IS DYNAMIC STABILITY RELATED TO NINTENDO Wii FIT BALANCE SCORES DURING YOGA POSES?

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INTRODUCTION

Dynamic stability is the ability to transition from a dynamic movement to a stable, static condition over one's base of support. Time-to-stability (TTS), based on the diminishing fluctuations of ground reaction forces, is often used to assess this transitional ability [1]. Yoga, on the other hand, requires practitioners to hold poses, often on one leg, for extended durations. The Nintendo Wii FIT system offers easy-to-use yoga programs and is a low cost balance training tool.

Because of the increased demands of yoga compared to static stability protocols, balance scores associated with yoga poses may be indicative of a person's dynamic stability. The Nintendo system is a low-cost training tool that may be valuable to clinicians evaluating the stability of young, active populations. With this in mind, our purpose was to determine if TTS is related to Wii system balance scores of two yoga poses.

METHODS

Twenty-nine participants volunteered for this study (age = 21 ± 3 yr; mass = 71 ± 15 kg; ht = 172 ± 9 cm) and completed two Wii FIT yoga modules for the half-moon (HM) and tree (TR) poses. These poses required single-leg stance, included attempts for right and left legs, and produced a balance score after an attempt of 30 s.

Before and after the yoga sessions, a dynamic stability test was conducted. Participants performed a forward hop, after 2 steps, and landed on an AMTI force platform. Trials were performed for landing on right and left legs. Ground reaction force (GRF) data were collected at 100 Hz for 10 s after landing. TTS was calculated using a sequential estimation technique applied to components of the GRF in the medial-lateral (ML), and anterior-posterior (AP) directions [1]. Pre- and post-yoga TTS values were averaged and those TTS values were correlated with Wii system balance scores from two yoga poses, completed for right and left legs.

RESULTS AND DISCUSSION

TTS values were similar to previously reported values for a similar sample [2]. Statistically significant, inverse relations were identified between Wii balance scores for the half-moon pose and TTS values based on AP GRFs. Higher Wii balance scores were related to longer, right leg TTS values based on ML GRFs (right leg landings only). For both poses, TTS values explained only 14-31% of the variability in Wii system balance scores.

Table 1. Correlation coefficients between TTS measures and Wii system balance scores.

	HM-L	HM-R	TR-L	TR-R
TTS-L-ML	-0.06	-0.01	0.02	-0.17
TTS-L-AP	**-0.47**	**-0.56**	-0.22	-0.24
TTS-R-ML	0.02	-0.02	**0.37**	**0.56**
TTS-R-AP	**-0.40**	**-0.44**	0.01	-0.13

Note: values in bold, $p < .05$

CONCLUSION

Shorter AP-TTS values were associated with higher Wii balance scores for the half-moon pose, whereas longer ML-TTS measures were associated with higher Wii balance scores during the tree pose.

REFERENCES

[1] Colby et al. (1999). J of Orthopaedic & Sports Phys Ther, 29, 444-454.
[2] Liu K & Heise GD (2009). Proceedings of the ASB, Abstract 1073.