

## The Effect of Motivational Self-Talk on Performance in a Force Generation Task with an Emphasis on the Role of Belief in Self-Talk

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**Abstract:** The purpose of the present research was to study the effect of motivational self-talk on performance in a force generation task with an emphasis on self-talk belief. 23 participants ( $23.5 \pm 1.9$  years old) voluntarily participated in the research. The performance of the participants was measured by a dynamometer under a control and an experimental condition. In the experimental condition (self-talk), the participants uttered "I can do it" before exerting force on the device, while in the control condition no sentence was uttered before the task. Immediately after the test the participants filled out a self-talk belief questionnaire as well as a manipulation check survey. The results showed that self-talk leads to improved performance in the force generation task, but there was no significant relationship between self-talk belief and performance. In general, it seems that self-talk belief is not an important antecedent for the effect of self-talk on performance.

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### Introduction

Many interventional methods have been employed for improving the performance, satisfaction, and personal growth of athletes. Various cognitive strategies such as self-talk, goal setting, mental imagery, relaxation training, and arousal control have been introduced to contribute to the psychological patterns of athletes. Self-talk is the most common of these interventions. Self-talk is a strategic method that refers to what an individual utters internally or externally [1]. Research has generally reported the positive effects of self-talk on learning and motor performance in different contexts such as skilled athletes in Landin and Herbert (1999), learned skills in Harvey et al. (2002), and new skills in Hatzigeorgiadis et al. (2008), and in different sports such as skiing in Rushall et al. (1998), tennis in Landin and Herbert (1999), and basketball in Perkos and Chroni (2007) and Theodorakis et al. (2001) [2, 3, 4, 5, 6, 7].

Hardy et al. (2009) proposed a framework for self-talk in order to provide a clearer picture of the relationship between self-talk and performance. According to this framework, there are two potential general antecedents for self-talk: personal factors (e.g. cognitive processing and belief in self-talk) and situational factors (e.g. task difficulty). Studies in non-athletic areas have proposed that belief in the effectiveness of an intervention is the prerequisite for its efficiency [8]. Researchers define belief in self-talk as the belief and perception of individual regarding the effectiveness of self-talk. Research has

shown that belief in self-talk increases the strength and effectiveness of self-talk for performance [9]. For instance, Van Raalte et al. (1994) showed that there is a significant relationship between belief in self-talk and self-talk effectiveness and the players with such a belief had a better performance than nonbelievers. Also Hardy et al. (2005) reported that skilled athletes have greater belief in the effectiveness of self-talk than novice athletes [10]. The results of these studies suggest that belief may influence the effectiveness of self-talk. However, Araki et al. (2006) observed no significant correlation between belief in self-talk and performance [11]. Thus, considering the contradictory results regarding the role of belief in self-talk, the present research aims to examine the effect of motivational self-talk on performance in a force generation task with an emphasis on the role of belief in self-talk to not only take a step in resolving the existing contradiction, but also provide a better understanding of this relationship for coaches and athletes.

### Materials and Methods

23 male, right-handed, athletes with no experience in dart throwing ( $23.5 \pm 1.9$  years old) volunteered to participate in this study. The research protocol was fully elaborated before the participants filled out the consent forms.

### Protocols and measurements

The design of the present research is with-group where the participants performed the force generation task in an experimental (motivational self-talk) and a control condition. The participants were examined by

a force generation task using a digital dynamometer (ED100N; YAGAMI Co. Ltd.). Each participant performed five sets of trials. In each trial set, the participants were asked to perform three maximum repetitions with 100% intensity. The participants were instructed that the overall work from the three repetitions in each trial set would be considered as a measure of their performance in kilograms [7].

Because the participants were not familiar with the functioning of the dynamometer and with dart throwing, they were first instructed how to use the dynamometer. For this task, the participants were asked to generate force while their dominant arm was fully extended and at their side. After becoming familiar with the device, the participants warmed up for performing the task and the warm-up included 5 minutes of stretching exercises in the dominant arm, opening and closing the fingers, and three times of force generation with fingers. The participants were asked not to put too much effort into the warm-up trials. Afterwards, in the motivational self-talk condition, the participants were instructed to repeat the sentence "I can do it" out loud before every trial so as to be heard by the researcher. In the control condition, no sentence was uttered before or during the task. 5 sets of trials were performed under each of these conditions and each set included three trials with a 5-minute rest between each two trial sets. The rest was meant for the recovery of the athletes and to prevent fatigue. The average maximum force in these 5 trial sets was calculated as each participant's score [7]. Immediately after the test, the participants filled out a questionnaire for evaluating their belief in self-talk as well as a manipulation check survey [9].

