Evidence-Based Practice Guideline

Exercise Promotion: Walking in Elders

Despite growing evidence of the health benefits of regular exercise, many Americans still remain sedentary. National data have shown that approximately 30% of American adults report no leisure-time physical activity. And by age 75, one in three men and one in two women do not participate in any regular physical activity (U.S. Department of Health and Human Services [USDHHS], 2000). Although 60% of older adults report some activity, the frequency and duration are insufficient (USDHHS, 1999). Two objectives of Healthy People 2010 are to reduce the proportion of adults (18 and older) engaging in no leisure-time physical activity from 40% in 1997 to 20% by 2010 and to increase the proportion of adults exercising according to recommendations from 15% in 1997 to 30% by 2010 (USDHHS, 2000).

Guidelines from the American College of Sports Medicine (ACSM, 1990), the Surgeon General (USDHHS, 1996), and National Health Service Scotland (Wood & Bain, 2001) recommend adults accumulate 30 minutes (duration) or more of moderately intense activity on all or most days of the week (frequency). The 30 minutes of exercise can be divided into two or three sessions of at least 10 minutes duration throughout the day (National Institute on Aging [NIA], 2008). The percentages of Americans meeting this recommendation are 34.3% for men and 29.8% for women (Jones et al., 1998).

Recommended activities should burn approximately 150 kilocalories per day (USDHHS, 1996). Because a brisk 30-minute walk (4 m.p.h. pace) consumes approximately 150 kilocalories, it is an appropriate kind of exercise to meet the recommendation. In addition, walking is suitable for older adults because it carries a low risk of orthopedic injury (Robinson, Brooke-Wavell, Jones, Potter, & Hardman, 1995; USDHHS, 1996), requires no equipment (except support shoes), can be done almost anywhere at any time, and costs nothing. For those who have been inactive for years, walking is an appropriate mode of exercise. Walking or brisk walking is a moderate-intensity exercise that can improve health and reduce risk of premature death (Ogawa, Oka, Yamakawa, & Higuchi, 2005; Schwarz, Bailey, & Ciarlariello, 2003; Singh-Manoux, Hillsdon, Brunner, & Marmot, 2005) in the following ways:

- Lowers the risk of developing hypertension, type 2 diabetes, colon cancer, and coronary heart disease (or second heart attack) and reduces blood pressure.
- Lowers blood cholesterol (R.S. Taylor et al., 2004) and triglycerides and may increase high-density lipoproteins (HDL).
- Maintains healthy body weight by increasing lean muscle and decreasing body fat.
- Increases muscle and bone strength.
- Lowers risk of disability (Van Den Brink et al., 2005).
- Slows bone loss from the spine in women who are postmenopausal (Giliska, 2003; North American Menopause Society [NAMS], 2006).
- Helps older adults become stronger and better able to be ac-
tive without falling or becoming excessively fatigued, and improves fall-related outcomes (i.e., balance, gait, fear of falling) (Schoenfelder & Rubenstein, 2004; L. Taylor et al., 2003).


In summary, walking, which is often perceived as a pleasant exercise, is an active lifestyle strategy that provides physical and psychological benefits and can result in improved health (L. Taylor et al., 2003). This article is an overview of the evidence-based practice guideline Exercise Promotion: Walking in Elders (Jitramontree, 2007) aimed at encouraging older adults to exercise by walking.

PURPOSE OF THE GUIDELINE

The purpose of the evidence-based practice guideline Exercise Promotion: Walking in Elders is to support health personnel in various settings as they motivate older adults to walk for exercise or to maintain their exercise behavior.

DEFINITION OF KEY TERMS

Walking promotion is the facilitation of bipedal locomotion to prevent illness or to preserve or improve health and fitness. Walking refers to the transfer of body position by the alternating movements of the legs (Berg & Norman, 1996). The aim of walking regularly at a moderate intensity is to diminish the risk of diseases, such as coronary artery disease, hypertension, colon cancer, and diabetes (USDHHS, 1996) and to raise overall quality of life by improving health, enhancing independent living (Potter, Evan, & Duncan, 1995), and decreasing depression (Mobily, Rubenstein, Lemke, & Wallace, 1996).

