

Exercise Therapy

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TYPES OF MUSCLE WORK

Work is defined as the product of force and the distance through which the force acts.

The types of muscle work used in controlling and moving the body levers are static, concentric and excentric.

Static Muscle Work: The muscles contract isometrically to counterbalance opposing forces and maintain stability but as there is no movement no work is done. Nevertheless, this type of muscle activity is usually, if inaccurately, called static muscle work to distinguish it from concentric and excentric muscle work.

Concentric Muscle Work: The muscles contract isotonicly in shortening to produce movement. The attachments of the muscle are drawn closer together (concentric- towards the centre) and movement is in the direction of the muscle pull.

Excentric (or Eccentric) Muscle Work: The muscles contract isotonicly in lengthening. The muscle attachments are drawn apart (excentric—from the centre) as it works to oppose the action of a force which is greater than that of its own contraction. Movement is there-fore in the direction of the opposing force, i.e. in a direction opposite to that of the muscle pull.

RANGE OF MUSCLE WORK

Range of muscle work means the degree of the movement done by the muscle contraction. The range of the movement can be measured by the goniometer. To produce a movement, the group of muscles has to contract or stretch. There are 4 types of ranges. The excursion of muscles, i.e. the amount of shortening or lengthening possible during contraction, is estimated to be about 50 percent of the muscle's maximum extended length.

The maximum excursion possible is called the full range of muscle work and any excursion which falls short of this is called inner, outer or middle range to specify the particular part of the range in which movement takes place.

The Inner range is the part nearest to the point at which the muscle is in its shortest position. The muscles move the joint from the medium contracted position to the full contracted position (Concentrically) or from minimum contracted position to the full stretched position (Eccentrically). Extreme inner range movements are difficult to perform, and it requires the more numbers of motor unit contractions.

The Middle range indicates that muscle is neither fully shortened or fully extended. Muscle moves the joints between the minimal range to the medium range. There is no fully stretched or fully contracted muscles seen. This is the range which we use more in our day-to-day life. In this range the muscle has the maximum strength. Exercise in this range increases the muscle power, strength and tone.

The Outer range the -part is nearest to the point at which muscle is most fully extended The muscles move the joint from the stretched position to the minimal contracted position (Concentrically) or from full contracted to the medium contracted position. Outer range movements also are very much difficult to perform. While performing the outer range movement, the angle of pull will be adverse and some of the energy is used for the compression of the articular surface. The gravity also resists the movement, so that out range movement will be difficult to perform.

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