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## PHYSICAL MEDICINE AND REHABILITATION

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**Comparison of the fatigue effect on lower extremity movements in subjects with or without chronic ankle instability during a lateral hopping task.****Ting Chun Huang***Chiung Yu Cho National Cheng Kung University, Taiwan.*

**Research Objectives:** Ankle sprain is one of most common sport injury. Fatigue was regarded as the risk factor which may increase the incidence of ankle sprain. Lots of researchers have investigated the pathological changes on the ankle sprain side; however, few studies have discussed the compensating mechanism on the sound side. Therefore, the purpose of this study was to compare the movement patterns in both lower extremities between the athletes with chronic lateral ankle sprain and the healthy participants during a lateral hopping task before and after fatigue.

**Methodology:** Twenty-six athletes were recruited from school or stadium. Half were subjects with chronic ankle sprain. After the warm-up exercise, the subjects may practice the lateral hopping task couple times until they were familiar with it. After performing the lateral hopping task, a fatigue task was performed. After the fatigue task, subjects performed the same task as before. The motion of the lower extremities was captured by the Qualisys System during the lateral hop task, and the data were analyzed for 200ms pre- and post-initial contact. Independent t test was used to analyze the baseline data (e.g. height, body weight) between control group and chronic ankle instability group. Three-way ANOVA was used to analyze the dependent variable, all results were analyzed by SPSS version 17.0 (SPSS, Inc., Chicago, IL, USA). The significant level was set at  $p < 0.05$ .

**Result:** Currently, we analyzed 16 subjects. For the ankle sagittal plane motion at initial contact, there was no interaction effect on time, group, and side factors. For the ankle frontal plane motion, there was a main effect on side ( $p = .028$ ), and a significant interaction for group X time X side in ankle instability group ( $p = 0.04$ ). Post hoc analysis was processed. The ankle sprain group had a more-inverted ankle on the injury side than the sound side ( $+5.99^\circ$ ) at initial contact before fatigue task ( $p = .093$ ). In normal group, they had a more-inverted ankle on their dominant side than their non-dominant side ( $+8.24^\circ$ ) after fatigue task, and the result stated significant difference ( $p = .021$ ). Conclusion: Although there was no significant difference between groups in two sides of ankle motion at initial contact for both before and after fatigue task, some differences were found subsequently. The ankle sprain group had a more-inverted ankle on the injury side than the sound side ( $+5.99^\circ$ ) at initial contact before fatigue task. In the normal group, they had a more-inverted ankle on their dominant side than their non-dominant side at initial contact after fatigue task, and these differences may be related to increased risk of ankle injury.

**Biography**

Ting Chun Huang is a senior of master's degree student in Postural and Balance Lab in the Department of Physical Therapy in National Cheng Kung University in Taiwan. He is a physical therapist and usually participates in sports events for providing athletes physical therapy treatment in international competitions, such as WBSC IV U-12 Baseball World Cup® 2017. His advisor is Dr. Chiung-Yu Cho, who is the associate professor in the Department of Physical Therapy and specializes in "Motor Control and Cumulative Trauma Disorder". Professor Cho has published more than 70 papers in reputed journals and has been serving as an editorial board member of repute.

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