

# Exercise and Fall Reduction in Assisted Living

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**F**alls are a major health problem for older adults, including those living in assisted living (AL) communities. More than one-third of adults age 65 and older fall annually, with up to 30% experiencing fall-related injuries that negatively impact functioning and independence.<sup>1</sup> The incidence of falls increases with advancing age; and 50% of individuals 80 years of age and older fall each year.<sup>2</sup>

Along with the potential physical injuries caused by falls, a number of older adults experience the psychological distress of “fear of falling” that may further limit activity and mobility which, in turn, are risk factors for falls.

At the same time, falls account for 70% of all accidental deaths among adults 75 years of age and older—the majority of which occur in the home environment.<sup>3</sup> Clearly, falls and fall-related injuries present a serious concern to AL residents and the practitioners and staff who care for them.

## Home Sweet Home: Preventing Falls in AL

For growing numbers of older adults requiring some assistance with daily living activities (ADL), the AL community has become home. Just as AL settings vary in the types and degree of services provided, residents’ functional abilities and their risk of falling vary considerably. Nonetheless, statistics suggest



that many AL residents have one or more factors that contribute to their risk of falling. For example, a 2000 survey by the National Center for Assisted Living reported that about 52% of AL residents had some degree of cognitive impairment, along with an average of 2.3 ADL needs.<sup>4</sup> The survey also showed that most residents moved into skilled nursing care centers within two to three years due to failing health, increasing cognitive impairment, and growing dependence in ADLs.

What studies to date haven’t documented to any great degree is the number of falls in AL communities.

However, studies report fall rates in continuing care retirement communities and residential retirement homes in the range of 56-57%.<sup>5,6</sup> A recent national survey of 233 long term care communities found a higher average injury rate due to falls in AL communities compared to skilled nursing care (353 injuries/1000 falls in AL compared to 337 injuries/1000 falls in skilled care). The rates of fall-related injuries requiring medical care were equivalent (112 injuries requiring medical care/1000 falls in both AL and skilled care).<sup>7</sup> With the aging population growing at a rapid pace, the

costs of fall-related injuries among older adults is projected to be nearly \$44 billion by 2020.

### **Contributing to Falls Are...**

The aging process, concomitant diseases, and existing disabilities put older adults at risk for falls. Intrinsic fall risk factors include sensory, neurological, cardiovascular, musculoskeletal, and cognitive impairment. Extrinsic risks related to increased falls include environmental hazards (such as slippery floors, inadequate lighting, and cluttered walkways), and drugs (especially those that affect the central nervous and cardiovascular systems).

Healthy People 2010, with its initiative to improve the health of the people in the U.S., targets injury prevention as a health indicator. Given the scope of falls in an aging population, AL communities need to focus on planning strategies to reduce falls and related injuries as key to risk management efforts. There is strong evidence that exercise reduces fall rates, but there are some barriers to program implementation that may be issues in AL communities.

### **Exercise— A Promising Solution**

The 1996 Surgeon General's Report on Physical Activity echoed what a growing body of evidence continues to say: "...no one is too old to enjoy the benefits of regular physical activity. Of special interest to older adults is evidence that muscle strengthening exercise can reduce the risk of falling and fracturing bones and can improve the ability to live independently."<sup>8</sup> Further studies demonstrated the positive effects of exercise for LTC residents through gains in strength and functional status.<sup>9</sup> Recommendations from a National Institutes on Health Consensus Statement suggest that adults participate in 30 minutes or more of moderate physical activity on most, if not all, days of the week.<sup>10</sup>

The question remains regarding

what type, amount, and intensity of exercise and physical activity are most beneficial for older adults to help reduce falls. Does a physical activity program's success depend on the type of setting, health status, activity level, or other factors? There is no "one-size-fits-all" answer, and the challenge is only made more difficult by the diversity of those elders at risk for falls. However, it is clear that mobility is crucial to activities of daily living and that balance is critical for maintaining mobility and reducing falls.<sup>11</sup>

### **A Look at the Literature**

A recent review of best practices in falls reduction determined that many studies involving elders focused on strength training, main-

**There is evidence that muscle strengthening exercise for older adults can reduce the risk of falling and fracturing bones.**

taining balance and flexibility, and building endurance.<sup>12</sup> The following provides a brief examination of some of these studies whose findings may be beneficial to AL residents, particularly those who may be at low or moderate risk for falls.