INDIVIDUALS AT RISK FOR INADEQUATE EXERCISE

Although people know exercise is good for their health, they do not necessarily follow through and exercise. People most at risk for not exercising include adults older than 45 (Woods et al., 2005), women with low educational attainment or low incomes, postmenopausal women (Ciliska, 2003; NAMS, 2006), African American and Hispanic adults, and adults in the northeastern and southern U.S. states (USDHHS, 2000). Adults who lead sedentary lifestyles are less apt to exercise (Wells, 1999). They participate in fewer than three 20-minute sessions of leisure-time physical activity per week. People with disabilities also tend to not engage in physical activity (Motl & McAuley, 2009).

ASSESSMENT TOOLS

To help older adults exercise safely and gain the most health benefits, use of the following assessment tools is recommended before encouraging older adults to start an exercise program: Physical Activity Stage of Change Questionnaire (Ingledew, Markland, & Medley, 1998; Nigg & Courneya, 1998), Physical Activity Readiness Questionnaire (ACSM, 1991), Balance Scale (Berg, Wood-Dauphinee, Williams, & Gayton, 1989), and Borg Scale (Borg, 1998; “Exercise Strength,” 2002). Three of the four tools are reprinted with permission in the full guideline (Jitramontree, 2007), available for purchase from The University of Iowa College of Nursing (http://www.nursing.uiowa.edu/hartford/nurse/ebp.htm). The Borg Scale is available on the CDC website (http://www.cdc.gov/nccdphp/dnpa/physical/measuring/perceived_exertion.htm).

Physical Activity Stage of Change Questionnaire

Changes in behavior are different among individuals, depending on their intention to change. Specifically, the needs and motivations of people in different stages of change vary considerably. The Transtheoretical Model (Prochaska & DiClemente, 1985) proposes that people change their behavior by moving through the stages of precontemplation, contemplation, preparation, action, and maintenance. This model has been successfully applied to exercise behavior.

The Physical Activity Stage of Change questionnaire, based on the Transtheoretical Model stages of change, contains five yes/no items that are scored to determine the individual’s stage of change. In addition, three questions related to current physical activity and exercise are included. Understanding older adults’ stage of change may enhance their exercise adherence.

Physical Activity Readiness Questionnaire

Before starting an exercise program, older adults who have not exercised for a long time should be assessed for their fitness and ability to exercise. The Physical Activity Readiness Questionnaire (PAR-Q), developed by Shephard, Thomas, and Weller (1991), is a simple self-administered tool widely used as an initial measure to identify people who can engage in physical activity without physician approval. The PAR-Q conservatively screens older adults who may exercise safely at a low- to moderate-intensity level (Cardinal, 1997). The ACSM (1991) recommends this tool for assessing healthy adults who intend to increase their exercise level.

The PAR-Q includes seven critical concern questions, such as chest pain, fainting, and uncomfortable feeling (Shephard, 1995). The original PAR-Q was overly conservative, excluding too many healthy adults, but the revised 1994 PAR-Q (USDHHS, 1999) improved its sensitivity and specificity. The sensitivity of the PAR-Q was found to be adequate, as no false positives were found after screening approximately 500,000 people (Shephard, 1999).
Assessment of Balance: Balance Scale

Independent walking requires the ability to stride with one foot forward while standing on the other one, thus requiring good balance (Berg et al., 1989). Balance involves the ability to control the upright position as well as to compensate body alignment in response to a loss of stability (Berg & Norman, 1996). Measuring balance is useful for identifying individuals at risk of falling (Maki, Holliday, & Topper, 1994); therefore, it is recommended that older adults have their balance tested prior to starting a walking program. Older adults with good balance are confident when walking (Steadman, Donaldson, & Kalra, 2003). For those with poor balance, exercises to improve balance, such as progressive resistance training or aquatic exercise, may be needed before beginning a walking program.

