

Immediate Effect of Augmented Feedback on Jumping Performance of the Athletes with Dynamic Knee Valgus

Authors : Mohamadreza Hatefi, Malihe Hadadnezhad

Abstract : It is well established that jump-landing-related biomechanical deficiencies, such as dynamic knee valgus (DKV), can be improved by using various forms of feedback; However, the effectiveness of these interventions synchronously on athletes' jumping performance remains unknown. Twenty-one recreational athletes with DKV performed countermovement jump (CMJ) and drop vertical jump (DVJ) tasks before and after feedback intervention while the kinematic, force plate and electromyography data of the lower extremity were synchronously captured. The athletes' jumping performance was calculated by using the reactive strength index-modified (RSI_{mo}). The athletes at the post-intervention exhibited significantly less hip adduction and more tibial internal rotation during both CMJ and DVJ tasks and maximum knee flexion just during DVJ task. Moreover, athletes exhibited increased time to take-off and consequently decreased RSI_{mo} during DVJ task, but no difference was observed in CMJ task. Feedback immediately improved DKV without disturbing the athletes' jumping height during both tasks, But athletes exhibited increased time to take-off and consequently decreased RSI_{mo} only during DVJ task, which suggests that the results may differ according to the nature of jumping task. Nevertheless, the effectiveness of landing-related biomechanical deficiencies improvement on athletes' jumping performance must be investigated in the long-term as a new movement pattern.

Keywords : reactive strength index, feedback, biomechanics, dynamic knee valgus

Conference Title : ICKESS 2023 : International Conference on Kinesiology, Exercise and Sport Sciences

Conference Location : Sydney, Australia

Conference Dates : December 04-05, 2023