



Relationship Between Balance and Core Strength

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Background

- Balance is a key factor in sports rehabilitation, training, and performance.
- Assessment of the relationship between balance and core strength can help ensure that proper interventions, exercises, and strength and conditioning programs are prescribed.
- This can ultimately help individuals or athletes reach goals more effectively.

Literature Review

- Ambegaonkar et al., (2014)
- 40 collegiate female athletes were used to examine the relationship between core endurance, hip strength, and balance.
- The researchers used the modified Star Excursion Balance Test (SEBT) and McGill's core endurance tests.
- After the correlation was ran between balance and core strength, the researchers found an r-value of 0.32 between left lateral core endurance and right posteromedial SEBT scores. This value reflects a fair, positive correlation.

Purpose

- The purpose of the study was to determine if there was a relationship between balance and core strength.

Methods

Participants: 21 Exercise Science students from Tennessee Tech (7 Males and 14 Females), including 7 Division 1 athletes

Instrumentation: White Tape, Tape Measure, Pen/Pencil, Stopwatch, Protractor, Data Collection Paper

Procedures: Modified Star Excursion Balance Test:

- Prior to the test, tape is placed on the floor in 3 directions (anterior, posteromedial, and posterolateral) and appropriate degrees measured with a protractor.
- Leg length is recorded in centimeters.
- While maintaining a stance on one leg, the participant reaches the opposite leg out as far as possible in each direction.
- Distance is recorded by the researcher, and process repeated in the remaining 2 directions, as well as with the other leg.
- Two additional trials are performed for accuracy.
- During data collection, leg length is normalized to the average reach distance to produce a total balance score.

Procedures: McGill's Lateral Musculature Plank Test:

- The participant lies on the right side with feet placed one on top of the other.
- The right arm is perpendicular to the floor, and the left arm is across the chest and on the right shoulder.
- The participant lifts the hip off the floor, and timing begins on the stopwatch.
- Time is stopped and recorded in seconds when a straight body position can no longer be maintained.
- Process is repeated on the left side.
- The average of the two lateral plank times produce a total plank score.



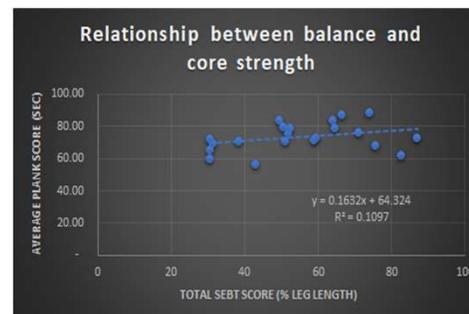
Modified Star Excursion Balance Test (SEBT)



McGill's Lateral Musculature Plank Test (Right)

Results

- $Y = 0.1632x + 64.324$
- Example for balance score of 70:
- $Y = 0.1632(70) + 64.324 = 75.75$ seconds
- SEE = 16.77
- CI 68%: 68% confident that someone who has a balance score of 70 will have an average plank time that falls between 58.97 and 92.52 seconds.
- After running a correlation, the researchers found an r-value of 0.33.



Discussion

- Based upon these results, researchers found that there is a weak, positive relationship between balance and core strength. While there is a positive correlation between these two variables, it does not deem balance the strongest predictor of core strength. The r-value of 0.33 was not significant at alpha = .05. While further research should be conducted with a larger sample size to determine what other factor(s) provide a higher degree of explanatory value, our findings will benefit individuals or sports professionals, such as coaches or rehabilitation therapists, who are looking for more information about how balance is related to core strength.

References

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