**Summer Mid-Term Examination (summer-2020 )**

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Q.1 Explain types of muscle contraction and types of muscles work?

 Answer: Muscle contraction is the activation of tension-generating sites within muscle fibers. In physiology, muscle contraction does not necessarily mean muscle shortening because muscle tension can be produced without changes in muscle length, such as when holding a heavy book or a dumbbell at the same position.

 Types of muscle contraction.

 Isometric :

 : A muscular contraction in which the length of the muscle does not change. Isotonic : A muscular contraction in which the length of the muscle changes.Types of muscle work: Concentric : Concentric contractions are those which cause the muscle to shorten as it contracts. An example is bending the elbow from straight to fully flexed, causing a concentric contraction of the Biceps Brachii muscle. Concentric contractions are the most common type of muscle contraction and occur frequently in daily and sporting activities.Eccentric : Eccentric contractions are the opposite of concentric and occur when the muscle lengthens as it contracts. This is less common and usually involves the control or deceleration of a movement being initiated by the eccentric muscles agonist.For example,

 when kicking a football, the Quadriceps muscle contracts concentrically to straighten the knee and the Hamstrings contract eccentrically to decelerate the motion of the lower limb. This type on contraction puts a lot of strain through the muscle and is commonly involved in muscle injuries

Q.2 Explain the following?

 Answer:

1. Pattern of movement.

 Fundamental Movement Patterns are patterns that allow the body to be coordinated in those simple, basic movement patterns of lateral motion, weight transfer, forward motion, up and down motion, and coordinating upper and lower body movements. ... Fundamental Movement patterns include: Walking. Bending. Reaching

1. Timing in movement.

 Is the sequence of muscular contraction which take place in the production of movement.

Good time Too slow ,Too fast there is a waste of effortFaulty timing accounts for the inefficiency of movement for the purpose for which is designed, as in learning to swim or to play golf

1. Speed.

 The rate at which someone or something moves or operates or is able to move or operate.Speed is the distance traveled per unit of time. It is how fast an object is moving. Speed is the scalar quantity that is the magnitude of the velocity vector. It doesn't have a direction. Higher speed means an object is moving fasterSpeed most often describes acceleration or a high rate of motion. ...As a verb, it means to “move along quickly,” like how you speed around on your bike.

1. Velocity.

 Velocity defines the direction of the movement of the body or the object. ... Velocity is the prime indicator of the position as well as the rapidity of the object.

Q3. Explain equilibrium and types of equilibrium.

 Answer : Equilibrium.

 Results when the forces acting upon a body are perfectly balanced.Types of equilibrium: Stable equilibrium.

 If the forces acting upon a body at rest tend to restore it to its original position after it has been displaced. Unstable equilibrium.

 a state of equilibrium of a body (as a pendulum standing directly upward from its point of support) such that when the body is slightly displaced it departs further from the original position — compare stable equilibrium.Neutral equilibrium . the kind of equilibrium of a body so placed that when moved slighty it neither tends to return to its former position not depart more widely from it, as a perfect sphere or cylinder on a horizontal plane.

Q.4 Discuss Types of plane and axis? What are the movements in different planes?

 Answer: plane and its types.

 An anatomical plane is a hypothetical plane used to transect the body, in order to describe the location of structures or the direction of movements. In human and animal anatomy, three principal planes are used:

Three types of plane.

Sagittal plane.

The sagittal plane or median plane (longitudinal, anteroposterior) is a plane parallel to the sagittal suture. It divides the body into left and right.

Movemants of sagittal plane.

 ▪ walking

 ▪ Runing

 ▪ Flexion

 ▪ Extanion

 ▪planter flexion

 ▪Dorsi flexion

 ▪ Squats

 ▪ Vertical jumping

Coronal plane.

The coronal plane or frontal plane (vertical) divides the body into dorsal and ventral (back and front, or posterior and anterior) portions.

Movements of coronal plane.

 ▪ Abduction

 ▪ Adduction

 ▪ Evertion

 ▪ Invertion

 ▪ Radial daviation

 ▪ Ulner daviation

 ▪ Side flexion of trunk

 ▪ Side flexion of neck

Transverse plane.

The transverse plane or axial plane (lateral, horizontal) divides the body into cranial and caudal (head and tail) portions.

Movement of transverse plane .

 ▪ Supination

 ▪ Pronation

 ▪ Retraction

 ▪ Protrection

 Axis :

 An axis is a straight line around which an object rotates. Movement at the joint takes place in a plane about an axis. There are three axes of rotation.

Three types of axis .

Sagittal axis.

Sagittal axis - passes horizontally from posterior to anterior and is formed by the intersection of the sagittal and transverse planes.

Frontal axis .

Frontal axis - passes horizontally from left to right and is formed by the intersection of the frontal and transverse planes.

Vertical axis .

Vertical axis - passes vertically from inferior to superior and is formed by the intersection of the sagittal and frontal planes.

Movements .

 ▪ Flexion

 ▪ Extenion

 ▪ Adduction

 ▪ Abduction

 ▪ Rotation

Q.5 Define the following?

1. Force.

 force is the push or pull on an object with mass that causes it to change velocity Force is that which alter the state of rest of a body or its uniform motion in a straight line.

1. Gravity .

 The force by which all bodies are attracted to earth Newton concluded that “A Force of attraction existed between all material objects, the magnitude was directly proportional to the mass of each body and inversely proportional to the square of the distance between them”.

1. Agonist.

 An agonist is a chemical that binds to a receptor and activates the receptor to produce a biological response. In contrast, an antagonist blocks the action of the agonist, while an inverse agonist causes an action opposite to that of the agonist.

1. Antagonist.

 a muscle that opposes the action of another; the biceps and triceps are antagonistic muscles. A muscle that acts as the opposing force in contraction or relaxing of a muscle. An example of this is the the contraction of the biceps, where the triceps would be the antagonistic muscles.

1. Synergist.

 a synergist is an entity that displays synergy with respect to another entity.

More specifically, a synergist may be:

a synergist muscle

a substance that enhances the effect of another substance, such as a drug