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Changes in Kicking Pattern: Effect of Experience, Speed, Accuracy, and Effective Striking Mass

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Purpose

The purpose of this study was to examine the effect of experience, speed, accuracy, and effective striking mass on kicking performance. The study was conducted with 20 participants who were divided into two groups: a control group and an experimental group. The control group consisted of 10 participants who were experienced kickers, and the experimental group consisted of 10 participants who were inexperienced kickers. The participants were asked to perform a series of kicks, and the data were analyzed to determine the effect of experience, speed, accuracy, and effective striking mass on kicking performance.

Method
Twenty participants were recruited for this study. The participants were divided into two groups: a control group and an experimental group. The control group consisted of 10 participants who were experienced kickers, and the experimental group consisted of 10 participants who were inexperienced kickers. The participants were asked to perform a series of kicks, and the data were analyzed to determine the effect of experience, speed, accuracy, and effective striking mass on kicking performance.

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Results

Results indicated that experience and speed affect absolute timing of joint velocities with no changes in the relative timing of peak joint velocity across independent factors. Chi-square analysis indicated that calculated effective mass is not independent of ankle velocity. ANOVA indicated that experienced performers displayed less variability error than did inexperienced performers.

Conclusion

It was concluded that: (a) Experience, velocity, and accuracy do not affect the relative timing of kicks; (b) kickers trade ankle velocity at impact for greater effective striking mass and ball velocity; and (c) variability in ball placement is affected by experience.

Keywords: constraints dynamic systems pattern change striking mass

Notes

¹ Data regarding coordination and effective mass were also analyzed using a principal component analysis. Thirteen variables representing data collected for this study were entered into analysis. Five components were identified with eigenvalues greater than 1.0. The components were differences in joint velocities, calculated and actual effective mass, ball and foot velocity, joint lag, and joint velocity. Results substantiated that the variable... variance in the data

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