

# Outcomes Following a Balance Training Program with a College Athlete: A Case Report

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## Introduction

- Unsteady surface training has been shown to decrease power output, which is unfavorable to athletes including golfers.
- This case report explores a 6-week balance intervention program that does not utilize unsteady surface training.
- Pre-intervention and post-intervention balance assessments will be analyzed, as well as specific golfer performance indicators.

### Key Aspects of a Balance Intervention Program

- Duration: 10-15 minutes in length
- Frequency: 3 – 4 times per week
- Begins 4-6 weeks prior to competitive season
- Sport-specific motions

## Patient History / Systems Review

### Patient Demographics:

- 21 year old Caucasian male

### Activity Level:

- Golfs approximately four times per week.
- Strength trains 1-3 times per week.

### Past Medical History

- Unremarkable

## Examination

### Pre-intervention Evaluation

- Biodex balance assessment:
  - Postural sway
  - Limits of stability
  - m-CTSIB
  - Athletic single leg stance stability
- Trackman golf swing analysis
  - Important golf performance indicators included club head speed, attack angle, club head angle, and face angle.

## Clinical Impression

### Balance Impression

- As an athlete, the patient had above average balance scores when compared to his age norms.
- Postural sway index, limits of stability, and athletic single leg stance were all above average
- The patient showed lower than average scores on one aspect of the m-CTSIB, which tested his ability to use his vestibular system and visual system to maintain balance. This indicates over-dependence on his somatosensory system.

### Golf Swing Analysis

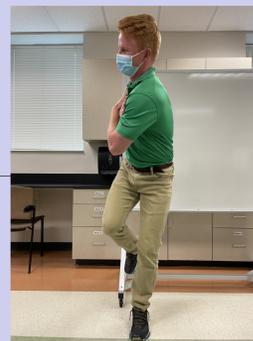
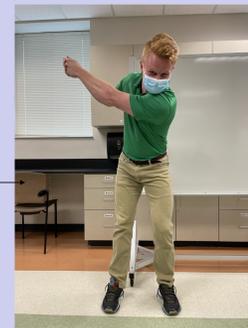
- High variance in attack angle and club path during the 14 swing analysis
- Club speed, ball speed, and carry were higher than average, but lower than the average PGA tour players.

## Intervention

- Patient completed the training 5 times per week following a 5-minute aerobic warmup of his choice.

### Exercises

1. Limits of Stability Circumduction
2. Slow motion swing – eyes closed
3. Single leg stance – eyes open
4. Single leg stance – body rotation
5. Single leg stance – head turns
6. Single leg stance – eyes closed



## Outcomes

### Biodex Balance Assessment Outcomes

- The patient's postural stability significantly improved after the 6-week intervention program.
- The patient's m-CTSIB scores were varied. The postural sway index increased for the steady surface tests. The unsteady surface tests were both improved following the intervention program.
- All components of the athletic single leg stability improved.
- The patient's limits of stability data points were inconsistent, but the overall score showed an improvement.

### Trackman Golf Swing Analysis Outcomes

- No significant changes in club head speed.
- Attack angle variance decreased.
- Club path variance decreased.

Postural Stability		
Actual scores	Score Pre	Score Post
Overall stability index	2	0.4
A/P index	1.9	0.2
M/L index	0.2	0.3

## Conclusions

- Following this 6-week balance intervention, a collegiate golfer improved multiple aspects of balance.
- The patient improved his unsteady surface m-CTSIB scores, suggesting an increase in the ability to utilize visual and vestibular components of balance.
- The most advanced balance assessment, athletic single leg stance, saw the greatest improvement between pre- and post-intervention scores.
- This specific intervention format can provide a framework for future balance research that is designed for golfers.
- Certain golf performance indicators showed more consistency after a 6-week balance intervention.