

Ai Chi

Balance and Trunk Stabilization

The purpose of this technique and course is to allow controlled weight bearing, with open and closed chain movement, and progressive balance training combined with core centered movement control. It sounds confusing but is (in practice) a simple way to use Ai Chi to increase functional core strength and balance.

One of the main effects of injury or aging is the loss of neuromuscular timing, loss of balance, and loss of control which lead to a loss of skill and function. Ai Chi Balance and Trunk Stabilization can help to restore these factors and promote normal musculoskeletal biomechanics.

Core

Lack of core strength affects alignment and execution. A weak (and therefore unstable) core is a poor working foundation, which can lead to injuries and other weaknesses. Injuries can occur due to the loss of ideal posture when performing an exercise. If a client has poor core strength to start with, it only compounds the potential for injury.

We're often too concerned with working the more superficially-placed muscles without first creating a solid infrastructure. In other words, we train prime movers without equal conditioning of the associated stabilizers. ***We must understand that while we are leading our clients through exercises we are also programming their nervous systems with movement patterns.*** If technique and posture are poor during exercise the same will be true at work and in ADL's. Instead of improving musculoskeletal function, poor techniques and posture only accelerate musculoskeletal dysfunction.

Reprogramming Movement Patterns

Ai Chi – BTS can improve functional movement organization by re-educating neuromuscular patterns of the trunk, pelvis and shoulder girdle. Activation of the trunk muscles precedes firing of the hip and leg muscles during lower extremity exercise, while contraction of the scapular muscles precedes upper extremity movements.

I tell my clients they're going to work from the inside-out, not from the outside-in. The majority of ADLs (and sports related movements) should be proximal to distal (from the inside out). With an 'inside-out' stabilizing and synergistic focus we no longer allow strong muscles to get stronger and weak to get weaker.

Movements are characterized by reduced variability and increased efficiency. This requires the repetition of precise, well-coordinated movement with a focus on accuracy and quality not quantity.

This control of muscle groups and appropriate timing of muscle activation reduces the biomechanical demands on joint structures and more distally placed muscles, such as the vertebral joints, rotator cuffs, hips and feet.

Proprioception / Kinesthetic Sense is Enhanced

The re-education of functional movement organization and improved awareness of the body in space is a direct result of several factors.

- First, activation and control of the core muscles leads to *increased input into the central nervous system* from muscle spindles and tendon organs.
- Increased input provides the musculoskeletal system with the *information to coordinate and control movements*.
- Intuitively, activation of a greater number of receptors will make more information available to the central nervous system, leading to *greater awareness of the position of the body and limbs with respect to self and space*. (*Proprioception is the sum of input from all of the sensory receptors of the musculoskeletal system, including muscle spindles, skin receptors, mechanoreceptors, etc. The sensation is primarily from muscles and joints. Input is based upon muscle contraction or stretching. Feedback is received through the degree and rate of angulations – positional changes. Neuromuscular spindles are wrapped around muscle fibers. Golgi tendon organs are located at the muscle and tendon junction and sense tendon stretch.*)

Breathing

Breathing properly allows the contracting muscles a more complete ROM. Exhaling when you perform the concentric phase causes the intra-abdominal and intrathoracic pressure to decrease, thus allowing additional compression of the rib cage. This translates into greater ROM and shortening of the contracting muscles.

On exhalation, the relaxed diaphragm pulls up and the abdominal wall is “pulled in” by the abdominal musculature. Coordination of breathing and movement allows muscles to integrate their dual functions and produce graceful, flowing movements of the trunk and extremities.

Hints

- Invite precise, efficient recruitment and timing of neuromuscular activation
- Watch for breath retention. Encourage continuous breathing.
- Work toward excellent technique. Encourage the execution of smooth movement flow, advancing coordinated movement by concentration.
- Work toward neutral spine. Keep shoulders relaxed and down. Watch for “chin forward.”
- Move slowly and with control.
- Sequence movement with repetitions in one position first and then consider positional variety. This enhances reinforcement of functional movement organization and facilitates transfer of control and preferred organization into ADLs. Example – lean R, L forward, back, stand against the wall, change arm position or head position, etc.

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