

## The Heavy Concept

The purpose of the Heavy Concept is to allow controlled weight bearing, allow open and closed chain exercise, and offer progressive balance training combined with core centered movement control. It sounds confusing but is (in practice) a simple way to use any movement to increase functional core strength and balance.

### Core / Balance

The main effects of injury or aging is the loss of neuromuscular timing, loss of balance, and loss of trunk control which lead to a loss of skill and function. The Heavy Concept can help to restore these factors and promote normal musculoskeletal biomechanics.

Lack of core strength affects alignment and movement 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.

### Why So Little Improvement?

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

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

### Inside Out – How to Teach

I tell my clients they're going to work from the inside-out, not from the outside-in. "Inside out" means that deep tissue, inner core, muscles fire first. The focus is on the synergists and stabilizers rather than the prime mover. Just like a building, we want the infrastructure to be solid before adding the insulation and siding. The majority of

activities of daily living (and sports related movements) should be proximal to distal (from the inside out).

When we were infants we all worked from the inside-out. We didn't move an arm or leg without first engaging inner core muscles first. Since our bodies are good at finding the easiest way to do things, we've all started to move from the outside in. The tail is wagging the dog! When we lift our arm to the side we offset it with head and leg movement rather than engaging the trunk.

Muscle strength and endurance, as well as posture and tone can be enhanced by reversing this natural process. Heavy uses stabilizing and synergistic focus. Usually strong muscles get stronger and weak get weaker. Not with this concept. **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.

Skilled movements are characterized by reduced variability and increased efficiency. Development of skill requires the repetition of precise, well-coordinated movement:

- accuracy
- quality not quantity
- primary mover is not the focus. Stabilizers and synergists engage first and should be felt internally anchoring the body.

### **Proprioception / Kinesthetic Sense is Enhanced**

Development 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. Eventually, participants are taught to maintain control of trunk and abdominal muscles without the necessity of the breathing cue. This leads to development of core control and alignment under all movement conditions.

## **Teaching Hints**

- Try only one aspect of the stabilization (scapula, gluteals or abdominals) at a time. 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 and avoiding ballistic movements.
- 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 activities of daily living. Example – lean R, L forward, back, stand against the wall, change arm position or head position, etc.

***Never confuse movement with action.***

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