

Sensory-motor training

Balance is as important as strength or flexibility to your overall physical fitness. Most injuries occur suddenly when an unexpected force is encountered. A common example is when an ankle is sprained by stepping off a curb you didn't know was there. This illustrates that balance is even more important than strength in injury prevention. How your body responds automatically on a 'reflex' basis tells your health care provider a great deal about your ability to prevent future injuries. In fact, your posture won't easily improve unless balance function is also restored.

American Indians used to run bare foot in dried out river beds as a treatment for lower back pain. Our posture depends on a large amount and variety of stimulation coming in from the soles of our feet. Yet in the last 100 years we sit more, wear thick soled shoes and walk on flat or carpeted surfaces nearly all the time. A form of sensory deprivation has taken place and this leads to poor balance and fallen arches.

Balance training has been utilized for treating athletes with ankle sprains, children with vestibular (inner ear) problems, chronic knee injuries, elderly individuals with

ataxia (frequent falls), and even lower back pain. Surprisingly, balance training has been shown to improve strength in the thighs and lower legs even more than much more time consuming and intense strength training! Balance has been shown to improve by 200% with just 2 weeks of daily training. Such quick improvement makes balance training both fun and effective.

A simple balance exercise can be performed at home in a doorway. Simply stand on one foot and look straight ahead. While balancing try to grip the floor with your toes. Try to balance on just one foot for 30 seconds without hopping, holding on to anything or putting your other foot down. If you can do this then try it with your eyes closed. Once this is mastered then try it on a less stable surface such as your mattress. If you can't maintain balance for the full 30 seconds then be sure you are performing the simplest balance exercise and perform enough repetitions until the total time balancing is 30 seconds. To be effective you should do this on both feet at least twice a day.

Your health care provider will also train your balance with other tools such as balance boards,



Fig. 1 Single leg standing balance exercise with eyes closed.

balance sandals and gymnastic balls. Sometimes these will be used for your home program to maximize its effectiveness. For certain conditions — such as ataxia — up to 30 min a day of balance training is required to achieve positive results. However, this may only be required for a few weeks and is expected to improve balance over the long-term even without significant further practice.

One of the essential keys of improving balance training is placing your attention, 1 inch below your belly button and to try and keep that area still as you balance. This is your physical centre of gravity. Experiment with it yourself to see if it works. Your success will depend on your ability to keep that point steady as well as your attention on it.

One of the common difficulties people have with these balance exercises is to go from eyes open to eyes closed. This is because many people are visually dependent for their balance. The problem with this is if you're having a bit of a day dream or walking in poor light, your lack of balance can increase the likelihood of injury. If you're having difficulty at any stage, you can try making it easy to improve by introducing 'baby steps'. Once you've mastered an exercise by balancing for 30 seconds, you can progress by making the exercise a little more difficult. People who can balance steadily for 30 seconds with their eyes closed have been shown to have much less risk of injury. Also it's been shown that as we age it becomes more necessary to practise to retain our balance ability. Maintaining a good balance should also help you reduce the risk of falls as you get older.



Back-in-Action Chiropractic Clinic - Pain Relief, Rehabilitation, Performance & Wellbeing

28 Cop Lane, Penwortham, Preston, Lancs, PR1 0SR

Tel: 01772 749245 E-mail: reception@back-in-action.com Web: www.back-in-action.com

How To Progress Your Basic Balance Exercises

- If you are having problems balancing even with your eyes open, try fixing your gaze on something steady out in front of you about 30 degrees below eye level.
- You can also start with your arms out to the side, perhaps standing somewhere where you can reach out to touch a wall (e.g. in a corner of a room) or using some walking poles, to steady your balance. As you get better, gradually bring the arms lower, until you can balance with your arms by your side.
- The next step is to introduce movement in the arms or legs, perhaps going back to arms out if you need to. Try drawing out the alphabet with your hand or foot. Try turning your head or shoulders from side to side. Move your bent knee to one side. Move your bent knee to one side and your head to the other.
- Try working through all the previous steps standing on an unstable surface such as a thick cushion or wobble board.
- Try working through the above steps with one eye closed, then when your balance is good work through them with both eyes closed.



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