OLDER ADULT FITNESS

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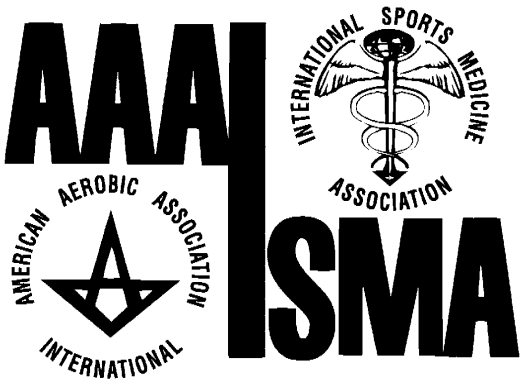
The International Standard in Exercise Science Education



Older Adult Fitness Manual

by
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Introduction

Introduction

According to the American Academy of Physical Education, the aging process can have a considerable impact on an individual's ability to perform basic activities. For example, of adults aged 60-64, 19% of the men and 40% of the women are unable to lift or carry 25 pounds. In that same group, 10% of the men and 22% of the women have difficulty doing light housework, and one out of every four adults aged 60-64 are unable to walk a quarter mile. As these people grow older, statistics show even fewer will be able to perform these tasks.

Whether you work in a senior center or area agency on aging, health department, church, or fitness club, you need to know some basic information about physical activity and exercise for older adults. Many people use the words physical activity and exercise interchangeably, but since exercise is a kind of physical activity, they are not the same. Physical activity is any bodily movement produced by skeletal muscles that result in energy expenditure. Physical activity can be grouped into four basic types: occupational, household, transportation or leisure time. Leisure time physical activities may consist of sports, recreational activities and exercise. Exercise is a planned, structured and repetitive bodily movement done to improve or maintain one or more of the components of physical fitness.

The four core elements of physical fitness for older adults are endurance, strength, flexibility and balance. In addition to the core elements, gaining an understanding of an individual's functional ability (a critical component of independent living), and knowing how to relate it to physical activity programming are essential for safe, effective and fun older adult exercises.

In developing exercise programming for the older adult the US Department of Health and Human Services recommends daily physical activity for 30 minutes at a moderate intensity. These 30 minutes may be broken down into 5-10 minute parts eventually working up to a continuous 30 minutes. Over time the routine should include strength, stretching and balance.

Regardless of your setting, you can use this study guide to learn more about working with older adults with sensory changes, cognitive loss or chronic diseases, and get a better idea of guidelines for how much physical activity an older adult should have, self-screening, medical clearance and ways to make a physical activity session more difficult as the elder becomes more fit and continually improves.

Terminology

Maximum Life Span
The greatest age reached by any member of a species. Genetic potential – 120 years.

Average Life Span/ Life Expectancy
Life span is the average number of years from birth that an individual can expect to live. Life expectancy in the United States rose dramatically in the 20th century, from about 47 years in 1900 to about 73 for males and 79 years for females in 1999.

Health Span
The length of time a person can enjoy a healthy, active, positive, quality of life. It is increased via exercise.

Gerokinesiology
A specialized area of study within the larger discipline of kinesiology that focuses on understanding how physical activity influences all aspects of health and well being in the older adult population and the aging process in general.

Hypo-Kinetic Disease
The under-mover (couch potatoes) has a sedentary life-style, which is a leading factor in premature disability and death in the USA.

Bio Markers
Changes in the human body attributed to aging seem to duplicate those of inactivity.

Sarcopenia
Frailty is the loss of muscle and strength (atrophy) mainly caused by inactivity.

Senescence
A more precise term used by gerontologists to describe aging. Senescence is the progressive deterioration of bodily functions over time. This loss of function is accompanied by decreased fertility and increased risk of mortality.

Aging
Aging is a complex natural process involving every molecule, cell, and organ in the body. It refers to changes that occur during lifespan - NOT necessarily problematic (i.e. wrinkles, grey hair).

Chronological Age
The number of years since birth we have lived categorized as:
65-74 Young Old
75-84 Middle Old
85-99 Old Old
100+ Oldest Old

Biological Aging
Also known as primary aging, refers to a group of processes within the body leading to various functional losses and eventual death.

Functional Age
Compares one's functional fitness with others of the same age and gender.

Successful Aging
A qualitative description of aging that describes "adding life to the years" and "getting satisfaction from life."

Functional Fitness
The level of fitness necessary for individuals to take care of their personal needs, maintain an independent lifestyle and participate in activities they value.

Basic Activities of Daily Living (BADLs)
Fundamental activities required for self-care such as eating, toileting, dressing and taking medication.

Instrumental Activities of Daily Living (IADLs)
These are activities not necessary for fundamental functioning but still useful in the community such as making beds, vacuuming and shopping.

Notes

Functional Fitness

Functional Abilities

Physically Elite (Athlete)
Physically elite senior trains almost daily to compete in sports, works in a physically demanding job, or participates in demanding recreations activities.

Physically Fit (Healthy)
Physically fit senior exercise at least twice a week for health, enjoyment, and well-being; or works regularly at a physically demanding job or hobby. Their health and fitness reserves put them at risk for falling into a lesser able category.

Physically Independent (Ambulatory/Sedentary)
The physically independent elderly live independently. They usually are with or without the debilitating symptoms of major chronic diseases and have low health and fitness reserves. For many seniors in this category, a brief illness or injury can mean a rapid loss of physical function and perhaps independence, even after recovery, their loss of function can leave them frail.

Physically Frail (Semi-ambulatory/Sedentary)
Physically frail seniors can perform basic activities of daily living but cannot perform all functions required to live independently. Can stand or walk short distances (usually < than 100 feet) with an assistive device; spends most of the day sitting.

Physically Dependent (Wheelchair-dependent)
Physically dependent has difficulty or cannot execute some of the Basic Activities of Daily Living (BADL). These activities include self-dressing, bathing, transferring, toileting, feeding, and walking. Individuals are dependent on others for basic functions.

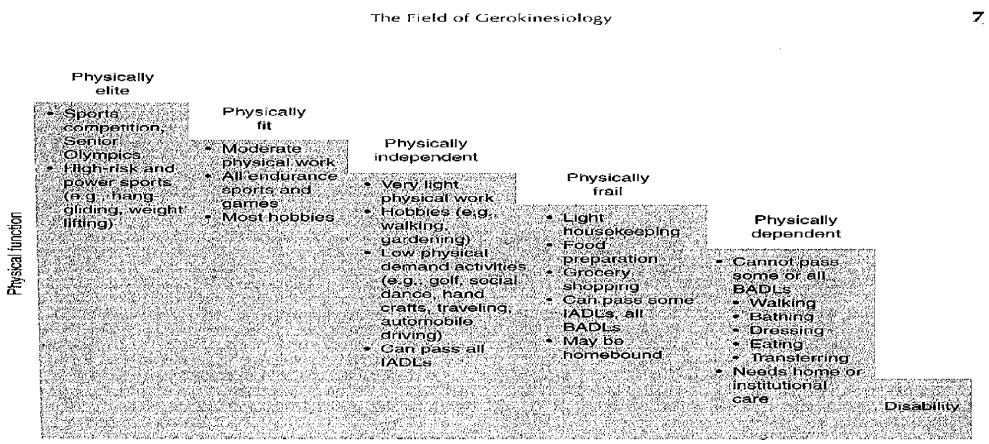


FIGURE 1.3 Hierarchy of physical function. BADL = basic activity of daily living. IADL = instrumental activity of daily living.
Reprinted, by permission, from W. Spirduso, 1995, *Physical dimensions of aging* (Champaign, IL: Human Kinetics), 339.

Tasks

Here are some examples of how exercise training can help the older adult function more efficiently in their everyday activities and maintain independence.

Type of Exercise Training	Functional Task
Aerobic endurance training	Walk in order to complete errands or attend events, perform activities requiring stamina such as vacuuming, raking and climb stairs
Resistance training for upper body and trunk	Lift and hold a grandchild, place luggage in overhead storage during travel, carry groceries, open heavy doors, perform garden work such as pulling weeds, perform housework such as washing windows.
Resistance training for lower body and trunk	Stand up from the floor, get into and out of a chair or bathtub, climb stairs, pick up package from floor, step or curb
Flexibility training for upper body and trunk	Turn head to look at traffic while driving or walking, fasten a zipper on the back of a dress, scratch an itch on the back, reach overhead cupboard, comb hair
Flexibility training for lower body and trunk	Put on socks and shoes, inspect feet, cut toenails
Balance and mobility training	Walk the dog safely; negotiate environmental hazards, curbs and stairs; pull weeds in garden; respond to unexpected losses of balance

Functional Assessment

The assessment of physical function assists the instructor in many ways: assessment facilitates the early identification of older adults who are beginning to experience changes, assist the instructor in developing an exercise plan, retesting allows selection or deletion of exercises, helps participants set appropriate short and long term goals and provides motivation. Finally, assessment provides documentation for the overall effectiveness of the program.

Senior Fitness Test (SFT)

Aerobic Endurance

6-Minute Walk

- Number of yards walked in 6 minutes
  < 350 yards at risk

2-Minute Step Test (Alternate Aerobic Endurance Test)

- Number of full steps completed in two minutes
  < 65 steps at risk

Strength

Biceps Arm Curl

- Number of curls completed in 30 seconds
  Females/5lbs Males/8lbs
  < 11 at risk

Chair Stand

- Number of full stands in 30 seconds.
  < 8 you are at risk.

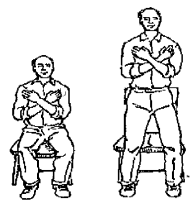
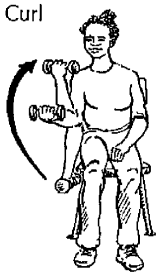
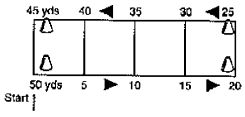
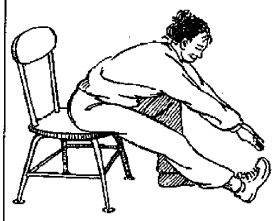
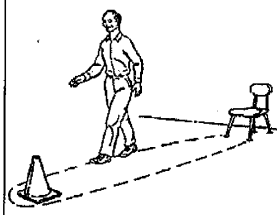
Exercise	Purpose	Description	Risk zone
30-Second Chair Stand 	To assess lower body strength needed for numerous tasks such as climbing stairs; walking; and getting out of a chair, tub, or car	Number of full stands that can be completed in 30 seconds with arms folded across chest	Less than 8 unassisted stands for men and women

FIGURE 6.3 Brief summary of the Senior Fitness Test items.
Adapted, by permission, from R.E. Rikli and C.J. Jones, 2001, *Senior fitness test manual* (Champaign, IL: Human Kinetics), 61, 63, 65, 67, 69, 71, 72.

