Nursing Fundamentals

Basic Elements of Normal Movement

Our ability to move contributes to our self-worth as well as our well-being. Mobility is necessary for all aspects of life. As we become less mobile in later stages of life results into health problems. Factors that contribute to immobility, especially in the hospital, including a greater length of stay in hospital, the more severe the illness is going to be and an emotional and physical toll on the individual.

Alignment & posture helps to optimize on being able to stand or move.

Alignment: Look at them from anterior view and look at shoulders and hips they should be aligned. Lateral and side view is plum line. Look at ear lobe, shoulder, hip, anterior part of knee and the posterior part of their heel. This is referred to as the plum line.

Do they look aligned? Posture: Erect, lordosis kyphosis or scoliosis.

Joint mobility: Some joints have a wider range of movement. Shoulder joint is a ball and socket joint as well as hip joint. Some joints are saddle joints in hands with limited flexibility compared to ball and socket. Joint mobility is affected by genetics, age, and disease processes and how physically active we are in our lifetime.

Balance: caused by inner ear-vestibular in our semicircular canals keeps us upright. Vision- cranial nerve number 2 tells us where we are in relation to our environment

Muscles to hold you skeletal frame for us to move

Coordinated movement is influenced by cerebral cortex, which initiates voluntary movement. And cerebrum in back of head is in charge of coordinating motor activity and the basal ganglia maintain posture as well.

As we go through different joints in body we

ROM

**Neck- Pivot Joint**

- Flexion: putting chin to chest
- Extension: sitting upright erect
- Hyperextension: when looking up to ceiling
- Rotation: turn head right and left
- Lateral flexion: ear to shoulder

**Shoulder- Ball-and-Socket Joint**

- Picture 1: Flexion extends hands above head
- Picture 2: Extension move arm down to resting position at side of body
- Hyperextension: move arms behind the body
- Picture 3: Abduction move arm away from midline
- Adduction (anterior) move arm towards midline
- Elbow may be straight or bent
- Circumduction: move arm in circles (not pictured)

**Wrist- Condyloid Joint**

- Flexion: Fingers toward inner aspect of forearm
- Extension: Straighten hand same plan as arm
- Hyperextension: bend fingers far back
- Radial flexion (abduction): Bend wrist laterally toward thumb side with hand supinated
- Ulnar flexion (adduction): Bend wrist laterally toward pinky supinated

**Hand and Fingers: Metacarpophalangeal Joints- Condyloid Interphalangeal Joints- Hinge**

- Adduction: spread fingers of hands
- Abduction bring fingers of hand together
- Flexion Fist Extension: straighten hand
- Hyperextension: Bend fingers back as far as possible

**Thumb- Saddle Joint**

- Flexion: Move thumb across palm toward pinky
- Extension: Move thumb away from hand
- Abduction: Extend them laterally
- Adduction: Move thumb back to hand
- Opposition: Touch each thumb to top of each finger of same hand. Thumb movements involved are abduction, rotation and flexion.
External factors Do you have money to buy running shoes? Is it too hot or cold outside?
Prescribed limitation "I live in snow, I don’t have snow shows nor do I do cross-country skiing so in the winter I don’t have to exercise because I can’t" (What type of talk are you telling yourself?) Maybe an individual is on bed-rest. So hopefully we can do isometric exercises so person won’t lose muscle tone. We lose muscle tone after 2 weeks on bed-rest. About 40-60% muscle atrophy. So even laying in bed the need to move. Older adults think that when they are sick in bed BUT they need to get up and move even if it is moving from bed to chair

Effects of Immobility

Musculoskeletal system- we get disuse osteoporosis, which is why it is important for us to do some type of weight training on bed rest. Disuse osteoporosis. Muscle atrophy. Also more stiff and painful joints and if we continue not to move for period of time we develop contractures.

Contractures are irreversible. Surgeries for these. But by the time they need surgery we do it for us. It is important for individual who has lost muscle tone to do passive range of motion. Position pt with hands out flat and not curled in. If the start to curl in you should put a washcloth there so you can put their hand around. So the ball. So you don’t get like this. These contractures are so bad that the nails are starting to go thru. Also some pt who clamp hands are in fetal position and they have diarrhea and we must clean stool out of hands because you can’t open your hands anymore. So do ROM. They need minimum of 5 twice a day passive range of motion. Contractures can happen to any of joints that we have.

