Proprioceptive Neuromuscular Facilitation (PNF)

The goals of PNF are to improve range of motion (ROM), flexibility, strength, and coordination while increasing joint stability and neuromuscular control after injury or surgery. The PNF frame of reference believes that the body recognizes total movement patterns before specific muscle actions and that these patterns occur in either a spiral or diagonal pattern. The occupational therapist analyzes and treats these movements and posture deficits with therapeutic handling techniques. PNF patterns are initiated from distal to proximal during sequences. Early motor behavior is dominated by reflex activity, vs. mature motor behavior is reinforced by postural reflexes. This Frame of Reference guides an occupational therapist in identifying postural and movement abnormalities. After identification, the therapist uses handling techniques to address these deficits by introducing normal movement patterns and/or sequences to tasks and activities.



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Goal

Improve ROM
Range of Motion
The goals of PNF are to prevent the limitation of or improve the range of motion, to move the target body part through a full range of motion, either passively or actively appropriately, and to position the body to prevent contractures and edema.

Indication

Weak Postural Muscles
Weak Posture Muscle-man
Weak postural muscles are a result of poor posture being forced to support the body by using muscle fibers that are dedicated to movement, called phasic fibers, rather than using the muscle fibers that typically support posture, called static fibers.

Mechanism

Diagonal Movements
Diagonal Dance
PNF incorporates mass movement patterns that are diagonal and spiral in nature and often cross the midline of the body. Everyday tasks and skills, from picking up a bottle of water to throwing and kicking, naturally utilize diagonal and spiral movements.

Patterns

D1 Flexion
Diagonal (1) Wand Flexing: Picking Apples
D1 Flexion is the same movement as "Picking Apples." The shoulder is in flexion, adduction, and lateral rotation. Elbow in flexion or extension. Forearm in supination. Wrist in flexion and radial deviation. Fingers in flexion and adduction.
Examples: Eating, Drinking, Putting on make-up.

D1 Extension
Diagonal (1) Wand Extension-cord: Picking Apples
D1 Extension is a movement of "Picking Apples." The Shoulder is in extension, abduction, and internal rotation in the medial position. Elbow in flexion or extension. Forearm in pronation. Wrist in extension and ulnar deviation. Fingers in extension and abduction.
Examples: Skiing.

D2 Flexion
Diagonal (2) Tutu: Cheerleading
D2 Flexion is a "cheerleading pattern." The shoulder is in flexion, abduction, and lateral external rotation. Elbow in flexion or extension. Forearm in supination. Wrist in extension and radial deviation. Fingers in extension and abduction.
Examples: Waiter.

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D2 Extension

Diagonal (2) Tutu: Drawing a Sword

D2 Extension is a "drawing a sword" movement. The Shoulder is in extension, adduction, and internal rotation. Elbow in flexion or extension. Forearm in pronation. Wrist in flexion and ulnar deviation. Fingers in flexion and adduction.
Examples: Unzipping pants, cleaning the perineum.

Methods

Contract-Relax

Contractors-Relaxing

Isometrically contract the opposing muscle first. Then, after contracting, try to stretch the intended target point further. This method is almost identical to hold-relax, except that, instead of contracting the muscle without moving, contract the muscle while moving. This method is sometimes called isotonic stretching.

Hold-Relax-Swing

Hold and Relax on a Swing

The hold-relax-swing method is similar to the hold-relax technique. The difference is that the ending passive stretch is replaced with a moving (dynamic or ballistic) stretch. This method uses a swinging or bouncing motion to stretch the muscles further.

Contract-Relax-Antagonist-Contract

Contractors-Relaxing opposite Ant-toga-Contractor

Contract-relax-antagonist-contract is stretching that involves an initial contraction of the agonist followed by an active or passive contraction of the antagonist to increase range of motion (ROM).

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