Exercise	Purpose	Description	Risk zone
Arm Curl 	To assess upper-body strength needed for performing household tasks and other activities involving lifting and carrying things such as groceries, suitcases, and grandchildren	Number of biceps curls that can be competed in 30 seconds holding a hand weight of 5 lbs (2.27 kg) for women; 8 lbs (3.63 kg) for men	Less than 11 curls using correct form for men and women
6-Minute Walk 	To assess aerobic endurance, which is important for such tasks as walking distances, climbing stairs, shopping, and sightseeing	Number of yards/meters that can be walked in 6 minutes around a 50-yard (45.7-meter) course (5 yards = 4.57 meters)	Less than 350 yards for both men and women
2-Minute Step Test 	Alternate aerobic endurance test for use when space limitations or weather prohibits taking the 6-Minute Walk Test	Number of full steps completed in 2 minutes, raising each knee to a point midway between the patella (kneecap) and iliac crest (top hip bone); score is number of times right knee reaches the required height	Less than 65 steps for both men and women
Chair Sit-and-Reach 	To assess lower-body flexibility, which is important for good posture, normal gait patterns, and various mobility tasks such as getting in and out of a bathtub or car	From a sitting position at the front of a chair, with leg extended and hands reaching toward toes, the number of inches (cm) (+ or -) between extended middle fingers and tip of toe	**Men:** Minus (–) 4 inches or more **Women:** Minus (–) 2 inches or more
Back Scratch 	To assess upper-body (shoulder) flexibility, which is important in tasks such as combing hair, putting on overhead garments, and reaching for a seat belt	With one hand reaching over the shoulder and one up the middle of the back, the number of inches (cm) between extended middle fingers (+ or –)	**Men:** Minus (–) 8 inches or more **Women:** Minus (–) 4 inches or more
8-Foot Up-and-Go 	To assess agility and dynamic balance, which are important in tasks that require quick maneuvering such as getting off a bus in time, getting up to attend to something in the kitchen, or getting up to go to the bathroom or to answer the phone	Number of seconds required to get up from a seated position, walk 8 feet (2.44 meters), turn, and return to seated position	More than 9 seconds

Adapted, by permission, from R.E. Rikli and C.J. Jones, 2001, *Senior fitness test manual* (Champaign, IL: Human Kinetics), 61, 63, 65, 67, 69, 71, 72.

Flexibility

Functional Reach

- Number of inches from middle finger to toe. Straight legs.
  > 4" Male > 2" Female

Back Scratch Test

- Number of inches between extended middle fingers
  8" Male > 4" Female

Agility and Balance

8-Foot Up and Go

- Amount of time it takes in seconds to get up and walk 8' and return to start
  > 9 seconds at risk

The "Walkie-Talkie" Test

The "Walkie-Talkie" test is used to measure an older adult's ability to divide attention between two tasks. A conversation is initiated by the instruction in the form of an open-ended question that requires more than a yes or no response from the participant.

A positive score is recorded if the participant stops walking in order to respond to the question posed. A positive score on this test suggests that the person is unable to divide attention between the tasks of walking and talking. For example, an individual who records a positive score would be best to perform activities with a single goal such standing quietly on a foam surface while fixating on a point in space.

Alternatively, if a person is able to continue walking while responding to the question, a negative score is recorded. A person recording a negative score would be able to engage in tasks with multiple task demands. For example, reaching for or catching objects while standing on a foam surface.

Benefits of Exercise

Ten Biomarkers of Vitality

The two principal factors that contribute to the onset and severity of the most chronic degenerative conditions are genetic heritage, which you cannot control; and lifestyle, which you can and should control. The book, BIOMARKERS: The 10 Keys to Prolonging Vitality, by William Evans, Ph.D., and Irwin Rosenberg, M.D., identifies ten (10) "biological aging biomarkers" that can be altered by exercise and good nutrition.

1. **Muscle Mass** – Lean body mass declines with age, accelerating after the age of 45. A muscle that is frequently used and pushed to the limits of its capacity will grow and gain strength, even in elderly people.

2. **Strength** - is lost due to a decrease in muscle cell number, size, and type. It is estimated there is a 30% decrease in total muscle cells between ages 20 and 70. Muscle cell atrophy results in muscles contracting with less force and a decrease in fast twitch muscle fibers. Studies have proven dramatic strength gains for men and women following progressive strength training principles.

Muscle mass and strength are the lead dominoes in the lineup of Biomarkers. As these two dominoes begin to fall so do all the others, which is precisely why rebuilding and maintaining strength is the best way to postpone senescence.

3. **Basal Metabolic Rate** – BMR is the rate at which energy is produced while a body is at rest. A gradual decline of basal metabolic rate is largely a result of reduced muscle mass. Studies have proven that regular exercise combined with strength training helps elevate metabolism.

4. **Body Fat Percentage** – Scientists use the ratio between a person's lean-body mass and fat tissue. The ratio of the good lean body mass to unwanted fat decreases as we age. Exercise and a moderate reduction in caloric intake can keep overall body fat within a healthy range.

5. **Aerobic Capacity** - The body's ability to process oxygen and pump blood through your heart, lungs, and circulatory vessels within a given time. Regular aerobic exercise - the kind that makes you huff and puff – can bring about a large increase in the muscles' oxidative capacity, especially in older people.

A person's aerobic capacity is a good indicator of overall cardiovascular fitness.

6. **Blood Sugar Tolerance** – The ability of our bodies to control blood sugar (glucose) is called glucose tolerance. With advancing age, our bodies lose the ability to use this sugar from our blood streams and the risk of Type II diabetes increases. A well balanced diet and regular exercise will produce a positive effect on blood sugar absorption rates.

7. **Cholesterol/HDL Ratio** – Cholesterol is a fatty substance necessary for body function. This is one Biomarker that exercise alone will not remedy. Your genetic makeup, diet, obesity and smoking can contribute to an imbalance in your blood's lipoproteins.

8. **Blood Pressure** – BP is the gradient pressure of blood on the artery walls (systolic) in combination with the pressure exerted while the heart is at rest and filling with blood (diastolic). With age and or a sedentary lifestyle, a decline in major blood vessel elasticity and thickened vessel walls contributes to increased resting and exercise heart rates. Research shows regular exercise can lower blood pressure.

9. **Bone Density** - Bone density is the amount of bone tissue in a certain volume of bone. There is an age-related decline in the mineral content of bones that leave an older person with a weaker, less dense, more brittle skeleton. A high-calcium diet, weight bearing exercise, and resistance training has proven to significantly help maintain and increase bone density.

10. **Thermoregulation** - Thermoregulation is your body's ability to regulate its internal temperature. Heat related injuries, dehydration and a lower rate of sweating are common among the elderly because the thermoregulatory ability diminishes. Consistent hydration and regular exercise will help your body regulate its internal temperature.

Notes

Benefits of Exercise

According to the U.S. Surgeon General (1996), World Health Organization (1997), and the Robert Wood Johnson Foundation (2001) participation in moderate levels of physical activity is important for successful aging. There is also increasing evidence that regular physical activity helps older adults maintain a high quality of life and independence in their later years. While the physical benefits are perhaps the most noticeable outcome of regular physical activity, there are also significant psychological and sociocultural benefits for older people and society.

Physiological Benefits of Exercise

Glucose Levels - Physical activity helps to regulate blood glucose levels.

Catecholamine Activity - Both adrenalin and noradrenalin levels are stimulated by physical activity.

Improved Sleep - Physical activity has been shown to enhance sleep quality and quantity in individuals of all ages.

Cardiovascular Endurance - In almost all aspects of cardiovascular functioning improvements have been observed following appropriate physical training. With regular cardiovascular exercise, an individual's maximal oxygen consumption (VO_2max) will increase, thus delivering oxygen more efficiently to the working muscles. Recent studies suggest age-related physical activity can result in cardiovascular strength and efficiency even in old age.

Cardiopulmonary Efficiency - Pulmonary efficiency declines with age due to the decreased strength of the thoracic muscles. Not only will regular exercise increase the strength of thoracic muscles it also reduces vertebral degeneration which effects the pulmonary function in older adults. Aerobic exercise will help increase capacity for the process of air exchange between the lungs and outside air (ventilation).

Resistance Training - Resistance training is a type exercise that can reverse the loss of muscle function and deterioration of muscle structure associated with the aging process and can improve bone health, postural stability, energy requirements, decreases body fat mass and increases metabolism.

Flexibility - Exercise that stimulates movements throughout the range of motion (ROM) assisting in increased performance of daily functional activities. It also helps older adults feel better by reducing pain and stiffness.

Balance/Coordination – Balance and mobility activities help prevent or postpone the age associated declines in balance and coordination while enhancing safe mobility for the prevention of falls.

Psychological Benefits of Exercise

General well being - improvements in almost all aspects of psychological functioning have been observed following periods of extended physical activity.

Improved Mental Health - Regular exercise can make an important contribution in the treatment of several mental illnesses, including depression and anxiety.

Improved relaxation

Decreases stress hormones – cortisol

Cognitive Improvements - Regular physical activity may help postpone age-related decline in central nervous system processing speed and improve reaction time.

Motor Control and Performance-Regular activity helps prevent and/or postpone the age-associated declines in both fine and gross motor performance.

Skill Acquisition-New skills can be learned and existing skills refined by all individuals regardless of age.

Social Benefits of Exercise

Formation of Friendship - Participation in physical activity, particularly in small groups and other social environments, stimulates new friendships and acquaintances while assisting in a more active role in society. The connection that often forms among people who do physical activity together makes it more fun.

Promotes healthier self-image and self-esteem.

Improves confidence in social situations.

Currently there are two widely accepted sociological theories of aging.
Activity theory states that people who stay engaged in mental and physical activities of daily living throughout life tend to age in a healthier and happier way.
Continuity theory states that the people who age most successfully have positive health habits, preferences, lifestyles, and relationships from midlife into later life.

As fitness professionals we can enhance successful aging of our clients by creating a fun and social physical activity environment.

Health Challenges

Aging is neither a disease nor an illness. Most so-called age-related bodily changes are affected by lifestyle factors, such as poor diet, smoking and environmental factors (pollution and chemical exposure). It is important to keep in mind that the elderly can do something about their health in later life. For example, a small change in lifestyle such as exercising more or quitting smoking, may lead to a significant change in health status.

Physical disease may display itself as a mental change. It takes a sharp mind and eye to notice change in an elderly person's thinking and recognize physical disease as one of the culprits. All too often elders will be called senile and ignored when their underlying, often treatable illness will go undetected. Research shows that four out of five persons age 65 and over suffer at least one chronic condition and multiple conditions are commonplace. A good rule is for the senior to find a physician who is especially interested in the health care of elderly patients.

The following are descriptions of some common health challenges for the older adult. As fitness professionals these descriptions are to help you be alert to symptoms and behavior. Remember only a physician should diagnose and prescribe.

Cardiovascular Conditions

Coronary artery disease (CAD)
Occurs when the arteries that supply blood to the heart muscle (the coronary arteries) become hardened and narrowed. The arteries harden and narrow due to buildup of a material called plaque on their inner walls. The buildup of plaque is known as atherosclerosis (ATH-er-o-skler-O-sis). As the plaque increases in size, the insides of the coronary arteries get narrower and less blood can flow through them. Eventually, blood flow to the heart muscle is reduced and the heart muscle is not able to receive oxygen it needs.

Hypertension
High blood pressure is a cardiovascular problem for 50% of Americans over age 65. The American Heart Association defined hypertension as systolic blood pressure greater than 120mmHg and diastolic pressure greater than 80mmHg.
Hypertension is the greatest risk factor for a stroke.

Peripheral Artery Disease (PAD)
Arterial obstruction results from restricted blood flow to lower extremities. This is very painful and may lead to development of gangrene and/or eventual amputation.

Congestive Heart Failure
Congestive heart failure is the inability of the heart to provide adequate cardiac output to meet oxygen needs. Shortness of breath, rapid pulse rate, low tolerance to exercise and occasional mental confusion are a result of lack of oxygen in the body.

Cardiovascular Disease Exercise Guidelines

- Avoid exercises that might produce an increase in blood pressure:
  - Avoid isometric muscle contraction
  - Sustained overhead arm work
  - Holding breath and straining (Valsalva)
  - Gripping weights tightly
- Create safe environment with clean air and comfortable temperature
- Use Rate of Perceived Exertion (RPE) Chart

Pulmonary Disorders

Chronic Obstructive Pulmonary Disease (COPD)
Refers to a group of conditions characterized by airway obstruction. Respiratory disorders are ranked among the top ten leading causes of death in older people.

Asthma
Asthma is a reversible obstructive airway disease in which airways become narrow. Causes of asthma include everything from allergens to stress with many people suffering from the combination of the two.

Exercise Induced Asthma (EIA)
Exercise Induced Asthma is a condition of respiratory difficulty that is triggered by aerobic exercise lasting several minutes. EIA can be induced or made worse by exercise in a cold dry climate. People with EIA should always carry their inhalers.

