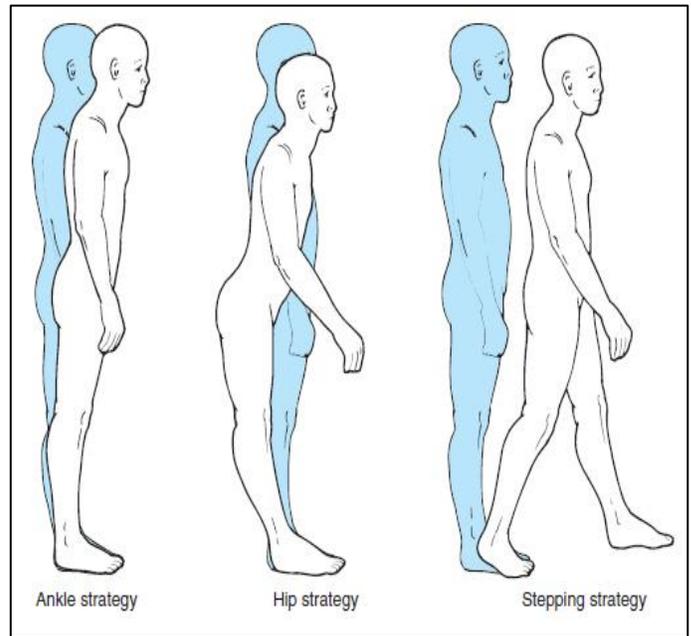
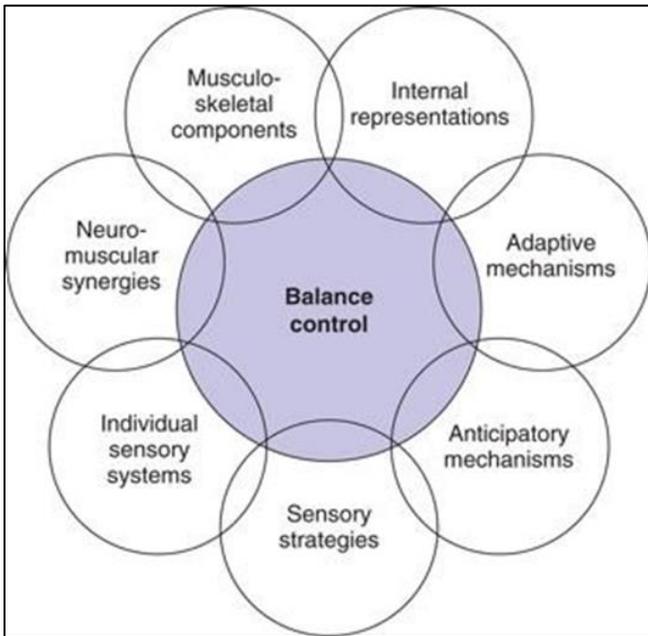


BALANCE SEMINAR – 9-18-18 – Dr Bruce



BALANCE CONTROL:

Many complex systems integrate in concert to keep a bi-pedal (2-legged species) standing erect and mobilizing without failing and falling.

Center of gravity- the spot on your body that acts as a balance point around which your body moves

Cone of stability- upside down cone surrounding your body that depicts the amount of movement your upper body can make without needing the step strategy to protect against falling

Base of support- what you are using to keep your body steady. In most cases, it's your feet about shoulder width apart

Perturbation- anything that acts to knock you off balance. It could be someone shoving you, or a rock that trips you, or an uneven piece of cement on a side-walk.

Static (holding still - stand) vs *Dynamic* (in motion - walking)

Balance Strategies: 3 lines of defense

Ankle – foot making tiny movements to counter any changes in the body's center of gravity

Hip – The hips work by swaying and moving the trunk to wherever it needs to go so that we don't fall outside of our cone of stability

Step - When the perturbation is so large that the ankle or the hip cannot help the only option is to take a step, broadening our base of support

Tests of Static & Dynamic Balance: <http://geriatrictoolkit.missouri.edu/balance/>

<https://www.topendsports.com/testing/balance.htm> <https://www.youtube.com/watch?v=cULsiZMA2oU>

Stork Balance Stand Test

The stork balance test requires the person to stand on one leg for as long as possible. The similar [Flamingo Balance Test](#) is different as it requires the subject to balance on a board.

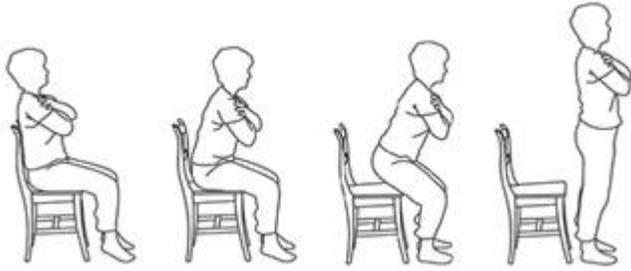
- **purpose:** To assess the ability to balance on the ball of the foot.
- **equipment required:** flat, non-slip surface, [stopwatch](#), paper and pencil.
- **procedure:** Remove the shoes and place the hands on the hips, then position the non-supporting foot against the inside knee of the supporting leg. The subject is given one minute to practice the balance. The subject raises the heel to balance on the ball of the foot. The stopwatch is started as the heel is raised from the floor. The stopwatch is stopped if any of the follow occur:
 - the hand(s) come off the hips
 - the supporting foot swivels or moves (hops) in any direction
 - the non-supporting foot loses contact with the knee.
 - the heel of the supporting foot touches the floor.



Rating	Score (seconds)
Excellent	> 50
Good	40 – 50
Average	25– 39
Fair	10 – 24
Poor	< 10

- **Scoring:** The total time in seconds is recorded. The score is the best of three attempts. The adjacent table lists general ratings for this test.
- **Variations:** the stork balance test is also sometimes conducted with the eyes closed, giving it a higher level of difficulty. See also the similar [flamingo balance test](#).
- **Alpha-Fit Version:** in the [Alpha-Fit](#) version of this test, the hand do not need to be placed on the hip, and timing stops if the hands go above the horizontal level. There is also a 60 second maximum score.
- **Reference:** Johnson BL, Nelson JK. Practical measurements for evaluation in physical education. 4th Edit. Minneapolis: Burgess, 1979.

EXERCISES TO IMPROVE BALANCE IN INJURED, DECONDITIONED, BEGINNER, MATURE POPULATIONS – EXERCISES TO INCREASE RANGE OF MOTION AT ANKLE + HIP & CORE STRENGTH (EYES OPEN/CLOSED, SHOES ON/OFF, NARROW STANCE). INCLUDE YOGA, PILATES, TAI CHI, STRENGTH TRAINING



Single leg balance with leg extension



EXERCISES TO IMPROVE BALANCE IN AN **NON-LIMITED INJURED, ADVANCED** **CONDITIONED, ATHLETIC POPULAITONS** – EXERCISES TO INCREASE ROM AT ANKLE + HIP & CORE STRENGTH. USE DIFFERENT LESS STABLE SURFACES (NAKED FOOT, FOAM PAD, SINGLE LEG, BOSU BALL, STABILITY BALL, ADD WEIGHTS, BANDS, BELLS, BALLS)

