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Fixing the first bounce in table tennis serve

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## INTRODUCTION:

In table tennis, the serve length can be usually distinguished by its first bounce point. That is, a short serve first bounces close to the net, whereas a deep serve first bounces close to the endline. Recently, top players seem to reduce such differences by fixing the first bounce of serves. However, the current understanding is limited. Moreover, whether rotation of the serve has an impact on this strategy (fixing the first bounce) remained unknown. Therefore, the aim of this study was to investigate the bounce location of short and deep serves with different rotation types, with and without using this strategy. **METHODS:** 

We recruited 2 male national representatives as participants. They were asked to perform short and deep serves, with 2 types of rotation (no rotation and backspin), with and without fixing the first bounce, each with 20 serves. The bounce location of each serve was recorded with a videocamera from the bird's eye view, and then input to Kinovea for tracking the bounce location in x-axis of the table. Two sets of three-way (2 ways of serve x 2 serve lengths x 2 serve rotations) repeated measures ANOVAs were performed to examine the serves of the two participants under different manipulated conditions separately. The significance level was set at alpha =.05. **RESULTS:** 

For both players, there were significant serve length x strategy interaction effects [F(1, 19) = 431.466, p < .001; F(1, 19) = 1.155, p = .296, for player #1 and player #2, respectively]. These results revealed that both players could successfully fix or differentiate the first bounce locations between short and deep serves when they were asked. Moreover, there were significant three-way interaction effects [F(1, 19) = 5.911, p = .025; F(1, 19) = 6.041, p = .024, p = .024]for player #1 and player #2, respectively]. Post hoc comparisons indicated that for player #1 when serving short in standard way, the first bounce location of serves without rotation was closer to the table compared to serves with backspin. On the contrary, when serving short by fixing the first bounce, the first bounce location of serves without rotation was closer to the net compared to serves with backspin. For player #2, the differences were found when serving short by fixing the first bounce. That is, the first bounce location of serves without rotation was closer to the table compared to serves with backspin. CONCLUSION:

Our results revealed that top players successfully fix the first bounce of serves between short and deep serves, and this might be difficult for the opponent players to anticipate their serve length by observing the first bounce. The serve rotation seemed to have an impact on the first bounce location, but the differences between different rotation types were within 5 cm. Whether they are empirically important needs future study to further investigate.

Topic:

Biomechanics

Presentation

Poster

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