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# THE STRENGTH AND CONDITIONING PROFESSIONAL'S ROLE IN PREVENTING FALLS OF OLDER ADULTS

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very year, one out of three older adults (65 years of age and older) experiences a fall (4). These falls often lead to injury and possibly even preventable death. In 2012 and 2013 there were almost 60,000 deaths in the United States as a result from a fall in older adults (4). Additionally, there are several other negative short- and long-term effects which can result from falling, such as disability, reduced quality of life, loss of independence, increased healthcare costs, and fear of doing daily activities. While a multidisciplinary approach to fall prevention among the growing older adult population is ideal, the cost to implement and sustain such a plan is prohibitive. Exercise, as a single component of a fall prevention strategy, has been shown to reduce the occurrence of falls in community-dwelling older adults (7). Consequently, certified strength and conditioning professionals have the opportunity to play an important role in preventing and reducing the severity of falls among older adults in the community. The purpose of this article is to review common risk factors for falls, discuss practical means to assess risks, and propose training strategies and other avenues aimed at reducing the risk of falling in older adults.

#### **RISK FACTORS FOR FALLS**

Several factors have been identified, which heighten the risk of falls among older adults. These factors can be divided into non-modifiable and modifiable risks. Strength and conditioning professionals should be aware of both risk factor types in order to identify those at risk and to develop an effective approach for addressing risks that can be altered through physical training. While the list of non-modifiable and modifiable risk factors below is not exhaustive, it should provide strength and conditioning professionals with an awareness of several important factors that may help in identifying and treating those at heightened risk.

#### NON-MODIFIABLE RISK FACTORS

**Age**: Risk for falls increases in older adults with advancing age (8). Yet, this increased risk with age may be more related to a decline in health and physical function rather than an increase in years (8).

**Sex**: According to a study in the United States, fall injuries among older adults are greater in women than men (19). In contrast, however, fall fatality rates appear to be greater for men than for women (20). Furthermore, fall risk in those 85 years of age and older has been found to be greater among men than women (8). Consequently, when assessing fall risk based on sex, one must consider the interaction between age and sex.

**History of Falls**: Older adults with a history of falls are at heightened risk of falling again (1,5,16).

#### **MODIFIABLE RISK FACTORS**

**Muscular Strength and Power**: Muscular weakness, especially in the lower extremities, is an important risk factor for falls among older adults (14). While further research is warranted, reduced muscular power appears to increase the risk of falling in older adults (9,11).

**Balance**: Research related to falls and balance demonstrates the positive correlation between balance deficits and fall risk in older adults (1).

**Flexibility**: Adequate flexibility or mobility in the lower extremities, especially at the hip and ankle joints, is important for reducing fall risk in older adults (6,12).

#### **ASSESSMENT OF MODIFIABLE RISK FACTORS**

All older adults should be assessed for fall risk either in combination with or independent of other essential physical and psychosocial assessments. Assessing non-modifiable risk factors can be as simple as asking the client a few questions. However, assessing modifiable risk factors requires more time and involvement from both the client and the strength and conditioning professional.

In most cases, there are several valid assessment tools for each of the modifiable risk factors; however, for the purposes of this article, only one or two for each will be described. Strength and conditioning professionals should use good judgement and caution with any assessment activity to ensure safety.

### ASSESSING MUSCULAR STRENGTH

Strength should be measured, in particular, for the lower extremities. The most common method for assessing muscular strength is the one-repetition maximum (1RM). However, for this population, 1RM measurement is not often feasible. If this is the case, then the 5RM or the 30-s chair stand test may be used as appropriate alternative measures (2,3).

#### **BALANCE ASSESSMENT**

Several balance assessment tools are available to the strength and conditioning professional, such as the Berg Balance Scale (BBS). The BBS is a 14-item balance measure and may be a viable option because it is easy to administer and inexpensive (18). In a recent study, research determined that the BBS was a valid predictor of fall risk (17). As with any balance assessment, strength and conditioning professionals should use caution and good judgement to determine what individual clients can and cannot do. They should also provide support and assistance during the test, as needed, to prevent a client from falling.

