



What is balance?

Balance is the ability to maintain the body's position over the base of support, whether it is stationary or moving. When the body is stationary, postural sway occurs.

Postural sway is the subtle or significant motion in the ankles and feet made in an attempt to keep the body stationary over the base of support.

Static balance is the control of this postural sway to keep the body in one position.

Dynamic balance is the ability to react to perturbations (disturbances) and changes in balance, moving from one balanced state through an off-balance state to another balanced state.

Lesson plan for a balance class

By Susan Bovre, M.A.

Maintaining balance is the result of a complex interaction of many systems and subsystems of the human body. With aging, changes occur that reduce the efficiency of these systems, which jeopardizes balance and increases the risk of falls.

Because balance is so complex, an exercise program designed to reduce the risk of falls demands a multidimensional approach. The exercises included in this article focus on a set of skills that help decrease the risk of falling among older adults.

These 5 skills for better balance, first identified by Tinetti et al. in 1986, provide a guideline for the well-trained and creative instructor to develop a program of exercises.

The 5 skills for balance are:

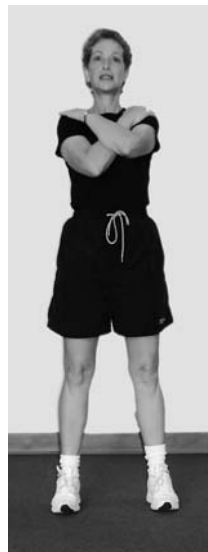
1. The ability to walk and turn the head at the same time.
2. The ability to extend the hip and back.
3. The ability to reach down and pick up something.
4. The ability to reach up.
5. The ability to stand on one foot for five seconds.

This lesson plan for a one-hour class focuses on these skills by including: warm-up; static and dynamic balance exercises; drills for the vestibular, visual and somatosensory systems; locomotor activities; strength and endurance training for the major muscle groups; posture exercises and stretching.

The class theme is good posture. This is a good opportunity to explain and practice neutral spine. The class is appropriate for people who have chronic conditions and

Continued on page 10...

Romberg drill



apart



together



semi-tandem



tandem

There are 4 parts to the drill—normal stance with feet a comfortable distance apart; feet together; semi-tandem; and tandem. In each position, participants practice standing still, eyes open, and eyes closed (if capable). Arms are crossed over chest or in any other arm position that is safe.

Photography: DSWFitness



Appropriate for



Getting started



Needs a little help

Posture class plan

Equipment

Each participant will need:

- ball, approximately 10 inches in diameter
- 6 inch-wide bands for resistance
- chair or other support
- wall space

Descriptions of unique exercises begin on page 11.

Warm-up, 10 minutes

- Ball handling
- Walk forward and backward
- Walk turning head
- Rocking horse
- Weight shifts, forward and back
- Weight shifts, side to side in straddle
- Roll onto toes and heels, normal stance and semi-tandem. "Normal" stance is feet a comfortable distance apart, or 3 to 4 inches.
- Tap three around
- Heel forward, toe back
- Knee lift, tap back
- Pedaling forward and backward
- Standing, lift thigh, hold under thigh, ankle flex and extend
- Ankle circles
- Calf stretch
- Hip and back extension

Balance drills, 5–10 minutes

(Teaching note: Place emphasis on postural alignment when performing each exercise.)

- Footprints
- Rock and roll
- Ice cream cone
- One-leg stand
- Romberg drill
- Functional reach

Upper body and back posture exercises, 20 minutes

- Abdominal isolations
- Posture pulldowns
- Bend and reach
(Teaching note: Introduce as part of the 5 skills for better balance. This exercise can be performed with or without weights or seated. The goal is to practice the skills of bending down, reaching down and reaching up.)
- Band exercises
 - Parallel row
 - Single arm lateral pulldowns
 - V to W
 - Flys
 - Rotator cuff exercise
- Shoulder rolls
- Arm circles
- Neck sequence
- Turkey neck
- Big breath
- Hip and back extension
- Scratch
(Teaching note: Participants may hold a resistance band between their hands as an extension if their hands do not meet. Be cautious because participants may have arthritis or other shoulder problems limiting movement.)

Lower body strength, 10 minutes

- Lower body seated ball workout
(Teaching note: This sequence is fun to experience and works the legs in an unusual way.)

Finish, 10 minutes

- Tai chi weight shifts
- One-leg stand
- Hands in the air



Continued from page 8

acute physical problems that have reduced their activity levels and compromised balance. They are able to perform all activities of daily living, but have reduced strength, agility and mobility. They can participate in all of the exercises, with a chair or wall support for the standing work.

