**Final-TermAssignment/Paper (spring -2020)**

**Therapeutic exercises**

**DPT 4th semester**

**Instructor: Dr. M.Jaffar**

Time: 6-hours**(9am-3pm)**  Max Marks: 50

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Q1. Define following.(10)

**a)Flexibility :**

* Flexibility is the ability of the moving, to change, bend, or to persuade.
* Flexibility is the Ability to move and refers the range of movement in a joint or series of joints smoothly and easily through an unrestricted, pain-free ROM.
* Flexibility refers range of the motion for given joint. Degree of the flexibility that a people have its influence by muscles and connective tissue, ligaments and tendons.
* Stretching formed the exercise that leads to increase the flexibility.
* Determined by the muscle length, joint integrity and extensibility of periarticular soft tissue.

**TYPES OF FLEXIBILITY:**

**DYNAMIC FLEXIBILITY:**

* The ability to movement of the muscles and joints through their full range of the motion during active movement.
* To increase your dynamic flexibility, warm up with exercises that combine cause stretching and control movement.

**EXAMPLE:**

* Before play the soccer, you will want to warm up with leg circle to mimic kick the football. By warming up with dynamic exercise, your body will move more effectively during your workout.

**PASSIVE FLEXIBILITY:**

* It is the ability to assume extended position and balance them using only your weight, support of the limbs.
* Passive flexibility is the range of the motion a joint can move into when there an external pressure helping it to there.
* Passive flexibility is larger than your active flexibility.

**b)Mobility :**

* Mobility is the ability to the move or moved freely and easily.
* Mobility is the ability of move freely. If you basketball injury causes you to loss mobility in your knee, that means you cannot move it very well. Mobility often refers to you can move or injured body part, such as a joint or limb, but it can also describe movement in general.
* Mobility is your ability to move the muscle or muscle group through the ROM in the joint socket with the control and in order to move a muscle control, you need strength.
* Importance of the mobility is essential b/c it prepare our body for the stress of training .It is important to the strength alone is not enough to have good mobility.

**c) Indications and contraindications of stretching.**

**CONTRAINDICATION OF STRETCHING**:

* Contraindication are following written below
* Joint instability can be the result of the prior dislocation, fracture or sprain.
* Infection: stretching area that is infected to the avoid tissue damage or spread of the infection.
* Deep venous thrombosis.
* A bony lock limits joint motion.
* Evidence of an acute inflammatory or infectious processes heat and swelling or sot tissue healing could be distributed in the tights tissue.
* Hyper mobility already exists.
* When contracture is needed to develop stability.

**INDICATION OF STRETCHING:**

* ROM is limited b/c soft tissue have lost their extensibility as the result of the contracture, scar tissue formation and causing the functional disabilities.
* THE muscles weakness and shorting of the muscles of the opposing tissue.
* Total fitness program prevent to musculoskeletal injuries.

**D) Isometric contraction**

* Isometric contraction is a muscular contraction in which the length of the muscle does not change.
* Example: During a bicep curl, holding the dumbbell in a constant position rather than actively raising or lowering it is the example of the isometric contraction.
* Isometric exercise are the used often during the early phase of rehabilitation a musculeotendinous injury b/c the intensity of the contraction and the muscle length tis is the contracts can be controlled.

**e) Isotonic contraction**

* Isotonic contraction tension remain same length is the changes.
* Two types of contraction.

**CONCENTRIC CONTRACTION:**

* CC the muscle tension rises to meet the resistance, then remains the same as the muscle shortness.

**ECCENTRIC CONTRACTION:**

* The muscles lengthen due to the resistance being greater than the force of the muscle is producing.

Q2. Define contracture? Discuss types of contractures? (10)

**CONTRACTURE:**

* Contracture is the tightening of the tissues. This is includes muscles, tendons, ligaments or skin. It makes it the harder or impossible to move the nearby the joints.
* Contracture is the shortening of the muscles and the joint. It is the response to the prolonged hypertonic spasticity in a concentrated muscle area, such as in the tightness muscles of the person with conditions like spastic cerebral palsy, but can also be due to the congenital abnormal development of the muscles and connective tissue in the womb.
* Contracture can be ischemic (resistance of the blood flow) leading to the death of the muscle tissue.
* Contracture can be reversible or irreversible.
* Contractures can occur in different parts of your body, such as
* MUSCLES: A muscle contracture involves the shortening and tightening of the muscle.
* Joints: If there’s contracture in the joint capsule where 2 or more bones contact , You’ll experience limited range of motion in that area of your body.
* Skin: Skin contact where it’s been scarred from an injury, burn, or past surgery. This will your ability to move that part of your body.
* The main symptom of contracture deformity is reduced ability to move an area of your body. You feel also have pain, depending on location and cause of the problem.

