How grunting influences perception in tennis

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Grunting noises in tennis influence the prediction of ball flight. Sport psychologists from Jena University come to this conclusion in a new study. Credit: Anne Guenther/University Jena

Exceeding noise levels of 100 decibels, the grunting sounds produced by some tennis players when hitting the ball are on a par with motorbikes or chainsaws. While fans react to these impressive exhalations with either

annoyance or amusement, the habit has also been a source of intense debate among professionals. For instance, Serena Williams has said that she is not bothered by opponents grunting in the heat of the competition. In contrast, former world number one Martina Navratilova has complained that grunting masks the sound of the racket striking the ball, making it—unfairly—harder to predict the ball's trajectory. The question of whether this common complaint is justified has now been examined in a new study by a team of sport psychologists from Friedrich Schiller University, Jena, led by Dr. Florian Müller and Prof. Rouwen Cañal-Bruland.

Experiment with manipulated grunting noises

For this study, the research team conducted a series of experiments in which experienced players were shown video clips of rallies from a professional tennis match. After observing players hitting the ball, they had to work out the ball's trajectory and indicate where it would land. Largely unnoticed by participants, though, the intensity of the grunting noises was manipulated.

Grunting biases anticipation of ball flight

Results indicate that grunting does have an effect—but not the one claimed by Navratilova. There was no evidence that grunting caused a distraction effect. In spite of the supposed irritation, participants' level of error in predicting where the ball would land was the same—regardless of the intensity of the grunts. Instead, it was shown that the louder the grunting, the further the participants assumed the ball would fly. This reaction was observed even when the noises could only be heard after the racket had made contact with the ball, as is usual in many professional matches. "We assume that players account for the physiological benefits provided by grunting," explains Müller.

Other researchers have demonstrated that forcefully exhaling air activates the abdominal muscles, providing additional strength that enables players to hit harder, making the ball fly faster. "This possibly explains why an effect can be observed as a result of the grunting, but the ability to anticipate the ball's trajectory remains unaffected."

Perception in sport as the interplay of multiple sensory impressions

According to Müller and his colleagues, the results of the study suggest that Navratilova's claim needs to be reconsidered. For the sport psychologists, it is also evidence that sensory impressions other than sight are of importance in sport as well, and that scientists should look at these more closely in future. For this reason, too, they want to stay 'on the ball' and investigate the phenomenon further. To get closer to real-world conditions, in the next step participants will have to catch a tennis ball on the touchscreen in real time. Ultimately, the experiment could even be conducted during a real match on a tennis court—as long as no one in the neighbourhood is disturbed by excessively loud grunting.

More information: Florian Müller et al, The sound of speed: How grunting affects opponents' anticipation in tennis, *PLOS ONE* (2019). DOI: 10.1371/journal.pone.0214819

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