



Does groin pain changes the rate of force development during cutting maneuver in soccer players?

Oral Presentation

1Hamidreza Naserpour * ; 2Elham Shirzad; 3Mehdi Khaleghi; 3Amir Letafatkar

¹Department of Biomechanic and Sports Injuries, Faculty of Physical Education and Sport Science, Kharazmi University, Tehran, Iran (hamidreza.naserpour@gmail.com)

²Department of Health and Sport Medicine, Faculty of Physical Education and Sport Science, University of Tehran, Tehran, Iran

³Department of Biomechanics and Sport Injuries, Faculty of Physical Education and Sport Science, Kharazmi University, Tehran, Iran

Abstract

Introduction: Athletic groin pain (AGP) is one of the most common injuries among soccer players (Mansourizadeh et al., 2019). This study aimed to determine whether AGP changes the rate of force development (RFD) during a cutting maneuver in soccer players.

Methods: Twenty-eight soccer players (14 healthy, 14 with AGP) who took part in the second division league participated in the current study. The RFD related to the peak of force was evaluated during cross-cutting maneuvers via force plate with a 1000 Hz sampling rate. The subjects did these maneuvers 3-times with a 1-minute rest between trials (Shirzad Araghi et al., 2021). MATLAB and ORIGIN Pro software version 2021 were used to filter and process the force plate data. The data were processed using SPSS version 25. The Shapiro-Wilk test was used to check the normality distribution of data. An independent t-test was used to compare the results between healthy and AGP groups. The data were analyzed at a significance level of 0.05.

Results: The results indicated that AGP group in comparison with healthy one has significant higher RFD in medial-lateral direction ($p=0.031$). There were no significant differences in the anterior-posterior and vertical directions.

Conclusion: According to the result of this study, it seems that pain changes the RFD characteristic which put the athletes at the risk of further injuries. Due to the fact that body tissues are viscoelastic, their loading response is time-dependent; damage decreased at lower loads. In other words, at a lower load, a certain force is applied to the tissue for a longer period of time and the probability of tissue damage is reduced. It seems that the increase in RFD of the medial-lateral direction in the groin pain group increases the risk of the ankle lateral ligament injuries due to the consequent supination torque (Naserpour et al., 2020).

Keywords

Athletic Groin Pain (AGP); Kinetic; Rate of Force Developments (RFD); Soccer

Reference:

1. Mansourizadeh, R., Letafatkar, A., & Khaleghi-Tazji, M. (2019). Does athletic groin pain affect the muscular co-contraction during a change of direction. *Gait and Posture*, 73, 173–179. <https://doi.org/10.1016/j.gaitpost.2019.07.249>
2. Naserpour, H., Khaleghi Tazji, M., & Letafatkar, A. (2020). Immediate Effect of Cryotherapy on the Kinetic Factors Associated with Injury during the Side-Cutting Maneuver in Healthy Male Athletes: Pilot Study. *The Scientific Journal of Rehabilitation Medicine*, 9(2), 1–8. <https://doi.org/10.22037/jrm.2020.113786.2436>
3. Shirzad Araghi, E., Naserpour, H., Khaleghi Tazji, M., & Letafatkar, A. (2021). The Comparison of Timing Electromyography Activity of Selected Lumbar-Pelvic Muscles During a Cross-Cutting Maneuver in Soccer Players with Athletic Groin Pain and Healthy ones. *The Scientific Journal of Rehabilitation Medicine*. <https://doi.org/10.22037/jrm.2021.116084.2864>.