**MYOSTATIC CONTRACTURE:**

* It is the condition of the permanent shortening in resting muscle which is persists after the section of the motor nerve. It develops a muscle is immobilized by the section of the its tendon, by the paralysis of the antagonist or by the flexion of the limb in a plaster cast.
* Myostatic contracture can be the resolved in the relatively the short time with the stretching exercise.
* Muscle in a constant state of contraction,

**PSEUDOMYOSTATIC CONTRACTURE:**

* It is the impaired mobility and the limited ROM may also be the result of the hyper tonicity (i.e. spastic or the rigidity) association with the central nervous system lesion such as the CVA, spinal cord injury and the traumatic brain injury.
* Muscles spasm of the guarding and pain may also a cause of the pseudomyostatic contracture.

**ARTHROGENIC CONTRACTURES:**

* An Arthrogenic contracture is the result of intra articular diseases. These changes include adhesions, synovial proliferation, joint effusion, irregular in articular cartilage.

**FIBROTIC CONTRACTURE:**

* Contraction of muscles which is the muscle tissue has been replaced by the fibrous tissue b/c of the injury.
* Permanent the loss of the extensibility of the soft tissue and that occurs that cannot be reversed by the non surgical intervention.
* Healing by the stretching and the surgical of the intervention.

**PERIARTICULAR CONTRACTURES:**

* A periarticular contracture develops when connective tissues that cross or attach to a joint or the joint capsule lose mobility, thus restricting normal arthrokinematic motion.

Q.3. what is stretching? What are types of stretching?(10)

**STRETCHING:**

* Stretching it is relates to the health and fitness, it is the processes of the placing particular parts of the body into a position that will lengthen, elongate and the muscles and association of the soft tissues.
* Any therapeutic manoeuvre designed to the increased extensibility of the soft tissues.
* Improves the flexibility and the ROM by the elongating structures and that have adaptively short over time.
* Stretching is the physical exercise in which a specific muscle or tendon is the deliberately flexed or stretch to improve the muscles elasticity and achieve comfortable muscle tone. The result is the increased muscle control, flexibility and range of the motion.
* PURPOSE OF THE STRETCHING: stretching keeps the muscles flexible, strong and healthy and it’s maintaining the ROM in the joints.

**TYPES OF STRETCHING:**

* The different types of the stretching are:

**ACTIVE STRETCHING:**

* Active stretching gets your blood pumping and loose up your muscles, which made it deal to warming up before a workout.
* Active stretching you can do own by contracting your muscles without apply any external force.

**PASSIVE STRETICHING:**

* That stretching helps of the assistance and other forces apply and to increase the stretch , which means that you are not perform which means he/she not actively contribution to the increasing the ROM.
* Passive stretches enhance the flexibility while preventing the muscle fatigue and soreness that often follow a workout. Passive stretches are useful when you are recovering from the injury or cannot perform exercise and stretch on your own.

**DYNAMIC STRETCHING:**

* Person can do dynamic stretches as a warm-up to the target of the muscles groups and movements that person will use during your workout.
* Standard dynamic stretches typically involve slow and the control active contraction of the muscles.
* Dynamic stretches use for the smooth, control movements the increase ROM and the mobility.
* These stretches can improve flexibility and alleviate tightness in person muscle and tendon.

**BALLISTIC STRETCH:**

* This stretch use force to move your body parts its normal ROM .These tense stretches target specific muscle groups using the jerky movements and quick movements.
* The actual performance of the ballistic movements preventing lengthening of tissue.
* Take care to do these stretches safely and mind fully to reduce your chance of the injury.

**PNF STRETCHING:**

* Proprioceptive neuromuscular facilitation is known as PNF.
* This stretching is an advanced form of the flexibility traning.It involves the contraction and the stretching of the muscles.
* It spread in to main stream gyms b/c its perceived effectiveness.
* PNF stretching is a technique to improve muscle elasticity and ROM.
* PNF stretching techniques are performed with the partner involved both passive movements and active muscle actions.
* **3 types of technique for PNF stretches:**

1. **Hold-relax**

* Hold-relax technique with a passive pre stretch.
* This is held at a point of the mid discomfort for about 10 seconds. Your partner applies a hip flexion force and instructs the athlete to HOLD and do not let mw move the leg.
* Athlete holds and resists the movement so that isometric muscle action occurs. This is held for about around 6 seconds.
* The athlete then relax and a passive stretch is performed and held for 30 seconds.
* Final stretch should be greater magnitude due to the autogenic inhibition (e.g. activate of hamstrings muscles).

1. **CONTRACT –RELAX:**

* Contract-relax technique with a passive pre-stretch of the hamstring.
* The point of mid discomfort for 10 seconds. Athlete then extends the hip against resistance from the partner. That a concentric muscle action through the Full ROM occurs.
* Then athlete relaxes, following a passive hip flexion stretch to be applied and held 30 seconds. The increase ROM is facilitated due to autogenic inhibition (activate the hamstring).
* T he athlete can attempt the extend the hip and partner as hold-relax technique.