The most comprehensive balance assessment inventory is a performance-based test developed by Berg and Norman (1996). The Balance Scale includes 14 activities of daily living, with scores ranging from 0 to 4 according to the independence or dependence of movements needed for each activity. Older adults who independently perform the task and meet certain time and distance criteria are given the highest score (4). The total score for the entire 14-item battery ranges from 0 to 56. The scale is a reliable instrument with excellent inter- and intrarater agreements (intraclass correlation coefficient > 0.95) and a high degree of internal consistency (Cronbach’s alpha coefficient = 0.96). Compared with other balance tests, the Balance Scale is a sensitive measure for older adults (Berg & Norman, 1996). Further, it is an older adult-friendly test that requires only 10 to 15 minutes to administer.

Assessment of Perception of Exertion: Borg Scale

Perceived exertion is how hard a person feels his or her body is working, which offers a reasonably good estimate of actual heart rate during exercise. Perceived exertion for the same activity varies among people (“Exercise Strength,” 2002). What is undemanding for one person might be exhausting for another. Some people might feel like they are walking on flat ground, while others may feel like they are jogging uphill.

The Borg Scale (Borg, 1998) is a subjective measure indicating level of effort people feel they are putting into an activity. That perception of exertion is likely to relate well to actual physical measurements (“Exercise Strength,” 2002). It is recommended that people perform physical activity at the level of 13 on the Borg Scale, which is a moderate level of intensity. Level 13 is the feeling of working at a somewhat hard level but still feeling all right to continue. Brisk walking is an example of an activity at level 13.

ASSESSMENT CRITERIA

After evaluating older adults’ physical activity stage of change, physical activity readiness, balancing ability, and perceived exertion levels, health care providers should encourage older adults to exercise according to the following criteria:

- Interventions for older adults should be tailored to each stage of change in the Transtheoretical Model, described in more detail below in the Description of the Practice section.
- Regarding physical activity readiness, if older adults respond yes to one or more items on the PAR-Q, they should consult with their primary care provider. If they answer no to all PAR-Q questions, an exercise program can be initiated gradually without talking to a health care provider.
- For ability to balance, older adults with lower Balance Scale scores should be more careful while exercising. It may not be necessary to administer the entire tool, but assessing the item “standing on one leg” is specifically recommended before beginning an exercise program.

- For perceived exertion level, it is recommended that, to achieve benefit from exercising, older adults walk until reaching the “somewhat hard” feeling (Borg Scale level 13). Walking beyond that level should be done gradually and with caution.

DESCRIPTION OF THE PRACTICE

To promote exercise behavior, psychosocial and physiological aspects should be considered (Quinney, Gauvin, & TedWall, 1994). Approaching individuals differently addresses diverse levels of motivation to change and is an important strategy to enhance exercise behavior (Ingledew et al., 1998; Nigg & Courneya, 1998). Interventions developed for individuals in each stage of change are discussed below.

Precontemplation Stage

Those in the precontemplation stage include those who are not active and currently have no intention of being active within the next 6 months. Examples of actions for older adults in this stage include:

- Increasing awareness of their activity level by assessing activities in daily life. For example, the health care provider can ask the older adults to record their activities in a diary and then discuss their activity level with them.
- Helping older adults understand how their current behavior influences them personally and also others. For example, inactive parents model unhealthy behaviors to their children and grandchildren (USDHHS, 1999).
- Increasing awareness of what the older adults might miss if they continue to be sedentary (Burbank, Padula, & Nigg, 2000), providing information about the benefits of exercise (Resnick & Spellbring, 2000), and clarifying the misconcep-
tions associated with exercise, such as injury, excessive muscle hypertrophy, and fatigue (USDHHS, 1999).

- Emphasizing the short-term benefits, such as enjoyment, feeling better about oneself, and eating better.
- Linking benefits of a physically active lifestyle to valued people (White & Maloney, 1990). For example, the health care provider can have older adults identify the most significant people in their lives and discuss important upcoming events they are looking forward to and want to attend.
- Emphasizing that by staying healthy, the older adults will be able to improve their quality of life (e.g., living independently longer, avoiding falls).