Teaching skills

As the instructor, observe and assess each participant's ability to perform the exercises. Remember to emphasize good postural alignment throughout the class, and to stress the importance of the safe and correct performance of each exercise.

Exhibit confidence and humor, and combine encouragement with gentle coaxing. You can use the motivation of group dynamics and the ability for an individual to hide within the group to give the anxious new exerciser time to build confidence, and the less motivated the opportunity to enjoy interesting and worthwhile challenges. Lean on your strengths and develop your skills with an understanding of what is important to the older adult in your class. •

Susan Bovre, M.A., has a certificate in gerontology and over 25 years teaching experience. She teaches balance, chair exercise, aerobics and aquatic classes at FitCenter in Tucson, Arizona, a fitness facility that specializes in fitness for the older adult.

Adapted with permission from "Balance Training: A Program for Improving Balance in Older Adults." Copyright 2001 by Desert Southwest Fitness, Inc.

Exercise descriptions begin on next page.

References

Alexander, N. B. (1994) Postural control in older adults. *Journal of Geriatric Medicine* 42:93-108.

Berg, K. O., Maki, B. E., Williams, J. I., et al. (1992). Clinical and laboratory measures of postural balance in an elderly population. *Archives of Physical Medicine Rehabilitation* 73(November):1073-1080.

Crilly, R. G., Willems, D.A., Trenholm, K. J. , et al. (1989) Effects of exercise on postural sway in the elderly. *Gerontology* 35:137-43.

Rogers, M.W., Kukulka, C. G., & Soderberg, G. L. (1987) Postural adjustments receding rapid arm movements in Parkinsonian subjects. *Neuroscience Letters* 75:246-251.

Wolfson, L., Whipple, R., Derby, C. A., et al. (1992) A dynamic posturography study of balance in healthy elderly. *Neurology* 42:2069-2075.

Woollacott, M. H. (1993) Age-related changes in posture and movement. *The Journal of Gerontology* 48(Special Issue):56-60.

Resources

"Balance Training: A Program for Improving Balance in Older Adults"
Susan Bovre, M.A.
24 lesson plans, 5 balance assessments and 10 client handouts. CECs and CEUs available.
ICAA Knowledge Center
www.icaa.cc

Fitness Wholesale Online
balls and latex Dyna-Band® Exercise Bands
www.fwonline.com

Thera-Band®
Latex and latex-free Thera-Band® Resistive Exercise Bands
www.thera-band.com



Glossary

Locomotion. Ability to travel, to move about.

Normal stance. Feet a comfortable distance apart, or 3 to 4 inches.

Somatosensory system. Integrates the sensations of the skin, nervous systems and information from the joints and muscles.

Semi-tandem position. Feet several inches apart, one foot in front of the other.

Tandem position. Feet directly in front of one another, heel to toe.

Vestibular system. Located in the inner ear, relates to the movement of the head.

Visual system. The eyes and ability to see.

Continued from page 10

Exercise descriptions

Abdominal isolations. Seated or standing, inhale. On exhale, contract abdominal muscles, pulling navel to spine. Seated, this can be done with a ball between lumbar spine and chair, contracting abdominals against the ball.

Ball handling. Stand in place. Bounce ball 4 times to right and 4 times to left. Bounce ball from side to side. Walk while bouncing ball and throwing ball in air and catching. Feet wide apart, bend one knee and reach ball from opposite side, overhead, making a rainbow shape. Repeat to other side.

Bend and reach. (Teaching note: Introduce as part of the 5 skills for better balance. This exercise can be performed with or without weights or seated. The goal is to practice the skills of bending down, reaching down and reaching up.)

With legs shoulder-width apart, squat while reaching down to the right side (as if picking up an object from the floor). Come back to center and reach up and across in front of body (as if placing something on a high shelf).

Big breath. Standing or seated, extend arms forward with palms facing each other, thumbs up toward ceiling. Take a big breath, open arms to side, bring elbows slightly back and toward each other to contract rhomboids. Exhale as arms return to starting position.

Footprints. Stand with feet close together. Press feet into floor as if standing in wet concrete or sand. Imagine roots all around the edges of the feet, growing into the floor. If able, cross arms over chest.



Bend ...



... and reach

Functional reach. Stand with feet together. (Stand directly behind a chair if needed.) Hold chair with one hand, reach forward as far as possible with the free hand, feeling the stretch in the back of the legs and across back of hips. Repeat with other hand. Then, run free hand down the front of the back of the seat, across the seat, and continue circling the arm forward and up, bringing it down from directly overhead. Repeat on other side.