Bronchitis
Bronchitis is an inflammation of the bronchial passageway to the lungs. Exercise cannot reverse the damage of COPD; however, it can reduce disability by improving endurance, breathing efficiency and dyspnea tolerance (breathlessness).

Emphysema
Emphysema is the destruction of aveoli lung tissue where the exchange of oxygen and carbon dioxide takes place.

Respiratory Disease Exercise Guidelines
Encourage students to:

- Follow physicians directives
- Bring their inhaler or oxygen to work session
- Arrive early and begin a longer, slower, progressive warm-up
- Exhale with a steady blow, rather than forcefully
- Use the Dyspnea Scale for perceived exertion intensity measurement to avoid an unexpected respiratory episode

Modified Dyspnea Scale (Breathing)

Scale	Severity
0	Nothing At All
1	Very Slight
2	
3	Slight
4	
5	Moderate
6	
7	Severe
8	
9	Very Severe
10	Maximum

This material prepared by Mercy Homecare & Hospice in Clinton, is provided by the Iowa Foundation for Medical Care, the Medicare Quality Improvement Organization for Iowa, under contract with the Centers for Medicare & Medicaid Services (CMS), an agency of the U.S. Department of Health and Human Services. The contents presented do not necessarily reflect CMS policy. 8SoW-IA-HH-3/06-013

Musculoskeletal Diseases

Osteoarthritis
Osteoarthritis is the most common type of arthritis, especially among older people. It is a degenerative joint disease that mostly affects the cartilage. Osteoarthritis affects approximately 50% of all adults older than 65 years and 80% of those older than 75. This form of arthritis typically affects the weight bearing joints, thereby reducing their ability to adequately transmit or absorb the forces associated with impact. The joint pain that accompanies osteoarthritis invariably leads to higher levels of inactivity and reduced strength, range of motion and cardiovascular endurance. Although exercise has been shown to be an effective intervention, it will not cure the disease. Land-based programming consisting of aerobic conditioning, resistance training and flexibility exercises has resulted in moderate improvement in function and aquatic-based exercise programs have also produced moderate improvements in strength and flexibility, particularly among older adults with moderate to severe joint damage.

Rheumatoid Arthritis
Rheumatoid arthritis is a whole-body autoimmune disease, in which the body's own immune system attacks healthy tissue. The joint defamatory associated with rheumatoid arthritis (RA) are often more severe than osteoarthritis and affect the entire joint. The systemic nature of the disease also produces symptoms that include increased fatigue, sleep disorders, and anemia.

Osteoporosis
Osteoporosis, or porous bone, is a metabolic bone disease characterized by low bone mass and structural deterioration of bone tissue, leading to bone fragility and an increased susceptibility to fractures of the hip, spine, and wrist.

Joint Replacement
Joint replacement is one option when the chronic pain cannot be controlled through medication, assistive aids, or exercise and when the pain and decreased range of motion in the affected joint interfere with the person's ability to ambulate. The arthritic or damaged joint is removed and replaced with an artificial joint called prosthesis. The total number of hip and knee replacements performed in the US rose nearly 50% between 1999 and 2003, and now approaches 800,000 surgeries a year.

Musculoskeletal Disease Exercise Guidelines

Those with osteoarthritis:

- Perform better in morning
- Need to improve awareness of postural alignment
- Focus on proper body mechanics when performing dynamic activities
- Require improved strength and flexibility
- Must emphasize warm-up and cool-down for joint stiffness
- Will need to keep exercise intensity below the discomfort threshold

Those with osteoarthritis:

- Eliminate exercises where the plane of motion is irritating to the joint
- May need a chair to aid balance
- Re-evaluate program if pain or fatigue is experienced during or after exercise
- Require smooth, repetitive movements in all activities
- Benefit by cross-training to avoid overuse of certain joints

In addition to the above guidelines those with rheumatoid arthritis:

- Perform better after several hours of awakening
- Should not exercise during a flare-up

Osteoporosis

- Should avoid jarring and high-load exercises
- Weight-bearing exercise are strongly recommended
- Use resistance exercises, both isotonic and isometric
- Avoid any exercises that require forward flexion of the spine combined with either stooping or spinal rotation (e.g., lifting weighted objects from low levels, toe touching, spine twists)
- Emphasize exercises that require spinal extension (e.g., standing backward bends, isometric spinal extension, prone spinal extension exercises for individuals to can tolerate lying on the floor).
- Use upper body resistance to induce weight-bearing stress on the spine and wrists beginning with a low level of resistance and increase slowly
- Standing weight bearing activities

Hip Precautions

- Do not let knee or ankle cross midline (crossed legs)
- Avoid hip flexion more than 90 degrees

Notes

Metabolic Diseases

Diabetes

Diabetes is a metabolic disorder that results in impaired glucose metabolism.
People who have diabetes can't properly make or use insulin, a chemical that your body needs. Insulin helps change sugar and other foods into glucose, which fuels your body. There are two major forms of diabetes: Type I is insulin-dependant and Type II is non-insulin dependant. They have similar consequences but people with Type I usually experience an earlier onset.

Exercise is important for diabetes treatment and has a significant impact on body weight, glycemic control, and cardiac risk reduction.

Obesity

Obesity is a condition where the natural energy reserve, stored in the fatty tissue in humans is increased to a point where it is thought to be a significant risk factor for certain health conditions as well as increased mortality.

Metabolic Disease Exercise Guidelines

Diabetes

- Participants should drink water before, during, and after exercise
- Participants should plan the insulin injection in conjunction with the exercise session.
- Participants should wear protective footwear
- Avoid extreme heat and cold environments
- Exercise at a steady pace, about 50-65% of VO_2 max or HRR
- Avoid interval workouts
- Exercise with a buddy –in case hypoglycemia or hyperglycemia occurs
- Have easily digestible carbohydrates on hand in case of a drop in glucose

Obesity

- Encourage a complete program of diet and exercise for weight loss
- Place importance on health as opposed to appearance
- Exercise 5 days/week
- Exercise for longer duration with less intensity

Neurological Conditions

Parkinson's Disease (PD)
Parkinson's disease is a progressive neurological disorder that occurs most commonly in middle age and the elderly. Tremor or involuntary movement is a primary feature of Parkinson's disease. Another symptom is an abnormal gait pattern of increasingly short but quicker steps. This is referred to as festinating gait. Postural instability or a stooped, flexed posture is another common symptom of Parkinson's disease.

PD Exercise Guidelines

- Slow controlled movements through various ROM while sitting, walking, standing and lying
- Have participant use a mixture of support bases
- Emphasize plumbline posture
- Aerobic activity should be performed in the seated position

Alzheimer's Disease (AD)
Alzheimer's disease is a progressive neurological disorder resulting in impaired mental functioning. Individuals with AD often experience severe declines in cognition and may also experience moderate to severe balance impairments. Due to behavioral changes that may cause the participant to become agitated in the exercise setting, these clients may not be appropriate for the group exercise class.

AD Exercise Guidelines

- Keep exercise routine structured
- Make the exercises simple and straightforward
- Explain each movement clearly and frequently
- Slow down all activities

Why Many Older Adults Fall

Falls are common among older adults, often leading to physical injury and psychological trauma. At the national level, falls among the elderly also lead to high rates of morbidity and mortality. Falls are the second leading cause of accidental death in the United States. Seventy-five percent of these falls occur in the older adult population. One third of the older adults who fall, sustain a hip fracture and are hospitalized, die within a year. Falls not only affect the quality of life of the individual but also influence the caregiver and family. Health care costs for falls and rehabilitation average 70 billion dollars a year! Even if the fall does not result in hospitalization, fear of falling becomes a major factor. Fear leads to inactivity and loss of confidence. This, in turn produces a cycle of fear, loss of self-confidence, and inactivity, thereby decreasing the quality of life and increasing the risk of falls.

Many possible causes have been attributed to the higher than average fall rates among older adults, and a number of fall related risk factors have been identified over the past decade. As gloomy as these statistics may appear at first glance, the good news is that many falls are potentially preventable. Educational awareness programs often combined with home safety inspections and modifications and exercise-based interventions have all been shown to positively affect fall incident rates among older adults. First, not all older adults fall for the same reason in fact, a multitude of reasons and factors contribute to the increased fall rate observed among older adults. These factors may be due to age or disease related changes occurring within the older adult (intrinsic risk factors). Or to factors that are more external in nature, such as the presence of environmental hazards in the home or community that elevate the risk for falls during routine activities associated with daily living (extrinsic risk factors).

The presence of certain types of medical conditions such as Parkinson's disease, stroke, arthritis and dementia have also been shown to be moderately to strongly predictive of increased falls. The increased risk is likely due, at least in part, to the negative effect these diseases have on the various dimensions of balance and mobility, as well as on cognition.

In addition to certain medical conditions being strongly associated with increased fall risk among the elderly, both the type and number of medications prescribed to older adults contribute to heightened fall risk. Specifically, it has been demonstrated that older adults who are taking more than four prescription medications are four times more likely to sustain a fall than their peers who are taking fewer prescription medications. Side effects such as dizziness, reduced alertness, weakness, fatigue and postural hypotension that result from taking these types of medications are all likely contributors to heightened fall risks. Finally, other intrinsic risk facts such as impaired visual acuity, foot problems (e.g., loss of sensation, bone deformities) and the presence of depression or anxiety are also known risk factors for falls.

Although your primary focus as an instructor is to address the intrinsic risk factors that contribute to increased fall rates among older adults, you may have several opportunities to provide invaluable education about some of the extrinsic risk factors such as environmental hazards and risk taking behaviors. Having clients complete a home safety checklist as a homework assignment will also make them more aware of potential hazards in and around the home and perhaps lead them to some changes that are likely to reduce their chances of falling. One of the most comprehensive websites addressing home safety and home modification issues is the National Resource Center on Supportive Housing and Home Modification. You will be able to download a home safety checklist that can be distributed to your class participants when they first join the program. The web address is www.homemods.org.

The Ageing Eye

By Dr. Anthony Sala

Vision is an integral part of the neurosensory system. Vision and balance are linked through the complex circuitry of the central nervous system. Poor vision can affect one's depth perception, spatial relationships and overall coordination. As people age, they inevitably experience vision changes which can profoundly effect balance and coordination.

Seniors are the fastest growing segment of the population. As baby boomers are reaching retirement at an unprecedented pace, visual impairment is on the rise. Early detection and treatment of ocular disease is the single most important factor in preventing vision loss. It is therefore important to understand diseases that affect the aging eye.

Cataracts

Cataracts are common among the elderly and occur when the clear lens of the eye loses its transparency. Light and images can no longer pass through, causing vision to become cloudy. There is no single cause and many factors contribute to cataract formation. Surgical removal of the lens is the most effective treatment and restores vision by replacing the cloudy lens with a lens implant, which provides focusing power for the eye.

