isometric--can begin these exercises right away in the pain free range
  - Generally, you progress from isometric to isotonic.
  - You would stick with isometric until they can work through the entire pain free range
  - When applying isometric strength training, the window of tx is 20 degrees from neutral
  - Isometrics have a potential side effect: tend to increase hypertension

- Progressive Resisted exercises (isotonic)
  - Isotonic= weight stays the same
  - Use tubing for isotonic exercises. Rubber or latex tubing used for different levels of resistance
  - 2 types: concentric and eccentric contraction

        - You have greater strength with eccentric contraction
        - Generally you will only want to do eccentric exercises with people who are very weak
    - 1-2 second concentric, 2-4 second eccentric (general protocol)

- Delame
    - You have a max of 10 reps. This is just based on your clinical judgement. You decide what maximum weight they can do for ten reps
    - 50%, 10 reps
    - 75%, 10 reps
    - 100%, 10 reps

- Oxford
    - All the reps remain the same but the percent changese
    - 100%, 75%, 50%
    - So, on this one you start out more aggressively

- Biometrics
    - Quick eccentric contraction, load the muscles, and then a quick concentric contraction
    - Goal: increase power and speed

- Open chain
    - The distal segment is free
- Closed chain
    - The distal segment is fixed
    - This is a popular thing to do right now.
    - Most of your rehab for cervical and lumbar will be closed chain

10.09.09--PT Notes

Friday, October 09, 2009
8:21 AM

- PT LAB NOTES
  - Cervical extensors
    - Done unilaterally
    - Patient is prone. Turn head to side and lift off table. Dr presses downward and asks patient to resist.
  - Cervical flexors (longus capitus, longus coli, are the deep ones. After whiplash these may be inflamed)
    - Have patient supine and ask them to lift their head
    - If they jut the chin forward we are thinking there is a problem with deep neck flexors. The patient should tuck the chin first.
  - Abdomen muscle testing
    - Transverse, internal oblique, external oblique
    - Trunk flexion test
      - Legs straight, patient supine. Lift trunk off table.
      - No leg stabilization
      - If they can get scapula off table=5
    - Straight leg raise
      - Patient supine, flatten back against table
      - Dr places hand under patients lower back to make sure it is flat
      - Dr lifts both legs off table to the maximum height that the patient can go.
      - Have patient lower legs slowly
      - If patients core muscles are weak they will recruit psoas and their lower back will pull away from your hand
  - Spinal extensors
    - Patient prone, hands behind head.
    - Have patient lift trunk off table
    - Stabilize patients legs

- Midterm = 50 points
- Range of Motion
  - One of the earlier goals is improving range of motion
  - 3 types of ROM : 2 in assessing, 1 for treatment
    - Passive= full range of motion at that joint
    - Active ROM= what the patient can do on their own (with their own muscle power)
      - WFL= within functional limits
        - This applies to people who get the job done, but it is not considered the full textbook range of motion
      - WNL= within normal limits
        - This is the people who have the full textbook ROM
      - Active Assisted ROM (AAROM)= when the muscle grade is a 2 or less
        - These people need help getting the joint through the available ROM
        - If the patient can only lift their arm to 90^{o} you help them through the rest of the ROM
        - This can be used as a type of exercise
      - If pain is involved in active range of motion, we don't know what is causing the problem
        - When we find pain, we generally put that joint through passive range of motion
  - End feel is what you feel when you take someone through passive range of motion (5 types)
    - **Bony end feel**= this is simply bone on bone restricting the range of motion (ex: elbow)
    - **Soft tissue end feel**= usually with elbow flexion, knee flexion. This is in joints that have soft tissue

coming together.
        - You know this is normal.
    - **Capsular end feel**= this is what you test with motion palpation.
        - This is what you expect to feel at the end of normal range of motion. It is a springy feel
    - **Empty end feel**= you have no end feel; the patient is just in pain.
        - With this, you cannot go any farther due to patient pain level
    - **Hard end feel**
        - On a normal muscle stretch there will be 'give'. However, with hypertonic muscles you may feel this hard end feel.
        - This can be muscular or ligamentous

- Example: if you have an empty end feel, you can begin treating it right away
- Example: hard end feel
    - May or may not be pain.
    - Can do static stretching or PNF if it is a muscular problem
    - Joint mobilization, joint manipulation

