

Maintenance of Physical Function in Frail Older Adults

Carol E. Rogers, PhD, RN^{a,*}, Maria Cordeiro, MS, APRN, CNP^b,
Erica Perryman, BBA^c

Maria Cordeiro Erica M. Perryman

KEYWORDS

- Physical activity • Sedentary • Community • Low intensity • Frailty
- Physical function

KEY POINTS

- Participating in regular physical activity is safe for sedentary older adults.
- Multiple barriers prevent the initiation and maintenance of a regular routine of physical activity.
- Health care provider recommendations are important to changing behavior.
- Social settings, such as a faith-based community, may be the social-relational connection or key ingredient of the intervention delivery.

Physical function tends to decrease with older Americans, while disability rates usually increase with age.¹ These changes may impair mobility and functional capacity that ultimately affect quality of life and lead to institutionalization. Although much of the general public mistakenly believes this decline is inevitable, loss of function is not a part of normal aging. One key factor in the prevention of functional decline is participation in regular physical activity (PA). Older adults are still capable of caring for themselves, and some continue to compete as elite athletes into their 90s (eg, Jack LaLanne, who became a TV fitness icon for women from 1952 to 1985, and continued

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^a Department of Nursing, Donald W Reynolds Center of Geriatric Nursing Excellence, College of Nursing, University of Oklahoma Health Sciences Center, 1100 North Stonewall Avenue, Office 410, Oklahoma City, OK 73120, USA; ^b Department of Nursing, Reynolds Center of Geriatric Nursing Excellence, College of Nursing, University of Oklahoma Health Sciences Center, 1300 Olde North Place, Edmond, OK 73034, USA; ^c Department of Nursing, Reynolds Center of Geriatric Nursing Excellence, College of Nursing, University of Oklahoma Health Sciences Center, 1100 North Stonewall Avenue, Office 472, Oklahoma City, OK 73117, USA

* Corresponding author.

E-mail address: Carol-rogers@ouhsc.edu

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his daily 2-hour workout as a nonagenarian).² More importantly, women enjoyed working out with Jack. His workouts were easily performed in the home with low-cost, low-tech equipment.

Despite the popularity of numerous televised exercise programs and more than a decade of national attempts to increase participation in regular PA, older adults in the United States are sedentary. Only 20% participate in strength training required to maintain physical function.² As older adults transition to retirement, many lose the benefits gained from occupational or lifestyle PA.³ To make a significant impact on this national trend, it is critical that health care providers actively screen older adults to determine if they are meeting the national requirements for PA and provide recommendations for sedentary older adults. Research evidence shows that low-intensity physical activity is feasible and beneficial for older adults.⁴ This article will review strategies to reduce the barriers and strengthen motivators to this important behavior change for frail older adults. Research continues to develop and test strategies to support frail older adults who need to initiate and maintain a regular routine of PA.

BACKGROUND

Older adults generally fall into 5 categories of physical functionality that range from physically elite to physically independent.⁵ Physically elite older adults are master athletes who train on a daily basis or continue to work in a physically demanding profession such as a hiking instructor or firefighter. Physically fit older adults remain very active, exercising intentionally 2 to 7 days a week, and may continue working. Physically independent older adults do not exercise with any regularity, but have not been diagnosed with a debilitating disease known to result in loss of function and independence. These older adults have little physical reserve and are close to transitioning to the next level of function, which is physically frail.

Physically frail older adults are able to perform activities of daily living that are basic to caring for oneself.⁵ They may require some assistance such as meal preparation and shopping to maintain independence. Frailty is not the same as disability, but frail older adults are at risk of developing a disability and death from a minor stressor.⁵ Frailty is a geriatric syndrome that results from impaired physiologic reserve across multiple systems.⁶ That loss of reserve may be due to age, disease, or disuse. It results in a reduced ability to withstand physical and psychosocial stressors and increases an older person's vulnerability to adverse mental and physical health outcomes.⁶ Clinical symptoms may include anorexia, weight loss, fatigue, and inactivity; signs include reduced immune function, age-related muscle wasting (sarcopenia), age-related loss of muscle strength (dynapenia), bone thinning (osteopenia), malnutrition, balance disturbance, and gait instability. Key factors leading to the development of frailty are chronic undernutrition and physical inactivity.⁶ Predictably, the outcomes associated with frailty are increased risk of falls with injury, acute illness, cognitive decline, disability, dependency, social isolation, institutionalization, and death.⁶ Clearly, it is important to be proactive in the management and prevention of frailty in older adults, because the associated functional decline is costly to the individual; additionally, the associated higher health care resource utilization is costly to the larger society.

