

## Tests for Fitness in Older Adults

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# TESTS FOR FITNESS IN OLDER ADULTS

## AAHPERD Fitness Task Force

BRUCE A. CLARK

To design a functional fitness test battery, "functional fitness" was operationally defined as an individual's capacity to meet ordinary and unexpected demands of daily life safely and effectively. Therefore, the test battery had to be practical and closely related to activities in which individuals 60 years and older normally participate. From the parameters studied in the preliminary testing, a list of general parameters was developed, including agility/dynamic balance, endurance, flexibility, strength, and coordination. Preliminary testing was conducted by over 20 professionals in community centers, universities, exercise facilities, and other sites across the United States. A questionnaire included in the "Working Draft Manual" of the AAHPERD Functional Fitness Test for Older Adults test battery provided feedback from the preliminary tests. Preliminary testing established the practicality of the test in the field, provided feedback on the range of discrimination among given age and sex groups, and determined the preliminary norms for the population served.

### Guidelines for testing older adults

- (1) The test must relate to older people of all ages. Options may be used for subgroups.
- (2) The test will not relate to follow-up exercise prescriptions.

- (3) The test will be nondiagnostic from a pathological point of view.
- (4) The test will provide physical function evaluation only.
- (5) The test will be drug independent. However, participants on prescribed medication will continue its use.
- (6) The test will not need physician approval and involve no more risk than life itself.
- (7) The test will be prepared for paraprofessional use.
- (8) The test will require only normally available equipment.

Body weight and height were not intrinsic to the functional fitness test, but were used as part of the demographic data. Body weight of participants wearing street clothes was determined using a calibrated scale with increments of one pound or smaller, with weight recorded to the nearest pound. Height of participants without shoes on was measured using a measuring tape or stadiometer calibrated with one-half inch increments and recorded in feet and inches to the nearest half inch. One trial was used in each case.

The test items are designed to be used individually. Only items that will provide accurate data without unnecessary risk or discomfort for the subject should be used.



## Functional fitness test battery

**Parameter:** Agility/dynamic balance

**Test item:** Agility/dynamic balance

**Equipment:** Chair with arms (average seat height 16"), masking or duct tape, measuring tape, two cones, stopwatch.

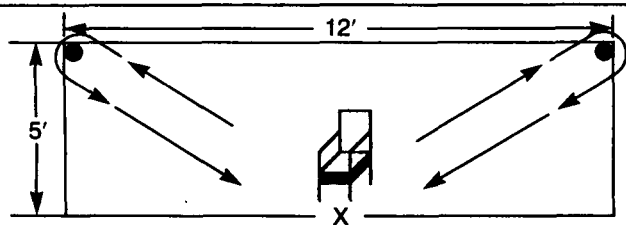
### Procedure.

**Set up.** Placement of the chair should be marked and legs should be taped to the floor, if possible (the chair tends to move during the test). Measure from the spot on the floor (x) in front of the chair where the feet will be placed, and set up one cone on each side behind the chair with their farthest edges six feet to the side and five feet behind the initial measuring spot (see figure 1). The floor should be even, nonslippery, and well-lighted.



**Test administration.** The subject begins seated in the chair with heels on the ground. On the signal "ready, go" the subject gets up, moves to the right and circles the cone, returns to the chair and sits down. Without hesitation the subject gets up again, moves to the left and circles the second cone, returns to the chair and sits down. This completes one circuit. The individual immediately repeats a second circuit—one trial consists of two complete circuits (going around the cones four times: right, left, right, left).

Make sure the subject sits down in the chair completely before circling the cones by having the individual lift his or her feet one half inch before getting up.



**Figure 1. Agility/dynamic balance test**

The subject should move as quickly as possible without losing balance or falling. Explain the test procedure before beginning the test, then walk the individual through the course to make sure instructions are understood—cones should be circled correctly and feet should be lifted each time he or she sits down.