- Types of stretching
    - Ballistic
        - More of a bounding stretch.
        - Puts a quick/uncontrolled stretch on the muscles
    - Static
        - Long, slow stretch
        - Studies range from 3 sec to 30 sec; the majority range in the 15-30 sec range
        - In the studies they do 3-4 reps
        - When it comes to improving flexibility in healthy subjects, a study stated that static and ballistic are equal. However, you would not do ballistic in unhealthy patients
    - PNF (proprioceptive neuromuscular facilitation)
        - Studies show this is more beneficial than static stretching
        - 3 basic types of PNF stretching:
            - Contract-relax= this is contraction of the agonist (the muscle you want to stretch)
                - If you want to stretch the biceps, you contract the biceps for 5 seconds and then relax. Repeat
            - Hold-relax= this is contraction of the antagonist then stretch
            - Slow reversal hold= this basically combines the first two
                - Contract the agonist for 10 seconds, then contract the antagonist
                - For biceps example, you would contract the biceps and then contract the triceps

- Physiology (probably wont be tested on this information)
    - These stretches work through 2 types of mechanoreceptors
        - GTO (golgi tendon organs)--they assess tension
        - Muscle spindles--they assess length and speed
    - The primary way this works is through reciprocal inhibition
        - Contraction of the antagonist through that afferent system causes relaxation of the agonist
    - On the static stretch, the GTO tends to relax its own muscle to prevent damage

10.16.09--PT Notes

Monday, October 19, 2009
9:29 PM

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10.30.09--PT Notes

Friday, October 30, 2009
7:27 AM

- Hot Moist Heat
  - Transfers to the patient by conduction
  - Must be careful with hot moist heat packs because they can burn the patient. If the patient sweats the moisture becomes like boiling water. If your patient does sweat, you need to remove the pack and wipe the sweat off.
  - Make sure they are submerged in the water for a minimum of 30 minutes before using them.
  - 6 towel draping method is used
    - Or you can use the velcro packs. For these, you should use 2
  - Do not use any ointments along with the heat packs (ie: ben gay)

- Classifications of modalities
  - High frequency modalities--used for thermal application
    - Superficial
      - Hot moist heat packs
      - Cryotherapy (ice packs)
      - Infrared
      - UV
    - Deep
      - Microwave
      - Ultrasound
      - Short wave diathermy
  - Medium Frequency modalities (1000-10,000 Hz)--used mainly for pain control and building strength within muscle group and breaking muscle spasm
    - Interferential
    - Russian Stim
    - Biphasic
    - Nerve block
  - Low Frequency modalities--used for muscle contraction and pain control
    - High Volt
    - TENS
    - Low frequency alternating current
    - Low voltage galvanic (direct current)
  - Ultra low frequency modalities--used for pain control and wound healing
    - Microcurrent
    - MENS (microcurrent electrical nerve stimulator)
    - LIS (low intensity stimulator)

- Short Wave diathermy
  - High frequency, deep heat
  - 2 types of applicators: Inductor (drum head) or condenser (space plates)
  - Dosage levels:
    1. No heat at all
    2. Mild heating
    3. Vigorous heating
  - Inductor has to touch the skin or it will not work
  - Condenser use towels in the space between the head and the skin

- Microwave
  - Only treats a very small area, superficial heating
  - 2 applicators: circumferential (circular), regtangular (tend shape)
    - The applicators of microwaves never touch the skin
    - 7-17 inches away from the skin

- Ultrasound
  - 3 applications
    - Topical: take ultrasound head and move it around on the part you are treating
    - Emergent: small body part (wrist, hand, foot, ankle) in water bath. Keep appature of ultrasound heat 1/2 inch to 1 inch away from the part you are treating
    - Gel pad: put the gel pad down over the part you are treating and then put the ultrasound on top of that
  - Breaks up adhesions (adhesive capsulitis, or adhesions at the lumbar facets in LB pain)
  - Must use some kind of coupling with ultrasound (gel or water)
  - Frequency: this determines if you are going to treat deep or shallow (1 mHz, 2 mHz, or 3 mHz)
    - 1 mHz= deep
    - 2 mHz=moderate
    - 3 mHz=shallow
  - Intesity: watts/cm_2. The standard is 1.5 watts/cm^2
  - Duty cycle: determines how long the US is on and off
    - For acute conditions you typically use 20% duty cycle (20% on and 80% off, this is pulsed)
    - For chronic conditions you can use a continuous duty cycle (US is on all the time)
  - Area of treatment can be no larger than 3x the size of the ultrasound head
  - When you are treating small body parts (wrist, elbow, ankle, hand, foot) we always use emergent.