#### FLEXIBILITY ASSESSMENT

Flexibility and mobility of the hip joint and the foot-ankle complex should be assessed. There are various means to assess flexibility including the sit-and-reach test (10). Fitness professionals are encouraged to use methods they are comfortable with to assess flexibility of their older clients to help determine their risk of falling.

# TRAINING STRATEGIES TO REDUCE FALL RISK

Training strategies to reduce the risk of falling among older adults must be directly tailored to findings from an individual's fall risk assessment. Therefore, in reviewing the training recommendations below, strength and conditioning professionals should use the individual's weaknesses and specific risks (based on their assessment) to guide professional application. While a general strength and conditioning program that includes a foundation of aerobic, strength, and flexibility training is recommended, it is essential to integrate training strategies that are specific to fall prevention as well.

#### STRENGTH AND POWER TRAINING

Strength and conditioning professionals should focus on strength and power training. Specifically, attention should be paid to the muscles required for flexion and extension of the hip and knee joints and plantar flexion and dorsiflexion of the ankle joints (11,13,21,22).

#### **BALANCE TRAINING**

Both static and dynamic balance training should play an integral role in exercise programming for fall prevention. Balance training

can be completed in isolation or integrated with strength and power training. For example, depending on ability level and comfort, heel raises can be performed in a single-leg stance, narrow two-leg stance, wide two-leg stance, on a step, or on an instability balance trainer.

#### **FLEXIBILITY TRAINING**

Increasing flexibility and mobility, primarily in the hips, knees, and ankles, is essential for fall prevention. Both static and dynamic flexibility training methods can be incorporated into training programs for older adults. When designing a fall prevention exercise program using the training modalities described above, strength and conditioning professionals should incorporate functional movements as much as possible. For example, tasks similar to everyday life such as stepping over and maneuvering around obstacles can be used to improve balance and flexibility. Another example that may aid with strength and balance development is to incorporate squatting to lift an everyday object of a known weight (such as a one gallon water container, roughly eight pounds) and placing it on a shelf at eye level. Strength and conditioning professionals should be creative and work with the older adults to determine trouble areas (e.g., fear of falling when reaching to pick up objects from the floor) to help guide the programing.

#### INTERPROFESSIONAL COLLABORATION

Falls among older adults are a multifaceted public health concern; therefore, professionals from a variety of disciplines should work collaboratively to alleviate the issue. When necessary, fall prevention strategies should involve strength and conditioning professionals, primary care providers, physical therapists, audiologists, optometrists, social workers, occupational therapists, dietitians, and community health workers, among other professionals. Strength and conditioning professionals should reach out to other professionals to provide the most comprehensive approach to reducing their clients' risk of falling if it is outside of their scope of practice.

Furthermore, strength and conditioning professionals should embrace community efforts already in place by being actively engaged in local fall prevention coalitions and networks. A list of coalitions in the United States is provided by the National Council on Aging (15). Active engagement with community efforts through coalitions will not only enhance strength and conditioning professionals' ability to make a difference in the community, but also expand their network with like-minded professionals, which could result in the growth of their client pool. Interprofessional collaboration may also be achieved through involvement with evidence-based, community fall prevention programs. A list of the aforementioned programs is provided by the National Council on Aging (15). In addition, a compendium has been developed by the Centers for Disease Control and Prevention (4).

# CONCLUSION

Falls among older adults are a serious public health concern. Certified strength and conditioning professionals can play an integral part in the effort to reduce falls, as well as the cascade of associated problems after a fall, such as disability, reduced quality of life, loss of independence, increased healthcare costs, fear, and death. By utilizing muscular strength, balance, and flexibility assessments, strength and conditioning professionals can effectively design specific training programs for older adults. Adhering to an individualized, well-designed exercise program can be an effective strategy for reducing the risk of falling in older adults.

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