How to optimize service speed in tennis?

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Introduction
It has been known for a long time that motor performance can be positively and negatively affected by numerous factors. Some of these factors are nowadays investigated scientifically and the findings of these studies found their way into the daily training of athletes. However, there are several other well-known factors that have either not been investigated scientifically or that were only investigated scientifically in leisure sportsmen but not in elite athletes.

This research project aimed to transfer findings of previous studies into the field of elite tennis and to test whether the application of factors such as an external focus of attention, augmented feedback or grunting does also promote performance in elite athletes.

Methods

- Ten national elite tennis players (men, 19±3.7 yr, 71.62±9.26 kg, 1.84±0.07 m, two left handed) free from injury were enrolled for the study.
- The first protocol included 2 series of 5 acceptable serves to the T of the deuce service box (Moran et al., 2012) allocated to the following 4 conditions: control (CON), external focus of attention (EF), augmented feedback (aF) and combined (aF+EF).
- Before and in the middle of each series, verbal instruction of the current condition was given to the participant.
- Serve speed was recorded using StalkerPro speed gun (Stalker, Plano, TX).
- The second protocol included 2 series of 10 serves to the T of the deuce service box allocated to the following 2 conditions: grunting (GR) and without Grunting (nGR).

Results

- In experiment 1, the 1-way repeated measures ANOVA revealed a significant main effect of conditions: F(4, 36) = 5.53, p = .001, η² = .02. The post hoc tests (Bonferroni-Holm pairwise t-tests) revealed a significant increase in serve speed when players received aF (p = .009, +2.09%) followed by aF+EF (p = .03, +1.54%), and EF (p = .04, +.83%), compared to the CON condition.
- Accuracy was not affected negatively by any factor in both experiments.

Discussion and conclusion

This study shows that elite players can enhance service speed by providing simple factors in the form of aF but also when asked to adopt an EF or combine aF+EF. Additionally, players can enhance their service speed by grunting. As well-educated coaches are one of the key elements for success in elite sport, our results are relevant in the daily training of tennis athletes but could also be transferred to other sports.

References