Diabetes Mellitus

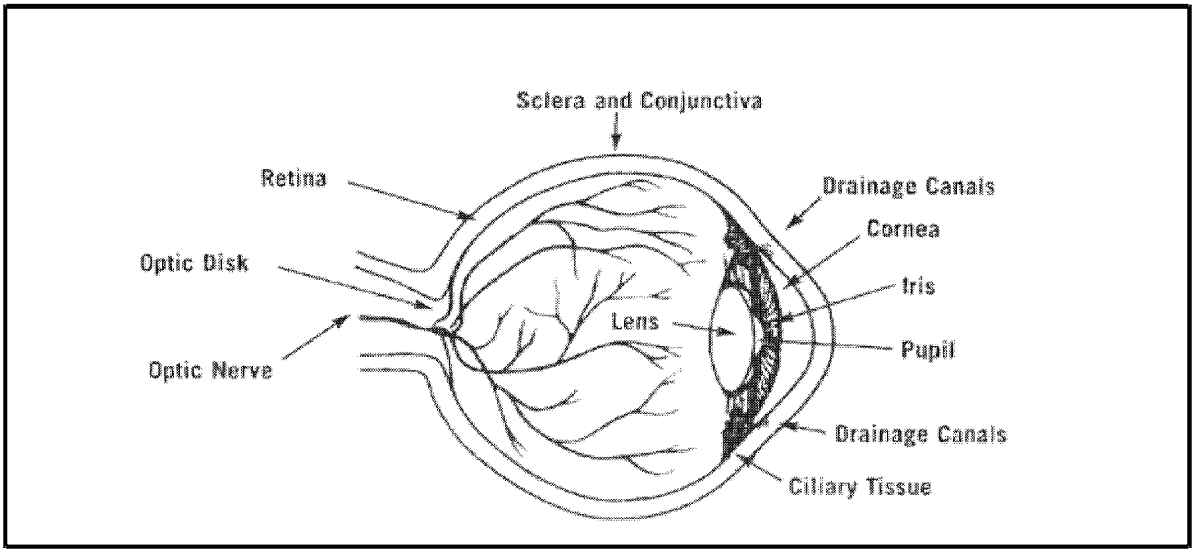
Diabetes (Elevated blood sugar) is becoming an epidemic in American society and is the leading cause of blindness in the United States. Consistently elevated blood sugar causes irreversible damage to the small blood vessels to the retina of the eye. Bleeding in the retina causes vision loss however laser treatment can stabilize the disease process. It would be preferable, however, to prevent the damage in the first place. Tight sugar control reduces the risk of blood vessel damage and improves cardiovascular health in diabetics. Proper diet and exercise are paramount in the prevention of diabetic complications. Borderline diabetics can control sugar levels with diet and exercise alone. Blindness from diabetes can be prevented by early detection and therefore all diabetics should have a comprehensive eye exam annually.

Age Related Macular Degeneration

Age related macular degeneration (AMD) is also a major cause of severe vision loss in the elderly. The macula is the area of the retina that is responsible for central vision. Central vision is what you see when you look straight ahead or when you read. With age, the neurosensory retina degenerates and the retina can no longer process a clear image. This damage is irreversible.

Risk factors for AMD include age, genetics, smoking and ultraviolet light rays from the sun. Preventative measures include smoking cessation and the use of sunglasses. Dietary considerations have also become important in the prevention of AMD. The National Institute of Health recently conducted a multi-center study (AREDS) and reports good evidence that antioxidant vitamins play a role in reducing the risk of severe vision loss

from macular degeneration, especially in those who are genetically predisposed to the condition.



Glaucoma

The two main types of glaucoma are primary open angle glaucoma (POAG), and angle closure glaucoma. These are marked by an increase of intraocular pressure (IOP), or pressure inside the eye.

Primary Open Angle Glaucoma is the most common form of glaucoma, affecting about three million Americans. It happens when the eye's drainage canals become clogged over time. The inner eye pressure (also called intraocular pressure or IOP) rises because the correct amount of fluid can't drain out of the eye. With open angle glaucoma, the entrances to the drainage canals are clear and should be working correctly. The clogging problem occurs further inside the drainage canals, similar to a clogged pipe below the drain in a sink. See: http://www.glaucoma.org/learn/what_is_glaucom.html

Glaucoma, another major cause of visual impairment, is also preventable with early detection. The disease often begins after age 40. Excessive fluid causes increased pressure in the eye, which eventually damages the optic nerve. It is an insidious, symptom free disease, which characteristically causes loss of peripheral (side) vision that progress to total loss of vision in the late stages of the disease. Unfortunately, damage is usually not detected until some vision is irreversibly lost. If eye pressure is lowered before damage to the optic nerve occurs, then vision loss from glaucoma can be lessened or even prevented.

Summary

In summary, many conditions affect the aging eye and can cause profound impairment in visual function. Early detection is key to prevention. Today's seniors are more active than ever; it is key that they understanding that they may have ocular diseases that can have a profound impact on their Activities of Daily Living (ADL). Simple preventative measures such as ultra violet protective sunglasses; proper nutrition and regular exercise can have a positive impact leading to better vision with age and improved quality of life.

Balance and Mobility

What is balance? Balance can be defined as the process by which we control the body's center of mass (COM) with respect to the base of support, whether it is stationary or moving. The COM is the balance point or location about which all the segments of the body are evenly distributed. The COM is also referred to as the center of gravity (COG) because the gravitational force due to the weight of the body also acts through this point. When standing upright in space our primary goal is to maintain the COM within the confines of the base of support. This aspect of balance is often referred to as static balance. When we are walking, we are continuously moving the COM beyond the base of support and re-establishing a new base of support with each step taken. This is often referred to dynamic balance.

Good posture is critical to good balance and refers to the biomechanical alignment of each of our body parts as well as the orientation of the body to the environment. When we are standing quietly in space, our goal is to align each of the body parts vertically and thereby extend the least amount of internal energy necessary to maintain an upright and stable position relative to gravity. To counteract the forces of gravity, a number of muscles are active during quiet standing. These include the soleus and gastrocnemius muscles, the tibialis anterior (when the body sways in a backward direction), the gluteus medius and tensor fasciae latae, the iliopsoas, the erector spinae muscles in the thoracic region of the trunk, and the abdominal muscles.

Anticipatory posture control is the term used to describe those actions that can be planned in advance. Anticipatory posture control is used to avoid obstacles in our path as we walk to the stove or run through the forest. It also assists us in adapting our gait pattern as we move between different types of surfaces (e.g., firm to compliant or moving surfaces, wide to narrow surfaces).

Reactive postural control is used to describe those situations that cannot be planned in advance of action being required. Reactive postural control becomes necessary when we have to respond quickly to an event that we did not expect (e.g., stepping in an unseen hole, being bumped in a crowd).

How far older adults are willing or able to lean in any direction without having to change their base of support or find it necessary to take a step constitutes their stability limits or sway envelope. This sway envelope, as it is called, is often much smaller among older adults who are beginning to experience balance problems. Reduced or asymmetric limits of stability may be the result of such factors as musculoskeletal abnormalities caused by weakness in the muscles of the ankle joint or reduced range of motion about the ankles, neurological trauma (i.e., stroke, Parkinson's Disease, Multiple Sclerosis), or a fear of falling. A significant reduction in those stability limits, particularly in the lateral and backward direction, will place the older adult at a heightened risk for falling. Any small disruption to standing balance in these older adults will quickly move them beyond their limits of stability and require that they reach for something close by or take one or more steps to prevent a fall.

Finally, mobility has been defined as the ability to move oneself independently and safely from one place to another. Adequate levels of mobility are required for many different types of activities we perform in our daily lives. These may include transfers (e.g., rising from a chair, climbing or descending stairs), walking or running, and other types of recreational activities (e.g., gardening, sports, dancing).

Multiple systems contribute to our ability to maintain balance in standing and moving environments. Three sensory systems are particularly important for good postural control and largely determine how well we perceive what needs to be done based on the information presented to us. These are the visual, somatosensory, and vestibular systems. The visual system responds to light, the somatosensory system is sensitive to touch, vibration and pain, and the vestibular system responds to movements of the head.

We depend most heavily on the visual system for information about our movement and where we are in space. In the absence of vision, the somatosensory system becomes our primary source of sensory information for maintaining upright balance and moving about in dark environments. The somatosensory system provides us with information about the spatial location and movement of our bodies relative to the support surface beneath us. It also informs us about the position and movement of our body segments relative to each other. This latter information is provided by important proprioceptors located in the muscles and joints throughout the body (e.g., muscle spindles, joint receptors).

The sensory system that provides us with important balance information is the vestibular system. This delicate balance mechanism is housed in the inner ear and is activated when we move our head. It also works in conjunction with the visual systems to help us determine whether the world or we are moving when we turn quickly in space.

Once the information derived from each of the three sensory systems has been organized and integrated by the central nervous system, the motor system and the musculoskeletal system are responsible for generating the appropriate action plan. Action is accomplished as the result of the nervous system constraining groups of muscles throughout the body to act together. These are referred to as muscle response synergies and are responsible for the many coordinated actions we are able to produce in our daily lives.

Finally, the cognitive system plays an important role in helping us to interpret the incoming sensations and plan the motor response. This system, which encompasses the processes of attention, memory storage, and intelligence, provide us with the ability to adapt our actions in response to changing demands. Any impairment in cognition or attention will severely compromise our ability to accurately perceive what type of response is needed and then effectively implement the response.

Older adults with cognitive impairment experience a more rapid decline in function following an acute illness or hospitalization, but they also experience many more falls than their non-cognitively impaired peers.

Age Associated Changes

Unfortunately, changes in the body systems that contribute to balance and mobility are an inevitable consequence of aging. When older adults are compared to younger adults across a variety of motor tasks, significant differences are evident in the speed with which older adults initiate and execute movements, particularly when the number of response choices available and the complexity of the movement to be performed increase.

Vision

The age-associated changes in the visual system include reduced visual acuity, narrowing of the field of vision, decreased depth perception and loss of contrast sensitivity. Reduced visual acuity can result from eye diseases, such as macular degeneration or cataracts, which have been associated with increasing fall rates. Narrowing of the visual field makes it increasingly difficult to clearly discern the edges and shapes of objects in the environment. Decreased depth perception affects an older adult's ability to safely negotiate obstacles and climb and descend stairs. Changes in contrast sensitivity make it more difficult to detect objects against a background or rapidly adjust to changes in lighting when moving from a brightly lit room into a dark corridor.

Somatosensory System

Age associated changes in the somatosensory (i.e., touch and proprioception) system have a direct impact on postural stability and the ability to restore upright control following a loss of balance. A reduced ability to feel the quality of contact between themselves and the surface beneath them has been well documented among older adults. Age related changes in muscle spindle activity primarily and joint receptor activity to a lesser degree are also believed to influence postural control. As mentioned earlier, proprioceptors found within the muscles and joints provide us the information relative to the static and changing position of our joints and are therefore important for optimal balance and mobility.

Vestibular System

A gradual decreasing density of hair cells within the vestibular system begins as early as age 30 and progresses through older adulthood. These hair cells serve as biological sensors of head motion. Therefore, any significant reduction in their number reduces our sensitivity to head movements and will result in increased sway. Older adults who are already experiencing balance problems may often comment on how much they dislike going into crowded malls or grocery stores because they feel increasingly unsteady due to people constantly moving in and out of their visual field. Many older adults compensate for this unsteadiness by pushing a shopping cart throughout the store to help stabilize them better, whereas others simply avoid these types of sensory environments. Older adults with dysfunctional vestibular systems may also frequently report that they are experiencing visual problems, feel dizzy or unsteady.

Motor System

An increase in the time required to plan and then execute an appropriate motor response appears to be the greatest consequence of the age-associated changes in the motor system. Inappropriate dealing of the response strategy is also observed in older adults. We see a tendency to over or under respond particularly when they are perturbed or disrupted. They might respond by immediately taking a step, even though the loss of balance was small, or might under respond to a larger perturbation by not stepping at all. Finally, older adults appear to lose their ability to anticipate changes in the environment or the demands associated with a task as they age. This age-associated change will be most evident when older adults are asked to start or stop quickly; transitioning between different surfaces (i.e., firm to compliant surface), or negotiates obstacles in their environment. Instead of a smooth and continuous stepping action, you are more likely to see a marked slowing in gait speed as an obstacle is approached and a brief pause before the stepping action is initiated.

Musculoskeletal System

Age associated changes in the musculoskeletal component of the motor system result in longer movement execution times. Decreases in muscular strength, particularly in the lower body, have been well documented. Muscle endurance decreases with age resulting in an earlier onset of fatigue during activities that will place an older adult at heightened risk for a loss of balance or a fall. Muscle power also decreases with age and has the greatest consequence for the performance of basic activities such as walking, climbing stairs, or rising from a chair because all of these activities require muscle power for their successful completion. Certainly, a decline in muscle power is an important contributing factor to an older adults inability to respond quickly and effectively to an unexpected loss of balance. The loss of muscle strength, combined with structural changes occurring within the joints, also leads to a reduction in overall flexibility that can adversely effect postural alignment as well as the quality of an older adults movement.

