

## **Functional Balance Training** *by Douglas Brooks, MS*

### **Part II of a series**

*Part two of this introductory series on functional training further explores the nature of functional balance training.*

Balance and stabilization training is simply a position or series of positions that

- occur during movement and
- are maintained when opposing forces equalize one another.

Little or no movement occurs at the stabilized joint(s). Applied to movement, this means that muscles on both sides of a joint contribute to stabilization via a co-contraction of agonist and antagonistic muscles. Co-contraction of muscles on either side of a joint contributes to a body part or body position being maintained in a desired or intended symmetry or asymmetry. In essence, this *is* balance and represents an important aspect of functional movement and training!

On the other hand, functional balance training goes beyond contributing to skilled movement by training not only stabilizing or static muscular contributions, but also simultaneously training dynamic movement patterns. Most skilled movement of any kind requires simultaneously stabilizing force production and bodily movement. For example, when skiing downhill or hitting a tennis ball, one part of the body, like the trunk, may require stabilizing force production, while another part of the body requires joint motion. Additionally, movement requirements will call the trunk region into play as a “mover” and not as a stabilizer.

Therefore, we can say that functional training incorporates many types of training, including functional balance training, and further—and importantly—the broad umbrella of “functional training” trains movement specific to sport, recreation, and daily life. While some may erroneously define it as one type of training or as a specific type of movement (i.e., stabilization or balance), functional training represents a diversified approach that integrates many different types of training into a total body development program.

We live and play in a world that is rich with constant and varying types of proprioceptive stimuli. This movement playground requires us to move and stabilize in every imaginable plane of movement. Therefore, an important training goal is to transition non-specific strength and movement patterns to “real-life” movement by making use of an effective, comprehensive functional training approach.

Balance is the foundation upon which all movement is based. Quite simply, balance and muscle contraction (or force production, more accurately) play critical roles in every type of physical movement. All human movement depends on skeletal muscle contraction and the nervous system (Plowman & Smith, 1997; McArdle et al., 1991). Training balance and muscles, which ultimately means training the nervous (neuromuscular) system, is essential since skeletal muscles will not contract unless they receive a signal from the

nervous system. Balance is indeed the platform for all human movement and keeps our neuromuscular system functioning at a high level.

### **Balance Training Benefits**

Balance exercises challenge both our mind and body to participate in order to sustain correct posture and balance. Training on the BOSU Balance Trainer—which is a dome-shaped and air-filled surface—for example, requires us to *maintain* our centre of gravity over a dynamic, ever-changing surface that is created by the air-filled dome.

The following benefits can be expected from balance training.

#### **Balance training**

- enhances coordination, balance, and neuromuscular function. From rehabilitation and daily movement requirements to enhancement of functional movement and sports performance, balance training has specific carry-over.
- develops and keeps sensory feedback systems sharp and well trained. This translates to neuromuscular training that increases movement efficiency, regardless of the activity.
- on a dynamic, gel-like surface (such as the air-filled BOSU dome) requires a collaborative effort by our muscles, which will result in improved posture and functional movement experiences. In real-life situations, rarely are we called on to isolate musculature. Instead, balance training calls into play movers, stabilizers, and counterbalancing forces that closely mimic everyday activities and tasks.
- boosts movement performance, efficiency, and safety.
- helps to develop balance and stabilizing strength that will result in improved postural endurance.
- helps to eliminate neuromuscular imbalances and improve everyday function.
- creates a new sense of body awareness, body positioning, postural alignment, and movement confidence.
- requires an integrated response from both the body and the mind. This type of “mindful training” results in total-body functional fitness gains.
- introduces a sense of fun or play into a general or athletic conditioning program.

### **Balance Training can and should be “Fun”**

Good things happen when we’re having fun and enjoying the activity in which we participate. Steven Wright is quoted as saying, “You have to stay in shape. My mother started walking five miles a day when she was 60. She’s 97 now and we have no idea where she is.” You get the idea. The word *fitness* should be permanently fused to the word *fun* (McLaughlin, 2001).

Balance training can be a prescription for fun. Personal isolation is common in today's workplace because of the "information highway." Loneliness and depression are widespread among today's workers who sit at computers for a large portion of the day. People are generally tired, overstressed, overworked, overweight, and unfit because of today's labour- and time-saving technology.

Not only do people need to know when to power down, but the concept of working out should be perceived as time efficient, effective, and fun. Most people realize that fitness and health depend largely on consistency and reasonable effort. While this is true, a message like this is not too exciting or motivating. Balance training workouts are not only result oriented and efficient, but can also encourage laughter and play. Workout time moves quickly when we are focused on the task at hand and can literally see improvement with each workout.

Goal oriented "play" is an important aspect of any results oriented program. Play is something we want to do and something we enjoy doing. Play is something we return to time and time again. Play is challenging and can even be hard. Play makes us feel good.

Integrated Balance Training takes movement patterns and exercises and incorporates them into a unique modular training system that helps improve proprioception and balance within *every* component of fitness, while simultaneously encouraging the aspects of non-competitive fun and fitness play.

### **Ten Characteristics of Functional Training**

Activity or training that is functional...