The lowest level of physical function is physically dependent, which is characterized as inability to complete some or all of the activities of daily living and depend upon others for basic needs. When the demands of self-care outweigh the homeostatic reserves of the older adult, the frail elder is no longer able to independently meet day-to-day functional needs and becomes dependent on formal or informal assistance; this, potentially, leads to institutionalization.^{5,6} Disability rates are higher in centenarians

and tend to be higher in women, African Americans, and those below the federal poverty levels.¹

MANAGEMENT

Management of frailty begins with the identification and management of underlying disease states that are associated with anorexia and wasting disorders. These states include medical conditions such as congestive heart failure or diabetes as well as psychological conditions such as depression or dementia. Once underlying chronic conditions are addressed, management of frailty must focus on such supportive and preventive interventions as a regular routine of physical activity to improve or maintain physical function. The health benefits of physical activity contribute to reducing risk of the progression to frailty and extend beyond physical function. In particular, the evidence is clear that engaging in a routine of regular exercise is helpful in 2 areas. It not only builds strength, flexibility, balance, and endurance, but it also protects against, and helps manage, chronic conditions such as cardiovascular disease, diabetes, cancer, and osteoporosis,⁷ in older adults.^{8,9} Both pathways ultimately contribute to improved physical function in older adults.

EVALUATION/DIAGNOSIS

Two annual screening activities that may identify the risk for progression of functional decline toward physical dependence are the amount of physical activity in which an older adult participates on a regular basis and his or her functional fitness levels. These screens compliment the annual review of health systems and chronic conditions. A decline in activity from 1 year to the next is an indicator that an older adult needs a prescription for PA to maintain his or her ability to perform the activities of daily living required to maintain independence. When asked about level of activity, most will give the answer they think the questioner desires. For example, patients may say with confidence they walk every day, but simply observing the pace of walking into the office informs the assessment negatively. Questions asking for simple yes or no responses usually do not provide enough information. Barriers to using more complex screening tools include the time involved. Multiple screening surveys for PA are available, but many require over 15 minutes to administer and even more time to score. The Stanford Brief Physical Activity Survey offers the least burden on the patient and health care provider; it takes less than 5 minutes to administer and score according to level of physical activity.¹⁰ The tool takes into account the typical activities over the course of a year and includes lifestyle activities such as yard work and household cleaning. Based on the level of physical activity, health care providers can make the needed recommendations for PA.

Functional fitness components required to perform the activities of daily living required for the maintenance of independence include cardiorespiratory fitness, musculoskeletal fitness, balance, flexibility, motor agility, and body composition.^{5,11} Rikli and Jones developed a battery of tests to assess these areas of functional fitness¹² that are easy to administer and require minimal equipment and space. Normal scores have been scaled according to age and gender, allowing for interpretation of the initial findings. The scores also provide an objective measure to monitor changes in fitness over the course of time. Health care providers can also tailor a prescription for PA based on the findings of the screen. For example, if an individual scores in the 50th percentile for the flexibility measures, but in the 25th percentile for strength measures, an appropriate exercise would include strength training. The logical next step is to make recommendations for initiating a regular routine and follow-up of PA.

RECOMMENDATIONS FOR PA

The goal of promoting PA in physically independent and frail older adults is to prevent the decline to physical dependence. The American Heart Association and American College of Sports Medicine national physical activity guidelines for older adults recommend moderate-intensity aerobic activity for a minimum of 30 minutes 5 days a week or vigorous aerobic activity 20 minutes 3 days a week.⁴ In addition, patients should participate in strength training and endurance exercises 2 days per week, with balance and flexibility exercises 2 days per week for 10 minutes.⁴ Assurance to the individual should include the message that it is never too late to start exercising. Frail and deconditioned older adults must start slow with a routine of strength, balance, and flexibility training to build endurance prior to participating in moderate-intensity physical activity.⁴ There is evidence that some health benefits are achieved with as little as 2 exercise sessions per week.¹³

Older adults are more likely to engage in a regular routine of PA when their health care provider gives them a recommendation to do so.¹³ That recommendation is more effective when it is in writing, just like a prescription for a medication. Prescriptions are more effective when they include the type, frequency, and specific duration of PA sessions.^{4,14,15} The prescription also needs to account for the older adults specific needs. For example, an older adult with poor balance may need to start with some balance training prior to initiating a walking intervention, whether it is indoors or outdoors. Older adults are more likely to change their behavior if the health care provider explores the patients' expectations of initiating a new routine of PA¹⁶ and feel in control.¹⁷ Some older adults may require monitored sessions to build endurance prior to exercising independently. Due to the uncertainty of health care providers to give the appropriate recommendation, many older adults do not receive any information, remain sedentary, and lose the ability to care for themselves. The Exercise Assessment and Screening for You (EASY) tool is available online¹⁸ at <http://www.easyforyou.info/> and in print to help older adults and health care providers select activities that are safe and effective based on individual responses to a set of 6 questions.¹⁹ Questions refer to the individual's experiencing chest pains or pressure on exertion, dizziness or feeling lightheaded, high blood pressure, unsteadiness, pain or physical symptoms preventing PA, or other reasons a patient might be concerned about starting a PA program.¹⁸ Use of this tool has enabled older adults with major health problems to enroll in and successfully complete fall prevention classes.²⁰

PATIENT CONSIDERATIONS TO INITIATING AND MAINTAINING A ROUTINE OF PA

Multiple considerations are necessary in initiating and maintaining a routine of PA for older adults. Health care providers may need to help older adults remove barriers and recognize facilitators to making this important health behavior change.