*Strength training exercise programs and impact on falls.* Strength or resistance training in older adults is essential especially for the oldest age groups to build muscle strength, increase walking endurance, and improve cardiac functioning, all of which benefit falls reduction. The effects of a group weight-bearing exercise program on 551 high-risk adults aged 62-95 residing in AL and independent living (IL) communities

was observed in a one-year randomized study.<sup>13</sup> The intervention group participated in strength training classes twice weekly. Researchers reported 22% fewer falls and improvements in stepping reaction time and six-minute walking distance in the intervention group compared to the control group. The group exercise program specifically designed for high-risk elders (eg, those with previous falls) residing in AL and IL settings was effective in preventing further falls and maintaining physical function levels.

In a 20-week randomized control study examining effects of strength and flexibility training on older women diagnosed with osteoporosis, 80 women ages 65-75 were recruited from the community at large.<sup>14</sup> Titled the Osteofit Program, the intervention consisted of 8-16 exercises performed in classes held twice a week designed to improve posture and balance using elastic bands and hand weights. Researchers found that the exercise group experienced improved balance and knee extension strength, resulting in decreased fall risk.

*Balance training exercise programs and their impact on falls.* About one-third of older adults have problems with balance, which has been identified as one of the most common fall risk factors.<sup>15</sup> Although general exercise is beneficial to improving balance, specific types of balance training combined with strength training yields greater results. An often cited meta-analysis of balance training is the Frailty and Injuries: Cooperative Studies of Intervention Techniques (FICSIT) trials.<sup>16</sup> The FICSIT studies involved eight independent, randomized controlled clinical trials of elders across multiple settings (eg, community, long term care, and hospitals) participating in a variety of exercise programs that ranged in length from 10-36 weeks. Studies that involved balance-specific training combined with exercise and gait interventions yielded a reduction in fall risk of

24%, an improvement greater than those studies of exercise alone (13% reduction in fall risk).

A four-week individualized visual feedback balance training program was tested in two senior living communities with 27 older women randomly assigned to control or treatment groups.<sup>17</sup> A significant improvement in balance was reported in the treatment group. Those receiving the balance training program also reported reduced fear of falling and increased physical activity, although these improvements were not sustained one year after the study ended.

*Targeting exercise programs based on physical impairments and impact on falls.* Some randomized controlled studies focused on assessing fall risk based on specific physical impairments identified and developing individualized exercise programs led by physical or occupational therapists typically in the home setting. Although therapist-led interventions are more costly and not all AL communities have access to therapists, results demonstrate that individualized exercise programs with personalized follow-up are beneficial in reducing falls.

In a two-year study of a home-based strength and balance training program led by a physical therapist and involving 213 women 80 years of age and older, subjects received regular encouragement and telephone follow-up to motivate participants.<sup>18</sup> Researchers reported that an average of 71% of subjects continued into the second year of the project. At the end of the second year, 44% of the intervention group was complying with the exercise program. The fall rate for the exercise group remained significantly lower than for the control group during the course of the study, leading to the conclusion that individualized strength and balance exercise programs may reduce fall rates over an extended period of time.

A meta-analysis of four controlled trials of instructor-led, home-based

strength and balance exercise programs conducted with 1,016 women and men 65-97 years of age reported that the overall effect was a 35% reduction in the number of falls and fall-related injuries.<sup>19</sup> In regard to injury prevention, those 80 years of age and older reported significantly greater benefits than did those aged 65-79. The program was equally effective in fall rate reductions.

*Dynamic balance training exercise programs and impact on falls.* Dynamic balance training involves slow movement to train proprioceptors, or the nerves controlling muscles to maintain posture and mobility. A widely tested form of dynamic balance training to improve balance, flexibility, and coord-



## **AL residents may experience myriad health benefits from exercise, including improved sleep health and self-confidence, thereby reducing fall risk.**



ination among older adults is Tai Chi exercise. Tai Chi is a low intensity exercise program combining slow, deliberate movements, meditation, and deep breathing led by a trained practitioner. Although Tai Chi is promising as a single intervention balance exercise for older adults, further study is recommended to address Tai Chi's impact on falls reduction.

