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

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

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**Section DPT (A)**

**FINALTERM ASSIGNMENTMARKS: 50**

1. **Enlist functions of the following muscles**

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

**Pectoralis major minor, Tere major.**

**Ans:**

**Deltoid :**

**Function:**

The deltoid is the primary muscle responsible for the abduction of arm from 15 to 90 degree.

**Trapezius :**

**Function:**

The trapezius functions to laterally rotate, elevate, and retract the scapula.

**Latissimus dorsi :**

**Function:**

It pulls the inferior angle of the scapula in various directions, producing movements on the shoulder joint: internal rotation, adduction and extension of arm.

**Rhomboids :**

**Function:**

It rotates the scapula and retracts it towards the spinal column.

**Levatorscapulae :**

**Functions :**

The main function of the levator scapulae is the elevation of scapula.

**Serratus anterior :**

**Functions:**

Its primary function is to latterly rotate and protract the scapula.

**Pectoralis major :**

**Functions:**

It acts as a strong adductor and internal rotator of humerus at the shoulder joint.

**Pectoralis minor :**

**Functions:**

It depresses the point of the shoulder, drawing the scapula the superior, toward the thoraz, and throwing its inferior angle posteriorly.

**Teremajor :**

**Functions:**

It is medial rotator and adductor of humeris and assists the latissimus dorsi in drawing previously raised humeris downwards and backwards.

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

Ans:

**Shoulder ligaments :**

1. **Gleno humeral ligaments (GHL):**

These ligaments are main source of stability for the shoulder. They are superior gleno humeral ligaments middle gleno humeral ligament and inferior gleno humeral ligaments.

**Functions:**

They help hold the shoulder and place and keep it from dislocating.

1. **Coraco acromial ligament (CAL) :**

**functions :**

these two ligaments ( trapezoid and conoid ligaments ) attach the clavicle coracoid process of scapula. They carry a massive load and are extremely strong .

1. **Transverse humerla ligament (THL) :**

**Functions :**

It holds the tendon of the long head of biceps of brachii muscle in the groove between the greater and lesser tubercle on the humerus.

1. **Write Individual and combine action of Rotator Cuff muscles**

**Ans :**

**Rotator cuff muscles :**

They are also referred to as the SITS muscle, with reference to the first letter of their names ( supraspinatus, infra spinatus , teres minor and subscapularis, respectively )

**Individual action :**

**Supra spinatus :**

**Action :**

* **Abduction of the humerus**

**Infra spinatus:**

**Action :**

* **External rotation of arm and stabilization of gleno humeral joint**

**Tere minor :**

**Action:**

Laterally rotates the arm, stabilizes humeris.

**Subscapularis :**

**Action:**

Internally rotates and adducts humeris ; stabilizes shoulder.

**Combine action:**

These four muscles are vital to maintain functioning of the entire shoulder girdle.

As a group, the rotator cuff muscles are responsible for stabilizing shoulder joint.

They keep the head of humeris within the small glenoid fossa of the scapula in order to enlarge the range of motion GH joint and avoid mechanical obstruction,

1. **Define Lateral epicondilitis and explain its physiotherapy treatment**

**Ans :**

**Lateral epicondilitis :**

It is also known as “tennis elbow”, is the most common over use syndrome in the elbow. It is a tendinopathy injury involving the extensor muscles of the four arm.

**Physiotherapy treatment of lateral epicondlilitis :**

For the first 24 to 48 hours after acute onset of your pain, treatment includes:

* Resting the arm by avoiding certain activities and modifying the way you do others.
* Using 10-20 minutes ice treatments.
* Using elastic bandages or supports to take the pressure off of the painful muscles.

Your physical therapist will decide if you should use a brace or support to protect your muscles while the area is healing.

Depending on severity, your therapist may recommend that you consult with another health care provide for further testing or for consideration of additional treatment such as medication. In rare cases, treatment such as cortisome injection or surgery might be needed.

Your physical therapist can design a specific treatment program to speed your recovery. There will very likely be exercises and other treatments that you will be expected to do at home.

Your physical therapist also might use special physical therapy treatments to help relieve pain, such manual therapy , special exercises, and ice or heat treatments or both.

For an “acute” case of tennis elbow- one that has occurred within the past few weeks- its important to treat as early as possible.

Left untreated, tennis elbow may become chronic and last for months and some times even years.

This is a specially true if treatment is focused only on relieving pain and not on correcting the muscle weakness and bad habits that might have led to your condition in the first place.

**Improve your ability to move :**

Your physical therapist may use manual therapy to enable to your joints and muscles to move more freely with less pain.

1. **Differentiate between type 1 and type 2 muscle fibers**

**Ans :**

**Type 1 fibers :**

They are the fiber of slow contraction. Of greater resistance of fatigue, small diameter (smaller size than type 2 fibers ) and contain a large amount of myglobin, which is what gives it the red color that characterizes them. They contain a large amount of mito chondria. They have a high oxidative activity .

**Type 2 fibers :**

They are fast-twitch fibers and their strength development is 3-5 times greater than slow-twitch fibers. They are white, and larger than type 1 fibers.

They use blood glucose and muscle glycogen. They are recruited mostly for an aerobic activities.