

THE EFFECTS OF SELF-TALK ON THROWING- AND JUMPING-EVENTS PERFORMANCE

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Abstract: Two studies were conducted in order to examine: (a) the effectiveness of three types of self-talk (instructional, motivational, and kinaesthetic) on sport performance, and (b) athletes' perceptions regarding the self-talk functions. In the first study, all three types of self-talk improved club representative athletes' shot put performance relative to a baseline trial, whereas in the second study, physical education students did not improve significantly their standing long jump performance using self-talk. Thus, for some tasks, kinaesthetic self-talk can be as effective as motivational or instructional self-talk. Both athletes and students showed greater preference for motivational self-talk and reported that its' use facilitated them on concentration, confidence, and feeling strong. Future research may examine the effectiveness of various types of self-talk employing individualized statements.

Key words: Self-talk, Sport performance, Throwing / Jumping events.

Sport psychology research as well as anecdotal evidence of elite athletes has established the important role of thoughts on performance (Gould, Eklund, & Jackson, 1992; Hardy, Jones, & Gould, 1996; Singer et al., 1991). One distinct line of research in this area is focusing on athletes' self-talk (ST). Hardy, Hall, and Hardy (2004) defined ST as «athletes' self-verbalizations, said overtly or covertly which are multidimensional in nature and seem to serve at least instructional and motivational functions» (p. 251). The aim of the present studies was to examine the relative effectiveness of various types of ST and to explore some of its potential functions.

Research examining the impact of ST on sport performance has focused on comparing the effects of positive and negative ST as well as comparing the effects of instructional and motivational ST. Although

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experimental studies have shown the benefits of positive ST on performance in dart throwing (Dagrou, Gauvin, & Halliwell, 1992; Van Raalte et al., 1995), football (Dagrou, Gauvin, & Halliwell, 1991), basketball (Hamilton & Fremour, 1985) and endurance running (Weinberg, Smith, Jackson, & Gould, 1984), field studies have been less supportive. Specifically, Van Raalte, Brewer, Rivera, and Petitpas (1994) found that one of the key elements of winning in junior tennis was positive ST. Based on the same methodology, Van Raalte, Cornelius, Brewer, and Hatten (2000) continued their research in ST and tennis investigating this time ST in competitive tennis players. Their results revealed that negative ST may also affect sport performance positively by motivating athletes, supporting Highlen and Bennett's findings (1983) and Hardy, Hall, and Alexander's (2001) suggestions.

Furthermore, research in the area of ST has attempted to explore the effects of various types of ST on sport performance. Specifically, researchers, focusing more on instructional ST and less on motivational ST effects, found that instructional ST enhanced performance in golf (Harvey, Van Raalte, & Brewer, 2002), in the tennis volleying skill (Landin & Hebert, 1999), in 100m sprinting (Mallett & Hanrahan, 1997), in tennis forehand ground strokes (Ziegler, 1987), and in basketball shooting task (Theodorakis, Chroni, Laparidis, Bebetos, & Douma, 2001). Furthermore, Theodorakis, Weinberg, Natsis, Douma, and Kazakas (2000) explored which type of ST, namely instructional and motivational, is more effective for precision and gross tasks. They reported that instructional ST was more effective for tasks requiring precision and technique, whereas for gross tasks that required power and effort both instructional and motivational ST had equally beneficial effects. Hatzigeorgiadis, Theodorakis, and Zourbanos (2004) extended Theodorakis' et al. (2000) study by comparing instructional and motivational ST in a precision and in a power water polo task. They recorded the occurrence of interfering thoughts based on the hypothesis that ST will decrease irrelevant thoughts. Instructional ST improved performance for both tasks, whereas the motivational self-talk group improved its performance significantly only on the power task. Finally, both types of ST resulted in a reduction of interfering thoughts supporting the hypothesis that one of the possible mechanisms of ST is to debilitate destructive thoughts and in turn facilitate performance.

Apart from instructional and motivational self-talk, there are other types of self-talk that may warrant investigation. For example, there is

anecdotal evidence from top-ranked athletes who urge themselves by repeating phrases like “I am flying”, “I feel my legs light as feathers”, “Fast legs”. Thus, metaphors are used by athletes to symbolically describe a personal meaning of a situation.

The Collins English Dictionary (Sinclair, Hanks, Fox, Moon, & Stock, 1991) defines a metaphor as «an imaginative way of describing something by referring to something else which has the qualities that someone is trying to express» (p. 910). In sport psychology research, metaphors have been used in interventions with children and young athletes. For example, Efran, Lesser, and Spiller (1994) used the metaphors of a bubble, a cocoon, and chrysalis to teach young tennis players proper attentional focus. Further, in a related line of studies Hanin and colleagues (Hanin, 2000; Hanin & Stambulova, 2002) have shown that athletes can relate their readiness to perform to self-generated metaphors. However, the effects of these type of metaphors, or differently expressed as kinaesthetic ST, is not commonly used in experimental studies (Hanin & Stambulova, 2002).