Cognitive System

At least 10% of all people over 65 years of age and 50% of those over 80 have some form of cognitive impairment. Older adults find it particularly difficult to store and manipulate information simultaneously in working memory when a second task that also demands cognition is presented. This requirement to divide attention between tasks, particularly when one of the tasks involved is balance is more problematic for healthy older adults than for their younger counterparts.

Despite the many age related changes occurring in the multiple systems that contribute to good balance and mobility, there is growing evidence to suggest that we can reverse, or at least slow, the rate of decline occurring in some or all of these systems. Interventions that target the source(s) of balance related problems and repeatedly expose older adults to changing task demands and environmental constraints have been particularly effective.

Screening and Assessment for Balance and Mobility

Screening and assessment are important:

1. To facilitate the early identification of changes in postural stability and mobility
2. To help develop an appropriate exercise plan
3. To guide participants selection of short and long term goals and provide motivation to meet the goals
4. To document the effectiveness and progress of the program

The Fullerton and Berg Balance Scale can be used to identify older adults who may need intervention and possibly be used as a tool for identifying those who are more likely to sustain a fall. The Fullerton Advanced Balance (FAB) Scale is a test to measure multiple dimension of balance in different sensory environments. The test was developed for higher functioning older adults.

The FAB Scale comprises 10 items that are scored using a 0 to 4 scale. The highest score possible is 40 points.

An alternative measure is the Berg Balance Scale (BBS) a test that simulates activities likely to be encountered by older adults in their daily lives (e.g., transfers, objects retrieval, turning). The BBS is recommended when assessing low-functioning older adults. A modified version of the test, which eliminates the first five items, can be used with higher functioning older adults.

Fullerton Advanced Balance (FAB) Scale

Test Item	Dimension of Balance Measured
1. Stand with feet together, eye closed	Sensory organization (use of somatosensory inputs)
2. Reach forward to retrieve object	Forward limits of stability
3. Turning in a full circle to right	Sensory organization, dynamic balance
4. Stepping up and over a bench	Anticipatory postural control, dynamic balance
5. Tandem Walk	Dynamic balance on reduced base of support
6. Standing on foam, eyes open	Static balance on reduces base of support
7. Standing on foam, eyes closed	Sensory organization (use of vestibular inputs)
8. Two-foot jump for distance	Dynamic balance, whole-body motor coordination
9. Walk with head turns	Sensory organization (visual-vestibular inputs)
10. Unexpected backward release	Reactive postural control

Posture and Walking

Walking into Health

By now, there are dozens of studies confirming the many health benefits associated with walking, weight control, reducing blood pressure, fighting stress and depression which raise the odds of staying healthy.

As humans progressed into the neo-mammalian phase (fully upright), our bodies have developed in such a way that walking and movement are essential to health. As they say, form follows function. Walking requires the integrated use of our arms, legs and torso. Hundreds of calories are utilized by walking. Walking briskly not only results in the burning of calories, it increases the enzyme activities and other metabolic activities. Studies have shown that walking as little as two miles per day may result in increased calorie consumption for up to 12 hours post movement.

Benefits of Walking

Metabolism:

- Increased metabolism doesn't only mean using more calories. It means that your body is more likely to draw in nutrients from your foods and supplements. It affects peristalsis, metabolism, assimilation and elimination. It also means that your desire to drink more water will increase, thus supporting all of your bodily systems of detoxification and elimination while improving digestion.

Circulation of vital fluids:

- Walking results in rhythmic contraction and relaxation of muscles as well as rhythmic pressure changes in body cavities, thus improved circulation of blood, lymph and even synovial fluid (the lubricating fluid made in joints). Because much of your immune system travels throughout your body via blood and lymphatic fluids, improving your circulation through daily walking can improve immune function and health in general.

Steady walking or walking at a consistent effort synchronizes breathing with movement causing wavelike pulsations throughout the body cavities. Cerebral spinal fluid is the special fluid that bathes and nourishes your nervous system. With the increased inhalation/exhalation cycles, this vital fluid is assisted in its movement. Inhalation lengthens the spine sending cerebral spinal fluid flow back into the brain while exhalation achieves the opposite.

Mobilization of internal organs:

- The rhythmic pressure changes produced by walking also massages your internal organs. When people become sedentary, they lose the natural visceral mobilization provided by functional exercise. Couple this loss of needed activity with the daily habits of modern man and you have constipation and a host of other reasons for the body to perform poorly. Consider that in the United States, laxatives are the third best-selling drugstore item, and most of the laxative customers would look and feel much better by merely walking as little as two miles a day and drinking daily an ounce of water for each two pounds of their body weight.

Notes

Home Activity

Steps count!
One study recommended ten thousand steps per day (five miles) as the amount needed to stay healthy and fight off disease. Most people average three to five thousand steps per day, or half of the daily requirement to stay healthy. Wearing a pedometer or a step counter will track daily activity. A typical thirty-minute walk or movement class would accomplish about half of the daily requirement, which is why the standard sport fitness now calls for 30 minutes of activity most days of the week. The rest of your steps per day would be in your ADL (activities of daily living) such as walking up and down stairs, etc.

De-conditioned seniors should start with a two-minute walk test.
Simply walk while timing yourself for two minutes, no more.

Ask yourself the following:
"How did that feel? Do I feel winded? Did I want to stop?"

Eventually, the two minutes will become five minutes and then 10. If you can work up to at least three 10-minute brisk walks per day, you will improve your fitness level.

The next walk test is the half-mile test.
Measure a half-mile distance, for example, a quarter mile track would be two times around that track. Time yourself at the end of the walk. Note your RPE. Re-test yourself periodically to see if you are improving your fitness level. When you can cover the same route in less time and with a lower RPE, it means that you have improved your physical fitness. This monitoring is especially helpful to keep you aware of your activity level and motivated to keep improving.

Check Your Walking Pattern:

Here is a quick and easy way to check the quality of your walking pattern. All you need is a full-length mirror. Walk directly toward the mirror and observe the following:

- Your knees are pointing forward
- Your hips are level
- Your arms swing rhythmically as you walk
- Both sides of your body are symmetrical (arm swing, step length, etc.)
- You are walking tall (e.g., head erect and ears are directly above your shoulders)

Walk alongside a wall mirror (a full-length mirror is helpful for this activity) and observe the following:

- Your heel makes contact with the floor first with each step
- You can feel the pressure roll up to the toes as you push off from the floor
- Your knee is almost fully extended before your heel contacts the floor
- Your steps are of equal length
- Your ears are directly above your shoulders and your body is upright

Ergonomics: What your mother always knew

By Brent Wyman, D.C.

"Stand-up straight, pull back your shoulders, tuck in your chin, and suck in that stomach." Commands heard by any child from mother or petty officer from a drill sergeant. But what was she saying? She knew the physical world works in predictable patterns, and by focusing on good posture while it is easy, greater problems could be prevented in later life.

Ergonomics is the relation of man to his work, emphasizing the anatomic, physiologic, psycho logic, and mechanical principles affecting the efficient use of human energy. (1) It is vitally important to work with our bodies when performing all our *A*ctivities of *D*aily *L*iving (A.D.L.s). By envisioning how forces affect us, such as gravity pulling down through our core/spinal column and our muscles/pulleys attached to our bony frame/skeletal system, we can balance our loads better and prevent injury and postural distortions.

Here are some tips to incorporate ergonomics into your life: when walking consciously point your thumbs forward, or more outward. This rotates your arms, which retracts your shoulders, which pulls your head up (as it should be over your shoulders), and allows you to use your diaphragm efficiently with deep belly inspirations, thus getting the maximum oxygen turnover to your muscles. When lifting a load of course use your legs and keep the load close to your body. Use a cart when available and pushing versus pulling is a more body friendly means to accomplish a task. For repetitive or mundane tasks try using both sides of the body equally. Make an effort to use your non-dominant hand at least five times a day at such tasks as brushing your teeth, reaching for the refrigerator door, etc. This allows you to contract your fine motor muscles on the non-dominate side of your body and promotes better balance. When sitting a harder chair is better, and all your body should be at 90° (they're called right angles for a reason). Againhead over the shoulders, looking straight ahead, you can use desk easels to prop books up while reading to prevent forward head tilt. If typing, elbows should be at 90° slightly rested on the desk. A pillow or rolled up towel placed at the small of the back will support the lumbar spine. The thighs should be 90° to the hips as well as the knees being 90° with the feet flat on the floor. Take a break every 20 minutes to get up, change posture and stretch.

What if you haven't given your posture much thought lately and you need some help to help to obtain increased benefits from these healthy habits? There is help available. The American Academy of Spine Physicians recommends having regular spinal check-ups by a Doctor of Chiropractic for better spinal health. (2) Aligning the bones of your spine will balance your posture and promote the function of spinal curves that not only permit turning and bending movements but allow the spine to support 10 times more weight than if it were straight. (3) And the benefits of chiropractic care have been known medically as Dr. Winsor, M.D., in 1921 determined a direct connection between minor curvatures of the spine and diseased organs as the nerve supply to these organs had been compromised. (4) Recent bodies of evidence have even shed light on anti-aging properties of long-term chiropractic care, as these patients had higher levels of serum thiol, a primary antioxidant, needed for DNA repair. (5)

Regardless of what stage of life you are classified as, promoting healthy postural habits will only benefit your overall health potential. Remember age is just a number; it's what's inside that counts. Any physical engineer will tell you "structure predicts function", so keep your structure in alignment and your body will function as it should.

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Nutrition

Although it is not our job as fitness instructors to designate any particular dietary plan we may want to be aware of any differences in needs for the older adult as there is a direct correlation between fitness and nutrition. We may also want to encourage our clients to ask for directives from their healthcare practitioners. Jack LaLanne, granddad of fitness, who at 91 is still going strong, has several famous phrases. One of them is,

"Exercise is king, Nutrition is queen. Put them together, and you've got a kingdom."

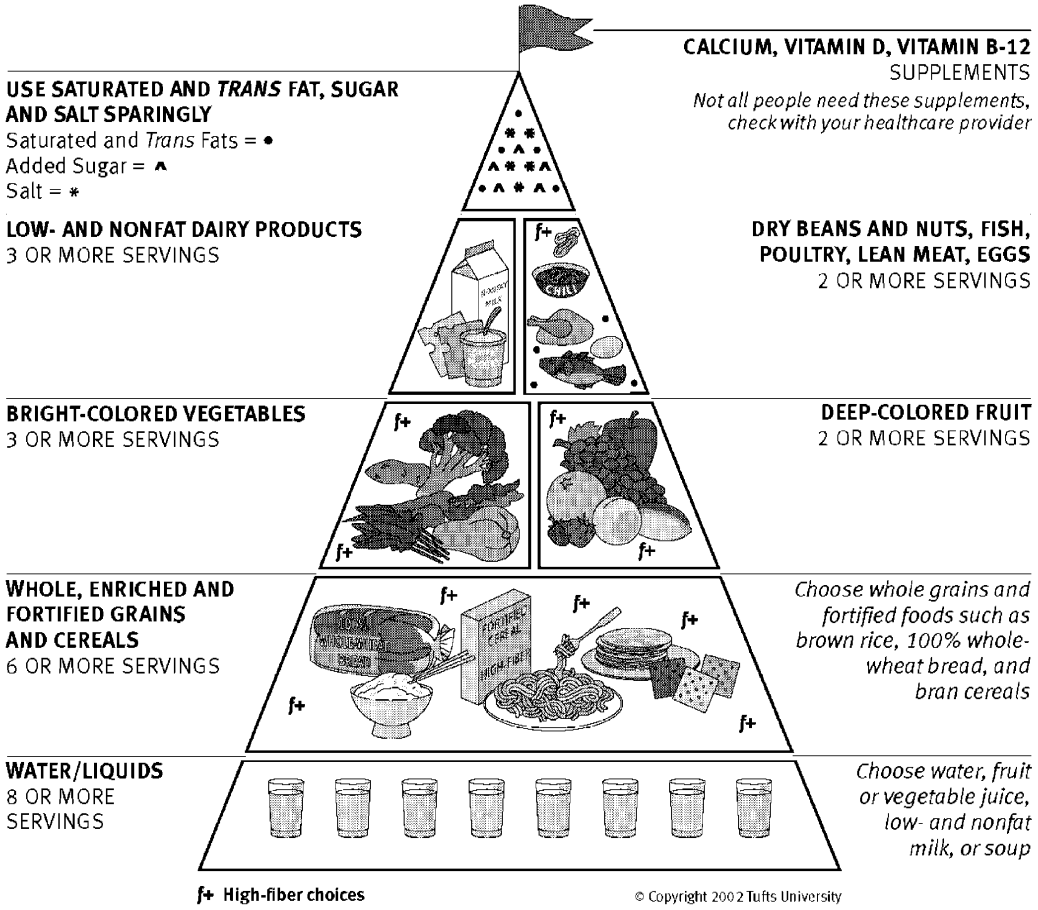
One might think that younger and older active people would have vastly different dietary needs, but in actuality, their needs are quite similar. The greatest difference is in the amount of food needed and the decreased absorption of certain nutrients that occur with aging.

