Belief in Self Talk and Motor Performance in Basketball Shooting

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ABSTRACT: The present study aims to investigate the effect of instructional and motivational self talk on basketball shooting performance as well as the relationship between belief in self talk and shooting performance. A number of 57 participants at the age range of 20-26 years old were randomly assigned into an instructional self talk group (N=19), a motivational self talk group (N=19) and a control group (N=19). During the training program, instructional subjects used the phrase "wrist, center" and motivational subjects used the phrase "I can" before shooting tasks. The control subjects participated in the pretest and post test without using self talk. The results of one-way ANOVA showed that both instructional and motivational subjects outperformed the control subjects in shooting performance (P<0.05). Besides, motivational subjects outperformed instructional subjects in shooting tasks. The results of Pearson correlation formula revealed no significant relationship between belief in self talk and shooting performance. The present findings correspond to earlier findings in the self talk literature though no correlation was witnessed between belief in self talk and performance.

Keywords: Self Talk, Belief in Self Talk, Motor Performance, Basketball Shooting

Introduction

For long, various interventions have been made to improve performance, satisfaction and personal growth in the athletes. In this regard, different cognitive approaches such as self talk, goal setting, mental illustration, relaxation training and motivational control have been proposed to help improve psychological and thought patterns in the athletes. Self talk is a specific type of these interventions, which is a strategic technique whereby the individual speak to themselves vocally or subvocally (Sellar, 1997). Research has shown that athletes extensively use self talk techniques to generate and enhance motivation and to create signs of physical performance (Weinberg et al., 1992). Weinberg and Gould (1992) reported that athletes benefit from self talk techniques in a variety of ways including new skill acquisition, elimination of bad habits, motivation enhancement, attention control, changes in mood and self-confidence build-up. Thus, self talk may be used in different situations and for different purposes.

Different categorizations have been proposed for self talk, one of which assigns self talk into two types, namely, instructional and motivational. Several studies have investigated the effect of different types of self talk on different tasks, situations and athletes. Some researchers contend that motivational self talk facilitates performance through encouraging higher levels of endeavor, creating a positive mood and enhancing self confidence, whereas in instructional self talk, task-related training statements improve performance through calling for favorable activities using concentration and performance strategy (Hardy, 1996). Several studies have investigated the effect of different types of self talk on athletic performance before training tasks or competitions, but they have yielded contradictory results. Some
studies reported improvements in athletic performance in swimming, 100-meter dash, golf and tennis tasks through instructional self-talk (Harvey, 2000; Landin & Macdonald, 1990; Harvey et al., 2000; Rushall et al., 1984). Some researchers contend that both types of self talk may improve performance (Chroni et al., 2007). Research has also shown that there is a relationship between self talk efficacy and the nature of the task (Landin, 1994). Before having athletes resort to self talk, the type of the task should be examined so as to determine whether it is an open or closed task or a simple or complex task (Perkos, 2002). Landin contends that task complexity affects the efficacy of self talk in improving performance. Perkos and colleagues (2002) showed that instructional self talk does not affect basketball shooting performance (as a complex task), while Chroni and colleagues (2007) reported that motivational self talk improves basketball shooting performance.

Belief in self talk is one of the influential factors affecting the efficacy of self talk in enhancing performance. Belief in self talk has been defined as the individual's belief in and perception of self talk in improving performance (Chroni et al., 2007). Research has shown that belief in self talk affects the strength and efficacy of self talk in improving performance (Chroni et al., 2007). Van Raalte and colleagues (1994) reported that there is a positive correlation between belief in and efficacy of self talk in tennis players so that players with belief in self talk outperformed players with no such belief. Hardy and colleagues showed that skilled athletes hold stronger belief in self talk comparing with novice athletes (Hardy, 2005). Thus, the findings suggest that belief in self talk affects the self-talk efficacy (Chroni et al., 2007). However, Araki and colleagues (2006) found no significant correlation between belief in self-talk and athletic performance. In this regard, there are contradictory results as to the findings on belief in and efficacy of self talk. The present study aims to investigate not only the effect of self talk on basketball shooting performance but also the correlation between belief in self talk and motor performance so that both athletes and coaches may gain better understanding of self talk utility in improving athletic performance.