- 1. Focuses on integrated movement, not isolated action at a joint.** Practise parts of the movement, combine the parts into movement patterns, practise the movement, rehearse the movement, "drill" the movement and "do" the activity or sport. Functional movement integrates multiple joint movements—linking movement together in the kinetic chain—and doesn't isolate muscles, but instead requires significant stabilization of the body's musculature during dynamic movement.
- 2. Presents an unpredictable movement challenge.** Sport participation, by its nature, represents imbalance and an uncontrolled, dynamic environment. All movement exhibits a degree of randomness and chaos. On the other hand, some elements of "play" are fixed. For example, a diver or gymnast contends with fixed challenges such as the height of a diving board, the spring of a vaulting board, or the challenge of quieting the movement of still rings. A tennis player or downhill ski racer interacts with fixed elements that include using a familiar racquet with a specific string tension or skiing a familiar race course on a favourite pair of well-tuned skis. But, athletes also contend with changing elements that can include wind, snow conditions, terrain uncertainties, or in the case of a tennis player, an opponent who counters with unpredictable strategies, all of which can impact performance. Some coaches contend that what separates anarchy from sport is a

thinly veiled line that represents uncontrolled chaos versus controlled chaos as it relates to movement. Functional movement is dynamic and requires the participant to speed up, slow down, stop, change directions, react to ground forces, contend with gravitational forces, alter the amount of force production, stabilize, change body angles, modify line of sight, and constantly adjust, readjust, and react.

- 3. Introduces multi-joint movement that occurs in multiple planes of movement.** One's body, the live representation of the kinetic chain principle, moves in multi-planar fashion whether we're performing at a world-class level or lifting a child. Functional movement occurs in a three-dimensional environment at any level of physical movement and challenges multi-planar movement. To challenge movement functionally, we must exercise in the sagittal plane (divides the body into right and left halves as it passes front-to-back), frontal plane (divides the body into front and back halves as it passes side-to-side) and transverse plane (divides the body into top and bottom halves). Within these basic planes of movement are infinite movement variations. In other words, we bend, reach, stretch, and maintain balance simultaneously while creating force production via the kinetic chain.
- 4. Builds complexity in a progressive manner.** Foundational fitness must be attained and basic movement skills learned before advanced training and balance skills are attempted. This will ensure success, safety, and progressive skill advancement.
- 5. Builds intensity in a progressive manner.** Baseline strength, muscular endurance, and cardiorespiratory fitness must first be established. Initial loading during functional training should be accomplished by using body weight only. If appropriate, progress to external resistance as training adaptations take place and specificity of training dictates. Many people hurt themselves or their performance in the name of "specificity." For example, it is arguable that excessively "loading" a golf swing or baseball pitcher's arm motion while the skill is performed at full speed is dangerous, not specific, and could negatively affect the complex neuromuscular patterns involved in complex sport movements. (Refer to number 8 for additional information.)
- 6. Develops the body's ability to stabilize and generate power from the core or trunk "power centre."** A variety of movements and types of training must be used to ensure a balanced approach to core training as well as total development of the trunk region. Core movements should be trained in isolation (mover-type activity that includes spinal flexion, extension, lateral flexion, and rotation) as well as using functional exercises that require the trunk muscles to synchronize their activation, resulting in a stabilized pelvic and spinal position. Functional or stabilization training of the abdominal region represents synergistic movement that demands an integrated, interdependent response of the trunk—which means muscles working together to stabilize spinal position. Functional training of the

abdominal and back muscles involves training them in a manner in which they are required to work on a daily basis. The key function of the abdominal and back musculature is not to create movement at the spine, but to exert isometric or stabilizing muscular force production in order to maintain spinal and pelvic position.

(Note: These comments are not intended to infer that mover-type or isolation trunk exercises are poor choices. The intention is to recognize that stabilization training is different from active-isolation exercise, which uses movement at the spine, and that both should be used to optimally develop and challenge the trunk.)

- 7. Challenges joint motions in a manner that closely copies what the body is required to do in the activity in which one will participate.** The adage, “Train and practise like you play!” is a testament to kinetic chain or functional training, and the importance of specificity.
- 8. “Drills” or practises in a manner that incorporates skills that are integral to the performance of an activity or sport.** Using drills for the sake of drills is unintentional training. Analyze the activity and incorporate movement and balance challenges that mirror the activity, but do not introduce unnecessary risk.
- 9. Has a specific application in mind for accomplishing training goals.** Activity for the sake of activity is a dead-end approach. Without specific training goals, participants drop out, become discouraged, or get less than optimal training and/or performance results. Training must make sense and have application toward one’s goal if it is to be called functional or usable training.
- 10. Is fun.** Though it can be challenging, it is generally rewarding and synchs-up with natural movement. Since it feels natural and is challenging, yet has direct links to personal success and every day movement applications, “fun” takes care of itself in the form of diversity, results, and exercise compliance.

At its simplest, functional training “trains, or develops, movement coordination.” We hope that every professional and layperson can identify with the simple yet profound nature of this characterization, as well as its importance to skilled and safe movement.