After sufficient practice the subject should be given the following instructions: "Walk as fast as possible without feeling you will lose your balance or fall. Circle the cones four times—first go to your right, then to your left, and repeat the cycle. Go around each cone from the inside to the outside and sit down after circling each cone. Sit down fully and lift your feet off the floor each time. Use your hands to help you get in and out of the chair. If you feel dizzy, lightheaded, or any pain stop immediately.

**Administrative cues.** Give directions, supervise practice, and start each trial with the command "ready, go." Start the stopwatch when the individual begins to move, and stop the watch when the person sits down the fourth time. Give verbal directions during the test (e.g. right, left, around, sit down, etc.) so the person does not become confused. If the chair moves from the original position, the administrator should readjust it during the trial.

**Trials.** A practice will be allowed until the person demonstrates that he or she understands the test. Three trials are administered with 30 seconds or more rest after each trial.

**Scoring:** Record the time for each trial to the nearest 0.1 second. The score will be the best of two trials.

**Approximate range of scores:** Most people will score between 15 and 35 seconds.



*Instruct the subject to sit down completely each time and use his or her hands to help get out of the chair.*

*Parameter:* Endurance

*Test item:* Half mile walk (or 880 yard walk)

*Equipment:* Stopwatch, measuring tape, cones.

**Procedure.**

**Set up.** The individual will walk around a measured lap until he or she has completed a continuous walk of 880 yards. Using a measuring tape or similar device, measure an oval or rectangle 67 yards or longer. Mark the inside edges of the lap with the cones. The lap should be designed with sufficient space to turn; if conducted in a hallway a minimum length of 50 yards and width of five feet is recommended. The surface should be nonslippery, level, and well-lighted. All obstacles should be removed from the path.

**Test administration.** Instruct the individual to walk the course (x number of laps) as fast as possible without running. It is important that participants pace themselves to finish the distance without discomfort. Instruct the individual to stop immediately if dizziness, nausea, or other discomfort is experienced. On the signal "ready, go," the individual begins at a designated spot and walks the necessary laps until he or she has completed 880 yards.

**Administrative cues.** Screen individuals for cardiovas-

cular or orthopedic problems. Give directions, command "ready, go," and start the stopwatch. Count each individual's number of laps and record the time to the nearest second.

**Scoring:** The scoring is the elapsed time in minutes and seconds.

**Approximate range of scores:** 7 minutes, 30 seconds to 12 minutes.

**Special considerations:**

Under the following circumstances the test administrator should discourage or prevent participation in this test until the subject's physician is consulted:

- Orthopedic problems that may be aggravated by prolonged walking (8-10 minutes).
- History of cardiac problems (recent heart attack, frequent arrhythmia, or valvular defects) which may be negatively influenced by exertion.
- Lightheadedness during activity or history of uncontrolled hypertension (high blood pressure).

The walk test should be administered last in the battery of tests. The warmup session is left to the discretion of the test administrator. Individuals should practice walking several days prior to the test to determine their appropriate walking pace.

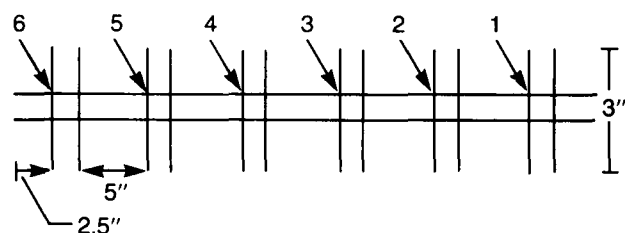
*Parameter:* Flexibility

*Test item:* Trunk/leg flexibility

*Equipment:* Yardstick, chalk, and masking tape

**Procedures:**

**Equipment setup.** Create a line approximately 20 inches long on the floor (masking tape may be used). Tape the yardstick to the floor perpendicular to the line, with the 25-inch mark directly over the line. If masking tape is used for the line, the 25-inch mark should be positioned at the edge of the tape. Next, draw two marks on the line, each six inches away from the center of the yardstick (see figure 2).