Contemplation Stage

Contemplators are individuals who do not exercise but intend to start exercising within the next 6 months. They are not ready to initiate the action because they are in the process of weighing the pros and cons of beginning to exercise. Consequently, they are ambivalent about engaging in exercise behavior. Examples of actions for these older adults include:

- Assessing their barriers to exercise and then discussing how to overcome them (Cooper, Bilbrew, Dubbert, Kerr, & Kirchner, 2001).
- Assessing their exercise efficacy and providing motivating messages such as “good job” or “you’re doing great” to enhance self-confidence (USDHHS, 1999).
- Providing awareness about walking options, such as taking the stairs, walking to church, or shopping (U.S. Department of Transportation, Federal Highway Administration, 1994). Health care providers can encourage older adults to choose to walk and to view these options as personally and socially desirable. They can also provide information about pedestrian safety.
- Providing choices (Mullan & Markland, 1997) of home-based exercise programs, such as stretching, range of motion, and weight-bearing exercises (King, Haskell, Taylor, Kraemer, & DeBusk, 1991).
- Providing lists of community resources (Sallis et al., 1990) so older adults have an option to participate in exercise with others.
- Helping older adults with the “beginning basics,” such as selecting appropriate shoes, socks, and clothing for exercising (USDHHS, 1999).

Preparation Stage

Individuals in the preparation stage include those who intend to exercise in the near future, usually within the next month. They may begin to exercise but do so less often and with less intensity than recommended. They may be uncertain about the outcomes of their activity. Examples of interventions include:

- Providing information about how to walk and safety considerations (Pucher & Dijkstra, 2003) (Table), including the time and

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<tr>
<th>How to start a walking program:</th>
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<tr>
<td>• Start walking at a comfortable natural pace (warm up) and stretch after walking (cool down).</td>
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<tr>
<td>• Let your arms swing in a relaxed and rhythmic manner (Kubo, Holt, Saltzman, &amp; Wagenaar, 2006).</td>
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<tr>
<td>• Hold your head erect, with the chin in, shoulders relaxed, back straight, and abdomen flat.</td>
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<tr>
<td>• Land on your heel and roll forward to drive off the ball of your foot. Walking only on the ball of the foot or walking flat footed may cause soreness.</td>
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<td>• Take long, easy strides, but do not strain. When walking up hills rapidly, lean forward slightly.</td>
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<tr>
<td>• After a few walking sessions, begin to pick up your pace by striding out and walking faster until you feel up to level 13 of the Borg Scale (Borg, 1998).</td>
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<th>Tips for safety</th>
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<tr>
<td>• Wear comfortable support shoes with flexible soles, good arch support, and roomy toe boxes.</td>
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<td>• Choose a comfortable time of day to walk that is not too soon after eating (Shephard, 1995) or rising from bed (Willich, 1995) and when the weather is not too cold or hot. For outdoor walking, dress in layers that can be added or removed as needed. Older adults can be easily influenced by the heat or cold (National Institute on Aging [NIA], 2008).</td>
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<tr>
<td>• Drink fluids after walking and sweating. Older adults are less likely to feel thirsty (Mack et al., 1994; Phillips, Bretherton, Johnston, &amp; Gray, 1991). Check with your physician if your fluid intake is restricted.</td>
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<td>• Start out at a lower level of effort and work up gradually, especially if you have been inactive for a long time (Pate et al., 1995).</td>
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<td>• Cut back if fatigue persists more than an hour after walking or divide the workout into several sessions that add up to a total of at least 30 minutes but no less than 10 minutes per session. Walking less than 10 minutes at a time will not provide cardiovascular and respiratory system benefits (NIA, 2008).</td>
</tr>
<tr>
<td>• Stop if you are panting, nauseous, or dizzy, or have chest pains. Consult a physician before starting again.</td>
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distance one should walk (Howze, Smith, & DiGilio, 1989).

- Strengthening their exercise efficacy (Chau, Shiu, Ma, & Au, 2005; Gary, 2006; Resnick & Spellbring, 2000) by:
  
  (a) Facilitating a progressive walking program, reinforcing successes (Long & Haney, 1988), and providing self-monitoring methods that help older adults visualize progress. They may record time spent walking each day in a graph or chart (Figure) or record steps walked each day using a pedometer. Older adults may monitor their weight as a criterion for success. Experiencing physiological changes, such as decreased fatigue, also strengthens self-efficacy (Strecher, DeVellis, Becker, & Rosenstock, 1986).