Sarcopenia (loss of muscle mass) associated with aging decreases caloric need but increases need for dietary protein. Studies continue to show that aerobic activity along with a strength-training program can slow the rate of lean muscle tissue loss, thereby slowing the decline in basal metabolism.

Appetite, which also wanes with aging, may be stimulated through regular physical activity. This field of research is very young and more research is needed to learn about the specific nutrient requirements of aging. The primary differences relate to decreased nutrient absorption of vitamins (B12, B6 and D), increased protein and calcium needs and ample fluid intake. Therefore, emphasis should be on consuming nutrient-dense foods with possible supplementation of calcium and vitamins along with adequate protein and fluid intake. Apart from these specific issues, nutrient recommendations should remain the same for a healthy active aging person as for the younger adult.

The USDA, developed as a visual representation for a healthy diet, the Food Guide Pyramid for people over the age of two. However, Tufts University researchers believe that seniors have specific nutrient needs not addressed in the "one size fits all" food guide pyramid. In 1992 they developed the Tufts Food Pyramid, it has a smaller caloric intake (1200-1600 calories per day) to focus on the reduced need for calories among seniors. With the smaller intake consumers 70+ have to make every calorie count in order to get enough of the essential nutrients. The 70+ pyramid emphases whole grain foods, a variety of colored fruits and vegetables, low fat dairy and lean meats, fish and poultry.

Food Guide Pyramid for Older Adults

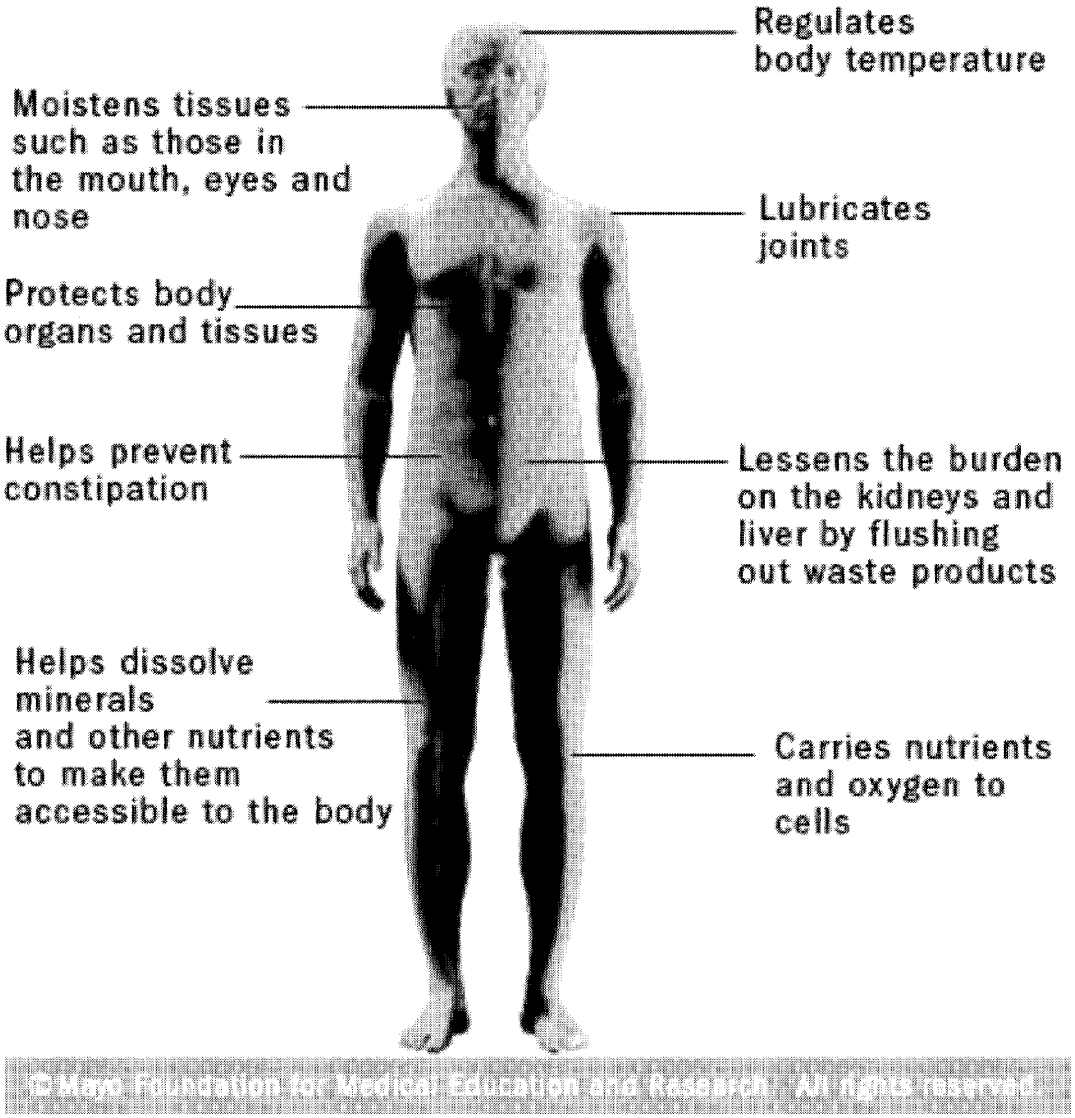


For additional copies visit us on the web at **http://nutrition.tufts.edu**

Grain, fruits and vegetable tiers of the pyramid highlight the importance of fiber, especially important for seniors but applicable to all adults. A flag at the peak illustrates the need for dietary supplements of calcium B12 and D. Seniors do not absorb B12 properly and since sunlight is our best source of vitamin D some outdoor exposure when possible is recommended. While not all seniors may need supplements this should be discussed with their healthcare provider, especially in light of certain supplements interacting with medications. It is very important to note that the base of the senior pyramid emphasizes consuming eight to 10 glasses of water each day.

Functions of water in the body

Water is one of our most critical nutrients. It is the only one that we cannot do without for more than a few days and is involved in almost every process that is essential for life. Water makes up about 60% of your body weight. Your blood is 90% water, the brain is 85% water, muscle is 72% water, skin is 71%, bone is 30% and fat is 15%.



You need to drink eight glasses (two quarts) of water per day just to provide the cellular moisture you need and to help your kidneys filter your blood. When you exercise, you need substantially more fluid intake to balance your fluid loss. That means 14 to 22 ounces two hours before exercise and six to 12 ounces every 12 to 15 minutes, depending on your tolerance. Water transports vitamins and minerals throughout your body. Water assists in muscle contraction, makes digestion possible, serves as a shock absorber, maintains your body temperature as it eliminates heat, and rids the body of waste. So

when you do not get enough water everything dries out and nothing functions as well as it should. Your cells are not much different than that of your houseplant and you know what that looks like when you forget to water it.

As your body loses water, the effect registers first in those areas where you have the highest water content - blood, brain, muscle, and skin. This means that you lose mental ability, and muscles weaken. When you feel beat – headache, sore muscles in your neck and back, eyestrain – you may just need more water. So a word to the wise; do not wait until you are parched. Assume you are thirsty. When in doubt…drink water. When you are bored and need a break…take a drink of water. When you sit down for a meal…take a drink of water. Try to drink most of your water before five p.m. so that you won't be up all night going to the bathroom. Drinking plenty of water can also help with weight loss. It fills you up, cleanses your taste buds and neutralizes food cravings.

As you get older, your body proprioceptors may become less likely to trigger the urge to drink when you need water. In other words, you may need water, but you won't get thirsty. Therefore, as fitness instructors, we must encourage and remind older adults to drink before, during and after exercise. A simple guide may be to intake one ounce of water for each two pounds of body weight per day. For example, a 100-pound person would need 50 ounces of water, which is similar to the recommendation for approximately eight glasses of water per day. This need of course, will also vary due to the individual, intensity of sweating, temperature and time of year as well as other factors. Note: if your doctor has asked you to limit your fluids be sure to check with him or her before increasing the amount of fluid you drink while exercising. Congestive heart failure and kidney disease are examples of chronic disease that often requires fluid restriction.

Notes

Program Design

The FITT Principle Frequency, Intensity, Time, Type

Exercise guidelines for an individual are typically a formula or a prescription from a healthcare provider based on the FITT principal: frequency, intensity, time (duration), and types of exercise. These components are described, followed by information that focuses on 30 minutes of moderate intensity of physical activity. This section has information on each of these topics, so that you can add to your basic knowledge when working with older adults to start or increase their physical activity.

Frequency
Frequency relates to how often an older adult should do endurance, strength, stretching and balance activities. As a general guideline, the American College of Sports Medicine recommends:

Type of Physical Activity	Days/Week
Endurance (cardio)	3 to 7 (prescribed by physician)
Strength	2 to 3
Stretching	3 to 7

While the American College of Sports Medicine currently does not have a recommendation for how often older adults should do balance training, researchers recommend 2-3 days per week as a general guideline.

Intensity
Intensity refers to how hard or how much effort is being exerted during a physical activity session. It is often categorized into low, moderate, and high levels. Physical activity of moderate intensity provides many health benefits for the older adult.

The aerobic exercise boom of the 1970's popularized the concept of being physically active in your target heart-rate zone. Heart rate or how hard your heart is beating while you are physically active is a measure of your physical activity intensity. Individuals can determine their intensity by taking their pulse while being physically active. If the pulse is less than their target heart-rate zone, they can increase their activity level, if it is higher, they can reduce their intensity. To calculate target heart rate use the Karvonen formula found in the AAAI/ISMA *Exercise Science* manual.

Older adults who have difficulty taking their pulse accurately or who take beta-blocker medication for heart conditions (which artificially maintains a low heart rate) should choose an alternative method to measure intensity.

The Borg Category Rating Scale

Least effort		
6		
7	very, very light	
8		
9	very light	
10		
11	fairly light	ENDURANCE TRAINING ZONE
12		
13	somewhat hard	
14		
15	hard	STRENGTH TRAINING ZONE
16		
17	very hard	
18		
19	very, very hard	
20		
Maximum effort		

Alternative Methods to Evaluate Intensity

There are two easy alternative methods to determine physical activity intensity that are suited for older adults: the Simplified Borg Rating of Perceived Exertion Scale (RPE), and the Talk Test. Studies have proven the rate of perceived exertion scale to be an accurate measurement of heart rate intensity when correlated to actual heart rate measurements and is the preferred method of measurement for those on certain medications.