- Interferential
  - 98% of your practice will be patients who are in pain. This is one of the best ways to control pain
  - 2 carrier frequencies
    - 4000 Hz
    - 4080 Hz
  - Applications
    - Quadripolar= 4 pads
      - □ We place the pads in a criss-cross pattern
      - □ Wherever they intersect each other creates another frequency. The third frequency is called the beat frequency (this is the difference between the 2 carrier frequency)
      - □ Current follows the path of least resistance in the body (not always a straight line)
        - We have a way of compensating for this.
        - **Vectoring** takes the interference and moves it around between the 4 pads. This ways we are always treating all of the tissue in between the 4 pads.

    - Bipolar= 2 pads
      - □ In bipolar and quadripolar, the pads are the same size
    - Monopolar or unipolar= pads of different sizes
  - Remember these 3 frequencies
    - 80-120 Hz= acute pain
    - 1-10=chronic pain
    - 1-15=reduction of swelling
  - Sweep: keeps the patient from accomodating to the frequency
    - Say you are using 80-120, this sweeps through all of the frequencies so the patient always feels the current

Lab Notes (these are my extra notes from the blue packet)

- Ultrasound--Intelect Legend XT (p 3)
  - Make sure on ultrasound that you keep it moving. If you leave it still, it will burn the patient
  - Head warmer can be on if you want
  - Duty cycle
    - 10% = pulse for acute
    - 100%=continuous for chronic
  - Increase watts to 1.5 (use the turn dial on the machine)
    - This is the maximum, do not turn up higher than 1.5
  - Treatment time= 6-8 minutes
  - Select start
  - Small concentric circles over the area
  - For water ultrasound:
    - Treatment time is 3-5 minutes
    - Keep the ultrasound wand 1- 1 1/2 inches away from the patient

- Ultrasound Intellect Legend Combo (p 4)
  - Power switch is on the back of the machine
  - After selecting frequency, select duty cycle
    - 4 settings for duty cycle
      - 10% or 20% for acute
      - 50% for subacute
      - Continuous for chronic
  - Leave the display setting at W/cm^2
  - Head warmer doesn't matter
  - Output (Intensity)--increase to 1.5 W/cm^2 (this is the maximum)

- Dynatron 125 Ultrasound (p.5)
  - Select frequency
    - 1 MHz= deep
    - 3 MHz= superficial
  - Must have contact established before you start

- LSI Interferential application (p. 8)
  - Red= Channel 1
  - Black= channel 2
  - The best way to determine the channels is to follow the cords back to the machine
  - Cross the channels on the patient
  - Intensity: Must go above 4 on LSI to vector

- Intelect Legent XT therapy system Interferential Application (p. 9)
  - Go to electrotherapy--then select channel 1 and channel 2
    - You must know which is which
  - Select Edit
    - Sweep is always on
    - Frequency:
      - Acute: it might pop up 80-150, you can leave it there
      - you can also leave the 4000 carrier Hz
  - Always cross the pads

- Intelect Legend Combo (small unit on cart)---Interferential Therapy application (p. 10)
  - Select interferential= IFC button
  - Choose both channels --cross numbers
  - Vector--choose 100% (always)
    - This is actually listed as amplitude modification

- LSI Interferential--Pre-Mod (p. 11)
  - Turn up one channel or both channels, depending on what you want
  - To be using both channels, you would be doing 2 different joints
  - Pre-mod is same as interferential except it is used as small joints

- Intelect Legend XT therapy system--Pre-mod (p 12)
  - Same as interferential except you use on small joints.
  - Do not cross pads
  - Place pads on so they go through the joint

- LSI Medium frequency Nerve block (p. 13)
  - Used for antalgic/hot Low back
  - Helps to diminish pain
  - Place electrodes bilaterally over target lesion
    - DO NOT CROSS. They can be parallel, horizontal or just one electrode

- Intelect Legend XT--Electrical Nerve Block (p. 14)
  - Edit: then turn sweep off this is what gives you nerve block
  - Legend= new machine on wheels