  (b) Emphasizing individual competence and accomplishment focusing on recognition of exercise participation and mastery, rather than on extrinsically focused traditional awards based on fitness assessment (Fitness Canada, 1992; Prudential FITNESSGRAM, 1992).

  (c) Promoting competence perceptions by reinforcing the personal progress made (Whitehead & Corbin, 1991).

  (d) Providing a video showing older adult role models who walk (Reeve, 1996).

  (e) Establishing a group field trip to visit an older adult walking program (Reeve, 1996).

  (f) For group exercise, assigning individuals to groups on the basis of their confidence and ability levels (Howze et al., 1989).

  (g) Improving balance to enhance walking confidence (Jansson & Söderlund, 2004).

- Helping older adults establish short-term goals that are small, specific, and realistic (Resnick & Spellbring, 2000), such as “I will walk for 10 minutes every day.” Pedometers, step logs, and e-mail reminders are recommended to help in goal setting (Heesch, Dinger, McClary, & Rice, 2005).

- Encouraging older adults to make a commitment by sharing their intention to exercise with another person. For example, health care providers can ask older adults to sign a behavioral contract following a discussion of potential barriers, strategies to achieve walking goals including rewards for success, and motivating methods to be used (Williams, Bezner, Chesbro, & Leavitt, 2005).

- Promoting exercise as an enjoyable activity (Corbin & Pangrazi, 1999; USDHHS, 1999).

- Fostering social support from the older adults’ spouses, family members, friends, neighbors, and coworkers (Cousins, 1993). Health care providers can involve older adults’ spouses and family members by assessing their attitudes, discussing progress the older adults have made, and offering examples of reinforcing constructive feedback. Older adults may also be encouraged to walk with spouses, families, friends, neighbors, coworkers, or significant others.

- Discussing barriers to regular activity and eliciting ways to overcome those obstacles. The recommended nursing interventions for overcoming various barriers are as follows (Cooper et al., 2001):

  (a) Pain: Older adults should take medications to reduce pain 1 to 2 hours before beginning to walk. They should warm up by stretching for at least 5 to 10 minutes before and after walking. They should begin at a usual walking speed and increase gradually as tolerated. They can prevent pain by slowing down or stopping as needed. Older adults should let their joints and muscles recover by walking every other day.

  (b) Fatigue: Older adults can improve their sense of well-being by arranging a schedule to maintain balance between rest and activities, get quality sleep by avoiding caffeine and alcoholic beverages, and increase energy level with proper exercise.

  (c) Mobility: Older adults can improve range of motion and blood flow to joints and muscles by performing exercises slowly, smoothly, and gently, and avoiding overstretching of the joints. They should walk at a comfortable pace on a smooth, even floor and use walking aids as needed.

  (d) Sensory impairments: Health care providers should inspect

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**Instructions:** Make a dot corresponding to the day of exercise and the amount of time in minutes that you exercise each day. You can make a dot corresponding to a duration of exercise time that falls between the numbers given on the graph (e.g., 12 or 27 minutes). Then connect the dots from Day 1 to Day 2, Day 2 to Day 3, and so forth.

![Figure](image_url)

*Figure. Using this graph, older adults can chart the duration of their exercise by day.*
older adults’ feet and legs regularly for skin lesions. Older adults should walk in a well-lit area with friends and wear proper-fitting shoes with good support.

- Informing older adults about the temporary nature of unpleasant sensations (Resnick & Spellbring, 2000), such as muscle aches, joint pain, shortness of breath, fear of falling, and feeling bored. They can decrease or eliminate these unpleasant symptoms (Resnick, 1998) by taking medication prior to exercise, applying ice to areas of pain, or wearing better socks and support shoes to relieve pain. Older adults apprehensive about falling should be encouraged to walk with their usual assistive devices, walk on a treadmill while holding the handrails, or walk with a partner.