Materials and Methods

Participants
A number of 57 participants at the age range of 20-26 years old (Mean=22.3, SD=1.7) were randomly assigned into an instructional self talk group (N=19), a motivational self talk group (N=19) and a control group (N=19). Based on the statistical power of 0.8 (the common statistical power in behavioral sciences) and the effect size of 0.62 (as reported by Meyers for cognitive approaches to motor performance), the sample size of 19 was considered sufficient at 95% confidence level.

Instruments
Shooting Test: A three-minute basketball shooting test was used in this study. In this test, a participant is required to make any possible number of shots from every arbitrary point on a semicircle line with a radius of 3.66 meters from the hoop center. The participant has to receive the rebounded balls himself. Every successful shot receives one score. The reliability of the test has been calculated to be 0.91 (Perkos et al., 2002; Chroni, 2007).

Belief in Self talk Questionnaire: This is a standardized scale with the reliability coefficient of 0.85 [1]. The questionnaire consists of 8 items on a 6-point Likert scale ranging from strongly disagree (0) to strongly agree (5). The total score on the questionnaire ranges from zero to 40 (Araki et al., 2006).

Manipulation Check Protocol: This protocol addresses the participants' use of self talk. Indeed, this protocol is to guarantee the accuracy of experimental conditions created by the researcher (Hardy et al., 2005). The experimental subjects were asked to specify on a 10-point Likert scale (a) how many times they had used selective self talk, (b) whether they had used other types of self talk and (c) if so, what they had told themselves and (d) how often they had used it. The idea of self talk was also explained to the control subjects. Subsequently, they were asked to indicate on a 10-point Likert scale (a) whether they had ever used self talk and (b) if so, what they had told themselves and (c) how often they had used it (Hatzigeorgiadis et al., 2008).

Procedure
Before the study was started, the researcher met the program coach a few times to explain to him the research method and test procedures. Based on a timetable, every group came to the sports hall separately. Following the jogging and stretch training, the participants were asked to do 10 minute warm-
upbasketball training. Then the pretest was performed. In the pretest, shooting task was examined in both the experimental and control groups without using self talk. Subsequently, self-talk techniques were explained to the experimental subjects who were to use them in their task performance. The experimental subjects were asked not to talk to their teammates during task performance but to repeat either vocally or subvocally the specified self talk phrase before doing the task (Hardy et al., 2005). The instructional self-talk subjects were asked to repeat the phrase "wrist, center" to direct their attention to wrist flexibility and hoop center during shooting task. The motivational self talk subjects were asked to repeat the phrase "I can" before the shooting task. The control subjects did similar shooting task without self talk. The same coach trained all the groups. Immediately upon the completion of tasks, the participants filled in the manipulation check questionnaire and belief in self-talk questionnaire (Chroni et al., 2007).

Data analysis
Using descriptive statistics, the mean and standard deviation of research variables were calculated and tables and figures were drawn. Factorial ANOVA was used to determine the effect of the type of self talk on motor performance and the post hoc Tukey's test was run to examine between-group differences. Besides, Pearson correlation formula was run to examine the relationship between belief in self talk and motor performance.

Results
The results of one-way ANOVA of shooting performance showed a significant difference among instructional self talk, motivational self talk and control groups (P<0.05, F (2,54)=49.5). To compare the means two by two, the results of Tukey's post hoc test of basketball shooting task showed that there is a significant difference between the mean scores of instructional self talk and control groups (P<0.05). In other words, instructional self talk resulted in better shooting performance. There was also a significant difference between motivational self talk and control groups in shooting performance (P<0.05). In other words, motivational self talk resulted in better shooting performance. Besides, there was a significant difference between the mean scores of instructional and motivational self talk groups in shooting performance (P<0.05). Accordingly, motivational self talk group outperformed instructional self talk group.

The results of Pearson correlation analysis revealed that there is no significant correlation between belief in instructional self talk and shooting performance (P=0.094, r (19)=0.39) as well as between belief in motivational self talk and shooting performance (P=0.564, r (19)=0.14).

