

FACTORS INFLUENCING HEIGHT OF BALL FOR INSIDE-OF-FOOT SOCCER KICK ON IMPACT

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Introduction

In a soccer game, an offensive player instantaneously judges various factors such as scenes with far longitudinal coverage to the purpose, and many situations in which the ball must be kicked using the inside-of-foot kick. In this study, a ball must be kicked at a target that can be moved in the vertical direction and placed at three heights. The impact operation for each height and the differences in the kick operations are analyzed in the present study.

Methods

The subjects in this study were 14 university students belonging to the university's soccer club. The experiment set up consisted of a force plate (KISTLER) of size 600 mm × 900 mm, which was the target, placed at a distance of 6 m from a football. The target was set at three heights—high, middle, and low. An optical motion capture system (Vicon 512) was used for capturing images. Another force plate (KISTLER) was used to measure floor reaction force at the pivoting foot during kicking. One trial admitted that subjects were the best in each condition was decided, and 42 in total were analyzed.

Results & Discussion

Fig. 1 shows that relation between height of ball-hit and distance from the ball center to the center of mass (COM) when the ball hits the target. In X axis, the impact was done on pivoting foot side as the height of the ball went up. Moreover, the impact position was the ball at a lower position in Z axis. In the case of the inside-of-foot kick, it is suggested that the angle of projection is enlarged by making the toe side from COM dive under the ball.

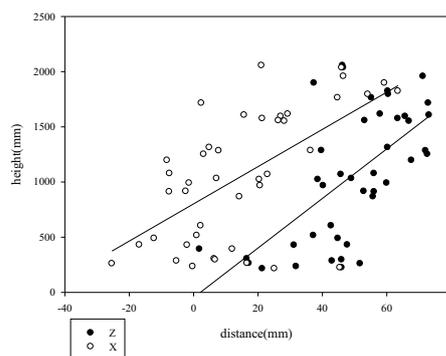


Fig.1 Relation between height of ball-hit and distance from the ball center to COM

Conclusion

With regard to the inside-of-foot kick, the height of a kicked ball can be increased by making the toe side from COM dive under the ball.

References

- 1. Ishii, H. et al. (2009). *Journal of Biomechanics*, 42(16): 2712-2720.