Continued on page 12...



Continued from page 11

Hands in the air. Stand with back to a wall, back of head, heels and hips touching the wall (if possible). Lift arms to the side. Keep backs of hands on the wall, bend elbows to 90 degrees to bring hands up. Keep fingers against the wall. Rotate arms at shoulder to bring hands down, then lower arms to sides without changing posture. Step away from the wall holding new posture. Then release into old posture.

Hip and back extension. This is a combination of a hip flexor stretch and extension of the upper spine. Basic position is similar to calf stretch with one leg forward, one back, except front leg is straighter. Keep body upright, abdominals contracted. Press hip of back leg forward to stretch hip flexor. Raise one or both arms, hands to cheek, then extend up and back with thumb facing back. Objective is to move shoulders back with chest opening to extend the spine. Option: big toe of back leg on the floor, keeping more weight on front leg.

Ice cream cone. Same position as Footprints. Imagine feet in the bottom of an ice cream cone with shoulders at the top. Roll around in the cone, shoulders touching the inside of the cone, movement coming from the ankles. Keep knees, hips, waist, shoulders and head still.

Lower body seated ball workout. Sit forward on the edge of the chair.

1. Place ball between knees. Squeeze and release the ball, contracting gluteus maximus on each squeeze.
2. Place ball between ankles. Lift one knee, pressing the ball against the inside of the opposite calf, creating pressure inward, using adductors as well as quads and hip flexors. Squeeze and release the ball.
3. Place the ball under one foot and press the ball down with the heel only, the toes, the whole foot.
4. Using toes, roll the ball from side to side.



Hip and back extension

5. Sitting against the back of the chair, hold the ball between ankles. Extend and bend the legs.

6. Keeping the legs extended, squeeze the ball. Try to squeeze the ball with the backs of the legs (toes turned out).

Neck sequence. Roll shoulders up, back and down to pull scapula down. For best posture, bring ribs over hips, shoulders over ribs, ears over shoulders. Lower head directly forward toward chest, trying to bring chin to chest. Raise to center. Without moving head toward the side, lower center of chin to right collar bone medial end. Raise chin. Turn head about 45 degrees toward the diagonal, lower center of chin to center of collar bone. Do not tilt head or lower sideways. Repeat on other side.

Pedaling forward and backward. Stand. With one leg at a time, pretend to pedal a bicycle forward and backward.

Continued on page 13...



Continued from page 12

Posture pulldowns. Seated or standing. Stretch arms above head, slightly apart to form a “V,” palms facing forward. Pull elbows down toward sides/back, exhaling and contracting abdominals. Pull shoulders and scapula back, down and together.

Rock and roll. Same position as Footprints. Roll from side to side, feeling edges of feet in contact with the floor. Rock forward and back, keeping heels and toes on the floor.

Rocking horse. Stand in semi-tandem position with one or 2 feet between front and back foot. Rock forward on front leg, lift back leg in a hamstring curl. Lower back leg to floor, then rock onto back leg, lift front knee.

Rotator cuff exercise. Arms at sides, bend elbows to bring hands forward with palms facing each other. Rotate palms toward ceiling and open forearms to side with thumbs pointing back (as if hitchhiking).

Scratch. (Teaching note: Participants may hold a resistance band as an extension if their hands do not meet.)

Reach behind waist with one hand and place back of hand against back. Walk fingers up the back. Place other hand over shoulder as if to pat self on the back. Walk hand down to touch fingers of lower hand. Hold for 10–20 seconds. Repeat on the other side.

Tai chi weight shifts. Shift weight from side to side without removing either foot from the floor. Step forward in semi-tandem and shift weight forward and back without lifting feet completely off the floor.

Standing comfortably, raise the right foot gently and step forward, landing with the heel and rolling down through the ball of the foot. Shift weight enough to release the back foot, then step back on left foot rolling



Posture pulldown

down toe, ball, heel. Bring right foot back to left foot, feet together.

Tap three around. Stand with feet comfortable distance apart. Tap one foot forward, with leg extended (count 1), bring foot to the side to tap (count 2) and to the back to tap again (count 3). This completes a semi-circle. Bring legs together (count 4) and repeat on other side.

Turkey neck. Stand or sit with good posture. Press chin forward, keeping it parallel to floor, then pull chin back without tilting head, and make double and triple chins.

V to W. Reach arms up to form a V shape. Using back muscles, pull elbows in toward sides, making a W shape with arms.

Weight shifts, side to side in straddle. Roll onto toes and heels, normal stance and semi-tandem. •