

論文の欧文要旨

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(Title)

Factors affecting the change-of-direction sprint time in Japanese football players.

(Abstract)

The aim of this study was to clarify the factors that primarily affected the change-of-direction sprint time in Japanese football players. Change-of-direction sprint test protocol was modified from the 505 agility test (Draper and Lancaster, 1985) and the sprint time was measured by the laser measuring instrument system. In an experiment I, The reproducibility and reliability of the change-of-direction sprint time was examined. In an experiment II, the effects of velocity changes on the change-of-direction time was investigated. As a result, it was suggested that not only the sprint ability but also the ability to decelerate was important to reduce the change-of-direction sprint time. In an experiment III, it was to investigate the developmental characteristics of the change-of-direction sprint for junior and youth male football players from 13 to 18 years old and divided them into three groups such as 13-14, 15-16, and 17-18, and to determine whether the influences of the basic abilities that constitute the change-of-direction sprint time in each age group. The results showed the groups for 15-16 and 17-18 were significantly shorter in the change-of-direction sprint time than the 13-14, respectively. Furthermore, the basic abilities composed by the change-of-direction sprint time were found in the difference from each group. There was the relationship between the ability of sprint and the change-of-direction sprint time, especially for the group between 13 and 14. However, as those players grew older, the ability of change-of-direction also came to have a strong influence in addition to sprint ability. In an experimental IV, the purpose of this study was to figure out the primarily factors affected the change-of-direction sprint time using a biomechanical method. In comparison with the with the ground reaction force (GRF) of the second foot (SF) and the turn foot (TF), the highest GRF was observed in the two steps before the change-of-direction (first foot : FF). In addition, there was the correlation between the horizontal impulse of FF and the horizontal

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displacement of the center-of-gravity during TF contact. Therefore, it was suggested the horizontal impulse of FF was related to the movement time in the change-of-direction phase. In addition, at the acceleration phase, it was suggested that it is important to lower the center-of-gravity and increase the horizontal impulse of the TF take-off.

In conclusion, those result showed the braking force in the deceleration phase couldn't have been directly related to the change-of-direction sprint time, however it was suggested one of the movement strategies in order to perform the change-of-direction more quickly.