Grant Information Summary

The Effects of a 4 Week BAPS Rehabilitation Program on Subjects with Functional Ankle Instability

Practical Significance

A simple wobble board rehabilitation program consisting of clockwise and counterclockwise rotations (3 days a week for 4 weeks) improves clinical impairments and self-reported functional stability in active individuals suffering from functional ankle instability.

Background

Rehabilitation protocols using multiple exercises have been shown to improve balance and decrease ankle sprain incidence in individuals with functional ankle instability (FAI). While these outcomes are desired, evidence is lacking on how each specific exercise in rehabilitation programs contribute to improving clinical outcomes and self-reported outcomes.

Objective

To quantify improvements in clinical impairments and self-reported outcome using a single ankle rehabilitation exercise as a therapeutic intervention.

Design & Setting

Prospective, randomized controlled experimental design. Research laboratory.

Subjects

Thirty-four subjects with "giving way" and a history of ankle sprains (i.e. FAI) were participants. Subjects had to score ≤27 on the Cumberland Ankle Instability Tool (CAIT). Seventeen subjects (170.22±8.71 cm, 75.57±13.55 kg, 22.94±2.77 yrs; CAIT=16.94±5.08) were randomly assigned to a rehabilitation group (REH) and seventeen subjects (168.57±9.81 cm, 77.19±19.93 kg, 23.18±3.64 yrs; CAIT=17.18±4.43) were randomly assigned to a control group (CON).

Measurements

Dependent measures included average number of foot lifts (FLT), average reach distance (cm) normalized by leg length (PMR), time (s) to complete testing (SHT), and CAIT score. Fewer foot lifts, longer reach distances and shorter times indicated improved performance. Larger CAIT scores indicated improved self-reported functional stability.

Results

Main effects for time were significant for all measures ($P<0.05$). Significant interactions were found for FLT ($REH_{pre}=5.61\pm2.59$, $REH_{post}=3.82\pm2.25$, $CON_{pre}=5.00\pm1.73$, $CON_{post}=4.61\pm1.77$; $F_{(1,32)}=4.55$, $P=0.041$), PMR ($REH_{pre}=0.85\pm0.12$, $REH_{post}=0.98\pm0.12$, $CON_{pre}=0.88\pm0.08$, $CON_{post}=0.86\pm0.09$; $F_{(1,32)}=23.79$, $P<0.001$), and SHT ($REH_{pre}=19.55\pm9.54$ s, $REH_{post}=12.40\pm6.15$ s, $CON_{pre}=16.20\pm7.95$ s, $CON_{post}=15.18\pm7.95$ s ; $F_{(1,32)}=8.37$, $P=0.007$). Post-hoc testing showed that the REH group improved performance on all measures at posttest, whereas the CON group did not. Main effect for time was significant ($P=0.021$). A significant group by test interaction was found ($REH_{pre}=16.79\pm4.90$, $REH_{post}=22.86\pm4.83$, $CON_{pre}=17.00\pm4.59$, $CON_{post}=16.43\pm6.03$; $F_{(1,26)}=8.88$, $P=0.006$). Post-hoc testing showed that groups were not different at pretest. Posttest score for the REH group was greater than pretest score; the CON group did not improve at posttest. Lastly, posttest score for the REH group was greater than the pre- and post- test scores for the CON group.

Conclusions

Wobble board rehabilitation improved clinical impairments and self-reported functional stability. We suggest utilizing this program to improve balance and performance deficits associated with FAI. Future research should examine how long the improvements in self-reported functional stability last (ie. 1 month, 6 months, 1 year).

Publication & Presentation List

NATA Oral Presentation (2011)

The Effect of a 4-Week BAPS Rehabilitation Program on Subjects with Functional Ankle Instability

Linens SW*, Ross SE†, Arnold BL†: *Georgia State University, Atlanta, GA, †Virginia Commonwealth University, Richmond, VA.

NATA Oral Presentation (2012)

The Effect of a 4-Week Wobble Board Rehabilitation Program on Improving Functional Ankle Instability

Linens SW*, Ross SE†, Arnold BL†: *Georgia State University, Atlanta, GA, †Virginia Commonwealth University, Richmond, VA.

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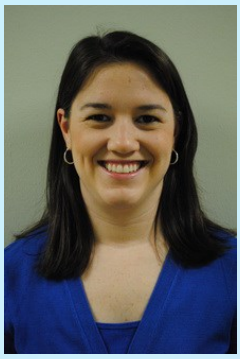

Shelly W. Linens, PhD, ATC

Dr. Linens currently lives in Atlanta, Georgia. She has been an Assistant Professor and Program Coordinator for the Graduate Sports Medicine Program at Georgia State University since August 2010. She and her husband, fellow athletic trainer, Adam Linens, have two Great Danes.

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2952 Stemmons Freeway
Dallas, Texas 75247
800-879-6282
www.natafoundation.org

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