**Mid-Term Assignment**

**Course Title: Biomechanics And Ergonomics I**

**DPT 2nd semester section B**

**Instructor: Dr.M.Shahzeb khan (PT)**

**Marks: 30 NAME=SUNDAS BIBI, ID=16335**

**Note:**

* **Attempt all questions, all questions carry equal marks.**
* **Answer Briefly and to the point, avoid un-necessary details**

**Q1:** (A) What is biomechanics and ergonomics?

(B) why we study biomechanics and ergonomics in physical therapy?

**Q2:**(A) What is shoulder complex? Elaborate it

(B) What makes shoulder joint most mobile?

(C) How normal position of scapula and Humerus aid in stability of shoulder joint?

(D) What is osteo and Arthrokinematics? Explain it with example

**Q3:**(A) How supraspinatus muscle different from other SITS muscle in GH stabilization?

(B) Explain how scapula movement is necessary for normal range of motion of shoulder

Joint?

ANSWERS;

ANS1(a):BIOMECHANICS AND ARGONOMICS:

1: Biomechanics is the moment of living body in which some thing is related to force leuternal and internal force.

2: Eroonomics is the study of work performs and enhance the safety of the worker.

And it is the discipline with the understanding of interactions amoung human and other elements of system.

Ans 1 (b): The physical therapist analyze the walking gate evaluating function after surgery or operations or accident all use biomechanics to help inform decisions about human moment.

:- physiotherapy is Kelvin burg for work activities. When argnomics principles are applied in work of enviorment and many workplace injuries are avoide and work performance can be improved.

***ANS2(A):* SHOULDER COMPLEX:-**

**The**  shoulder complex is composed of three bones which are scapula,humerus and clevical, and these three bones are made up of many muscles ligaments and tendons which connect each other and make the shoulder complex there are 5 types of shoulder complex.

1: sternoclavicular joint.

Sternum + clavical.

2: acromioclevicular joint.

Acromion of scapula + clavicle.

3: glenohumeral joint.

Glenoid fossa + numerous.

4: coracoclevicular joint.

1st rib + clevical.

5: scapularothoranic joint.

scapule+ thoraxic.

ANS 2(b): shouder joint is the most mobile joint in the body because which is the most vulnerable to injury. It heap to prevent the shoulder problems and injury. Shoulders joint are strong but vulnerable.

ANS3(C): when there is a change of ther normal position of the scapula in relation of the humerus , this can cause a disfunction of the change of the normal position is called scapular dyskinesia this is increase the stability of shoulder joint.

Ans 2(d): Osteokinamatics:-

The study of simply bone moment is called osteokinaatics. Moments includes such as flexsion, abduction, adduction etc.

EXAMPLE: Of osteokinamatics.

When the boy or girl rasie a arm up, as if it to ask a question, the humerous is moving upword.

ARTHOKINAMTICS:-

The study of joint moment which includes the moment are:- rolls, glides,slides etc.

EXAMPLE:-

1:Glenohumeral posterior glide increases flenosion and internal routine.

2: Humeroradial articulation.

3: hip joint.

4: Tibi ofemoral articulation.

5: Talocroral joint etc.

ANS3(A): Rotator cuff muscles:-

Consists of four muscles.

S:- supraspinatus

I:- infrespinteus

T:- teresminor

S:- subscapularis.

:- Group of muscles that stabalize GH joint.

1. Supraspinatus muscle:-
   * It is originated from supraspinious fossa of scapule.
   * It is insert the greater tubercle of humerus.
   * It is initially (15 degress) at shoulder joint. Stabilizing shoulder joint.
   * The nerve of supraspinious supply the suorascepular nerve
   * Moments of supraspinatus muscle is abduction, adduction etc.

The SITS muscles are different from supraspinatus muscle because it is different in movement and originate etc are different in SITS muscles.

ANS3(B):-

Scapula movement is necessary for shoulder joints moments:-

Scapula is an important bone in the function of the shoulder joint. It engages in 6 types of motion, which allows for full functional upper enternity movement including protection, retraction, elevation, depression, upward rotation and downward rotation and also stabalized the shoulder joint.

ELEVATION:-

Associated with reaching when glenohumeral abduction and flexion are limited in range.

DEPRESSION :-

Associated as a closed-chain motion with reach-elevation of the closed-chain motion with crutch walking, transfers, and use of a walker.

UPWARD ROTATION:-

Associated with reach-elevation of the upper extremity through glenohumeral abduction.

DOWNWARD ROTATION:-

Associated with closed-chain motion with transfers, especially moving from a low to a higher surface; as an open-chain motion, associated with reaching behind the back and downward.

The last set of moments, protraction and retraction, follow the countour of the thorax;

PROTRACTION:-

Associated with extreme reach forward in upright sitting.

RETRACTION:-

Associated with rowing (horizontal shoulder abduction) and reaching backward.