**HOLD-RELAX WITH AGONIST CONTRACTION:**

* The hold-relax with agonist contraction phenomena identical to hold-relax in the first 2 phases.
* Third phase, a concentric action of the agonist used to addition the passive stretch. The isometric hold, the athlete flexes the hip, and there by moving further the new ROM. With the technique, the final stretch should be greater, primary due to reciprocal inhibition (activate the hip flexor), second help with inhibition (e.g. activation of hamstring).
* The hold-relax with agonist contraction most effective PNF stretching technique due to facilitation both reciprocal and autogenic inhibition.

Q.4. what is Nagi Model? Discuss disablement and impairment?(10)

**NAGI MODEL:**

* Nagi used the term, pathology, path physiology, impairment, functional limitation, and disability to the describe health status.
* A conceptual explanation of this process and underlying mechanisms by which disease, injury or birth defect impacts a person’s ability to function (perform their expected role in society).

**DISEASES:**

* Pathological condition of the body is abnormal entire with a characteristic of signs and symptoms that affect the body. Signs are direct observed or evidence of the physical abnormality.

**IMPARIMENTS:**

* Impairment means any loss of normal physical or mental activities or abnormality of psychology, physiological and loss Of the anatomical structure and function of a body part, organ, system; this may be due directly or secondary to diseases or may be either injury.
* The action of impairing or the state and condition of being impaired; diminishment or loss of the function working or ability.
* Examples of impairment including a loss of the limbs, loss of vision or memory loss.
* Impairments direct is the result of the pathology or diseases including any loss and abnormality of physiological or psychological structure or function. For a patient with stroke, examples of impairments that are the direct result of the pathology include sensory loss, persist and hemianopia. Impairments may or not may be permanent.
* Second impairments (indirect) are the squealed or the complication (e.g. .Decubitus ulcer, deep venous thrombosis, Depression).

**FUNCTIONAL LIMITATION:**

* The restriction the ability to perform at the level of the whole person, physical action, task or activity in an efficient, typically expected or competent manner. (BADLs): self care: dressing, grooming, hygiene, toileting, bed mobility, transfers, locomotion, speech, reading, writing.
* Instrumental ADL – house cleaning, shopping managing finance etc.

**DISABILITY:**

* A disability is a physical or mental condition that limits a person’s movements, sense or activities .A disability is any condition that makes it more difficult for a person to do certain activities or interact with the world around them. It is a complex phenomenon, reflecting the interaction between features of a person’s body and features of the society in which people lives.
* Disability in the society rather than individual functioning, defined as an inability to perform, limitation in the performance of the actions, activities usually expected in specific roles that are customary for the individual or expected the person status or specific sociocultural context and physical environment.
* Required roles included are the self care, home management.
* DIAGRAM: NAGI DISABLEMENT MODEL.

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| --- | --- | --- | --- | --- |
| Dimension of the Model : | Active pathology | Impairment | Functional limitations | Disability |
| Level of Disablement : | Cellular | Body system | Whole person | Person’s relation to the society. |
| The Patient scenario : | Posterior-superior labral injury. | Decreased of the strength | Inability to throw at ≥ 75% maximal effort | Inability to fill role as the starting pitcher. |

Q.5.What is Aerobic exercises? Write down **Principles of aerobic exercise**.(10)

**AEROBIC EXERCISE:**

* Aerobic exercise is a type of endurance exercise.
* Aerobic exercise is the type of physical exercise which help in promoting physical fitness and the prevent health illness.
* Aerobic exercise any form of physical activity that produces an increased heart rate and respiratory volume to meet the oxygen requirements of the activated muscle.#
* Aerobic exercise *is sometimes known as* ***‘’cardio’’*** *exercise that requires pumping of oxygenated blood by the heart to deliver oxygen to working* muscles. Exerciseperformed to improves one’s cardiorespiratoy fitness and in promoting energy expenditure and fat utilization.
* Aerobic exercise examples include walking, swimming, jogging, cycling, jogging,

dancing, hiking, cardio machine, skiing.

**BENEFITS OF AEROBIC EXERCISE:**

* Stretching heart muscle.
* Lowers blood pressure.
* Improve blood sugar regulation/lower insulin levels/ lower risk of diabetes.
* Produces new blood vessels in the heart –improves collateral circulation.

**PRICIPLES OF AEROBIC EXERCISE:**

Following aerobic principals are;

**FREQUENCY:**

* The how many number of the days per week dedicated to an exercise session.

**INTENSITY:**

* Your bodies how do much hard working the activity.
* Intensity refers to the amount of the energy expended / minute of activity, while relative intensity takes a person’s level of exercise capacity or cardio respiratory fitness into account to assess the level of effort.

**TIME:**

* The length of the time in which an activity or exercise is performed. Duration is generally expressed in minutes.
* The 20 to 30 time is perfect and the optimal.

**MODE:**

* The mode of the exercise is performed.
* Selecting type of aerobic exercise
* Depends on goal, physical condition, injury history