Studies have linked Tai Chi to mitigating the fear of falling by older adults. Whether or not an older person personally has experienced a fall, fear of falling is common; in some cases, it may be protective. Such fear actually may prevent an untoward event by limiting exposure

to hazardous situations. However, when fear of falling interferes with normal ADL function, the result is a greater predisposition to falling. As one study concluded, avoiding activity out of fear of falling may lead to diminished physical ability and may be predictive of future falls.<sup>20</sup>

To investigate the impact of Tai Chi on risk of falls, a 48-week cluster-randomized, controlled trial was conducted in 20 AL communities with a sample of 291 women and 20 men 70-97 years of age.<sup>21</sup> During the intervention period, the percentage of residents who fell was lower in the Tai Chi group (47.6%) compared to the group receiving wellness education (60.3%). Further study of this sample was conducted to examine the impact of Tai Chi on fear of falling<sup>22</sup> and found that residents who participated in Tai Chi reported significantly less fear of falling compared to the wellness education group.

In another study, a six-month, randomized controlled study of the effects of Tai Chi on number of falls and fall risk, 256 inactive community-dwelling older adults 70-92 years of age participated in either Tai Chi or stretching classes that met three times weekly.<sup>23</sup> Demonstrating maintenance of significant improvements six months post-intervention, Tai Chi participants continued to experience significantly fewer falls, decreased risk for falling (by 55%), reduced fear of falling, and improvements on selected physical performance measures as compared to the control group.

*Additional benefits of exercise and impact on falls.* Exercise has additional benefits that may indirectly impact older individuals' risk of falls. Research has demonstrated a link between insomnia, a common sleep disorder in the elderly, and fall risk in long term care residents.<sup>24</sup> In a 16-week randomized study of 43 community-dwelling, sedentary older adults 50-76 years of age, moderate intensity physical activity of 30 to 40 minutes four times weekly was

found to improve sleep quality and duration in subjects with moderate sleep complaints.<sup>25</sup>

In addition to improved sleep health, AL residents also may experience myriad other health benefits from exercise, thereby reducing fall risk. Increased energy level, enhanced mood, and selected benefits to cognitive functioning have been reported by older adults in several studies.<sup>26-28</sup>

With regards to emotional health—specifically self-confidence—regular physical activity has been linked to greater personal self-efficacy as a mediating factor between fear of falling and functional ability in older adults. Researchers studied the relationship between fear of falling and falls self-efficacy in a randomized, controlled trial of 256 community-dwelling adults 70-92 years of age who were assigned to Tai Chi or stretching groups for a six-month period.<sup>29</sup> The results demonstrated that an increase in self-efficacy in the Tai Chi group reduced their fear of falling during the course of the treatment when compared to that of the control group.

### **Implementing Exercise Programs—Important Considerations for AL Residents**

Functional and cognitive abilities of AL residents vary widely. Therefore, exercise programs need to be individualized accordingly. Safety is a key consideration—both for the individual and the community at large. AL communities can effectively integrate safety components in exercise programs that will benefit their residents in many ways. Facilities may want to consider some of the ideas and activities described here.

*Resident screening and assessment.* Exercise “prescriptions” should be based on the resident’s functional, medical, and cognitive abilities. Health problems such as hypertension, osteoarthritis, and osteoporosis are common among the AL populace. As such, exercise

programs must be individualized according to each resident’s known health problems.

According to the Aerobics and Fitness Association of America (AFAA) Standards and Guidelines for Senior Fitness, pre-exercise assessment needs to include age, body mass, strength, flexibility, functional limitations, personal goals, and current health status.<sup>30</sup> Assessment components should focus on the residents’ goals related to increased flexibility and balance, improved strength, and increased cardiovascular endurance. After physician consent is obtained, the exercise program should begin



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gradually—particularly for AL residents who have been predominantly sedentary.

*Exercise conditions.* These include personal and environmental considerations. Residents should wear loose, comfortable clothes and well-fitting shoes that have cushioned heels and soles with good arch support. Most AL communities will not have a formal “health club” environment, so a safe environment for exercise may need to be established. A room for group exercise should have a large open area free of obstructions, good ventilation and lighting, and low pile carpet.

“Activity friendly” communities

have been linked to increased physical activity and positive health outcomes.<sup>31</sup> On the other hand, “sprawling” communities, common to many areas of the U.S., promote a driving—rather than walking—lifestyle. Many community-dwelling elders are used to driving everywhere for a variety of reasons. AL communities that provide walking trails or access to outdoor activities may help motivate these residents to take advantage of exercise opportunities.

### **Overcoming Exercise Barriers**

Overcoming barriers to exercise among AL residents is challenging from many perspectives. Many AL communities that implement wellness programs do so with the belief that if “they build it, they—residents—will come.” Unfortunately, this often isn’t the case.

There are many reasons that older people don’t exercise. For AL residents, the most common barriers to exercise include health problems that cause back, joint, or other pain; perpetuate or produce fear of injury; and/or affect stamina level.

