

Progressive Foundation Building

Innovative and Effective Exercises for Core Muscle Awareness and Development

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Training of core musculature has increasingly infiltrated mainstream public consciousness over the last years of the 20th century, and “core-training” has become a veritable buzzword for fitness and therapy professionals in the last decade. Even the United States Army, in early 2010, began testing the use of core training to supplement and/or supplant traditional basic training exercises. Core training, though, has a history of centuries in Asian martial arts, and during World War I, Joseph Pilates applied the principles to rehabilitative exercise for veterans.

Martial arts students are taught to channel *chi* (also called *qi* or *ki*), the vital energy of the universe, through their bodies. The term is found in various martial arts' names: Tai *Chi*, *Qi* Gong, *Aikido*, and in *Ai Chi*, the non-combative water exercise developed in Japan and the U.S. over the last 20 years, by Jun Konno. *Chi* is stored in the lower *dan tien* (*hara* in Japanese), an energy field centered in the abdomen, two finger widths below the navel; Western kinesiologists recognize this point as the body's center of gravity. All movement in the martial arts emanates from this energy center, which constitutes the ultimate core of the body.

Like Pilates, Moshe Feldenkrais, another 20th century pioneer in the Western study of movement, built his program of therapeutics and exercise on *mindfulness*; he called his approach to independent exercise “Awareness Through Movement.” Again, the concept has ancient origins in the *asanas* (poses) of *hatha yoga*. Both yoga and ATM have earned increasing popular acceptance in the last 40-50 years, and awareness of one's core is fundamental to the practice of each.

Getting into water adds a whole new dimension to exercise. While land exercise can be done in a pool, understanding and applying hydrodynamic principles makes movement easier, safer, and exponentially more effective, as immersion changes and challenges both perception and performance. Density, buoyancy, resistance, turbulence - all contribute to a unique experience. In this inherently unfamiliar setting, a sense of risk promotes awareness and attention, leading to the body's learning proprioception, postural stabilization and new, more effective, ways to move, as James McMillan demonstrated with the Halliwick Concept.

Progressive Foundation Building (PFB), a program of therapeutic exercises, evolved over a period of 17 years, at a community pool for post-clinical therapy, where users are referred by physicians and therapy clinicians for maintenance exercise. Most patrons are not covered by insurance, creating a situation that allows experimentation and innovation. PFB is synthesized from practice of tai chi, qi gong, and yoga; experience as a kinesiology instructor; the study of hydrodynamics; and training and practice in aquatic exercise. It holistically addresses body, mind, and spirit - combining movement with mental acuity, and, essentially, a spirit of play.

The exercises have been used successfully, in whole or in part, for a variety of conditions: LBP, pre- and post-spinal surgery, arthritis, pre- and post-surgical joint replacement (knee, hip, shoulder), CVA, MS, Parkinson's, ALS, SCI, osteogenesis imperfecta, and critical illness polyneuropathy.

Core-muscle awareness and development, introduced immediately, is the common thread for all progressions, which in turn feed back into core development.

Board Games

Board Games, though apparently simple, presents multiple challenges. A kickboard acts as a supporting seat for movements that progress from (1) bouncing (similar to using an exercise ball) to (2) lower-extremity motions that challenge balance, develop coordination, and enhance flexibility, according to the first three principles of the Burdenko Method, to (3) propulsion with lower extremities alone, and finally to (4) propulsion incorporating upper extremities, which further develops coordination. Initially, floor contact provides some stability, which is eliminated with progression into deeper water and varying positions, from sitting to kneeling and standing.

Terpsi-Technic

Terpsi-Technic (named for Terpsichore, the muse of dance in Greek mythology), while not radically different from ROM exercises performed in most therapy gyms, adds the safety and challenge of hydrodynamics. Using dance names adds an element of fun, and acts as a mnemonic device for remembering each of the various movements. Buoyancy permits freedom of movement within prescribed limits for predictable progression from NWB to FWB, while water resistance and turbulence challenge proprioception and develop strength, enhance balance, coordination and flexibility, as prescribed by Burdenko.

Shoulder Work Ahead

Shoulder Work Ahead opens with shoulder and shoulder girdle loosening movements, then progresses to strengthening, using Halliwick Concept principles to coordinate upper extremity activity with core musculature, developing and building awareness of the necessity of this relationship.

Clocking In

While an *Awareness through Movement* exercise taught by Feldenkrais practitioners uses a chair for support, this variation will be familiar to skiers and those familiar with the work of Pete Egoscue at the Walking Project in California. Beginners assume a chair position, back against the wall. Small movements of the pelvic girdle activate core musculature toward a neutral pelvis, and increase proprioceptive awareness of proper pelvic positioning. Maintaining this position and awareness is the basis for the next exercises.

Shoulder Arms

Again utilizing Halliwick Concept principles, this set of exercises uses buoyancy and turbulence to challenge balance, simultaneously strengthening core, shoulder girdle and shoulder joint muscles.

Keepin' Time

Keepin' Time is based on the premise that a structure is only as stable as its foundation, and that feet and lower extremities are the foundation of the human body. Starting at the toes and progressing upward, these exercises strengthen supporting musculature, enhance proprioceptive awareness, and engage muscles neglected in sub-optimal posture and movement. One MS patient claimed that this set of movements resulted in the first tactile sensations in her feet she had experienced in 30 years, and that she had fallen twice in 6 months, rather than the 6-7 times per day, as she had previously.

Steppin' Out

Having engaged upper and lower extremities, plus shoulder and pelvic girdles, exercises in *Steppin' Out* are done from the same chair position, with the back supported against a wall. Highly challenging, they strengthen and integrate movement while enhancing proprioceptive awareness of the core and its role in balance and coordinated movement.

Gettin' Hip

Utilizing Bad Ragaz Ring Method positioning and Halliwick Concept principles of hydrodynamic stabilization, *Gettin' Hip* is a NWB but highly challenging way of engaging core musculature and strengthening hip extensors.

Beyond Hip

This set of movements improves knee ROM and support, enhancing standing posture, gait, and proprioception, while challenging core strength and coordination. Simple and easily progressed, the exercises are especially applicable for pre- and post-knee surgery, including TJA.

Pipe Dreams

Inspiration for *Pipe Dreams* came from a need to invent exercise that would allow a kayaker to resume his sport after a C7-T1 incomplete spinal cord injury. Though fully paraplegic with limited upper extremity function, his primary concern was postural stability. Using a flotation belt as a seat to approximate the rounded, relatively unstable, floor of a kayak, and PVC pipe as a non-bladed paddle, exercises progressed from paddling movements to a set of actions that appear to trigger core muscle reflexes while developing upper extremity/shoulder girdle strength and function. Results proved equally effective in more generalized use of these exercises, besides developing lower-extremity musculature that is not compromised by lack of innervation.