



# Self-talk optimizes the positive effects of mental imagery in service learning for beginners

Nicolas Robin<sup>a,b</sup>, Robbin Carien<sup>1</sup>, Boudier Christophe & Laurent Dominique<sup>b,c</sup>

<sup>a</sup>Université des Antilles, France. <sup>b</sup>Université de la Réunion, France. <sup>c</sup>Laboratoire ACTES (UPRES EA 3596), France.

## ABSTRACT

The aim of this exploratory study was to test the effects of a combination of mental imagery (imagining oneself serving) and cognitive self-talk (instructions for serving) on the percentage of success and the technical quality of the serve of young beginner tennis players during a one-week training course, with the aim of providing practical recommendations to coaches. The results show an additional improvement in service performance when mental imagery is combined with self-talk.

**Key words:** service, mental imagery, self-talk, beginner.

**Received:** 2 August 2021

**Accepted:** 10 September 2021

**Corresponding author:** Nicolas Robin. Email: robin.nicolas@hotmail.fr

## INTRODUCTION

Mental training techniques are frequently used by mental trainers, coaches, and players as strategies to improve learning and performance (Hall & Fishburne, 2010). Among these techniques Motor Imagery (MI), which can be defined as a conscious process of mentally simulating a technical gesture (e.g., a forehand) or a sequence of actions such as doing a serve-volley (Robin et al., 2007), is one of the most frequently used strategies in racket sports (Cece et al., 2020) because it can improve the performance of both experienced (e.g., Dominique et al., in press; Guillot et al., 2013) and novice (e.g., Mamassis et al., 2005) players. In particular, MI can improve the gestural technique, which has a fundamental role in tennis (Hegazy et al., 2015). Indeed, the greatest "danger" for a tennis player is to learn a "bad" technical gesture that it will be very complex to "unlearn" (Hegazy, 2012). This is why coaches pay particular attention to the quality of the technical execution and its optimal development, in particular by giving feedback and generally verbal instructions to carry out sequences of actions such as the serve for example (Schönborn, 2000). Thus, having memorized these instructions, the players will be able to "repeat them to themselves" before carrying out these actions by using the "self-talk focused on technique" or instructional discourse, which, just like MI, has shown its effectiveness in tennis, particularly in serving (Malouff et al., 2008). Self-talk thus represents what players say to themselves, expressed in the form of a small inner voice or in the form of verbalizations out loud (Theodorakis et al., 2000) and whose content can serve at least two functions: cognitive (i.e., verbalizations with an attentional focus directed towards the technique and movements adequate to the task) or motivational (i.e., discourse dealing with self-confidence, the increase of effort, the optimization of energy deployed, or favoring a positive mood)

As recent work has shown the beneficial effect of combining MI with self-talk on players' self-efficacy (Dohme et al., 2019), the aim of this exploratory study was to assess the effects



of a combination of MI and cognitive self-talk, focusing on instructions to serve, on the performance and technical execution quality of the serve in novice players conducting a one-week club course.

## METHOD

Twenty-four beginner tennis players (M = 9.8 years old, 10 girls and 14 boys), who participated in a one-week tennis course at the Amicale Tennis Club, (Gosier, Guadeloupe, France) voluntarily participated in this experiment. They were randomly divided into 3 groups: Imaging, Imaging-self-talk and Control. Consent to take part in the study was obtained by the parents or tutors of the players. Ethics approval to conduct the research was obtained by the University of Antilles.



**PROCEDURE**

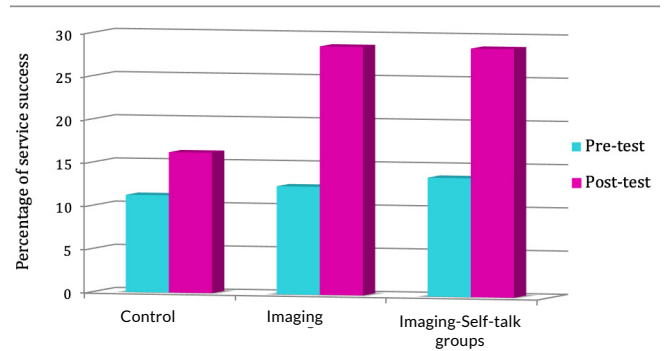
The players performed five 1.5-hour sessions during which, after a standardized warm-up, they were asked to serve 10 times, with intermediate balls, changing sides each time. The Control group received no instructions other than verbal instructions on the steps to serve. The Imagery group was instructed, before each service ball, to imagine (in the third person) serving successfully to the "correct" service box. The Imagery-Self-talk group was instructed to repeat the instructions to themselves internally during the IM. The daily practice time for the service was approximately 15 minutes.