**Figure 2. Masking tape placement for coordination test**

**Directions.** The subject should remove shoes for this test and sit on the floor with legs extended, feet 12 inches apart, toes pointing straight up, and heels on the line at the 25-inch mark, each heel centered at the six-inch marks on the line. The yardstick should be between the legs, with the zero point toward the subject. With hands placed one on top of the other, the subject should slowly reach along the yardstick as far as possible, holding the final position for at least two seconds.



The test administrator should place a hand on the subject's knee to ensure that the knees are not raised during the test.

**Scoring:** Record the final number of inches reached to the nearest one-half inch.

**Trials:** Two practice trials are allowed, followed by two test trials. Record only scores for the two test trials. The score is the best of the two trials.

**Approximate range of scores:** 10 to 30 inches.

**Special considerations:** Be sure the subjects are warmed-up prior to this test. Help all subjects into the sitting position and when getting up from the floor. The forward reach should be gradual along the top of the yardstick; the tip of the middle fingers must remain steady throughout the reaching action; and the final position must be held for a minimum of two seconds. Be sure the subject's toes are straight up and that the legs are kept as straight as possible. If feet turn outward or knees rise during the reaching action, ask the subject to maintain the correct position.

**Parameter:** Muscle strength/endurance

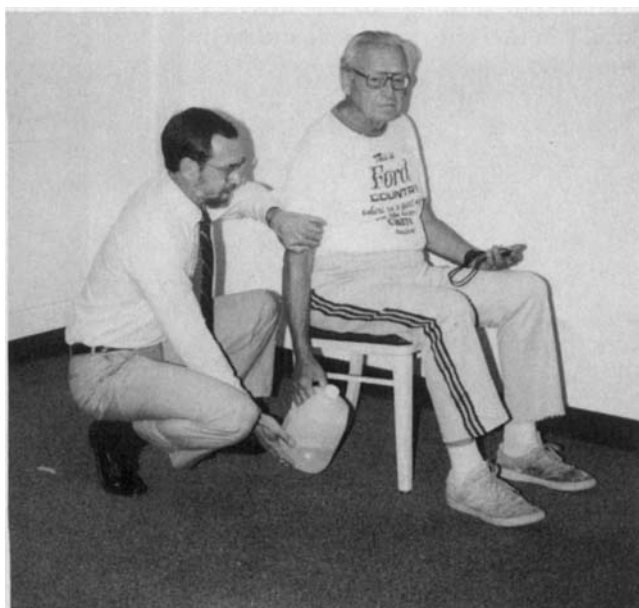
**Test item:** Muscle strength/endurance test

**Equipment:** Two sets of dumbbells, 4 pounds and 8 pounds, (or, as an alternative, two-quart plastic milk bottle with handle; one-gallon plastic milk bottle with handle; sand, water, or other similar material); stopwatch; normal straight-back chair without arms.

