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Q1).If you lifted a 10kilogram weight upward over the distance of 2 meters the work performed would be? Calculate work.
Applying formula
W=fd**Force exerted by a mass m is F=m
Lets say we are on earth, where g is acceleration due to gravity, 9.81m/s/s
Therefore work=mass x g x distance
=10x9.81x2
196.2joule **Q2). Enlist basic principles of training .
1)** Individuality
2)Specificity
3)Progression
4)overload
5) Adaptation
6)Recovery
7)Reversibility

**Q3)Describe preload and afterload in simple words.
PRELOAD:**Preload, also known as the left ventricular end-diastolic pressure (LVEDP), is the amount of ventricular stretch at the end of diastole. Think of it as the heart loading up for the next big squeeze of the ventricles during systole. Some people remember this by using an analogy of a balloon—blow air into the balloon and it stretches; the more air you blow in, the greater the stretch.

**AFTERLOAD:**Afterload, also known as the systematic vascular resistance (SVR), is the amount of resistance the heart must overcome to open the aortic valve and push the blood volume out into the systematic circulation. If you think about the balloon analogy/ afterload is represented by the knot at the end of the balloon. To get the air out the balloon must work against that knot.

**Q)4 What are the factors increasing stroke volume?
Ans.** Stroke volume index:
Stroke volume index is the volume of blood pumped bt the heart with each(in millimeters) devided by the body surface area(Square Meters). This allows direct comparison of the stroke volume index of large and small patients. Stroke volume index is determined by three factors:
**PRELOAD:**The filling pressure of the heart at the end of diastole.
**Contractility:**The inherent vigor of contraction of the heart muscles during systole.
**AFTERLOAD:**The pressure against which the heart must work to eject blood during systole
Starling’s law in the relationship between preload and stroke volume.
The frank starling law of the heart represents the relationship between stroke volume and diastolic volume. The law states that the stroke volume of the heart increases in response to an increase in the volume of blood in the ventricles before contraction, when all other factors remain constant.

**Q5) Differentiate between isometric isotonic and isokinetic exercises.
Ans. Isometric Exercises:**Is the type of lowimpact exercise that involves straining your muscles without moving or bending your joints. A prime example is holding your body in a plank position you stay at the top of a push up without bending your elbows.

**Isotonic Exercise:**It involves putting a constant amount of weight or tension on your muscles while moving your joints through a full range of motion.
An example bench pressing as the amount of weight stays tha same and your joints bend and straighten all the way. Squats are another form of isotonic exercise, using your body weight to tense the muscles and moving your knees through their full range of motion

**Isokinetic Exercises:**Isokinetic exercise is a type of workout that involves specialized machines and is not often used by the average person. It is mostly used to train athletes to improve their running or throwing by improving the speed at which they can move their limb/body or a weight smart says;
The equipment used for isokinetic exercise, known as an isokinetic exercise known as an isokinetic dynamometer, keeps your muscles moving at a constant speed, which can then be raised with ongoing training.