

DO IT!

Finding Your Balance!

Design an Investigation to Learn about Balance!



You'll Need

- 1) Blindfold
- 2) Couch Cushion, Throw Pillow, or Thick Blanket
- 3) Meter Stick or Baseball Bat
- 4) Timer
- 5) Paper & Pencil

1. **Brainstorm.** In a large group list places or activities where balance is important or where students have lost their balance (boat, subway/train, bus, riding a bike etc) Why might it be important to have better balance.
2. **Discuss Balance.** Balance is the ability to maintain a controlled body position while doing a task or even just sitting still. To stay balanced your body relies on information from three different sources.
 - Touch: Stretch and pressure cues from your feet, legs, arms, and other body parts help the brain know where your body is in space.
 - Sight: Visual cues from your eyes help the brain know whether your body is moving and what direction you are moving.
 - Inner ear: Organs in your ear help your brain detect gravity and movement.
3. **Practice Balance.** Have students share with a partner an experience they've had with balancing. Have the whole group test their balance. Ask everyone to stand on one foot, fold their arms across their chest, and close their eyes. How long can they hold stay balanced?
4. **Design an investigation.** When the brain can't get some information from the body it is harder to maintain balance. Introduce the SciGirls Challenge: Design an experiment to determine what type of information (touch, sight, inner ear) affects your balance most. As a large group brainstorm how you can alter touch, sight, and inner ear information. Make sure the list includes some of the items below:
 - Stand on one foot
 - Walk on a simulated balance beam (put two lines of tape on the floor 6 inches apart)
 - Stand with one foot on the floor and the other resting on a ball, short stool. Stand on a pillow, couch cushion or thick blanket.
 - Stand on your tiptoes

- Blindfold or close your eyes
- Close one eye and spin around multiple times quickly (looking up, down, and straight ahead)

5. Collect and Analyze Data. Have students work in small groups. Each group should choose a different variable to test and then record their results in a table. Take an average (total all the lengths of time balanced / number of trials) of the results from the trials with the variable and compare that to the control trial. Was the person able to balance longer during the control trial? What does that mean about how much that particular variable affects someone's balance?

6. Share. Have each small group share how changing different variables affected their balance. Were there some variables that didn't make a difference? Which variable(s) affected balance the most? Were there any commonalities across the different groups? Who would benefit most from knowing what affects balance?

7. Extension. The best thing about balance is that anyone can get better with practice. Athletes of all kinds (like surfers, dancers, and martial artists) often have better balance than other people because they practice their balance all the time. Have groups practice the balance activities regularly for an extended period of time (a week or two), then do the experiment again. Did their balance get better?