11.06.09--PT Notes

Friday, November 06, 2009
7:28 AM

- Medium frequency modalities continued (1000-10,000 Hz)
    - Russian Stimulation
        - This is another medium frequency modality because it is 2500 Hz
        - Used for 2 things mainly
            - Reducing muscle spasm
            - Building strength in a muscle group or groups
            - Also will decrease edema, increase blood flow, and reduce muscle spasm
        - Current is on for 10 seconds and then off for 10 seconds. This pattern repeats
        - This would make the muscle respond with a twitch rather than a gradually increasing mechanical contraction
        - Indications:
            - Chronic back pain
            - Post-injury muscle atrophy and/or wasting
            - Post-casting
            - Muscle spasms
        - Contraindications
            - Pacemakers
            - Malignant lesions
            - Upper thorax
            - Pregnancy
        - 10/50 pre-set
            - The electrode is a bi-polar application technique (2 pads). You can put the pads on the origin and insertion of the muscle group or anywhere else on the muscle where you can produce a contraction
            - This is used for trying to build strength in a muscle group
        - 10/10 preset
            - When you are trying to reduce a spasm in the muscle
            - This works because there is a pumping action
            - breaks spasms by fatigue of muscle
            - Also increases blood flow to the area
            - Bi-polar technique just as stated above
            - You increase the intensity as you are watching the muscle. When the muscle starts to contract, you stop there
        - We don't use vectoring or sweep with this
        - Pre-mod comes up automatically and then push start
            - Then go up and increase your intensity
            - The last thing you do is to choose 10/10 or 10/50
    - Biphasic stimulation
        - This is just like russian stim.
        - Carrier frequency is 2500 Hz
            - This is not the same as the treatment frequency
        - Electrodes will go on the origin and insertion of the muscle
        - 3 modes of treatment in biphasic stimulation
            - Normal= used to treat 1 muscle group
                - 1 channel
            - Reciprocal= used to treat 2 muscle groups (alternating contracting and relaxating)

        - 2 channels and 2 lead wires (four electrodes)
    - Co-contraction= used to treat 2 muscle groups at the same time
        - Use 2 channels
        - Treatment fires the 2 groups simultaneously
- If treating acute condition, you would choose 100 for the frequency
- If treating a chronic condition, you would choose 10 for the treatment frequency
- 10/50=used for increasing muscle strength
- 10/10=used for reducing muscle spasm
- With any electrical stim, make sure that you do not turn the unit on or off while it is connected to the patient

- Pre-mod
    - This is reserved for the use on small joints
        - Carpal tunnel at wrist
        - Epicondylitis
        - Even the shoulder joint
        - Ankle
    - 2 electrodes--bipolar application
        - This is better for small joints instead of having to use 4
        - Put the electrodes on either side of the joint and let the current run straight through
    - Carrier frequency
        - If you are using interferential there must be 2 carrier frequencies
        - One at 4000 and one at 4080 that interfere with each other
        - The interference creates a 3rd frequency called the beat frequency. Beat frequency is the difference between the two carrier frequencies
        - Chronic pain control frequency operates between 1 and 10 Hz

- Nerve Block
    - Carrier frequency is 4000 Hz
    - Bring the intensity up to sensory perception (until the patient begins to feel it). After about 2 minutes they will not feel it anymore
    - If the patient is in hyper-acute pain, you can put the nerve block on them and keep it running during the adjustment

PT Lab Notes

- LSI medium Frequency Russian Stim (p 15)
    - Turn unit on
        - On/off switch in the back
    - Use only 2 electrodes
        - Place on origin/insertion of the muscle
    - Select 2500 Hz
    - Set time for 10 min
    - Increase intensity up to **muscle contraction**

- Intelect Legend XT Therapy System Russian Application (p 16)
    - Select Edit
        - Cycle time: choose between either 10/10 or 10/50

- Intelect Legend Combo (small unit on cart) Russian Stim (p 17)
    - Frequency: 100 for acute or 20 for chronic

- Intelect legend XT Symmetrical Biphasic (p 18)
    - This is just like russian stim but more comfortable for the patient
    - Increase intensity on the dial to muscle contraction

