

Muscle contraction

- A muscle contraction occurs whenever muscle fibers generate tension in themselves.
- A situation that may exist when the muscle is actually shortening, remaining the same length, or lengthening.
- When tension developed in the muscle is called contraction.

1. Concentric Contraction-

- Occurs when the tension generated by the muscle is sufficient to overcome the resistance.
- The muscle actually shortens.
- As the elbow is bending the biceps brachii muscle shortens in length.

2. Eccentric Contraction-

- Occurs when muscle returns from shorten condition to its normal resting length.
- As elbow return to its normal position slowly from flexion position.

3. Static Contraction-

- The muscles remain in complete contraction without changing its length.
- There are two different conditions.
- Antagonist muscles contract with equal strength.

- Contraction against another force such as the pull of gravity or a muscular force.
- For Example- Holding a book with outstretched arm.
- A tug of war between two equal match opponents.
- Attempt to move an object that is too heavy to move.

Contraction according to activities

1. Isotonic Contraction-

- Isotonic means equal tension.
- Isotonic contraction involves muscle activity and joint movements in which the tension remain constant as the muscle shorten or lengthen.
- For example- Involved all physical exercises where joint movement is done.

2. Isometric Contraction-

- It occurs when tension within the muscle does not result in joint movement.
- Muscle tension is equal to the resistance.
- It is referred to as static Contraction.

3. Isokinetic Contraction-

- It allowing the development of full muscular force throughout the range of motion.
- Isotonic exercises are performed by utilizing apparatus which control the speed of muscular performance.

- In normal exercise, this is not possible because the muscle, due to change of angle of pull and leverage applied different level of tension at different angle through the joint movement.

