Correlation Between Dorsiflexion Asymmetries and Current Injuries in Collegiate Women's Lacrosse Players: A Clinical Case Series

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Background

Reduced dorsiflexion is a modifiable risk factor that can contribute to sustaining lower extremity injury such as ankle sprain, ACL sprain, plantar fasciitis, patellofemoral pain syndrome, and tendinopathy.[1-3] The weight bearing lunge test (WBLT) is a functional test that measures the amount of dorsiflexion a person has in a weight-bearing position. Healthy adults have been found to have asymmetries in dorsiflexion of up to 1.5 cm.[1] However, it has also been found that any asymmetry exceeding 2 cm is considered to be potentially indicative of pathological impairments.[1] Identifying dorsiflexion asymmetries can help clinicians in the prevention and treatment of injury.[2] Considering this information, we chose to examine the records of 30 collegiate women's lacrosse players who were screened using the WBLT at the beginning of their competitive season in order to investigate the relationship between dorsiflexion asymmetries and injury reporting.

Methods

All members of a Division III NCAA Collegiate Women's Lacrosse team were screened for injury history at the start of their season. If they had any history of lower body injury, they were asked to indicate which side was affected. All athletes were also assessed on the WBLT in accordance to the knee-to-wall principle described by Hoch and McKeon.[1] The WBLT was performed on both legs of all athletes and the maximum distance from the wall for each ankle was recorded. To examine potential WBLT asymmetries, the absolute difference between the right and left WBLT values was calculated. In order to explore the potential clinical meaningfulness of WBLT asymmetries, athletes were then separated into two groups: those who have sought athletic training services for lower body injuries since the WBLT assessment during the season and those who have not thus far.

Results

Since the start of the competitive lacrosse season and the initial WBLT assessment, 12 of the 30 athletes have sought care from the athletic trainers for lower body injuries. The injuries reported have included low back pain, ankle sprain/strain, plantar fasciitis, and medial tibial stress syndrome. When examining the dorsiflexion asymmetry values from those athletes who reported to the athletic trainers (WBLT Asymmetry: 1.5±1.0cm) compared to those who have not complained of injury (WBLT Asymmetry: 1.0±0.8cm), there appears to be a higher level of asymmetry in those who have sought out care. In order to assess the magnitude of this asymmetry, we calculated a Hedges' g effect size (ES) with a 95% confidence interval (CI) between the mean differences in asymmetry values reported above. This analysis revealed an ES of 0.6 with a 95% CI ranging from -0.2 to 1.3 suggesting a potentially meaningful difference between groups.

Discussion

Upon analysis of the WBLT outcome measures taken at the start of the season in combination with those who have sought out athletic training services for lower body injuries since, there is a trend for larger ankle dorsiflexion asymmetries in the injured group. Of the 12

injured athletes, 58% (7/12) had dorsiflexion asymmetries $\geq$ 1.5 cm. In contrast, only 28% (5/18) of those who have not sought out care have this level of asymmetry. This finding seems to support the current literature that links dorsiflexion asymmetries with injury risk. Clinically the findings of this study suggest that the WBLT can be used in the future to identify athletes with these asymmetries so that a prophylactic therapeutic exercise program could be used to address the difference and help to reduce injury risk. Utilizing outcome measures in a systematic way in clinical practice can provide strong evidence for more robust decisions regarding injury risk, prognosis, and therapy decisions. Based on the results from this clinical case series, we will continue to explore the clinical utility of the WBLT.

Bibliography

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