

## The Contribution of Hip Strategy in Dynamic Balance in Recurrent Ankle Sprain

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**Abstract :** Introduction: Ankle sprain is a common lower limb injury that is complicated by high recurrence rate. The cause of recurrence is not clear; however, changes in motor control have been postulated. Objective: To determine the contribution of proximal hip strategy to dynamic balance control in patients with recurrent ankle sprain. Methods: Fifteen subjects with recurrent ankle sprain (group A) and fifteen healthy control subjects (group B) participated in this study. Abductor-adductors as well as flexor-extensor hip musculatures control was abolished by fatigue using the Biodex Isokinetic system. Dynamic balance was measured before and after fatigue by the Biodex Balance system Results: Repeated measures MANOVA was used to compare between and within group differences. In group A fatiguing of hip muscles (flexors-extensors and abductors-adductors) increased overall stability index (OASI), anteroposterior stability index (APSI) and mediolateral stability index (MLSI) significantly ( $p=0.00$ ) whereas; in group B fatiguing of hip flexors-extensors increased significantly OASI and APSI only ( $p= 0.017, 0.010$ ; respectively) while fatiguing of hip abductors-adductors has no significant effect on these variables. Moreover, patients with ankle sprain had significantly lower dynamic balance after hip muscles fatigue compared to the control group. Specifically, after hip flexor-extensor fatigue, the OASI, APSI and MLSI were increased significantly than those of the control values ( $p=0.002, 0.011, \text{ and } 0.003$ , respectively) whereas fatiguing of hip abductors-adductors increased significantly in OASI and APSI only ( $p=0.012, 0.026$ , respectively). Conclusion: To maintain dynamic balance, patients with recurrent ankle sprain seem to rely more on the hip strategy.

**Keywords :** ankle sprain, hip muscles fatigue, dynamic balance

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