Barriers

Multiple barriers to initiating and maintaining a regular routine of physical activity are reported in the literature specific to older adults.^{11,14,21} Cultural and geographic populations studied include African American,²²⁻²⁶ Australian,²⁷ Canadian,²⁸ Russian immigrant,²⁹ Asian,³⁰ Korean,³¹ German,³² Latino,^{25,33,34} Italian,³⁵ Swedish,³⁶ Norwegian,³⁷ Chinese,²⁵ Vietnamese,²⁵ American Indian,²⁵ Israeli,³⁸ and multiethnic populations.³⁹ Health-related populations studied have included persons with obesity,^{17,26} arthritis,⁴⁰ Alzheimer disease (and caregivers),⁴¹ diabetes,²⁴ Parkinson disease,⁴² cardiovascular disease,^{43,44} sleep,¹⁶ cancer,^{45,46} mobility disabilities,²⁶ depression,⁴⁷

and multiple sclerosis.⁴⁸ It has been found that some barriers are consistent for older adults across many cultures and diagnoses.

The environmental barriers of safety include uneven sidewalks, lack of streetlights, high crime rates, extreme temperatures, dangerous crosswalks, lack of facilities in community, and high cost of the program.^{11,14,49} Uneven sidewalks is one of the top risk of falls in older adults who may walk with a shuffled gait or do not see the sidewalk due to vision problems or poor lighting. Lack of streetlights decreases visibility while walking early in the morning or later in the evening, which may be necessary to avoid exposure and exertion in the heat of summer or accommodate for work schedules. Lack of streetlights is also associated with higher crime rates. Extreme temperatures are of particular concern in communities that are extremely hot in the summer or cold in the winter.⁵⁰ Many busy intersections lack stoplights to allow safe crossing. The timing of crosswalk traffic is often not long enough to allow persons with slow gait speed to cross before allowing the flow of traffic to proceed. Additional barriers include communities with lack of facilities with PA programs and equipment, no transportation to facilities, and high program costs.^{11,21}

Intrapersonal barriers to initiating PA for frail older adults are numerous and include beliefs about negative effects of PA, physical inability to perform a PA activity, lack of confidence in ability to exercise, no time to exercise, fatigue, concern for appearance, and previous negative experience with PA. Negative beliefs about PA include fears that it will increase arthritis pain⁴⁰ or a fall, that patients are too ill for PA,^{21,35,51} or that PA might worsen conditions following a unilateral stroke.⁴⁴ Physical limitations cited by individuals that keep them from participating in regular PA include shortness of breath and leg problems,⁵² fatigue from caregiving of others with Alzheimer disease,⁴¹ or diabetes-related comorbid conditions.⁵³

Lack of time is a common barrier to exercise. One planning strategy is to ask patients what time of the day would be best for adding a new activity to their already busy schedule. African American and Latino traditions reflect the precedence of care of family members over self-care activities including PA.^{33,34,41,43,60} Family caregivers in general may state similar beliefs. One way to help overcome this barrier is to actually involve the family in the planned activity or include family members in the discussion about ways for the caregiver to arrange time. A theme unique to frail older adults is that many feel they are too old to change their activity.³⁶ This can be more easily overcome by providing specific examples of ways to initiate change slowly and safely as demonstrated by other older adults like themselves.

Walking is an outstanding example of a low-cost, low-intensity PA for older adults. The most common barrier is the outdoors environment. It is often too hot or cold for frail older adults to walk outdoors.⁵¹ Before recommending outside walking for frail older adults, assess a safe walking path and time whether busy intersections have stoplights that are active long enough to cross safely. Some communities have built outdoor walking tracks to increase walking for PA in all generations. Some shopping malls encourage walking and provide covered protection for older adults, providing distance markers and seating along the walking route. Other ways to avoid outdoor barriers is using a treadmill. However, treadmills are not without barriers, including difficulty for those with gait problems such as slow walking speed or shuffled foot fall patterns. Most treadmills do not start slow enough to accommodate the older adult's slow gait speed.

