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Therapeutic Exercise:

Q1. Define following.(10)

- a) **Flexibility**
- b) **Mobility**
- c) **Indication, contraindications of stretching.**
- d) **Isometric contraction**
- e) **Isotonic contraction**

Ans: a) Flexibility: Ability to Move a single joint or series of joints smoothly and easily through an unrestricted pain free ROM.

Flexibility exercise help stretch muscle, protect against injury and allow the maximum range of motion for joints.

b: Mobility: It is often defined as the ability of structure or segments of body to move and move and allow the presence of range of motion for functional activities (Functional ROM). It can also be defined as: "The ability of an individual to initiate control, or sustain active movements of the body to perform simple to complex motor skills"

c: Isometric:

- An increase in intramuscular tension without any change in length of the muscle.

d: Isotonic:

- Same but a change in the length of the muscle.

e: Indication & Contraindications of stretching:

Indications of Stretching:

- ❖ Limited ROM
- ❖ Structure deformities.
- ❖ Muscles weakness.

- ❖ Muscles shortening.
- ❖ Part of a total fitness program designed to prevent musculoskeletal injuries .
- ❖ Prior to and after vigorous exercise potentially to minimize post exercise muscles soreness.

Contraindications of strstretching:

- Bony block
- Recent
- Sharp pain
- Evidence of tissues taruma
- Exposed joint
- Thrombophlebitis
- Compartment syndrome
- Fresh skin graft.

Q2 Define Contractures and types of Contractures?

Ans: Contracture:

Adaptive shortening of the muscle tendon and other soft tissue that cross or surround a joint resulting in significant resistance to stretch and limitations of ROM. Can reversible or irreversible.

Types Of Contracture ;

- **Myostic Contracture**
- **Pseudomyostatic Contracture**
- **Arthrogenic Contracture**
- **Fibrotic Contracture**

1: Myostic Contracture:

- No specific muscle pathology
- A reduction in the number of sarcomere units in series, There is no decrease in Individual sarcomere length.
- Resolved in a relatively short time with stretching.

2: Pseudomyostatic Contracture:

- Muscle in a constant state of contraction, hypertonicity associated with CNS lesion such as a CVA a spinal cord injury.
- Muscle spasm and pain

- Can be resolved with stretching.

3: **Arthrogenic Contracture:**

An arthrogenic Contracture is intra articular pathology.

These changes may include:

Adhesions: band of scar like tissue. Adhesion cause tissue and organ to stick together.

Synovial proliferation: joint effusion, irregular in articular cartilage, osteophytes formation.

4: **Fibrotic Contracture:**

- It may occur when normal muscle tissues and connective tissue are replaced with a large amount of non extensible, fibrotic adhesions and scar tissue or even heterotopic bone.
- Permanent loss of extensibility of soft tissues occur that cannot be reversed by nonsurgical intervention.

Q3 What is stretching ? What is the type of strstretching?

Ans: Stretching; It is a form of physical exercise in which a specific muscle or tendon is deliberately flexed or stretched in order to improve the muscle felt elasticity and achieve comfortable muscle tone. The result is a feeling of increased muscles control, flexibility and range of motion.

Types Of Stretching:

- **Ballistic stretching**
- **Dynamic stretching**
- **Active stretching**
- **Passive stretching**
- **Static stretching**
- **Isometric stretching**
- **PNF**

Q4 What is Nagi Model ? Discuss impairment and disablement?

Ans: Nagi Model:

- A conceptual explanation of the process and underlying mechanism by which disease, injury or birth defect impact a person's ability to function
- Nagi experimental Hypothesis
- Disease > Causes > Impairment.
- Impairment > causes > Functional limitations
- Functional limitations > Causes > Disability.

Nagi Model

Primary pathology

Primary impairment

Functional limitations

Disability.

: **Disablement:** is a term that refers to the impact and functional sequence of acute or chronic conditions such as diseases, injury and congenital or developmental abnormalities on specific body system that compromise basic human performance and an individual ability to meet necessary, expected, and desired societal function and roles.

: **impairment:** Are the sequences of pathological condition that is they are the signs and symptoms that reflect abnormalities at the body system, organ or tissue level.

Q5 What is Aerobic Exercise ? Write down principal of Aerobic Exercise?

Ans: Aerobic Exercise:

Aerobic exercise is the type of moderate-intensity physical activity that you can sustain for more than just a few minutes with the objective of improving your cardiorespiratory fitness and your health.

- Aerobic" means "in the presence of, or with, oxygen."
- You know you're doing aerobic exercise when your heart's thumping and you're breathing faster than you do at rest but you can sustain the activity for extended periods of time. I recommend the cue "warm and slightly out of breath" to determine if your activity level is aerobic.

- Walking, jogging, biking, dancing, and swimming are examples of activities that can be performed aerobically.

Principal Of Aerobic Exercise:

- **Intensity**
- **Duration**
- **Frequency**
- **Modes**

Intensity:

- How hard your body is working
- Moderate intensity aerobic
- Vigorous intensity aerobics (high intensity exercise)

Example;

-An example of intensity is how quickly a treadmill is moving.

Duration:

- How long the performance is 20 to 30 minutes is optimal
- The greater intensity of exercise the shorter the duration needed to adapt.

Frequency:

- How often the exercise should be 3 to 4 times a week depends on goals.

Modes:

- Selecting type of aerobic exercise Depends on goal, physical condition, injury history

For Example;

- high load few repetitions is equal to the muscle strength.
- Light load, many repetitions is equal to the muscle endurance.