#### **Data analysis**

SPSS 18 was used for statistical analyses. T-test for correlated samples was applied to examine the difference between the control and the experimental condition. Also considering the normality of the data, Pearson correlation test was used to examine the relationship between performance and belief in self-talk.

#### **Results**

The results of t-test for correlated samples showed that performance in the force generation task significantly improved in the self-talk condition as compared to the control condition ( $P < 0.05$ ;  $t(22) = 4.66$ ). Moreover, the result of Pearson correlation test indicated that there is no significant relationship between belief in self-talk and performance in the self-talk condition ( $P = 0.111$ ;  $r(23) = 0.34$ ).

#### **Discussion and Conclusion**

The purpose of the present research was to examine the relationship between self-talk and performance with an emphasis on the role of belief in self-talk. The results showed that self-talk led to

improved performance in the force generation task. Research has generally reported the positive effects of self-talk on motor learning and performance, such as novice athletes in Perkos et al. (2002), skilled athletes in Landin and Herbert (1999), learned skills in Harvey et al. (2002), and new skills in Hatzigeorgiadis et al., (2008), and in different sports such as sprinting in Mallet and Hanrahan (1997), skiing in Rushall et al. (1998), tennis in Landin and Herbert (1999), and basketball in Perkos and Chroni (2007) and Theodorakis et al. (2001) [2, 3, 4, 5, 6, & 7]. Therefore, the results of the present research support these studies. The self-talk used in the present research is motivational and positive. Generally, positive motivational self-talk improve performance through creating positive moods, increasing self-confidence, and stimulating effort [7]. In an attempt for further investigation of self-talk, self-talk sentences were divided into two main categories: instructional and motivational. Motivational self-talk consisted of sentences such as "I can do it" and "calm down", while instructional self-talk included such sentences as "look at the target" and "do it smoothly". Subsequently, researchers examined and compared the effectiveness of these two types of self-talk on performance. The findings suggested that motivational and instructional self-talk may have different effects on performance. For example, Theodorakis et al. (2000) showed that instructional self-talk is more effective when the task requires fine motor movements, for it focuses attention on task-related cues; however, when a task mainly requires strength and endurance, both motivational and instructional self-talk strategies are effective [7]. This conclusion resulted in a hypothesis that was later developed by Hardy et al. (2009) and was called "matching hypothesis". According to this theory, instructional self-talk is more effective for tasks that require accuracy and timing, while motivational self-talk is more effective for tasks that require strength and endurance [8]. The present research uses motivational self-talk in the force generation task and thus the results support the matching hypothesis in terms of the requirements of the task. In general, it seems that **motivational** self-talk contributes to better performance through enhancing self-confidence, effort, energy, and moods [7, 12].

Regarding belief in self-talk, studies in non-athletic contexts have shown that belief in the effectiveness of an intervention is the prerequisite for its efficiency. The literature on self-talk suggests that athletes and participants in experimental studies have appreciated the importance of belief in self-talk [8]. For instance, 70 percent of tennis players who answered "yes" to a belief in self-talk question were

of the opinion that self-talk positively affects the result of their matches. Moreover, participants in a dynamic balance test reported that they strongly believed in the effect of self-talk on their performance [11]. Therefore, belief in self-talk is an important issue that has not been very much dealt with. The present research showed that there is no significant relationship between belief in self-talk and performance. This finding is consistent with the results of Araki et al. (2006), but inconsistent with the results of Van Raalte et al. (2004). Van Raalte and colleagues showed that competitive tennis players who believed in self-talk performed better than nonbelievers [13], but Araki and colleagues reported that belief in self-talk is not associated with improved performance [11]. The inconsistency between the present research and Van Raalte et al. (1994) can be due to several factors. The belief scores indicate that the sample consists of people with fairly strong to very strong belief in self-talk; thus, the sample with a larger range may have yielded different results [13]. Another possible reason for this inconsistency is the different questionnaires used for measuring belief in self-talk. In Van Raalte et al. (1994), a single-item questionnaire was used for determining the participants' belief in self-talk and the players that answered 'yes' were the ones who believed in it. However, in the present research an 8-item questionnaire on a 6-point scale with a range of 0 to 40. Moreover, the results of Van Raalte et al. (1994) are based on the comparison of two groups, but the results of the present research are based on the relationship between belief in self-talk and performance. Therefore, the design and methodology of the two studies are different and this can be another reason for the inconsistency of the findings.

In sum, it appears that belief in self-talk is not an important antecedent for the effect of self-talk on performance. Considering the type of task used in the present research, it is recommended that the relationship between belief in self-talk and performance be examined for other skills and other sports.

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