

Balance Training for Seniors

By Evan Osar, DC

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One of the most challenging issues that affect [older adults](#) is instability and loss of balance. Improving balance is vital for improving the quality of this population's [workouts](#).

Recognizing and enhancing the various components of balance provides the greatest chance for success. This means improving stability (foot, knee and [lumbar spine](#)); teaching clients to dissociate at the appropriate regions ([ankle](#), hip and thoracic spine); and progressing them through functional movement patterns. This systematic and progressive approach is key to enhancing [balance](#) while providing older individuals with essential tools for a lifetime of successful movement.

Three Systems That Maintain Optimal Balance

Optimal balance requires input from both our [body](#) in space and our external environment. To analyze, interpret and anticipate our environment, the central nervous system (CNS) utilizes three systems: visual, somatosensory and vestibular.

1. **Visual.** This is the system we rely on the most to provide feedback to the CNS about our body's movement in space. It allows us to anticipate the terrain we are on, note objects around us and determine the appropriate response necessary for optimal navigation.
2. **Somatosensory.** This system provides us feedback about our body's movement relative to its base of support and about the movements of one body part in relation to other parts. It relies on proprioceptors located within muscles and joints and becomes the primary operating system when input from the visual system is insufficient (e.g., when we are [walking](#) in the dark).
3. **Vestibular.** This system is located within the inner ear and responds to movements of the head. It becomes increasingly important for balance if data from visual and somatosensory systems are unavailable or conflicting.

The CNS takes the sensory information from these three systems, analyzes it and initiates the appropriate set of somatic motor (muscle) responses. If the information received by the CNS is faulty, then the response will be less than optimal.

The Foot Tripod

Disruption in the proprioceptive system is directly involved in further movement dysfunctions by altering both joint stabilization and the timing of muscle contraction. Therefore, the key to restoring optimal and efficient movement patterns is to restore

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[proprioception](#) in crucial regions of the body. In the case of balance, we look primarily at the [foot and ankle](#) complex.

The three points of foot-to-surface contact, creating a “foot tripod” foundation, are the big toe, the small toe and the center of the heel. Strive for this contact in all the patterns in which the foot is in flat contact with the ground. Why is this so important? The weight of the foot pressing down and spreading the metatarsals (long bones of the foot) stretches the interossei muscles located between the metatarsals. This sends a reflexive signal back to the brain to contract the extensor musculature in order to stabilize the foot and lower leg.

Begin with the client’s shoes off so that you can watch the foot response and monitor for signs of toe gripping (see Figures 1 & 2). Toe gripping is a pathological response in which the individual is trying to over-recruit the long toe flexors to make up for weakness and instability in the foot’s intrinsic muscles. Clients who demonstrate dysfunction in the feet—for example, claw toes, hammertoes or bunions—generally possess weakness or inhibition of the intrinsic foot musculature.

Correct foot placement is critical during both static postures and functional movement patterns, such as lunging. The foot tripod should be established regardless of the plane of motion in which the movement pattern is performed. Proper alignment should be established between the foot, [knee](#) and [hip](#) regions, with a neutral spine. To improve stability, have the client visualize a line from the foot tripod up through the knee and directly into the hip socket.

For more insights on balance, please refer to the full article, [“Balance for Baby Boomers & Seniors,”](#) in the online IDEA Library or in [October 2009 IDEA Fitness Journal](#).

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