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Peak and End Range Eccentric Evertor/Concentric Invertor Muscle Strength Ratios in Chronically Unstable Ankles: Comparison with Healthy Individuals

Yavuz Yildiz¹, Taner Aydin¹, Ufuk Sekir², Bulent Hazneci³, Mahmut Komurcu⁴, Tunc Alp Kalyon^{1,3}

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¹ Department of Sports Medicine, Gulhane Military Medical Academy, Ankara, Turkey

² Department of Sports Medicine, Medical Faculty of Uludag Univeristy, Bursa, Turkey

³ Department of Physical Medicine and Rehabilitation, Gulhane Military Medical Academy, Ankara, Turkey

⁴ Department of Orthopaedic Surgery and Traumatology, Gulhane Military Medical Academy, Ankara, Turkey

Yavuz Yildiz

[✉] Department of Sports Medicine, Gulhane Military Medical Academy , 06018 Etlik, Ankara, Turkey

Email: yasabis@yahoo.com

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ABSTRACT

The aim of this study was to evaluate the alterations in eccentric evertor/concentric invertor strength ratio and their importance in the chronically unstable ankle. Eight patients with chronic ankle instability (CAI) and nine healthy individuals participated in this study. Isokinetic concentric and eccentric invertor and evertor muscle strength measurement was carried out at an angular velocity of 120°·sec⁻¹ by measuring maximal force moments (torque) during isokinetic ankle inversion and eversion movements. Functionally, evertor/invertor muscle strength ratios (E/I strength ratio) were calculated separately based on peak moment and angle-specific moments obtained at 0°, 5°, 10°, 15°, 20° ankle joint angles. Peak and angle-specific eccentric evertor strength values at 0°, 5°, 10°, 15°, 20° were significantly lower in the chronic ankle instability (CAI) group. In spite of this, no differences were obtained for peak and angle-specific concentric invertor torque values. Eccentric evertor/concentric invertor strength (E_{ecc}/I_{con}) ratios were also significantly lower in the CAI group, but only at 15° and 20°. Eccentric evertor muscle torque and end range (15°-20°) E_{ecc}/I_{con} strength ratio for the chronically unstable ankle were significantly different from those for the healthy ankle. For this reason, measurements of end range eccentric/concentric strength ratios are more valuable in monitoring chronic ankle injuries and rehabilitation should include not only concentric muscle strengthening but also eccentric muscle strengthening, particularly for the evertor muscles.

Key words: Unstable ankle, strength ratios, eccentric evertor, concentric invertor

Key Points

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