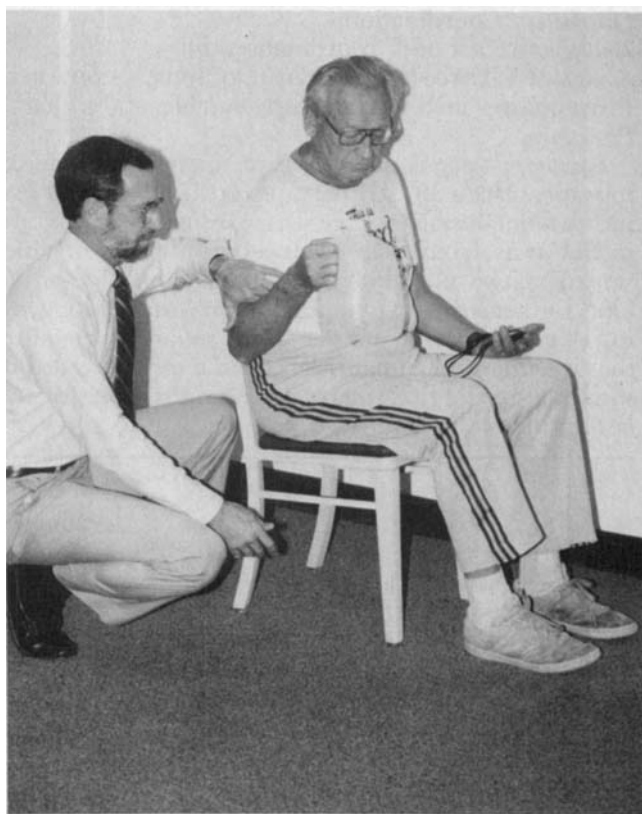
**Procedure.**

**Set up.** If dumbbells are not available, the two-quart empty milk bottle should be filled with sand, water or other material to four pounds total weight and covered tightly. The one gallon empty milk bottle should be filled to eight pounds and covered tightly. The one gallon bottle may be filled about halfway for use in the four pound test. A straight-back chair with no arms is placed in an area without obstructions.

**Test administration.** The subject should sit with back as straight as possible against the back of the chair. Eyes should be focused ahead and feet should be flat on the floor. The nondominant hand should rest in the lap while the dominant arm hangs straight and relaxed to the side. The dumbbell or weighted milk bottle is placed in the subject's dominant hand and held in the extended position. The four-pound dumbbell (two-quart container, or gallon container half-filled) should be used for women and the eight-pound dumbbell (gallon container) should be used for men. The running stopwatch should be placed in the nondominant hand and face the dominant side of the body. The test administrator should stand on the side of the subject's dominant arm, placing one hand on the dominant bicep while the other helps support the dumbbell (weighted milk bottle). When the administrator stops supporting the dumbbell (milk bottle), subject should contract the bicep until the



*The test administrator should place one hand on the subject's dominant bicep while the other hand helps support the dumbbell (weighted milk bottle).*



*The subject should contract the bicep until the lower arm touches the hand of the administrator.*

lower arm touches the hand of the administrator. This is one total repetition. If the subject cannot bring the weight through the full range of motion, the test is terminated with a score of zero.

If the practice repetition is complete, the weight is placed on the floor for approximately one minute and then placed in the hand supported by the clinician. The clinician instructs the subject to make as many repetitions as possible in 30 seconds. The lower arm must touch the clinician's hand on the bicep for a complete repetition. While watching the stopwatch, the clinician instructs the subject to begin, unassisted, and counts the number of repetitions the subject completes in the 30-second period.

**Scoring:** Record the number of complete repetitions in the 30-second interval.

**Approximate range of scores:** 0 to 40

**Special considerations:**

- If the subject cannot grasp the handle of the weight, the test should not continue.
- Subjects should breathe normally during the test.
- The weight should not touch the floor—elevate the chair if this occurs.
- Subjects should stop if experiencing pain in the tested arm. The clinician must determine whether the pain is due to a structural condition or lack of strength. If the former is determined, the test is invalid and no score will be recorded.