CV system- bed rest: decreased cardiac reserve and increased sympathetic activity. More prone to have valsalva maneuver. When we lift the pt to top of bed and they help you and hold their breath. This could get them to sinus brady down to asystole. So when we are moving pt up it is important for us to tell them not to hold breath, make sure to breathe or we can do the work for them.

Respiratory system- decreased movement and pooling of pulmonary secretions. Also when we are moving around, we tend to sigh and take deep breaths more. But when we are on bed-rest we are not doing that so we are more prone to atelectasis and pneumonia.

GI system- if we are not moving our bodies we are not moving our GI tract, which means decreased peristalsis. So people on bed-rest are more likely to have constipation and decreased nutritional intake.

Metabolic System When we are on bed rest we have decreased metabolic rate. This leads to a negative nitrogen balance. Catabolism and anabolism.

Build up and breakdown of protein. We tend to have more breakdown of protein. We don’t build anything up when we are laying there. This throws us into negative nitrogen balance. This decreases healing time.

GU system- bed-rest people more prone to have urinary stasis- urine just sitting there it is more likely to become UTI and renal calculi because urine not moving. Also bed-rest people are more likely to be incontinent because they are not using detrusor muscle

Integumentary system- Skin atrophies. Decreased skin turgor and increased skin breakdown because of the pressure against bony prominences and decreased circulation, decreased blood flow and decreased removal of cellular waste products

Psychoneurological- decreased endorphins make us not quite as happy and dependence on others, which decreases our self-esteem, more frustrated and anxious

Nursing Management

History- normal activities what is their normal exercise routine
AHA- american heart association 30 minutes per day, 5x a week. Start out 1 day a week and after 2 weeks, do 2 days a week. Work up to do it more. Make it manageable for individual.

What other factors for immobilty?- pain, SOB live on 4th story of apartment and no stairs?

Physical exam- Alignment- do this when they are standing. Anterior view: Shoulder, hips aligned. Side view: looks at PLUM line. Joints: inspect them, palpate to see warmth, tenderness, deformity, crepitation (sound you hear with movement) Movement- ask if they need assistance to move. Are they alert. Good balance. Coordination. Put them at side of bed and are they able to maintain weight and trunk. If they maintain weight of trunk they should be able to stand and maintain weight.

Muscle mass Activity tolerance- determine strength and endurance. We can do a BP, heart rate, strength of heart rate, respiratory depth, rhythm and rate before we exercise and watch them during exercise and after exercise. If pt complains of SOB or dizziness or symptoms when exercising in hospital-walking. Then stop that activity.

Benefits of Exercise
Prevents muscle atrophy and prevents osteoporosis
Musculoskeletal system- Helps with our bone density. Maintain size, tone of muscle. Exercise nourishes joints and maintains ROM and stability so we can continue to use muscles as we age.

CV system- Exercise decreases risk of CVA as well as ACS (acute coronary syndrome).
With respiratory system, it improves gas exchange and helps immune system to function better.

Respiratory system
When exercising we do deep breathing. We get increased pressure in abdominal cavity which helps return lymph fluid back to lymph nodes and circulation

GI system- Increases GI tract tone. We have less likely to have constipation and impaction.

Metabolic system- Exercise decreases triglycerides, cholesterol and hemoglobin A1c levels.

GU system- Increased blood flow to kidney and increased elimination of waste products with better efficiency

Immune system- Increased lymph fluid during the time we are exercising and increases resistance to viruses and also exercise helps to decrease formation of malignant cells. All of us have malignant cells in our body but immune system takes care of them so they don’t wreak havoc on our system.

Psychoneurological- When we exercise we have increased endorphins and elevates our mood. We breathe heavier so we have increased oxygen. This creates euphoria effect. Exercise decreases stress, decreases anxiety and improves sleep.

Cognitive function- Improved decision-making and increased attention span when we are resting.

Factors Affecting Activity

Growth and development Age, BMI, body proportions, pregnant osteoporosis. Kyphosis or hunchback in top left. And top right is severe lordosis.

Nutrition Too weak to exercise? Not enough nourishment for energy to do this. No good nutrition decreases immobility increases stress on our joints.