Discussion and Conclusion
The present study aimed at investigating the effect instructional and motivational self talk on basketball shooting performance with specific focus on the role of belief in self talk. The findings showed that both instructional and motivational self talk lead to better shooting performance. Besides, the results showed that motivational subjects outperformed instructional subjects in shooting performance. However, the results of statistical analysis revealed no significant relationship between belief in self talk and shooting performance. Previous research has typically supported the positive effects of self talk on motor learning and performance in regard to various variables including novice athletes (Perkos et al., 2002), skilled athletes (Landin & Hebert, 1999), learned skills (Harvey et al., 2000), new skills (Hatzigeorgiadis et al., 2004), and different sports including sprints (Mallett et al., 1997), skiing (Rushall et al., 1988), tennis (Landin & Hebert, 1999), basketball ball handling, shooting and dribbling (Perkos et al., 2002; Chroni et al., 2007; Theodorakis, et al., 2001). Therefore, the present findings correspond to previous results. Generally speaking, it seems that instructional self-talk improves athletic performance through increasing concentration and athletic techniques whereas motivational self-talk helps improve performance via enhancing self-confidence, endeavor, energy and good temperament (Weinberg & Gould, 2003; Hardy et al., 1996; Theodorakis et al., 2001).

Recent research has focused on the comparison of instructional and motivational self talk as well as testing the matching hypothesis based on specific task demands. The results have shown that different types of self talk may exert variable effects on performance. For example, studies on different tasks including the accuracy of football shots and badminton serving test (Theodorakis et al., 2000), pass accuracy (Boroujeni, 2011) and golf strokes (Linner, 2011) showed significant improvements in performance in the instructional subjects comparing with motivational subjects. However, some studies on other tasks including push-ups (Kolovelonis et al., 2010) and the speed of basketball pass [2] showed
that motivational self-talk (2007) subjects outperformed instructional subjects. Still, some studies on chest pass (Linner, 2011), goalball penalty task (Stamou et al., crunch and knee extensor training (Theodorakis et al., 2000) and basketball pass (Chroni et al., 2007) showed that though motivational subjects outperformed instructional ones, the difference was not statistically significant between the two groups. The conclusion to be drawn is that since self talk is employed to improve performance, it is necessary to match self talk with task demands. Based on this conclusion, Theodorakis and colleagues formulated a hypothesis which was later called task-demands matching hypothesis by Hardy and colleagues (2009). According to this hypothesis, instructional self talk is more effective in the tasks which require accuracy and timing while motivational self talk is more effective in the tasks which require strength and endurance (Hardy et al., 2009). Overall, these findings suggest that different types of self talk exert variable effects on performance based on the type of self talk and the task. Hatzigeorgiadi and colleagues (2004) contend that with different types of self talk having variable effects on performance, it may be better to draw upon different types of self talk for different functions. According to the abovementioned discussion, studies have been conducted on different tasks resulting in different findings. For instance, Theodorakis and colleagues (2001) studied the effects of self talk on football task performance in adolescents, on badminton serving in adults, on crunch exercise in adolescents and on knee extensor training in adults. The task-demands matching hypothesis was inspired by these findings. The present findings showed that motivational subjects outperformed instructional subjects in shooting task. This is consistent with the findings of Sabonchi and colleagues (2011) on shooting task, Chroni and colleagues (2007) on shooting and dribbling tasks and Boroujeni and colleagues (2011) on speed pass, but inconsistent with the findings of Sabonchi and colleagues on dribbling (2008) and ball handling tasks, Theodorakis and colleagues (2001) on shooting task, Chroni and colleagues (2007) on ball handling task and Boroujeni and colleagues (2011) on pass accuracy.

In regard to the inconsistencies between the present findings and previous ones on shooting performance, a few factors may prove consequential. First, the inconsistencies may relate to the type of the tasks and skill level of participants. Basketball shooting is a complex task. Perkos and colleagues (2002) contend that task complexity significantly affects the efficacy of self talk in skill acquisition and improved performance. Therefore, before deciding on self talk phrases, one has to ensure whether or not the task can be divided into smaller components to facilitate learning and performance. Complex tasks, which require quick and automatic performance, usually cause difficulty to self talk techniques. Thus, task type may be a reason for the present inconsistencies. Second, the inconsistencies may be attributed to the variable functions of self talk phrases so that some phrases may play both instructional and motivational roles. For example, Theodorakis and colleagues (2000) found that PE students who used the word “slow” during the three-minute throwing task outperformed those who used the word “quick”.

