

THE IMPACT OF FATIGUE ON IDENTIFYING BIOMECHANIC POTENTIAL SOCCER KICKING RISK FACTORS FOR JORDANIAN JUNIOR SOCCER PLAYERS

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INTRODUCTION: In soccer there are many incidences of injuries due to either bad technique or shear force at a joint and to great extent of repeating kicks which causes fatigue occurrences. In reality, junior players in soccer could be exposed to many and various kicking positioning in which a joint can be in a situation where risk factors greatly pronounced and such circumstances can be hazardous. Predicting and identifying those risk factors in early stage (Backous et al, 1988) may be useful for both the young athlete and the coach to modify based on biomechanical analysis of their kicking techniques, especially after fatigue prevailed.

METHOD: Five junior soccer players (age 14-15) performed three goal kicks (set kick, walk kick, and run kick) before and after fatigue (left leg exercised on Biodex until fatigue occurred). They were filmed using 3 digital camcorders (50Hz) during all type of executing kicks while left leg planted on the AMTI force platform connected to a computer for further analyses. The cameras were synchronized with the angle between their optical axes being approximately 120 degree. A cube calibration structure comprising 8 markers placed in known locations and spanning a volume measuring 1m*1m*1m was positioned in the field view of the three goal kicks executed. All types of kicks were digitized using APAS software program. Cameras were field synchronized by light bulb diot using the frame matched. Digitized data were smoothed with a Butterworth digital filter at 2-4Hz. Linear and angular displacement, velocity and acceleration on the three dimensions before and after fatigue were measured. The ground reaction forces moments were also recorded at a sampling rate of 1000 Hz and used for comparison and for risk factors determination. ANOVA, Chefe'e and T – Test were used for comparisons.

RESULTS: There were biomechanical kinetics and kinematics variable differences among the trials and between pre and post fatigue. In running kick; the subjects increased the angular deceleration significantly (8807.5 to 4653.7), Ground reaction force also increased significantly after fatigue on X,Y directions (27.3-74.1 & 46.7-37.5N). Ground reaction forces and torques were variables and made great risk factors during run kick and after fatigue.

DISCUSSION: Changes in biomechanical variables among the trials during and before kicking the ball were found (Significant changes in displacement, Velocity and acceleration of body segments), which was illustrated that the junior soccer players have weak and unstable skill level; changes in techniques were found due to fatigue. Thus findings could be considered the most risk factors when dealing with juniors in training sessions or building training units to avoid any potential positioning to injury.

CONCLUSION: Avoidance of high repetition running kick exercises and the improper plant of the foot, should be considered during the power strength training unit for junior soccer players.

REFERENCES:

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