

Fall Prevention: Implications for Aquatic Therapy

Falling is something that can happen to anyone at anytime at any given place. Fortunately, most falls do not result in major injury, especially children and young adults. Sadly, in the elderly population, this is not the case as falls lead to morbidity and mortality. The reason(s) for this is due to an interaction of multiple factors and is not well understood. Falls are considered to be the main cause of death from injury in those elderly 65 and older. This statistic continues to increase with age and by age 85, two-thirds of injury related deaths are due to falls. A fall that results in minor to no injury can offer a devastating blow in terms of psychological issues. A minor fall can lead to a fear of falling, which in turn can decrease mobility and confidence in performing basic activities of daily living. People will also begin to retract from interacting in social activities and recreational hobbies. As a result of this inactivity, deconditioning, muscle weakness, and joint stiffness occur leading to even more falls.

As an individual grows older, there is a natural decline in muscle mass, bone density, vision, hearing, strength, range of motion (ROM), flexibility, and proprioception. These deficits can result in a fall and are known as intrinsic risk factors. Some other intrinsic factors are dizziness, confusion, and abnormal gait. Falls can also be the result of extrinsic factors such as slippery surfaces, throw rugs, obstructions, and decreased lighting. Research has found that intrinsic factors lead to falls more often than extrinsic factors. Identification of these risk factors is an important step in the prevention of falls. Often times, it is difficult to determine if the fall was a result of the above intrinsic factors or other extrinsic factors, and is usually a complex mixture of both leading to the fall.

In the book "Balance and Falls In the Elderly: Issues in Evaluation and Treatment. An aging theory," Chandler discusses three axioms of fall evaluation; the functional reserve, that aging is heterogeneous, and the concept that an elderly person's function may represent more or less than the sum of losses in his/her physiological systems. All three of these concepts should be taken into account when evaluating and developing treatment for the elderly that are in the fall risk category. Functional reserve "refers to the excess or redundant function that is present in virtually all physiological systems such that a significant degree of physiological function can be lost long before clinical symptoms appear". As an individual ages, this functional reserve gradually decreases and can become significantly less in the older adult, leading to a decreased ability to observe loss of function. As redundant function decreases and other losses add up, the observable signs and symptoms of falling present themselves. The second axiom refers to the idea that, as a person ages he/she becomes more unique and less comparable to others in terms of physiological systems. The final axiom discusses the idea that when an elderly patient has several subtle losses widely spread throughout the physiological systems, compensatory mechanisms may not be successful. This is very important to take into account when performing evaluation and examination of patients in this population.

When assessing falls, a number of things should be considered to include: ecologic, biomedical, functional, and physiologic inputs, as suggested by Studenski. The ecologic input is any environmental or extrinsic aspect of the fall event. The biomedical element deals with any medical problem, acute or chronic, that could be a factor in the fall. Pathophysiological input looks at any aspect of postural

control that could potentially be affected, leading to loss of balance. Finally, the functional component deals with any basic movement that the individual may be demonstrating difficulty completing.

This course will review the basics on fall prevention discussed above, including all of the factors that should be considered when dealing with balance and falls. The more information, both subjective and objective, that can be obtained about the client will make the design and implementation of a treatment protocol more successful. The assessment tools necessary to obtain all of the pertinent information regarding a client's fall history as well as current function and balance ability, will be discussed. Taking a thorough subjective history can be just as important as evaluating objective function and balance. The more information that can be obtained from the patient, the more accurate the assessment and treatment will be.

Once a baseline for the patient's functional ability is determined, treatment goals should be established. Both client and therapy goals should be designed to guide the treatment protocol. The goals should be reachable and realistic, to avoid frustration and failure. The goals should also be objective in order to show improvements and progressions, which will allow the client to continue treatment as long as appropriate.

When all of the pertinent information is gathered, a treatment protocol can be established and implemented. In this course, balance and stability activities that can be done in the water will be addressed from the basics to advanced single leg stance exercises. Beginning with just the properties of the water and progressing to use of different equipment. Actual progressions with each client will be dependent on his/her progress and how each person's body responds to the treatment.

Safety will also be addressed in this class, as it is always important to consider this issue. The use of water as a tool to improve balance is a safe option due to the assistance of buoyancy in helping a person stay upright. There is less of a chance a client will lose his/her balance and fall, leading to an injury. Therefore, it is a safer place to push the limits of balance to allow for quicker improvements and carry over. This will hopefully lead to improved balance and stability with land based activities, allowing clients to have improved function and overall better quality of life.

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