Simplified Borg Rate of Perceived Exertion (RPE) Scale

1	Very, very light	("I'm breathing normal, let's go.")
2	Very light	("I feel super, I'm hardly working.")
3	Fairly light	("I feel like I could go forever.")
4	Light	("I can tell I'm exercising.")
5	Somewhat hard	("I'm starting to sweat.")
6	Moderately hard	("I'm getting a workout.")
7	Hard	("This workout is hard but I'm ok.")
8	Very Hard	("This is difficult. I'm breathing hard.")
9	Very, very hard	("I'm uncomfortable, slow down.")
10	Extremely hard	("I'm exhausted. I must stop.")

The Talk Test

The Talk Test is another self-assessment of physical activity intensity that correlates well to heart rate levels. During aerobic (endurance) physical activity, individuals can self-administer the Talk Test by saying a few sentences out loud. If the participant can easily talk or sing and is not the least bit out of breath, he/she is being active at a low intensity. On the other hand if the participant is not able to talk, sing, or is out of breath, the activity intensity is too high.

Time (Duration)

Duration is the length of a physical activity session. Most cardiovascular classes are 30 to 60 minutes long. This structure is based on the belief that cardiovascular activity of 20 minutes or more is beneficial to the cardiorespiratory system. The American College of Sports Medicine recommends accumulating 20-60 minutes of cardio (endurance) activity three to five times a week.

Deconditioned older adults can benefit from several shorter bouts of activity during the day. For example, 20 minutes can be broken into two 10-minute sessions. For more sedentary or frail elders, three to five minutes of activity may be a starting point.

To establish duration based on how long an older adult can perform cardiovascular (endurance) activities calculate the amount of time the older adult can perform without undue fatigue. Start slow and gradually increase the amount of time being active or increase the number of sessions per week. Over time this baseline can be extended.

Type of Physical Activity

There are many kinds of physical activity available to older adults. Land-based activities cover a wide variety of options: walking, biking, rowing, jogging, dancing, aerobic dance, group exercise, ballroom dance, folk dance, line and square dance, chair exercise, stair climbing, Tai Chi, Yoga, Pilates, strength training and calisthenics. Other choices include individual, one-on-one, or team recreational sports and games. Water-based activities include swimming, water aerobics, water walking, jogging and calisthenics, and games such as water polo.

Class Format

Warm-up (10-20 minutes)
The goal of the warm-up is to increase core body temperature using continuous, rhythmic endurance exercises like easy walking, light marching, toe and heel presses, low knee lifts, and small kicks. The warm-up is also a time to rehearse step-by-step exercise sequences using a slower tempo. It is recommended that dynamic stretches be performed early in the class to facilitate warming up the body and muscles. Specific joint mobility exercises (e.g. shoulder rolling backwards into arm circles) combined with low-intensity endurance exercises (e.g. walking around the room shaking hands) will promote safety, effectiveness and fun.

Guidelines for an Effective Warm-Up

- Exercise should work up a bell shaped curve gradually building the challenge and intensity. (e.g. increasing size or speed of movements, adding arm movements)
- Monitor rate of exertion accelerating gradually on the Borg RPE scale (6-20)
- Movements should be flowing and continuous with careful transitions to protect joints
- Stress rehearsal (step by step, but slower tempo) and repetition when teaching sequences
- Use age appropriate music (Big Band, Oldies, etc.) with an even rhythmic beat of 110-120 beats per minute
- Focus attention by creating a fun atmosphere and setting a goal or plan for the workout

Class Type Functional Training/Cardiovascular Conditioning (20-25 minutes)
Functional training and core stability should be considered when designing a resistance-training program for older adults. Whether carried out using free weights, resistance bands, stability balls, or other forms of resistance, functional training should stimulate muscle actions performed daily (twisting, bending, leaning). Most important for core stability are the stabilizing muscles of the trunk therefore exercises to promote strength and muscle tone in this region should be included in the program.

Guidelines for Functional Training

- Perform exercises in an unstable environment that can improve muscle balance, strength, and functional capacity
- Improve strength in functional movement patterns rather than training to increase muscle strength or size
- Core stability exercises develop abdominal muscles (transverses abdominis, internal and external obliques, and rectus abdominis) and help to protect the lower back (lumbar spine)
- Stabilization of the pelvis aids in performing exercises more efficiently with less likelihood of injury

Cool Down (8-10 minutes)
The cool down allows the participant time to recover from the work that was done.

Guidelines for an Effective Cool-Down

- Working down a bell-shape curve by progressively decreasing intensity and speed of exercise
- Monitor rate of exertion decelerating gradually on the Borg RPE scale
- Stretching should include ROM stretches and static stretching, emphasizing breathing with the stretches
- Add a variety of mind-body activities such as yoga and Tai-Chi that can be utilized outside of the class by participants for flexibility, balance and relaxation
- Focus on breathing and relaxation as part of the culminating activities
- Use formations such as a circle for holding hands, group massage and other activities that provide a social connection

Final Stretch (5 minutes)
Static stretches are done when the body is at its warmest and the muscles and joints are more receptive to being stretched. Incorporating breathing techniques increase stretch positions and flexibility.

Guidelines for Flexibility

- Perform flexibility exercise especially on joints that have limited range of motion (ROM)
- Compare opposite sides of the body when stretching, pay more attention to the less flexible side to help further structural balance
- Emphasize good body alignment while stretching
- Do not perform static stretches until the body is at its warmest and muscles and joints are receptive
- Move slowly into static stretch position
- Stretch to a point of gentle tension, but not pain
- Do not jerk, bounce, or force a stretch, because this could result in injury.
- Hold a static stretch for 10 to 90 seconds
- Inhale before the start of the stretch, exhale during the stretch, and breathe evenly while holding the stretch at its end position
- Remind participants to "listen to your body" and stop and adjust if a stretch hurts

Relaxation (5 minutes)
Relaxation is a time for quieting the mind and creating imagery, using affirmations and inspirational messages to end the class on an uplifting note or end on a fun, positive note such as sharing jokes and reinforcing a goal or "homework" assignment. Let your personality guide you.

High Risk Exercises

Deep knee bends or squats	Sustained forward flexion
Ballistic stretching	Overhead presses
Unsupported side bends	Double leg lifts
Unsupported forward flexion	Sustained isometric contraction
Whipping, swinging movements	Neck hyperextension

Working with Older Adults in Physical Activity Programs

1. Older adults are not a homogeneous group

A room full of older adults may include a wide range of ages, encompassing several generations. There may be big differences in functional or cognitive capacity. There may also be big differences between individuals based on culture, race, religion, language, sexual orientation, income, education, gender, physical ability, size, or other factors. Each elder is a unique individual. Learn as much as you can about the cultural environment of the elders with whom you are working.

2. Be aware of ageist attitudes

Watch out for ageist attitudes that you may be expressing inadvertently. Society's ageist attitudes negatively represent aging as a time characterized chiefly by loss of physical ability, loss of loved ones, loss of social status. While it is important to acknowledge loss, use this opportunity to promote the positive side of aging.

3. Older adult? Senior? Elderly? Little old lady?

Address elders formally (using Mrs./Miss/Ms./Mr.) unless they invite you to call them by their first name. Elder and older adult seem neutral and respectful, but remember that people of varying cultural backgrounds may not be comfortable with the same descriptors. An underlying respect for the elders you're working with will speak volumes.

4. Be inclusive and nonjudgmental

Use eye contact and other techniques to engage and include everyone in a group or class. In a group setting some elders may need or want more of your attention than others, which can be very challenging. Try to acknowledge and validate the needs of an individual while immediately refocusing attention back on the whole group. Base your expectations of an individual on their ability, not their age. Establish a positive, nonjudgmental tone that supports everyone.

5. Be aware of communication difficulties due to vision or hearing impairments or low literacy

Elders may have vision, hearing, or cognitive impairments. Others may have low literacy, which makes it difficult for them to use written materials. It may be hard to determine the specific reason for communication difficulties the elder may be experiencing. Older adults may feel embarrassed or ashamed and may mask these problems. Make sure everyone in the group can see and hear you. Use a microphone if possible. Print materials for older adults should be in a font that is at least 14-point size, do not use italics or script, should have high contrast and a clear, simple layout. Large-size visual aids can be very helpful because they don't require that someone knows how to read, a problem that affects one third of older adults'.

Lighthouse International has two excellent free pamphlets, *Making Text Legible: Designing for People with Partial Sight* and *Effective Color Contrast: Designing for People with Partial Sight and Color Deficiencies* (call 1-800-829-0500 to request). The Harvard School of Public Health website is an excellent health literacy resource (www.hsph.harvard.edu/healthliteracy).

6. Be aware of fears and concerns that older adults may have

Elders may have many fears and concerns such as losing independence, being isolated, falling, getting injured, feeling mixed about participating, not being accustomed to doing physical activity, or feeling that it is inappropriate to do physical activity. Acknowledge that societal attitudes toward physical activity for elders have changed over time. Listen to their concerns, validate their reality, and appreciate that you are in a position to help them make positive changes in their lives.

7. Pay attention to learning and teaching style

Older adults can learn new complex motor skills, but may learn at a different rate or need different instructional techniques than younger adults. Be prepared for a wide range of abilities among participants. Break down components into small parts and show more than once.

Repetition is a great way of learning.

Give clear explanations, both verbally and visually. Give participants a lot of positive reinforcement and positive feedback. Pay close attention to proper form and alignment, but encourage individual expression and variation wherever appropriate. And remember, every elder can improve the level of physical fitness. Be sure to celebrate progress with the participants!

8. Encourage social interaction among participants

For elders, one of the benefits of participating in physical activity in a group setting is the opportunity to engage in social interaction. Encourage peer education, sharing and interaction among participants both in and out of class. For example, include a 5-10 minute informal warm-up before a class during which participants can talk with each other while walking or doing other warm-up activities. Partner activities during a class are another way of encouraging elders to fulfill social interaction needs such as touching.

9. Learn from elders – They' re the experts!

Familiarize yourself with language and examples that relate to the older adults with whom you work. Ask about popular activities, and take a look at the physical activity opportunities in their neighborhoods and what these places offer. Appreciate that you are contributing to the empowerment and quality of life of elders in your program, and embrace and value the life experience they bring.

Risk Management

Risk management is an important responsibility for today's fitness professional. The following guidelines reflect the general areas fitness professionals need to consider.

Center for Physical Activity and Aging
Health Promotion Clinic of Healthy State University
Senior Fitness Program

Medical Clearance by Personal Physician

Your patient, _____, has expressed an interest in participating in the Senior Fitness Program, one of the programs offered by the Center for Physical Activity at Healthy State University. The center, under the direction of Kurt V. Trout, has offered exercise training programs for older adults for the past 10 years.

We would appreciate your medical opinion and recommendations concerning this individual's participation in exercise. If you feel that this individual might benefit from participation in the program, we would greatly appreciate your endorsement of his or her participation.

Assessments: The program participants are required to complete a medical and activity questionnaire, followed by a series of functional fitness assessments. This is done to identify weaknesses in physical parameters associated with activities of daily living and to more effectively prescribe appropriate exercise.

Physical Parameters	***Assessments***	***Approval***
Cardiovascular	Two-minute step-in-place	yes___ no___
	Six-minute walk	yes___ no___
Muscular strength and endurance	30-second chair stand	yes___ no___
	30-second arm curl	yes___ no___
Flexibility	Chair sit-and-reach	yes___ no___
	Back scratch	yes___ no___
Balance & gait	8-foot (2.4-meter) up-and-go	yes___ no___
	50-foot (15.2-meter) walking speed	yes___ no___

Exercise program: The intensity of the program is based on the individual capabilities of each participant. The class meets three times per week for 60 minutes. Each class will be instructed by trained students and supervised by personnel with extensive education and experience in exercise science and aging. The class will consist of a 10-minute warm-up; three 15-minute stations including aerobic, strength, and flexibility and mobility training; and a 5-minute cool-down.

Exercise class approval: yes ____ no _____

Please list any modifications or comments for testing and exercise class: _____

_____

Patient's last blood pressure reading: _____ / _____

Please indicate by your signature below that your patient is medically cleared to participate in the specific testing and training described. Please call Dr. Kurt Trout at 316-555-9595 if you have any questions concerning the program.

