Exercise Therapy

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Determinants of Stretching: Factors Affecting Stretching Effectiveness

Explore the determinants of stretching, including muscle temperature, stretching duration, intensity, frequency, tissue characteristics, age, flexibility and other factors influencing stretching effectiveness.

The effectiveness of a stretching intervention depends on several interrelated factors known as the determinants of stretching. These factors influence tissue elongation, improvement in range of motion (ROM), patient comfort and safety.

Determinants of stretching are;

1. Alignment and Stabilization

Proper positioning and alignment of the body, joints and muscles are essential for an effective stretch. Stabilization of the appropriate body segment ensures that the intended soft tissues are selectively stretched.

Effect: Improves the effectiveness and specificity of stretching while preventing unwanted movement and excessive stress on adjacent structures.

2. Intensity of Stretch

Intensity refers to the magnitude of force applied to elongate shortened soft tissues. Stretching should generally be performed at a low intensity, within the patient's tolerance, to minimize discomfort and muscle guarding.

Effect: Appropriate intensity promotes tissue elongation and improves ROM while reducing the risk of tissue injury and post-exercise soreness.

3. Duration of Stretch

Duration refers to the length of time for which the stretch force is maintained during a single stretching cycle. It also includes the cumulative time of all repetitions performed during a session.

Effect: Adequate duration facilitates viscoelastic changes in soft tissues, promotes tissue elongation and contributes to improvements in flexibility and ROM.

4. Speed of Stretch

Speed refers to the rate at which the stretching force is applied and released. Stretching should generally be performed slowly and in a controlled manner to avoid sudden tissue tension.

Effect: Slow stretching reduces the likelihood of activating the stretch reflex, promotes muscle relaxation and minimizes excessive tensile stress on soft tissues.

5. Frequency of Stretch

Frequency refers to the number of stretching sessions performed per day or per week. It should be determined according to the patient's condition, tissue healing, severity of restriction and response to treatment.

Effect: Appropriate frequency promotes progressive improvements in tissue extensibility and ROM while allowing sufficient time for tissue recovery and minimizing excessive tissue stress.

6. Mode of Stretch

Mode refers to the method by which the stretching force is applied and the degree of patient participation. Stretching may be performed manually, mechanically or independently (self-stretching), and may be passive, active or assisted.

Effect: Determines the level of patient participation, therapist control, stabilization and the amount of stretching force that can be applied.

7. Neuromuscular Inhibition and Facilitation

Neuromuscular techniques involve the use of specific muscle contractions and relaxation procedures to influence muscle activity during stretching. Proprioceptive Neuromuscular Facilitation (PNF) techniques may be incorporated to facilitate relaxation of the muscle being stretched.

Effect: Reduces resistance from muscle activity, facilitates muscle relaxation and may improve the effectiveness of stretching.

8. Integration of Functional Activities

Stretching should be integrated with appropriate functional activities to help utilize the improvements in flexibility and ROM during daily activities and movement tasks.

Effect: Helps translate improvements in flexibility and joint mobility into better functional movement and activity performance.

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Human Gait

References: Magee, D. J. *Orthopedic Physical Assessment*. 7th ed. St. Louis, MO: Elsevier; 2021.

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