Personal values and attitudes Do we value exercise? Ex. Work out obsessed family

Hip- Ball-and- Socket Joint
Flexion leg forward and upward. Knee extended or flexed
Extension leg back beside each other
Hyperextension leg back behind the body
Abduction leg out to the side
Adduction cross leg over the other
Circumduction Move leg backward, up, to the side and down in a circle
Internal rotation Flex knee and hip 90°. Place foot away from the midline.
Move thing and knee toward the midline
External rotation Flex knee and hip 90° Place foot toward the midline, Move thing and knee away from the midline

Knee- Hinge Joint
Flexion Bend each leg bringing the heel toward the back of the thing
Extension Straighten each leg, returning the foot to its position beside the other foot.

Ankle- Hinge Joint
Extension Plantar flexion Point the toes if each foot downward
Flexion Dorsiflexion Point the toes of each foot upward
Foot- Gliding
Eversion Turn the sole of each foot laterally
Inversion Turn the sole of each foot medially

Toes; Interphalangeal Joints- Hinge; Metatarsal phalangeal Joints- Hinge; Intertarsal Joints- Gliding
Flexion Curl the toe joints of each foot downward
Extension Straighten the toes of each foot
Trunk- Gliding Joint
Flexion Bend the trunk toward the toes
Extension Straighten the trunk from a flexed position
Hyperextension Bend the trunk backward

Lateral Flexion Bend the trunk to the right and to the left
Rotation Turn the upper part of the body from side to side.
**Nursing Diagnoses** These are related to decreased mobility or decreased/ altered level of consciousness
- Activity Intolerance
- Impaired Physical Mobility
- Sedentary Lifestyle
- Fear of falling
- Ineffective Coping
- Low Self-Esteem
- Powerlessness
- Risk for Falls
- Self-Care Deficit
- Risk for Infection
- Risk for Injury
- Risk for Disturbed Sleep Pattern

**Planning**

**Activity** Plan according to activity for tolerance. Eat in chair for meals and ambulate in hospital.

**Body positioning** Keep them properly aligned. Use body supports. Put something in hands so they won’t curl up.

**Bowel Elimination** Evacuate bowels every 24 hours with or without any type of aid.

**Fall prevention** Educate them. “Please do not get out of bed without assistance” Give clear instructions on fall prevention. Call bell keep bed in low position and hourly rounding. Be careful with pt with room away from nursing station and altered level of consciousness and impulsiveness. Most rooms at CHLB have two beds per room. If you are at the bed further away from the door and the curtain is pulled, then it is harder to see.

**Physiological and cognitive consequences** Focus on their strengths. Be positive “Yesterday you did this and now you can do this” Don’t worry about 20 years ago they can run marathon. Be positive and focus on what they CAN do and set goals that are ACHIEVABLE.

**Joint movement** Do passive range of motion to prevent stiff joints leading contractures

**Mobility** Enhance it- goal is to get out of bed tid. Whatever goal is for mobility, try to obtain it.

**Respiratory status** Prevent atelectasis or pneumonia, teach them deep breathing, doing pursed lip breathing. Using the incentive spirometer with them. Turning them every 2 hours to prevent secretions. These are all nursing interventions. Do not need physician to be able to do these.

**Self care** promote independence. Do not do things for them if they can do it themselves.

**Sleep** At least do 7 hours of sleep. Limit naps during the day.

Plan some type of activity. Plan the sleeping pill with them. Sometimes that decreases anxiety as well. If pt requests sleeping pill at 9:30, make sure to let them know you will give it at that time to decrease their anxiety.

**Stress level** Talk to them, what are their concerns? Do they need back rub. How are they doing with their hospitalization?

**Weight control** Maintain healthy BMI 18.5 to 24.9 kg/m²

**Implementing**

**Maintain or promote body alignment & mobility** Max for most nurses to lift is 35 pounds. Make sure you get help if you are lifting more than that. Make sure bed is at waist level. Use back to lift. Wide support. Shoulder and feet must be at the same width or wider than shoulders are.

