

## 【二次出版】

This article is a translation of an earlier paper in Japanese by the same authors, published in this journal under the title "種々の競技におけるサーブの正確さに関する検討" (Vol. 15 [2018]: 30-38).

### **The analysis of accuracy in the services of various sports**

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Key words: accuracy, reproducibility, serve

### **【Abstract】**

This study aimed to quantitatively assess athletes' ability to minimize "deviation" from target, as well as "variation" in accuracy when performing a series of serves, in several sports that start with a serve. The study also included an analysis of factors that have possible influence on service accuracy through comparison and identification of distinctive patterns of five different sports: volleyball, badminton, soft tennis, regular tennis, and table tennis. Subjects were instructed to serve a ball/shuttle in succession aiming at targets situated in different locations in the opposing court, and the distance between the target and the landing point of each serve was measured. Measurements were then normalized by dividing them by the distance between the service position and the target for comparison and analysis. The results showed 5 – 10% deviation in all sports with volleyball having the greatest deviation in all trial conditions, demonstrating a significant difference from other sports. Variation in landing locations ranged from 2 to 4% with significant differences among volleyball, badminton, and table tennis. In addition, badminton showed wider distributions in the lateral direction, whereas regular tennis, soft tennis, and table tennis showed elongated distributions in the longitudinal direction relative to the direction of serve, suggesting that these differences may be due to use/non-use of a racquet and different degrees of difficulty in racket manipulation, as well as different serve rules, serve court/box size, etc.

スポーツ科学研究, 18, 65-75, 2021年, 受付日:2021年2月16日, 受理日:2021年8月17日

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