Experiment No. 10 – Effect of Load on Muscular Contraction

1. **Which muscle contracts better – a free loaded or an after loaded one? Explain.**

Ans: Muscle will contract better in free load because there is larger force of contraction in free load than after load due to Frank' Starling Law.

2. **How muscle in the body remain in a free loaded state?**

Ans: In a free load, load is applied before muscle starts contracting. In this condition, muscle contracts till the physiological limit.

3. **What is the mechanical efficiency of a muscle during isometric contraction?**

Ans: During isometric contraction, there is no change in length of muscle fiber according to following formula:

$$work\ done = W \times H \times l/L$$

4. **What is optimum load?**

Ans: Optimum load is defined as minimum load applied at which muscles apply maximum output.

5. **Define Resting length, initial length, equilibrium length and optimal length of a muscle.**

Ans: The Ideal length of muscle is the length at which it can create greatest active tension.

- **Initial Length:** Length of muscle before contraction
- **Equilibrium Length:** Length of muscle when it is not attached to any body prominence.
- **Optimum Length:** Minimum muscle length at which maximum muscle force can be generated.