**Position clients appropriately** Eliminate pressure from bony prominences. Make sure the angel slides, chucks and linens don’t have any wrinkles on them. Don’t have pt lay on their gown. Pull the gown from underneath them. This all creates pressure to skin. Pt head of bed must be up 30° with tube feedings or respiratory problems. Anything else, their head should be down because when head is up there is more pressure on sacral coxy area, which makes that area break down. Also float heels- pillow is not on heels so heels float and good arm support as well.

**Moving & turning clients in bed**- make sure wheels locked on bed. Max inflate the bed is better to slide and turn patient. It is easier to move pt when the bed is inflated to firm, but make sure to adjust it back and not keep it as inflated when you leave them. Do not drag them. Use those turn sheets. Some pt must be logrolled because of cervical or back injuries

**Transferring clients** - Let pt know you are going to move them from one place to another. Say to pt who are altered “You are not going to fall” because a lot of pt have a fear of falling. So make sure to have enough staff, you get a transfer board if needed, bed needs to be at right height and try to lift and not drag pt.

**ROM exercises** great if active ROM. If they need passive range of motion, move the joint until the point of slight resistance, you must stop. Stop if complaining of pain. Do 3-5 reps a day, ideally twice a day (once on day shift, the other on night shift).

**Ambulating clients** Good trunk support (must be able to hold themselves up in bed without side rails. If they can do that, then the next step is to get up and ambulate them. If they do not have good trunkal support then you need physical therapy and it is out of the nurse’s hands because we want to make sure the pt are moving safe and can support their own weight.

**Prevent complications of immobility**- move to prevent complications.

**Client Teaching Using Canes**

- Cane is grasped by hand that is opposite the leg that is the weakest
- Stand with a firm grip on the cane
- At the same time, step forward with the weaker leg & swing the cane the same distance in front. The tip of the cane & forward foot should be even
- Take some of the pressure off of the weaker leg by placing pressure on the cane
- Step past the cane with the strong leg
- Repeat
- Turn by pivoting on the strong leg

**Client Teaching Using Walkers**

- If one leg is weaker
  - Move the walker & the weaker leg ahead together
  - Weight is borne by the stronger leg
  - Move the stronger leg ahead
  - Weight is borne by the affected leg & both arms
- When maximum support is required
  - Move the walker ahead
  - Body weight is borne on both legs
  - Move the right foot up to the walker
  - Body weight is borne by left leg & both arms
  - Move the left foot up the right foot
  - Body weight is borne by right leg & both arms
**Review Questions**

Which of the following are appropriate for the nurse to implement for a patient with orthostatic hypotension? Orthostatic hypotension is when BP drops, HR increases, and pt complains of symptoms of dizziness, lightheadedness, salty taste in their mouth like they're going to vomit, seeing stars.

1. Call for assistance
2. Encourage the patient to sit before getting OOB
3. Take blood pressure & pulse prior to activity
4. Encourage 2 to 3 liters of fluid a day. There is nothing about CHF or renal disease in that stem. So yes we can give 2-3 L of fluid. This is not saying the pt has CHF
5. Wear thrombo-embolic device TEDs. Helps return venous blood flow so they can have better BP
6. Avoid bending at the waist if something is dropped. Bend at knees instead!
7. Avoid foods high in sodium. No because where sodium goes, water goes, and where there's more water, more BP. Nothing about renal disease, heart disease, all this pt has is orthostatic hypotension!

You are transferring a patient from bed to a chair. The patient has an order for partial weight bearing due to knee surgery. Which of the following is the best technique for transfer?

1. Use a transfer board. No you’ll be flat
2. Wait for physical therapy to assist with the transfer. Unless it is asking you to delegate, we are nurses and we can do it ourselves and because we have an order
3. Implement a three person lift. We want them to get up by themself
4. Use an assistive device. Yes, let’s get them a walker or cane

A patient on bed-rest is performing isometric exercises. Which nursing diagnosis relates to this intervention? Isometric exercises are muscle contractions without joint movement ex: squeezing butt

1. Disturbed thought process
2. Impaired skin integrity
3. Disturbed body image. You might be thinking that if the person is on bed-rest, they might have a disturbed body image, but don’t think this way
4. Activity intolerance

Which of the following are principles of body mechanics when lifting or carrying an object?

1. Keep the knees in a locked position
2. Bend at the waist to maintain your center of gravity
3. Maintain a wide base of support
4. Hold object away from the body to improve leverage