**DPT 2ND SEMESTER (SECTION A)**

**COURSE TITLE: BIOMECHANICS-I INSTRUCTOR: AHMED HAYAT**

 **FINAL TERM ASSIGNMENt**

 **MARKS: 50**

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1. Enlist functions of the following muscles

 Deltoid, Trapezius. Latissmus dorsi, Rhomboids, Levator scapulae, Serratus anterior

 Pectoralis major minor, Tere major

**Ans 1:**

 **Function of the muscles.**

1. **Deltoid function:**
* Anterior head: flexes and internally rotate arm Medial fibres abducts arm
* Posterior fibers extend arm and laterally rotates arm
* Abduction from 15-90 degrees.
1. **trapezius functions:**
* upper fibers elevate and upwardly rotate the scapula, extend the neck.
* Midle fibers adduct the scapula.
* Lower fibers depress and help upper fibers in rotating scapula.
1. **lattisimus dorsi function:**
* **t**he primary function of the latissimus dorsi is to full the arm towards the pelvis.
* It is responsible for extension, adduction, rotation of the shouldere joint.
* Also it is used for extension and lateral flexion of lumber spine.
1. **rhombiods function:**
* assists in eccentric deceleration of scapular protraction andupward otation of scapula.
* Assists in stabilization of scapula.
1. **levator scapulae function:**
* elevation of scapula
* downward rotation of scapula
* extension of head and neck.
1. **Seratus anterior:**
* Abduction and rotates the scapula upward.
* Elevats ribs when scapula stabilized.
* Also known as boxer muscle.
1. **pectorilis major minor functions:**
* moved the arm from a raised position down across the chest to the opposite hip.
1. **teres major functions:**
* **adduct arm**
* **external rotation of the arm**

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1. Name all the ligaments of Shoulder joint and their functions

**Ans 2:**

 **Ligaments of shoulder joints and their functions**

Ligaments are soft tissue structure that connects bones to bones.

**1 Glenohumeral joint:**

 **Functions:**

 These ligaments are the main source of stability for the shoulder. They are the superior , middle, and inferior glenohumeral ligaments. They help hold the shoulder in place and keep it from dislocating.

**2 coraco-acromial ligaments:**

 **Functions:**

 These ligaments can thicken and cause impingment syndrome.

**3 coraco-clavicular ligaments:**

 **Function:**

 These two ligaments attach the clavicle coracoid process of the scapula. These tiny ligaments play an important role in keeping the scapula attached to the clavicle. A fall on the point of the shoulder can rupture these ligaments with dislocation of the ac joint.

**4 transverse humeral ligaments:**

 **Functions:**

 **Hold the tendon of the** long head of biceps brachii muscle in the groove between the greater and lesser tubercle on the humerus.(intertubercular sulcus)

1. Write Individual and combine action of Rotater Cuff muscles

**Ans 3:**

 **Individual and combine action of rotater cuff muscles:**

**Individual actions of rotater cuff muscles:**

**1 supraspinatus muscle:**

 **Function:**

Abducts the humerus

**2 infraspinatus muscle:**

 **Functions:**

 Externally rotates the humerus.

**3 teres minor muscle:**

 **Function:**

 Externally rotates the humerus.

**4 subscapularis muscle:**

 **Function:**

 Internally rotates the humerus.

 **Combine function of rotator cuff muscles:**

The rotater cuff is a group of muscle and their tendons located around the shoulder joint. The combine action of the rotater cuff muscle are to stabilize the arm bone within the shoulder joint during movments. The function of rotater cuff muscle allow the shoulder complex to reach overhead and move the arm quickly in multiple directions.

1. Define Lateral epicondilitis and explain its physiotherapy treatment

**Ans 4:**

 **Lateral epicondylitis:**

 This is also known as tennis elbow. It is the most common overuse syndrome in the elbow. It is tendinopathy injury that involes the extensor muscle of the forearm. It should be remeberd that only 5% of people suffering from tenis elbow relate the injury to tennis. It occours often in repetitive upper extreimity activities such as computer use , heavy lifting , forceful forearm pronation and supination.

**Physiotherapy treatment:**

 We have several types of therapies to treat the lateral epicondilitis. Genral physiotherapy management includes,

**1 Extracorporeal showckwave therapy:**

 Showckwave therapy is a method of treatment for multiple tendopathies that can be used for treatment of lateral epicondilitis. ESTW is a treatment technique in which patients are exposed to strong mechanical wave impulsis which can be used on a fairly accurate position.

**2 cyriax phsiotherapy:**

There are several contraindications regard to this therapy active infection , bursitis, disoreder of nerve structure. It is very common intervation that combines the use of deep tranverse friction DTF with MILLS manipulations.

**3 stretching:**

 The literature on the treatment of a lateral epicondilitis suggest that strenthning and stretching excersise are the most important component of excersise program, for the reason that tendon not only strong but also flexible. The stenching excersise are intended to improve the flexibilites of the extensor group of the wrist.

**4 tehraband exercise:**

 Theraband exercise are performed each day for 3 sets o 10. You fix one side of theraband under your feet or another place and you take another side in your hand or you have small weight in your hand. The patients starts the exercise in wrist flexion and then he/she does a wrist extension and come back to the start position slowley.

**5 flexbar exercise:**

* Hold flexbar in the effected hand
* The other end of the device must be held with your uneffected hand
* Twist flexbar with unaffected wrist while holding.

The flexbar exercise is performed each day for 3 sets of 15.

1. Differentiate between type 1 and type 2 muscle fibers

**Ans 5:**

 **Type 1 muscle fibers:**

They are the fibers of slow contraction. Of greater resistence to fatigue, small diameter and contain large amount of myoglobin, which is what give it red colour. They contain large amount of mitochondria , which are the cellular energy centers where the reaction of aerobic metabolism occour therfore they have high oxidative activity.

 **Type 2 fibers:**

They are fast twitch fibers and their strenghth deveolpment is 3-5 times greater then slow –twitch fibers. They are white , and larger then type 1 fibers. They use blood glucose and muscle glycogen so they are recruited mostly for anarobic activities( lifting weights , jumping , or a javelin throw).

 **The end**

 **Thankyou**