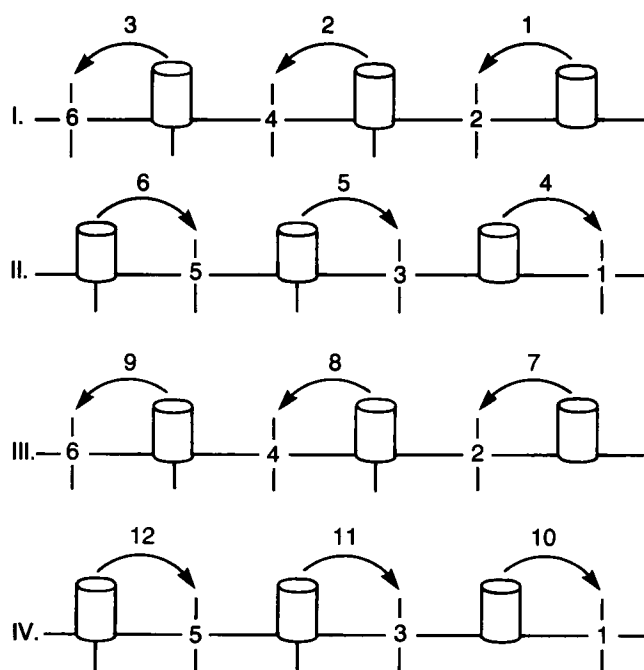
**Parameter:** Coordination

**Test item:** "Soda pop" coordination test

**Equipment:** Three unopened cans of soda, a stopwatch, three-quarter inch masking tape, a table, and a chair.

**Procedure.**

**Equipment setup.** Using the three-quarter inch masking tape, place a 30" strip of tape on the table about five inches from the table's edge. Draw six marks exactly five inches away from each other along the line of tape, starting at two and a half inches from either side of the tape. Center six strips of tape, each three inches long, on top of each of the six marks. Each "square" formed by the crossing strips of tape is assigned a number starting with one for the first square on the right to six for the last square on the left (see figure 3).



**Figure 3. Coordination test movement sequence**

**Directions.** Have the subject sit comfortably in front of the table, body centered with the diagram on the table. The preferred hand is used for this test. If the right hand is used, center one can on square one (farthest to the right), can two on square three, and can three on square five. The right hand is placed thumb up on can one with the elbow joint bent at 100-120 degrees. When the tester gives the signal, the stopwatch starts and the subject turns each can upside down, placing can one on square two, can two on square four, and can three on square six. The subject immediately turns all three cans right side up, starting with can one, while returning them to their original placement. On the return trip, the cans are grasped with the hand in a thumb down position. The entire procedure is completed twice without stopping and counts as one trial. The watch is stopped when the last can is returned to its original position on



*Begin the coordination test with thumb up and elbow bent at 100-120°.*

the second trip back. The preferred hand (in this case the right hand) is used throughout the entire task. The test should be performed as fast as possible. If a can misses a square (does not completely cover the square) at any time during the test, the trial must be repeated from the beginning.

If a participant uses the left hand, the same procedure is followed, except that the cans are placed starting from the left, can one on square six, can two on square four, and can three on square two. The procedure is initiated by turning can one upside down onto square five, can two onto square 3, and so on.



*When the tester gives the signal, the subject places can one on square two, can two on square four, and can three on square six.*

**Scoring:** Record the time of each test trial to the nearest tenth of a second. Scores will range from approximately eight to 25 seconds.

**Trials:** Two practice trials are administered and followed by two test trials. Only the scores for the two test trials are recorded.

**Special considerations:** During the entire procedure the cans must completely cover the squares formed by the crossing of the tape. If the individual misses a square, repeat the test until two successful trials are accomplished.



*On the return trip, the can should be grasped with the hand in a thumb-down position.*

The AAHPERD fitness test battery for older adults was designed to allow individuals with limited test expertise to assess the fitness of older adults in a variety of settings, using readily available equipment with minimal risk. Valuable feedback is provided to: (1) define the individual's physical status; (2) compare results with other individuals of the same age and sex; and (3) guide individuals who are interested in changing their status.

The fitness test presented here is "in process." It was carefully planned, preliminarily tested, and possesses validity within the restrictions noted earlier. The tests will continue to evolve as additional information and feedback are obtained. Input from professionals in the fields of health, physical education, recreation, dance, and gerontology are essential to the development of the tests.

Send comments regarding the fitness test battery to: Dr. Wayne Osness, Department of Health, Physical Education and Recreation, University of Kansas, Lawrence, KS 66045.

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Photo courtesy Bob Ziegler

*Proper fitness testing allows older adults to establish their fitness levels, after which they can participate in activities which increase their physical capacities.*