**EFFECT OF A MULTI-SEGMENTAL ROTARY EXERCISE PROGRAM ON HIP EXTERNAL ROTATOR AND ANKLE INVERTOR STRENGTH**

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**BACKGROUND AND PURPOSE**
- Lower extremity (LE) sprains / strains account for 36% of all injuries treated in emergency rooms1
- Many intrinsic and extrinsic risk factors have been associated with LE injury2
- Neuromuscular performance capabilities influence an individual’s response to external loads and forces3
- Both dynamic control of foot pronation and core stability appear to be important contributors to force dissipation4
- Improved hip and ankle muscle performance may provide an important contribution to optimization of core and LE dynamic stability5

**SUBJECTS AND PROCEDURES**
- Participants were 19 college students (21.9 ± 5.7 years of age)4
- 4 males: 177.8 ± 6.9 cm; 90.5 ± 10.7 kg; 15 females: 168.7 ± 5.5 cm; 70.3 ± 12.1 kg
- Exclusion Criteria: Participation in an intercollegiate sport within previous year; LE injury sustained within the 3 weeks of testing
- Joint-specific surveys administered to quantify functional status prior to initiation of strengthening program
- Oswestry Disability Index (ODI)4
- Intraclass correlation coefficient (ICC) calculated to assess measurement precision
- Pre-test values compared to post-test values for 8 participants (18%); reported improvement in overall functional capabilities

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**RESULTS**
- **WP** strength (kg) demonstrated exceptionally good consistency
- **HER ≥ 0.56 kg** improved by 34% (R & L)
- **WSH ≥ 8 sec** improved by 15% (R & L)
- **HER ≥ 0.56 kg** improved by 34% (R & L)
- **WSH < 8 sec** improved by 15% (R & L)

**Clinical Relevance**
- **HER and INV measurements obtained from hand-held dynamometer demonstrated exceptionally good consistency**
- **Use of stabilization belt appears to reduce variability of measurements**
- **Transverse plane strengthening program produced substantial improvements in multiple aspects of functional status**
- **Improvements in both measures of muscle performance and survey-derived function scores suggest that transverse plane strengthening may provide an important contribution to optimization of core and LE dynamic stability**

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**REFERENCES**