Facilitators

The involvement of a group or at least a partner in PA is not only a facilitator, but also helpful keeping up adherence to a program or activity. For walking, it also provides

a degree of safety in case there is need for assistance during the walk. Facilitators to older adults initiating and maintaining a routine of PA include tangible improvement, social support, and confidence in one's ability to perform the exercise.⁵⁴ In particular, persons with Parkinson disease and multiple sclerosis are more likely to initiate and maintain a regular routine of PA when they believe it will improve their health by slowing disease progression or decline in physical function.^{42,55} Persons with arthritis are similarly motivated by expectations of decreased joint pain.⁵⁴ Other facilitators to initiating a new routine of PA include having an instructor, having content repeated, reassuring instruction, optimism that the PA will improve chronic disease, and classes taught in a safe environment.^{54,56} African American women reported that they found prayer a motivating factor.⁵⁷ Family support was an important facilitator to keeping a regular routine of PA in 2 studies of African American and Hispanic older adults.^{22,50} The prescription for exercise, discussed earlier, warrants mention again. Individuals are more likely to exercise when they know what specific type of exercise is going to provide them the most benefit, how much is enough to start, what outcomes to look for, and where to find safe classes. Some communities offer a various low-cost, safe PA classes at senior centers, churches, and libraries (Fig. 1). In areas where they do not exist, community organizations or senior groups are possible sources for programs to start walking activities or low-exertion PA for frail older adults.

Summary of Recommendations

Specific PA must be predicated on the older adults existing limitations and potential for safe, gradual, improvement. The following approaches are recommended for the frail older adult:

- Screen for level of PA annually
- If physically active, encourage to continue with routine and consult if health interferes with ability to engage in regular physical activity
- If walking is possible, develop a list of safe walking routes
- Locate reputable PA classes in the community
- If sedentary:
 - Screen for prefrail or frailty
 - Discuss the importance of PA for patients based upon their needs
 - Discuss patients goals for the future and how PA can help achieve goals
 - Determine what types of PA are enjoyable for the individual

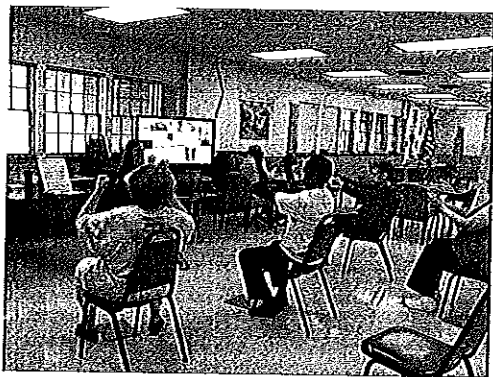


Fig. 1. Example of a physical activity class for older adults.

- Write a prescription for PA with specific dose
- Provide a list of resources in the community

SUMMARY

Annual screening for lifestyle PA and functional changes based on the individual's level of function is critical. The follow-up to screening includes a prescription for PA based on the older adult's needs. The prescription alone is not enough. To reduce the risk of frailty, older adults need to know the type and amount of activity they should engage in plus neighborhood resources for safe, low-cost PA classes taught by individuals who understand the needs of older adults.

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Maximizing ADL Performance to Facilitate Aging in Place for People with Dementia

Carrie A. Ciro, PhD, OTR/L, FAOTA

KEYWORDS

- Activities of daily living • Alzheimer disease • Dementia • Assistive technology
- Aging in place

KEY POINTS

- Disability in activities of daily living (ADL) is an inevitable outcome for people with all types of dementia.
- Undiagnosed and untreated ADL disability results in increased caregiver burden and increased risk of institutionalization for the person with dementia.
- Screening tools and performance-based evaluations are available to identify disability early, and monitor the progression of ADL function over time.
- Evidence-based interventions are available to prevent, minimize, and delay ADL disability in people with dementia.

INTRODUCTION

More than 5 million Americans are diagnosed with Alzheimer disease (AD) and related dementias with each experiencing a unique constellation of cognitive, motor, and psychological manifestations of their particular dementia type.¹ Common to all will be inevitable disability in their ability to perform the activities of daily living (ADL) required for independent living.¹ Basic ADL (B-ADL) is commonly defined as those most basic life skills constituting the ability to care for one's self, which includes bathing, dressing, toileting, eating, and grooming.² Instrumental ADL (I-ADL) refers to more complex life skills for managing family and home environment, which includes cooking, cleaning, and financial management.² Retention of ADL performance is associated with personal, familial, and financial benefits, such as increased quality of life, decreased caregiver burden, and reduced care costs, as well as societal benefits such as a reduction

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Department of Rehabilitation Sciences, University of Oklahoma Health Sciences Center, 1200 North Stonewall Avenue, Oklahoma City, OK 73117, USA

E-mail address: carrie-ciro@ouhsc.edu

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