During the first session, the players performed a pre-test: 10 serves with intermediate balls. The percentage of success, the speed of the balls (with a radar) and the technical quality (scores of 6 items: starting position, ball toss, backswing arm-racket movement, forward swing arm-racket movement, contact point and follow through movement noted with a scale from "0" mediocre to "7" excellent) of each service were recorded and evaluated by federal and state certified coaches (for a similar procedure see Atienza et al., 1994) On the 5th and final day of the course, the players completed a post-test identical to the pre-test.

**RESULTS**

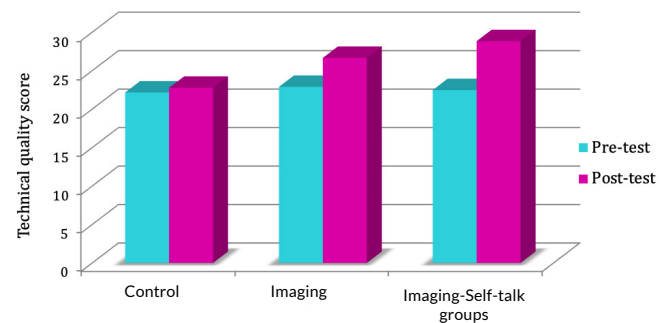
Statistical analysis performed on the speed of the serves showed no significant difference between the services of the groups: Control (M = 42 km/h), Imagery (M = 45 km/h), Imagery-self-talk (M = 46 km/h) at pre-test and post-test and between them.

On the other hand, the players in the Imagery and Imagery-self-talk groups improved the percentage of success of their serves between the pre-test and post-test by (16.5% and 15%) respectively, whereas the players in the Control group did not differ statistically (see Figure 1).



**Figure 1.** Percentage of successful service completion for the Control, Imagery and Imagery-Self-talk groups in the pre- and post-test.

Finally, the players in the Imagery-self-talk group improved the technical quality of their service between the pre-test and post-test and got better scores than the participants in the Control and Imagery groups on the post-test (see Figure 2).



**Figure 2.** Technical quality scores of services performed by the Control, Imagery and Imagery-Self-talk groups in the pre- and post-test.

**DISCUSSION**

This experiment was conducted to evaluate the effects of the combination of self-talk and/or MI on the serving performance of young beginner tennis players. The results show, firstly, a significant improvement in the percentage of successful serves in the MI group while the performance of the control group remained stable. These results confirm those of studies that have shown positive effects of MI used in addition to real practice on serving performance (Desliens et al., 2011; Dominique et al., 2021; Guillot et al., 2013; Mamassis, 2005). Secondly, the results of this experiment show that participants who used self-talk during MI not only had a significantly higher percentage of success than the Control group, but also obtained better scores on the quality of the technical execution of the services than the participants of the Imagery group. These original results, confirm the value of using technique-focused self-talk (Malouff et al., 2008) and combining this technique with MI (Dohme et al., 2019).

## CONCLUSION

The results of this exploratory study, carried out during a one-week training programme, show that MI improves technical execution and the percentage of successful serves, and that self-talk based on personalized instructions optimizes its positive effects. We recommend coaches to combine real practice with mental imagery and self-talk especially when they have short intervention periods such as during a training course.

## ACKNOWLEDGEMENTS

We warmly thank the Amicale Tennis Club for allowing us to carry out this experiment as well as all the participants of this study.

## CONFLICT OF INTEREST AND FUNDING

The authors declare that they do not have any conflict of interest and that they did not receive any funding to conduct the research.

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