

The effect of functional movement screen-based circuit training on balance and postural stability

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Purpose: Deficits in balance and stability have been associated with increased injury risk and older, relatively untrained, participants may demonstrate poorer balance than younger athletes. The Functional Movement Screen (FMS) has become popular as an injury risk screening tool. Since training may improve both FMS performance scores and postural stability, the purpose of this study was to determine if a circuit training program designed to target FMS improvement over six weeks improves balance and stability in older individuals. **Methods:** A pre-test, post test design was used. Eight healthy female subjects (57.0 ± 4.2 years) performed pretest measurements for static stability (anterior-posterior [AP] and medial-lateral [ML] shear force range) on a Kistler Force Plate and dynamic stability (AP and ML stability index) on a Biodex SD Stability System, before engaging in a 6-week circuit training program. Subjects trained twice per week for 6 weeks (a total of 12 sessions, 30 min per session) with the program consisting of 9 resistance exercises targeting major muscle groups and modeled after practical FMS movements. A post test was then conducted on the same measures as pretest no more than 72 hours after the final training session. **Results:** Paired samples t-tests were used (SPSS version 17.0) to compare pre- and post-test scores in static and dynamic stability. Due to low sample size and relatively low power, no statistical significance was found on any dependent variable. However, mean scores improved 49% in AP and 12% in ML shear force range for static stability, and 18% in AP and 22% in ML stability index for dynamic stability.

| Stability Parameter | Pre-test | Post test |
|--------------------------|-----------------|-----------------|
| AP Shear Force Range (N) | 62.5 ± 52.9 | 32.2 ± 12.1 |
| ML Shear Force Range (N) | 51.6 ± 28.9 | 45.5 ± 25.9 |
| AP Stability Index | $1.54 \pm .765$ | $1.29 \pm .813$ |
| ML Stability Index | $.738 \pm .526$ | $.575 \pm .243$ |

Conclusion: Results of this pilot study, demonstrating a consistent trend toward improvement in mean scores over time on all stability measurements, indicate a basis for further investigation of the benefits of FMS-based circuit training on balance and postural stability.