Thus, different phrases used in different studies may have led to different results. Tsiggilis and colleagues (2003) reported that the type of tasks, number of repeats and the athletes’ skill level may account for inconsistencies in research findings on self-belief studies. Third, the inconsistencies may as well relate to the performance criteria used in the present study. For example, Boroujeni and colleagues (2011) set the speed and accuracy of basketball pass and shooting as their criteria. In other words, drawing upon the two criteria of speed and accuracy, they sought to examine the task-demands matching hypothesis in performing basketball tasks. However, the performance criteria in the present study were set based on the successful task performance within specific time limit. Finally, research methodology may also account for inconsistencies between the present and previous findings. For instance, Perkos and colleagues (2002) used a within-group study method, while a between-group method was used in the present study. Besides, Chroni and colleagues (2007) had two coaches train self-talk groups separately whereas only one coach trained the subjects in the present study in order to avoid training inconsistencies. In regard to belief in self talk, non-sport studies have suggested that belief in the efficiency of an intervention may be a requisite of its functionality. A review on scarce research on belief in self talk reveals that the participants in laboratory experiments would be able to perceive the importance of belief in self talk. For example, 70% of the tennis players who answered the questions about belief in self talk contended that self talk affects the result of their competitions. The participants in a study on dynamic balance reported that it is their conviction (32.46 out of 40) that self talk influences their performance (Linner, 2011). Belief in self talk is an important issue which has been rather disregarded. The present findings revealed no significant relationship between belief in self talk and performance. This is consistent with the findings of Araki and colleagues (2006), but inconsistent with the findings of Van Raalte and colleagues (1994) who reported that tennis players with belief in self talk outperformed those with lack of such belief. However, Araki and colleagues (2006) showed that there is no significant relationship between belief in self talk and performance. The inconsistency between the present findings and those of Van Raalte and colleagues...
(1994) may relate to a few factors. First, the mean scores of self belief in different groups showed that every group consists of individuals with a range of strong to moderately strong belief in self talk; therefore, a group with wider range of belief strength may yield different results. Second, the questionnaires used to examine belief in self talk may have been another cause of inconsistencies. The questionnaire may not have been efficient enough to distinguish between the individuals with strong and weak belief in self talk. The two studies drew upon two different questionnaires. Accordingly, Van Raalte and colleagues (1994) used a questionnaire with only one item to examine the participants' belief in self talk. The participants who had answered "Yes" were regarded as those who believed in self talk. However, in the present study, a questionnaire with 8 items on a 6-point Likert scale with the score range of zero to 40 was used. Third, the results of Van Raalte and colleagues' study were based on a between-group comparison whereas, in the present study, the relationship between belief in self talk and performance was investigated. Therefore, differences in research method and design may also account for the inconsistencies. Along with other factors such as improper examination of self talk, the small sample size may also account for the rejection of belief in self talk as a prerequisite for the use of self talk. Consistent with self talk studies in using manipulation check protocol, a questionnaire was administered to the participants to report on what they thought during task performance. Over 95% of the participants in both instructional and motivational groups reported that they used self talk during task performance, which is an acceptable percentage (Weinberg & Gould, 2003). Excluding the participants who reported they had not used self talk during task performance, the data was analyzed again, which yielded the same results. The control subjects reported that they did not use self talk in doing tasks. Overall, the present findings are consistent with the existing literature on the efficacy of self talk on performance. Though no correlation was found between belief in self talk and performance, it is recommended that future studies investigate the relationship between belief in self talk and performance in different sports and skills. Besides, considering the type of self talk, it is recommended that future studies investigate the content and potential functions of different types of self talk (e.g. obvious vs. latent, self-selected vs. coach-selected) on motor performance.

References