

## Hip Strategy in Dynamic Postural Control in Recurrent Ankle Sprain

**Authors :** Radwa Elshorbagy, Alaa Elden Balbaa, Khaled Ayad, Waleed Reda

**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 postural 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 postural control 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. This means that those patients depend on a top to down instead of down to top strategy clinical relevance: patients with recurrent ankle sprain less efficient in maintaining the dynamic postural control due to the change in motor strategies. Indicating that health care providers and rehabilitation specialists should treat CAI as a global/central and not just as a simple local or peripheral injury.

**Keywords :** hip strategy, ankle strategy, postural control, dynamic balance

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