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Impact of ankle taping on dynamic balance and functional performance following fatigue simulation in elite youth soccer players with chronic ankle instability

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Abstract

Numerous activation energy systems, encompassing both aerobic and anaerobic pathways, are essential to fulfill the energy requirements of muscles during a 90-min soccer match. In the later phases of the game, a decline in physical performance becomes evident, marked by reduced work rate, muscular force output, and efficacy in high-intensity activities. Progressive fatigue sets in, prominently impacting dynamic balance and overall functional performance among players. A previous study highlighted a noteworthy 48% occurrence of ankle sprain injuries during the latter part of a soccer match, particularly within the last 15 min of each half; this issue is especially prevalent among elite youth soccer players. Motivated by this, our study aimed to evaluate the impact of ankle taping on dynamic balance and functional performance after fatigue induced in elite youth soccer players dealing with chronic ankle instability. Employing a pre-and post-quasi-experimental study design, participants were selected from a football academy, focusing on elite youth soccer players with chronic ankle instability. The study groups comprised an intervention group subjected to ankle taping and a control group without taping. Dynamic balance was assessed using the Y balance test (YBT), and functional performance was quantified through the single-leg hop test (SLHT) following a fatigue-inducing protocol. The results unveiled a significant time × group interaction in SLHT for functional performance ($p < 0.0125$), indicating a significant impact of ankle taping. Conversely, no significant interaction was observed for dynamic balance across all directions (anterior [ANT], posteromedial [PM], and posterolateral [PL]). However, a noteworthy between-group change was evident in PM, PL, and SLHT for POST5, POST20, and POST35 ($p < 0.0125$). Our findings strongly suggest that ankle taping, particularly with rigid tape, exerts a significant positive effect on preserving ankle stability and lower limb function against the deleterious effects of fatigue in elite youth soccer players coping with chronic ankle instability. © JPES.

Author Keywords

Ankle sprain; Ankle taping; Balance; Single leg hop test; Soccer; Y balance test

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