

## **FLEXIBILITY VS. MOBILITY**

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#### **I. Science of Stretching and Applied Mobility**

The most challenging aspect to decreasing quality in sports, fitness and health is the realization of muscular imbalances, tight/short and weak muscles that can lead to poor performance, overuse and under use, discomfort and in some cases pain.

To overcome these challenges is not a question of just stretching more, it is a question of activating the appropriate muscular sequences that bring about the correction of poor movement habits and start to create sequential firing patterns that will unlock what has been “stuck”, “sticky” or just tight and put in its place efficiency, ease and effortlessness increasing the opportunity for performance and freedom.

All stretching is a component of Proprioceptive Neuromuscular Facilitation. PNF refers to the communication between the brain, nervous and muscular systems within the body controlling all changes and progressions in movement and ranges of motion for muscles and groups of muscles. PNF simply means to create a reflex response for a muscle to either contract or release through manipulation of two sensory organs. They are muscle spindles and Golgi tendon organs.

#### **Important Definitions:**

**Mobility** is the degree of movement or freedom around a joint or body segment. Mobility is the balance between flexibility, balance, strength and the integration of the neuromuscular system. It is uninhibited motion.

**Flexibility** is the normal length of muscle fibers and connective tissue. Flexibility refers to an individual muscle or muscle group as opposed to range of motion, which refers to an entire joint.

**Range of motion** is the most available movement around a joint. There are many factors that contribute to range of motion. These are, but are not limited to the way bones are shaped, the strength of the opposing muscles, percentage of body fat, muscularity, inflammation, scar tissue, the length of the stretching muscles and neuromuscular inhibition.

**Post Isometric Relaxation** is what immediately follows an isometric contraction of a muscle. It is a relaxation phenomenon that contract-relax activation is based on.

**Reciprocal Inhibition** is when a specific muscle contracts, the opposing muscle is inhibited from activating. Although, if a muscle is too tight or short, it can inhibit the opposing muscle from firing, leading to synergistic dominance.

**Synergistic Dominance** is when a muscle is inhibited from working due to a muscle not getting the correct firing pattern based on an imbalance or poor movement habit, therefore the synergistic muscle will do the work instead of the muscle intended. An example of this would be if the muscles that move the hip into flexion are tight, they could inhibit the gluteus muscle group from firing appropriately. The hamstrings will then try to take over the work contributing to dysfunction and poor mechanics.

**Active Flexibility** is where the need for the opposing muscle groups needs to activate, stabilize and synergistically engage in while stretching the targeted muscle. This type of flexibility is characterized by increases in strength, stability, balance, coordination and improved performance potential.

**Passive Flexibility** is where the opposing muscle groups and body is stabilized by the floor or external support while stretching the targeted muscle. This type of stretching is beneficial to produce a recovery and relaxation response.

**Active Isolated Stretching** is where a targeted muscle is moved to its end range of motion, then force is applied against the muscle creating activation, held, then released. The contract release response being initiated and increases in the range of motion results due to the post isometric relaxation principle.

**Static Stretching** is performed where a muscle is stretched to its end range or stretch point and then held for 20-30 seconds feeling a sense of release then move to the new or lengthened position.

## II. **Structure of the System to implement range of motion and corrective movement techniques.**

### **Movement System Defined:**

#### **Activation / Integration / Reaction / Recovery**

1. **Muscle Activation and Deactivation Challenges** to promote a sequential muscle firing patterns with the focus on quality without compensation. This creates an improved motor program connecting the reactive response of stabilization in order to move other muscle groups and connective tissue through increased and uninhibited range of motion or stretch.
2. **Integrate** and reinforce the pattern from **static to a dynamic** protocols focusing on the quality of the movement and working towards increasing new range of motion changes recognizing the pattern getting more effortless and moving deeper without restriction.

3. **Increase intensity** of progressions utilizing **reaction**, force and instability challenges.
4. **Finish with passive flexibility and supported stretches** promoting **recovery** and relaxation responses.
5. **Always connect breath** with movement and stretch. The effort or ease of breath will help to define when you are working to hard or not working towards your potential “edge” with a calm centered focus.
6. **Target segments** of the body to tie intention and class sequences.

## BENEFITS OF STABILITY TRAINING

- The benefit of stability is the ability to maintain a posture, or control motion.
- It can create a balance of the muscles, ligaments, tendons, sensory organs and the entire integrity of the joint. Stability can be either static or dynamic.
- Static stability is the ability to maintain stillness in a certain position or posture. Dynamic stability is the ability to control and/or to decelerate motion.
- It is “reactive” in nature i.e. it is the body’s automatic response to unstable or changing environments that demand either static or dynamic stability.
- Joint stability should not be the goal at the risk of losing joint mobility.

## BENEFITS OF FLEXIBILITY TRAINING

- Can act as increasing the length of muscle and tissue contributing to healthy range of motion.
- Muscle and fascia as connective tissue can increase in elasticity.

## BENEFITS OF MOBILITY TRAINING

- Can increase the degree of movement around a joint or body segment.
- Mobility is a balance of flexibility, strength, and the integration of the neuromuscular system.
- It can create uninhibited motion. In general, mobility becomes the initial goal of functional movement.