

# RELATIONSHIP BETWEEN BALANCE SWAY VELOCITY AND TIME ZONE TRAVEL IN A COLLEGIATE WOMEN'S BASKETBALL TEAM



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## BACKGROUND

- Postural control is critical for efficient movement and rapid responses in athletic settings. Increased postural sway (balance sway velocity; BSV) during static stance may indicate neuromuscular fatigue, which can elevate the risk of lower limb injury.
- Travel across multiple time zones can disrupt sleep, energy metabolism, and cognitive function, impairing neuromuscular control and muscle activation—factors that may negatively affect athletic performance.

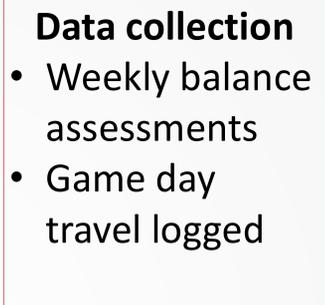
## PURPOSE

To examine whether time zone (TZ) travel versus no time zone (NTZ) travel influenced balance sway velocity (Bsv) in NCAA Division I women's basketball players across two competitive seasons.

**Table 1.** Comparison of Balance Sway velocity between No Time Zone Travel vs. Time Zone Travel

	No Time Zone	Time Zone
<i>n</i>	639	87
Balance Sway Velocity (m/s)	0.031 ± 0.010	0.029 ± 0.008

## METHODS

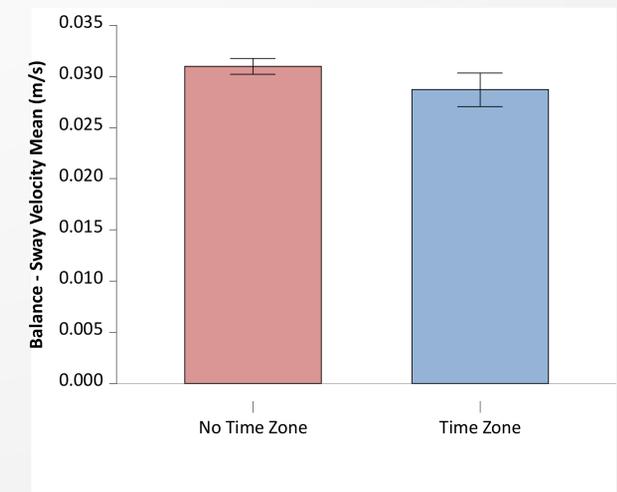


## CONCLUSION & PRACTICAL APPLICATION

- Time zone travel did not significantly impact balance sway velocity in collegiate women's basketball players.
- Force plate balance assessments offer a non-invasive approach to evaluate fatigue and neuromuscular control, helping determine an athlete's ability to respond to rapid movement demands.
- Sports performance staff should monitor balance metrics but may not need to alter training based on time zone travel alone.
- Testing in a non-laboratory setting may have introduced external variability, and individual differences in travel adaptation could mask group-level effects.
- Future research should explore individual variability in travel adaptation and its effects on neuromuscular performance.

## RESULTS

- Balance sway velocity for No Time Zone Travel and Time Zone Travel is shown in **Figure 1**.
- The total number of games played during each travel condition and the corresponding average balance sway velocities are presented in **Table 1**.
- No significant difference was found in Bsv between TZ (M=0.028,SD=0.007) and NTZ (M=0.028,SD=0.007); W=2888.000,p=0.574.



**Figure 1.** Scatterplot of Balance Sway Velocity: No Time Zone Travel vs. Time Zone Travel

## References

