

What is balance training?

To sit and to walk safely you need to have good balance. Balance training focuses on practicing and improving the body's ability to perform coordinated movement (of arms and legs) while maintaining a balanced posture, i.e. without falling, stumbling, or feeling wobbly. This is usually achieved through rehearsal of tasks, such as reaching for objects while holding the body straight. Training in sitting and standing should be initiated as soon as possible after a stroke, as these are basic, necessary tasks in daily life.

Why train balance after a stroke?

Balance is a basic requirement for active, independent, and safe movement of our bodies in daily life. Before your stroke, you probably balanced your body when sitting and standing automatically, without thinking about it. After a stroke, you may have balance problems that require you to concentrate a great deal to do simple things, such as putting on your socks, or standing at a sink to brush your teeth. Even people who experience only small problems with balance may have difficulty when walking outside on uneven ground or when crossing the street.

Are there different kinds of balance training?

Yes, there are different ways to retrain balance after a stroke.

- **Functional balance training:**

Recently, balance training has been focusing more on functional, task-specific training. In functional training, the individual who has had a stroke works on typical tasks that people perform in their daily lives, such as reaching into a cupboard for a cup or plate, or trying to carry a grocery bag.



- **Body weight support:**

After a stroke, some individuals are too weak and have difficulty sitting, standing, or walking in therapy. If this is the case, your body weight may be supported while you stand or walk either by your therapist or by a body harness.

- **Hydrotherapy:**



Pictures courtesy of Lynda Huey M.S. Complete PT Pool and Land Physical Therapy in Los Angeles, California. Photo by Robert Reiff

Sometimes, balance training is done in a therapeutic pool, using a technique called Hydrotherapy. Water makes your limbs lighter, since you are not moving against gravity. Water also provides support and stimulation so that you can work on your balance in a safe environment. Your therapist will usually work in the water with you to make sure that you are well supported and safe.

- **Proprioception training:**

Balance training can also include something called proprioception training, which can help you to be aware of where your arms and legs are in space. For example, after a stroke some people have difficulty knowing where their hand is when their eyes are closed. Proprioception is important to achieve proper balance, and the good news is that as we work on improving balance, we are training proprioception as well.

Other types of balance training you might hear about are:

“Bobath approach”: Bobath was a physiotherapist who developed a treatment approach that analyzes and interprets how you move after your stroke. After a stroke, many people move in a way that is different from before. Your therapist will work on training and modifying your movements to help you accomplish daily tasks. Usually a therapist will guide your arms, legs or trunk through the correct movements so that you can re-learn to do the activities correctly.

“Visual feedback” or “Biofeedback for trunk control”:

This technique uses a mirror in front of you or a video camera system to track your body, arms, or legs while doing activities like catching a ball or placing objects on a shelf. This allows you to see how you are moving so that you can try to correct your movements.

“Vision-deprived training”:

With your eyes covered, your therapist will help you do activities like standing on one or both legs, trying to sit on a pillow, or simply getting up from a chair and sitting down. This challenges your balance more than when your eyes are open. This is an activity you should try doing as you get better.

“Independent practice”:

You can work on your balance on your own. For example, during your independent exercise, you could have as a goal to stand on both legs with equal weight, or to try and sit on both buttocks with equal pressure.

NOTE: You should only try this once your therapist tells you that it is safe for you to do so.

“Balance biofeedback:”

After a stroke, it is typical to put more weight on your “good” leg when you are standing. However, it is important that you also put weight on your weaker leg. While you are standing, your therapist will use a computer screen with a special mat that will sense how much pressure goes through each foot. The amount of weight put through your weaker leg will then be recorded and will show up on the computer screen. Training in this way gives you immediate feedback about how well you are doing. At first, the goal may be to increase the amount of weight you put on your weaker leg. Next, it may be to put an equal amount of weight on both legs while standing. Eventually, you may try to put more weight on your

weaker leg. This is important because as we walk, we need to put our body weight through one leg at a time.

“Perceptual training”:



This technique focuses on training the awareness of your arms, legs, and trunk in space. For example you might be asked to touch your knee and then your forehead while your eyes are closed.

“Multisensorial Training”:

Following a stroke, you may become overly reliant on visual cues to help maintain your balance. Multisensorial training is a form of rehabilitation conducted while restricting the amount that you see. It focuses on the amount and intensity of your movements and exercise without placing emphasis on how well you perform them.

Does balance training work after a stroke?

Researchers have done experiments to see if balance training helps people who have had a stroke.

- **Task-oriented interventions:**

One high quality study looked at task-oriented interventions for walking. The results showed that this treatment can improve a person’s confidence in balance.

- **Perceptual exercises:**

After a stroke, it is common to have more body sway, and this makes you more unsteady on your feet. In one high quality study, results showed that perceptual exercises reduced the amount of body sway.

NOTE: Even without a stroke, everyone has a certain normal amount of body sway that we are not aware of.

- **Bobath Therapy Approach:**

One high quality study showed that the Bobath approach did not improve independence in normal daily living, sitting balance, standing balance, or the amount of weight put on the weaker leg.

- **Task-specific reaching training:**

One high quality study found that task-specific reaching does not improve how evenly you distribute your body weight through both buttocks when sitting. The same study results showed that such training does not improve how equally you put your body weight through both feet while standing.

- **Independent-practice training:**

There is limited research from one fair quality study that showed that when independent-practice training is combined with therapy based on the Bobath approach it does not improve balance after a stroke.

- **Visual feedback training:**

There is limited research based on two fair quality studies suggesting that visual feedback training does not result in improvements in balance. It is worth noting that one study did find important gains in the ability to perform self-care activities (such as washing, toileting, dressing, and grooming).

- **Balance biofeedback training:**

There are conflicting findings in this area. Three fair quality studies found no real gains in balance after using this training method. In contrast, two high quality studies on balance biofeedback training found that balance did improve after a stroke. Another high quality study demonstrated that biofeedback for trunk control training can improve significantly standing balance (not when walking or reaching).

- **Multisensorial Training:**

One high quality study found that multisensorial training (a form of therapy conducted while restricting what you see and focusing on the amount and intensity of movement and exercise) is **not** more effective than neurodevelopmental therapy (a form of therapy which focuses on quality of

movement and exercise) in improving standing balance. **However**, it is more effective at improving your balance when walking and moving around, as well as increasing independence in functional activities and improving quality of life.

Side effects/risks?

Balance is important to prevent you from falling. During balance training, you should always be supervised by an individual who knows about practicing balance training safely. Eventually, you will probably begin practicing balance exercises with your family or friends. Before you do so, your therapist should show them safe ways of working with you.

Who provides the treatment?

Balance training should be performed or supervised by a trained health professional. A variety of health professionals provide balance training as part of their treatment, including occupational therapists, physical therapists, and exercise therapists.

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