_____	_____	_____
Signature of physician	*Print name of physician*	*Date*

Physician's phone #: (____) _____ - _____

Health Screening

Conduct an evaluation before allowing older adults to participate in exercise. Screening guidelines include a variety of pre-exercise standards allowing an individual to participate with or without physician clearance based on self-reported questionnaires. Screening provides assurance to the older adult that it is safe to be active. Older adults with chronic conditions are advised to check with their healthcare provider before starting any physical activity.

Follow Physician Directives
Receive guidance or an exercise prescription from a qualified professional, such as a physician, osteopathic doctor, physical therapist, chiropractor or registered dietitian. Clear instructions will help the instructor and participant monitor the intensity of the workout.

The Physical Activity Readiness Questionnaire (PAR-Q)

The Physical Activity Readiness Questionnaire, known as the PAR-Q, is a brief screening questionnaire developed by the Canadian Society for Exercise Physiology. The PAR-Q is a tool to help an individual determine whether or not to see a healthcare provider before becoming more physically active. The PAR-Q consists of seven yes-or-no questions (such as, *Do you feel pain in your chest when you do physical activity?*) to help identify individuals who may have a heart condition, balance problem, bone or joint problem, or effects due to medication. A copy of the Par-Q can be found online at the Canadian Society for Exercise Physiology website: http://www.csep.ca/pdfs/par-q.pdf

Fitness Center Environment
Keep the environment free from unnecessary hazards. Room entries and exits should be well marked for uneven floors. Floor surfaces should be appropriate (clean & dry) for each activity. Create and maintain a clean air and controlled temperature environment. Older adults should avoid exercise in extremely hot, humid or cold conditions.

Equipment
Exercise equipment should be clean, used properly, and well maintained. Conduct a periodic check of resistance tools for cuts, breakage, and any weakness or degenerations that would present elevated risk while in use. Have easy to read instructions available.

Emergency Procedure

Have a "what if" plan prepared
Know your fitness center's protocol for calling 911
Know the address and phone number of your fitness center
Have health history form accessible
Know the location of your CPR mask and First Aid kit
Know how to file an Incident/Accident report
Use AAAI/ISMA buddy system

Legality

Responsibility, accountability, and follow-through are the three major factors that fitness professionals need to address. The legality of teaching an exercise program has become a concern for most instructors as more and more legal problems arise due to the increased popularity of wellness. Most lawsuits come about from participant injury and most of these fall under the category of negligence. Instructors cannot avoid responsibility, thus they cannot totally avoid liability. However, there are measures that can be taken to show responsibility, accountability and follow-through to limit liability problems.

A fitness professional is responsible for safe programming, proper instruction, and knowing the participant's physical capabilities and limitations.

The best protection is some form of liability insurance. The type and amount of coverage is dependant upon each individual circumstance.

General liability will cover the instructor if a student trips or falls.

Professional liability covers claims of negligence and is needed in situations where students claim they were hurt because the instructor was unsafe or negligent in their instruction.

Disability insurance provides income protection if an instructor were injured and unable to teach class. Instructors who operate as independent contractors should pay special attention to their coverage. They should become familiar with the coverage each fitness center has where they instruct. If the fitness center's independent contractors are not covered under a general liability policy the instructor should ask if they could be covered by special endorsement (certificate of additional insured).

Individual medical insurance provides major medical and hospitalization.

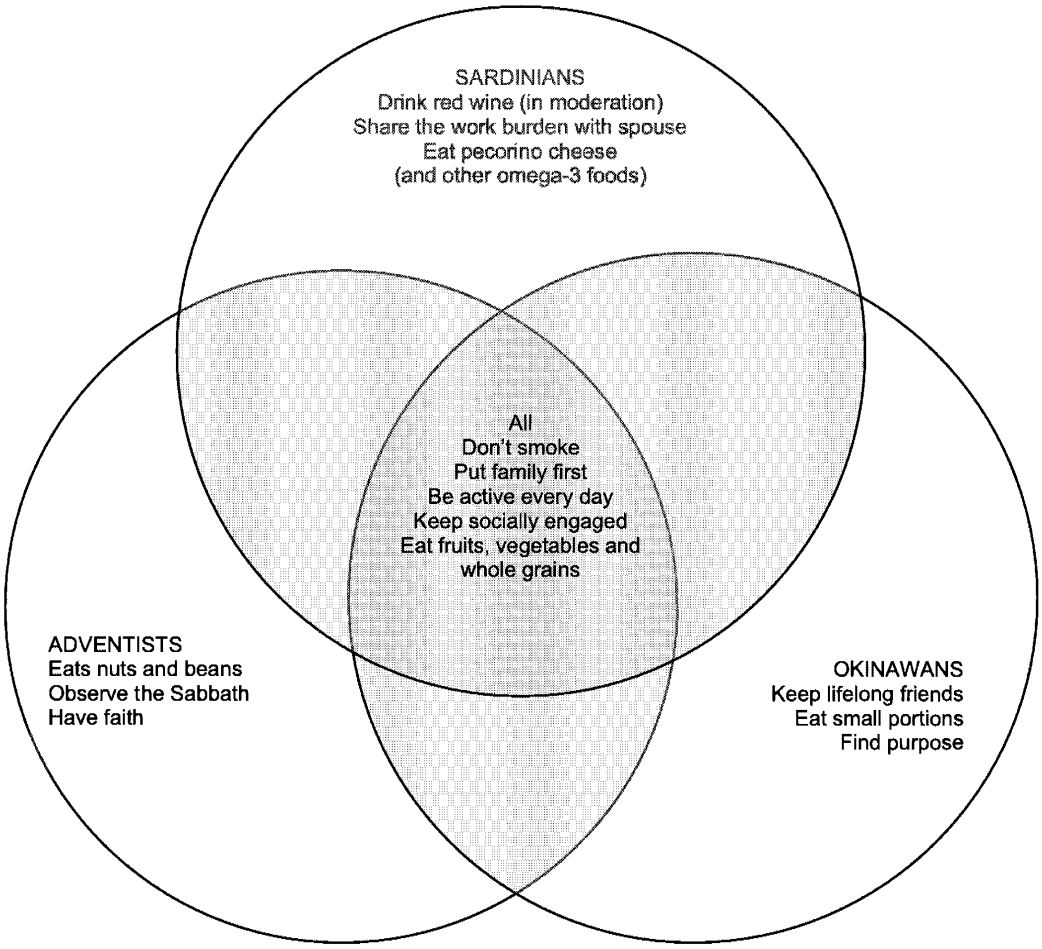
During class, there are other forms, which if used correctly can help instructors. Many exercise programs use waiver and release forms. The intent of these forms is to have the participants waive or give away their rights to sue in the event of negligence. A lawyer, using correct language that a participant can understand, should write a waiver or release form.

Longevity and Fun

A long healthy life is no accident. It begins with good genes but it also depends on good habits. If you adopt the right lifestyle, experts say you may live up to a decade longer. So what is the formula for success? Funded in part by the US National Institute on Aging, scientists have focused on several regions where people have lived significantly longer. In the United States, the ratio of female to male make centenarians is about four to one. In Sardinia, Italy, that ratio is more like one to one. Super seniors in three widely separated regions share a number of key habits despite many differences in backgrounds and beliefs. The five key habits are shown below.

HOW THEY LIVE LONGER

Superior seniors in the three widely separated regions share a number of key habits, despite many differences in backgrounds and beliefs.



Doesn't the list look and sound familiar? It seems simple enough in order to enjoy more healthy years of life.

Longevity and Fun

The Okinawans are among the world's longest-lived people. What is the key to their success? Ikigai, which translates roughly to *"that which makes ones life worth living."* Older Okinawans possess a strong sense of purpose that may act as a buffer against stress and diseases such as hypertension. Many also belong to a moai – a mutual support network that provides financial, emotional and social help throughout life. Lean diets, growing their own food and living by the Confucian principal – eat until your stomach is 80% full – may also be factors.

FUN – Hear It From the "Pro's"

Whatever the key to longevity may be, it is an interesting study to interview older adults who continue to possess a healthy, positive, quality of life well into their senior years. Here are a few of the healthy, inspiring seniors we knew or read about and their opinions of what promoted quality and longevity of life for them.

The mayor, governor and President of the United States honored Catherine Little of Erie, Pennsylvania in 2001 for 75 years of educating youth in dance. She was still performing on stage at the age of 91. When asked what keeps Little so young she replied,

> *"When I dance, no matter how I feel, I forget all of my troubles. It has kept me going all of these years. Right now, I am having the time of my life. I never look back – I try to look ahead. That is the real secret to a good life. All of these years, my only hope has been that I have brought life into their (her students) lives through dance."*

Rita Morsch, 90 years young from Sanford, North Carolina, remains active traveling, snorkeling, playing bridge and even chasing cows! She says she always has something scheduled on her calendar – something to look forward to do.

"Look to the future and keep it going."

Check out the book Growing Old Is Not For Sissies, Volume I and Volume II by Etta Clark. Here are a few of the comments from her portraits of senior athletes.

Erma Neubauer who teaches aerobics at 86 advertises,

"Feel alive as long as you live. Dance, run, twist and bend with Erma."

She hopes to convey to seniors that they can add years of joy to their life though sensible exercise and good nutrition.

John Turner, 79,weightlifter,

"Recent research indicates the benefits of weightlifting in people in their 70's, 80's and even 90's. I hope that exercise at my age fosters physical and mental well being. It is my profound ambition that by my words and my actions that I can encourage others, young and old to use and enjoy their bodies."

Rose Schwartz is a dancer and teacher at age 94. She says,

"I think God's greatest gift to humanity is music, and the next is the ability to move to music."

Ida Klein teaches aerobics and stretching every day at age 100.

"The secret to staying young at heart is staying fit; the key to a long life is to control your worries. I don't worry about tomorrow. If you have a problem and you can't fix it, you should dismiss it from your mind. The best part of living is the people in the world; there are so many wonderful people. That is what keeps me going."

And finally, the author's mother, Mary Shutkin, appeared in both issues in the nude, gutsy at age 75! Her advice on keeping a youthful appearance is,

"Don't wear your glasses when you look in the mirror."

Remember when…being a "senior" was graduation day with the whole world at your fingertips…now just keep thinking that way! This thought was continually reinforced as we interviewed numerous older adults around the country. The power of the brain and positive thinking seems to be at least one part of the equation for longevity.

Take time to do your own research. Seniors love to share, so ask their opinions and value their experience. It is so rewarding to work with older adults, as they really appreciate everything you do and remember as Nike says, *"Just do it!"* and as we say,

"Just have fun!"

Another important factor seems to be a sense of humor. In your teaching or working with older adults, the SEF (safe, effective and fun) principal proves to be apropos. The fun segment is widely appreciated and helps fulfill the social segment, which is of great need as we age. If you run out of your own jokes or "fun stuff" check out some jokes from different books such as Living Somewhere Between Estrogen and Death by Barbara Johnson – be careful it is labeled for women only!

Here are a few examples:

> The wonder years…when we wonder how we got this old and didn't save for a facelift.
>
> You have a heart of gold – that would explain why you weigh 200 pounds!

Men are like parking spaces – all the good ones are already taken – and the rest of them are handicapped or their meters are running out!

Perhaps if you get with the fun program you can avoid the epitaph on your tombstone, "Died at 30, buried at 60."

Middle age is when you chose your cereal for fiber, not for the toys.

When you are old, the challenge is not in bending down to touch your toes. It is remembering what you are there for once you arrive.

Remember, you may be OLDER today then you have ever been before but you are YOUNGER than you will ever be again.

Life is a matter of choice, you can choose to be 30 years old or 70 years young, you decide!

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To order laminated aerobic intensity wall charts in color contact Young Enterprises in Kansas: telephone (800) 765-3975, website: www.youngposters.com