11.13.09--PT Notes

Friday, November 13, 2009
7:22 AM

- High Volt Therapy
  - Unipolar application--2 pads with different sizes
    - The active electrode is the smaller pad. You put this on the site that you will be treating
    - The large pad is called the dispersive electrode. You put this pad anywhere away from the site that you are treating
    - Patient should not feel anything from the dispersive electrode. They should only feel current coming through the active electrode.
  - High Volt Modalities:
    - Intelect legend XT
      - On this unit there is no dispersive electrode. You will have two active electrodes
      - You would place one electrode on each side of the area you are treating
    - Intelect legend combo unit
      - You will have active and dispersive electrode
      - On this machine you will have to choose high volt and then follow the on screen instructions
    - Amrex High Volt
      - This unit has 3 different modalities
  - Used for
    - Analgesia
    - Edema absorption
    - Increase peripheral circulation
  - Specific indications
    - Soft tissue injuries
    - Sciatica
    - Arthritis conditions
    - Nonsystemic edema
    - Muscle spasm, muscle re-education
    - Trigger point therapy
  - Contraindications
    - Malignancy
    - Infection
    - Hemorrhage
      - (HIM: hemorrhage, infection, malignancy)
  - When using high volt, you need to concern yourself with polarity
    - Positive polarity= acute conditions
    - Negative polarity= chronic conditions
  - Cycle time:
    - If you are using this for pain you choose continuous
    - If you are using it to break muscle spasm= 10/10
    - If you are using it to strengthen muscle= 10/50
  - Ramp setting:
    - Ramp= the amount of time that the current is delivered into the tissues
    - It takes about 2 seconds to get into the patient
  - Frequency:
    - If treating acute conditions: 80-120
      - If it doesn't have the range you must choose a frequency inside the range
    - If treating a chronic condition: 1-10

- Intensity is increased to sensory perception
- Standard time= 10 min

- Low Voltage Alternating Current Stimulators (called Low Volt AC)
  - Used for reduction of swelling, building strength in muscle group, and reducing spasm. You also get pain relief when you break the spasm
  - 3 modes: surge, pulse, tetanize
    - If are trying is disperse fluid (sprained ankle) you would use pulse. You put the pads on either side of the joint
    - If you are trying to break spasm, you set the machine to tetanize. **In order to reach tetany you have to exceed 35 pulses per second**
      - We find that 2 seconds is the most comfortable ramp time
      - Desired time is around 10 min
  - Low Volt AC machines:
    - There is a surge rate light and a pulsation rate light.
      - You adjust the controls above to change these rates

- Microcurrent
  - You want to know this really well.
  - Know this for comp boards
  - Bipolar application
  - Time should be 10 min
  - Frequency= 10 Hz
  - 1 lead wire and 2 electrodes
    - If you are treating extremity or spine, put one electrode on each side.
    - If it is an ankle or something like that you want to run the current directly through the joint
    - If you are treating a muscle, put one on the origin and one on the insertion
  - Cycle time: continuous
  - We do not go over 50 microamps (this is intensity)
  - Microcurrent is ultra-low frequency, so it is sub-sensory.
  - Polarity: positive for acute, negative for chronic
  - Used for:
    - Wound healing (laceration or scar you put the electrodes on either side)
    - Trigger points. (used a lot for treating trigger points)

- **<u>PT LAB notes</u>**

- Intelect legend Combo High volt application (p 19)
  - Ramp 0.5-2.0 (defaults to 2.0)
  - Increase intensity to perception then push start

- Intelect legend XT therapy system High volt application (p. 20)
  - Can be sticky pads or carbon pads with sponge
  - Turn unit on--make sure channel 1
  - Edit:
    - The only things that you will change are the Time, polarity and frequency

- Amrex Low volt AC (p 22)
  - Use sponge + carbon pads+ weight or strap
  - 3 modes

        - The only time you mess with the dial on the bottom left is for pulsation. It turns up the pulsation rate
        - Make sure the rest light is OFF
    - For surge: min 10/50
        - Origin and insertion of the muscle. Turn up until you see muscle contraction
    - Increase intensity to muscle contraction (about 35 pps--on this machine there is no way to tell the actual number)

- Intelect Legend XT therapy system Microcurrent (p 24)
    - Select method: pads (never use probe on this machine)
    - Frequency: It will pop up as 1.0 must change to 10.0
    - Increase micro amps to sensory perception. No higher than 50 ma

- Solaris Microcurrent application Pads/probe technique (p 25)
    - Select Micro button first
    - Treatment time:
        - this is at 0. you just start and then watch for it to get to 30 seconds.
        - In order to start, you press start on the machine then start on the probe (there are 2 starts on this machine and you must push both)
        - When it reaches 30 seconds, you push stop button on the probe
    - To use the probe patient must be touching wet sponge (must be grounded)