Another reason that older individuals don’t exercise is that they think exercise is just for young, healthy people. Television and movies often perpetuate this myth. At the same time, some older adults may perceive that exercise isn’t beneficial unless it involves strenuous sports or activities in which they cannot partake. So they don’t exercise at all.

It is important to note here that predictors of intent to exercise differ between men and women.<sup>32</sup> For men, attitude towards exercise is the sole predictor. For women, a combination of factors influences intent. These include attitudes towards exercise, locus of control, perceived benefits of exercise, and degree of self-efficacy.

Lack of personal motivation is another deterrent to exercise in AL residents. Many of these individuals are widowed, single, or have a

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spouse who is unable to exercise due to serious illness. These people don't want to exercise alone; so they just don't exercise. Some older adults also report that exercise can be boring or they just do not enjoy it.

Some of the environmental barriers to exercise relate to space and access. Inclement or extreme weather is another problem. AL communities need to take into account these factors and provide safe environments for exercise as seasons change.

Finally, in some cases, physicians or other clinicians may prove a barrier to exercise in older adults, either consciously or inadvertently. Although the literature clearly indicates that exercise may be beneficial to everyone regardless of age or most health conditions, many practitioners continue to be unwilling to encourage or prescribe an exercise program for their older patients. Probably more serious is the lack of health promotion counseling by physicians. A study by the Centers for Disease Control and Prevention reported that physicians inquire about exercise and nutrition only about one-third of the time during patient visits. This leads many older individuals to believe that exercise is unimportant.<sup>33</sup> Interestingly, studies have shown that physicians who are physically active tend to integrate exercise counseling in their practices to a greater extent.

Table One suggests a variety of ways to overcome these barriers. However, it is imperative for AL facility staff to determine why particular residents do not exercise to determine how to motivate and enable them to pursue physical activity. This requires ongoing communication with residents and their families and cooperation between team members such as physicians and nurses.

**Table 1.**  
**Overcoming Barrier to Exercise in Assisted Living**

Barriers to Exercise	Possible Solutions
Environmental hazards (eg, cluttered apartments, throw rugs, poor lighting, etc.)	Home hazard assessment and modifications; better lighting, assist bars
Unsteady gait or balance problems (self-reported or observed)	Treat underlying cause; medication assessment; physical therapy referral
Medical problems (eg, hypotension, syncope)	Treat underlying cause; adequate hydration; short periods of exercise
Discomfort, fatigue, or pain	Adequate pain management; modified type or intensity of exercise to build stamina
Fear of injury	Focus on exercise benefits (eg, improved function, balance, mobility) which outweigh risks of injury; start exercise program gradually, initially focusing on balance improvement rather than endurance
Resident's lack of interest or motivation	Provide simple information; help resident identify personalized goals (eg, to be able to take a walk around the building with his/her grandson); personalized contact in providing information or education; use of personal progress calendar
Isolation or loneliness	"Buddy system" for exercise
Physician's lack of comfort or knowledge about benefits of exercise for AL residents	Use of standardized assessment tools, exercise "prescriptions," and counseling protocols

### When Exercise Increases, Falls Decrease

The literature clearly indicates that exercise can have a positive impact on falls in senior care settings. ALF leaders and staff must be determined and innovative in their efforts to educate residents, families, caregivers, and practitioners about the benefits of exercise. They then must work together to individualize exercise programs in a way that ensures maximum safety and contributes to residents' quality of life. ALC

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- American Geriatrics Society  
[www.americangeriatrics.org](http://www.americangeriatrics.org)
- American Medical Directors Association  
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### Action Plan for ALFs

With all the confusion circulating regarding Medicare prescription drug plans, it often is lost how significant the financial benefit is for Medicare beneficiaries may be. With the average Medicare beneficiary spending \$1,457 per year, the White House, Congressional Budget Office, and other sources suggest that seniors—especially those with high monthly drug costs—will experience savings of 10-20% or even more.<sup>1</sup> However, these savings are less certain if a senior chooses a plan that does not meet his or her needs.

ALFs that take the lead on working with their residents to help them make the best PDP choice are likely to have happier seniors in their residences. When residents can afford their drugs, they also are likely to be healthier and more compliant with therapies.

There is no doubt that the new Medicare prescription drug benefit is confusing, that it requires time and effort to understand, and that it will require more time, effort, and extensive coordination to implement. However, by taking a proactive and positive approach to Part D, ALFs ultimately will benefit their residents. ALC

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