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Aquatics for Fall Prevention

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Falls are the leading cause of injury-related morbidity and mortality among older adults, More than one in three older adults experiences a fall with a direct medical cost of over $30 billion. Some of the major consequences of falls among older adults are hip fractures, brain injuries and a decline in functional mobility. Did you know that hip fractures are far more common than breast cancer in women, and that one out of four hip fracture patients will never return to a normal life?

In 2013, 2.5 million nonfatal fall injuries among older adults were treated in emergency departments and more than 700,000 of these patients were hospitalized. Many people, who fall, even if they are not injured, develop a fear of falling. This fear may cause them to limit their activities, which leads to reduced mobility and loss of physical fitness, and in turn increases their actual risk of falling. People who are age 75 and older who fall are four to five times more likely than those age 65 to 74 to be admitted to a long-term care facility for a year or longer.

Exercises to improve gait, balance, flexibility and strength have been shown to reduce fall risk by 14%–37%. Most of us experience some level of muscle imbalance, and this tends to become greater with age. Elderly people tend to sit for greater amounts of time causing the muscles of the neck, torso, hips, knees and ankles to become tighter, weaker and more imbalanced. This muscular imbalance causes changes in posture such as forward head and exaggerated kyphosis, and can contribute to the shuffled walking pattern that puts people at greater risk for falling.

The aquatic environment is ideal for a program designed around fall prevention. By taking advantage of the water's properties of buoyancy, pressure, viscosity and drag individuals can improve overall flexibility and posture. Coordinated movements of the upper and lower body can enhance flexibility and mobility. The water's drag resistance also helps to improve reciprocal arm and leg patterns that may be more challenging to achieve on land. The

hydrostatic pressure of the water provides a “second pair of hands” assisting with increased support and feedback to help with stability and improved posture.

On land we rely on both gravity and momentum. These two elements are significantly reduced in the water, which causes people to feel uncoordinated when initiating water exercise. However, this can be a very effective training tool because the different proprioceptive and kinesthetic feedback provided by the water improves overall balance and coordination. Training balance and coordination in multiple planes, directions and speeds in a three-dimensional environment can be both safe and effective. Exercise participants may attempt more challenging movement patterns in the water as compared to land-based training since a loss of balance is less likely to result in an injury.

The viscosity of water slows down movement speed and provides constant resistance to the muscles during submerged movement. Improving strength helps to lower risks for falls. Lower body muscle weakness is a significant risk factor for falls, increasing the odds of falling fourfold. Movements can be progressed by increasing the speed of the movements or by increasing the surface area with drag equipment to effectively provide adequate training levels.

In my own practice I witness every day the power that water has in helping people with balance issues and at a risk for falls. I recently worked with a client that had been referred for a Fall Risk Evaluation. She was an elderly woman who had lived alone and had suffered a fall while at home, sustaining a fractured shoulder. She was fearful of falling again and became apprehensive of going outdoors or attempting a flight of stairs. Upon evaluation I noticed the flexibility in her torso and legs were significantly limited and she lacked muscle strength. She demonstrated a very slow and careful walking pattern with a very wide base of support. Balance testing using a timed walking test put her at a moderate risk for falling. After providing education on a home exercise program and a home safety checklist, we initiated an aquatic exercise program. She was surprised and amazed how challenging it was just trying to coordinate her arms and legs while walking in the water. Her confidence grew as we challenged her with exercises performed in multiple directions, planes and speeds. After four weeks of aquatic training combined with her home exercise program, she gained significant improvements in strength, flexibility, walking speed and her timed walking balance test improved to a level that she was no longer at a risk for falls.

I truly feel that the water is one of the best places to help with balance and fall prevention. I encourage you to add balance drills, walking patterns and strengthening exercises to your group exercise classes and personal training sessions for clients of all ages.

RESOURCES

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CDC Website
http://www.cdc.gov/homeandrecreationalsafety/Falls/adultfalls.html

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