IQRA NATIONAL UNIVERSITY

Paper; Biomechanics and ergonomics 1

DPT 2nd semester

Section B

I.D 16564

Q1).A.what is Biomechanics and ergonomics?

ANS:Biomachanics

It is defined as the study of the mechanical laws which is related to the movement or structure of living organisms.

Ergonomics

It is defined as the study of people's capability in their working field.

1).B. why we study biomechanic and ergonomics in physical therapy?

ANS;Biomechanics must be considered in **physical therapy because it enhances** the distinctive characteristics of prevention, evaluation, and treatment of movement dysfunction . In fact, isolating **physical therapy** from **biomechanics** appears impossible.

Ergonomic in physical therapy

- **Ergonomics** is the fitting of the task to the person, and fitting the person to the specific task. When **ergonomic** principles are applied in a work environment, many workplace injuries are avoided and work performance can be improved.

Q2).A.what is Shoulder complex? Elaborate it?

- It composed of clavicle, scapula and humorous.
- It is composed of four joints
- 1.glenohumeral joint
- 2.acromioclavicular joint
- 3.scapulothoracic joint
- These joints link the upper extremity to the axial skeletal.

Q.2.B.what makes Shoulder joint most mobilie?

- The shoulder joint is ball and socket joint
- .the glenoid cavity of the scapula is deepen which fit easily the head of humerus.
- The stability is also provided by the rotator cuff muscles.
- The normal position of the scapula and humerus also help in mobility.

Q.2.C.how normal position of Scapula and humerus aids in stability of shoulder?

- The glenoid cavity of the scapula is quiet deepen into which the head of humerus fit easily which make the joint stable and mobile.
- Q.2.D.what is osteokinetic and arthrokinetic?explain with example?
- Osteokinematics
- It came from the greek word osteon which means bones,so it is the movement through bones or around the joint.
- Arthrokinetics
- It came from greek word arthron which means joint.
- So it is the movement of joints or movements around the joints.

example

- When you raise your hand,your humerus is going upward.
- The head of the humerus has to come down in order to fit into the glenoid cavity.
- So osteokinetic will be the abduction of hand at shoulder joint.
- The arthrokinetics is spontenously occuring and moving of headf of humerus via a glide or slide.

3).A.how supraspinatous muscle different from other SITS muscles in GH stability?

- SubscapularisI
- nternal rotator of the shoulder
- Anterior stability of the shoulder
- Supraspinatus
- Abducts (primarily) and externally rotates the armImportant for the initial 0 to 15 degrees of shoulder abduction motion when the arm is adducted against the side of the trunk
- Beyond 15 degrees of abdduction, the deltoid moment arm acts synergistically to assist in shoulder/arm abduction

Along with the other rotator cuff muscles provides dynamic stabilization of the shoulder

Infraspinatus

External rotator of the shoulder

Along with the other rotator cuff muscles provides dynamic stabilization of the shoulder

Teres Minor

External rotator of the shoulder

Along with the other rotator cuff muscles provides dynamic stabilization of the shoulder

B.Explain how scapular movement is necessary for normal range of motion of shoulder joint?

- The **scapula** on the thorax contributes to elevation (flexion and abduction) of the humerus by upwardly rotating the glenoid fossa 50° to 60° from its resting position.
- In normal upper quarter function, the **scapula** provides a stable base from which **glenohumeral** mobility occurs. ... The **scapular** muscles must dynamically position the glenoid so that efficient **glenohumeral movement** can occur.
- The **movement** of the **scapula** can be described by rotations in relation to the thorax. The **scapula** moves around a dorso-ventral axis, resulting in a rotation in the frontal plane. In this **movement** the glenoid cavity is turned cranially (upward rotation) or caudally (downward rotation)