**Action Stage**

This stage includes older adults who currently exercise regularly but have just started doing so within the past 6 months. Individuals in the action stage are prone to relapse to old patterns of behavior. Examples of interventions for those in the action stage are:

- Continuing to provide positive, constructive feedback to enhance self-efficacy (Whitehead & Corbin, 1991).
- Increasing walking speed, distance, or time (Ottenbacher et al., 2005; Purser et al., 2005) with:
  - (a) Use of a portable, progressive-resistance exercise machine (Mangione et al., 2005).
  - (b) Use of virtual obstacle training (for older adults who have experienced stroke) (Jaffe, Brown, Pierson-Carey, Buckley, & Lew, 2004).
- Assisting older adults in developing a long-term goal for exercise (Resnick & Spellbring, 2000), such as “I will participate in a 2-mile walk this spring.”
- Assisting in identifying potential reasons for relapse (Forkan et al., 2006), such as risk of injury, boredom, and failure to meet goals (e.g., due to inclement weather, occasional illness, out-of-town visitors). Health care providers can discuss solutions for anticipated barriers and develop alternative plans for missing events. For example, older adults can try a new time, partner, or place for walking. Older adults should be informed that a relapse does not mean failure but is a normal part of the change process.
- Encouraging older adults to foster group cohesion by developing a buddy system (Quinney et al., 1994).
- For older adults exercising at home, the health care provider can visit their home to help them maintain their activity. This can include problem-solving techniques and behavior change strategies, such as biweekly telephone conversations to discuss progress, and offering support and guidance for relapse prevention (Bodie & Inoue, 2005).
- Reminding older adults to reward themselves for success. For example, buying a new pair of walking shoes or taking a short trip (USDHHS, 1999).

**Maintenance Stage**

People in this stage have successfully exercised for more than 6 months and are continuing to exercise regularly. As with the other stages of change, interventions should be tailored for the individuals:

- Reminding older adults to recognize and appreciate their successes (Resnick & Spellbring, 2000). Health care providers can continue to provide positive reinforcement.
- Providing opportunities for the older adults to serve as a role model for others. This will motivate them to continue their exercise program (USDHHS, 1999).
- Continuing to make exercise fun and entertaining, such as walking with their favorite music or having conversations with friends before, during, and after walking (Corbin & Pangrazi, 1999; USDHHS, 1999).
- Maintaining a supportive environment by reminding family members to continue providing encouragement (Cousins, 1993).
- Helping the older adults set realistic goals to prevent discouragement (Resnick & Spellbring, 2000).

**Relapse**

Individuals engaging in an active lifestyle may go back to an earlier stage of change. Interventions for people in the relapse stage are not the same as for those just beginning to change their behavior. Individuals in this stage are more likely to start their activity again. Examples of actions include:

- Assessing their stage of relapse to ascertain the length of the relapse (USDHHS, 1999).
- Learning from other older adults how they overcame barriers to exercise and sustained their activity (USDHHS, 1999).
- Identifying causes of relapse and discussing ways to overcome and prevent future relapses. Factors that can help or hinder program maintenance should be identified (USDHHS, 1999). For example, inclement weather may prevent older adults from exercising regularly. Alternatives may include walking in a mall, in a gym, or on a home treadmill.

**EVALUATION OF PROCESS AND OUTCOMES**

Each health care provider using this guideline should be asked to complete the Process Evaluation Monitor included in the full guideline (Jitramontree, 2007). The 9-item scale evaluates the perception of the usefulness of the guideline for practitioners. The item scores indicate the need to provide support or further education for practitioners implementing the guideline.
For each individual receiving the exercise promotion guideline, it is helpful to monitor and assess his or her performance of exercise behavior. The Exercise Promotion Outcomes Monitor includes three indicators: intensity, duration, and frequency of exercise behavior. This form, available in the full guideline, should be completed on a weekly basis throughout the exercise promotion program for each older adult.

CONCLUSION AND IMPLICATIONS FOR NURSING PRACTICE

The Exercise Promotion: Walking in Elders evidence-based practice guideline provides practitioners with assessment tools, evidence-based interventions, and both process and outcome indicators to measure the effectiveness of walking programs. Basing a walking program for older adults on the Transtheoretical Model stages of change is research based, individualized, and has promising potential for improving overall health in older adults in various settings and at different levels of health. Professional nurses are key players on interdisciplinary teams who must advocate for initiatives such as evidence-based walking programs to enhance older adults’ quality of life.

REFERENCES


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