Even though experimental studies have provided evidence for the beneficial effects of ST on sport performance, the amount of research is limited compared to other psychological skills in sport psychology such as imagery (more than 200 published studies) (Martin, Moritz, & Hall, 1999). Theodorakis et al. (2000) and Hatzigeorgiadis et al. (2004) proposed that the type of ST should match the task demands in order to have enhanced sport performance. However, greater insight is needed into the effectiveness of various types of ST on performance. Moreover, little experimental research has examined the effects of ST on amateur athletes, except of a few studies (e.g., Ming & Martin, 1996; Perkos, Theodorakis, & Chroni, 2002; Ziegler, 1987). In addition, as regards the mechanisms and functions of ST (Hardy, Gammage, & Hall, 2001; Hatzigeorgiadis et al., 2004), it is still unclear how ST impacts on sport performance. Consequently, athletes' perceptions of the effectiveness of various types of ST would give greater insight into the functions of ST. Finally, the effects of kinaesthetic self-talk has not been compared to those of instructional and motivational self-talk.

In line with these considerations, the purpose of the present studies was, first, to explore the effectiveness of three types of ST (motivational, instructional, and kinaesthetic) on novice athletes' performance and, second, to elicit participants' perceptions of ST effectiveness. Two field experiments were conducted, one with athletes of lower levels of

competition using a shot put task, and one with physical education students using a long jump task. We chose to examine two different samples of participants to strengthen the generalizing of results regarding the effects of ST use by novice and lower competitive level athletes. Furthermore, the two different tasks employed are similar regarding the relative demands of physical and technical elements as in both of them power and proper technique are relatively equal determinants of sport performance.

STUDY 1

In the first study, the throwing event of shot put was used.

Method

Design. Participants performed four trials of two shots each. The first trial was the baseline trial in which participants did not utilize the ST technique. In the other three trials, participants employed the three types of ST with random order. Thus, one third of the participants used motivational ST in the second trial, instructional ST in the third trial and kinaesthetic ST in the fourth trial. Another third of the participants used instructional ST in the second trial, kinaesthetic ST in the third trial and motivational ST in the fourth trial. The last third of participants used kinaesthetic ST in the second trial, motivational ST in the third trial, and instructional ST in the fourth trial. In order to ensure that the key words were actually said, participants were instructed to speak audibly. Participants were allowed a two minutes rest between trials during which they completed the Self-Talk Rating Questionnaire.

Participants. Participants were fifty-one shot put amateur athletes (30 males and 21 females), competing at local level, who participated voluntarily in the study. Their mean age was 18.4 years ($SD = .50$).

Measures. Prior to the study, a pilot study was carried out, with 36 shot put athletes in order to obtain ST cues used by high-level shot put throwers. The participants' mean competitive experience was 12 years. They were asked to write ST statements that they say to themselves during competition and training. The most frequent and most representative statements for each of the three types of ST were used in the experiment. Specifically, for motivational ST: "Come on / Hard" ($n = 12$); for

instructional ST: "Follow the shot" ($n = 4$) and for kinaesthetic ST: "Fast" ($n = 8$). Selection of ST statements was based on reports of high level athletes in order to maximize the chance for statements to be effective on improving sport performance.

Shot put performance. Participants performed 4 trials (1 baseline and one using each type of ST) of two shots each. The mean of the two throws was the score for each of the 4 trials. All throws were executed from a throwing cement circle. The shot weighted 6 kg for the males and 4 kg for the females. Performance on the shot put was measured by one investigator, who was positioned at the side of the throwing circle, outside the athletes' line of vision. Each throw was calculated by measuring the distance from the center of the throwing circle and the landing spot of the shot.

Post shot put Self-Talk Rating Questionnaire. Participants rated their perceptions of ST responding to 6 items for each of the three ST types. Examples for the motivational ST include: "How much do you believe the words 'Come on/Hard' helped you to perform better?", "How do you think the words 'Come on/Hard' helped you to concentrate better?" (see Tables 2 and 4). The same questions were used for instructional and kinaesthetic ST, respectively. Participants rated their answers on a scale anchored at 1 (Not at all) and 10 (Very much). The presentation of statements was counterbalanced.

Results

Effects of ST on performance. Descriptive statistics for performance are presented in Table 1. Paired-sample t-tests were used to examine performance differences between the baseline and the experimental trials and between the three types of ST. To examine for Type I error we used Bonferroni corrections (nominated p value divided by the number of the t-tests). As a result an alpha level of .001 was used for the effects of ST on performance.

The paired-sample t-test showed a significant difference between baseline performance and motivational ST, $t(50) = -7.147, p < .001$, between baseline and instructional ST, $t(50) = -5.152, p < .001$, and between baseline and kinaesthetic ST, $t(50) = -6.081, p < .001$. Moreover, the examination of possible differences between the three types of ST revealed no significant difference between motivational and instructional ST, $t(50) = 3.308, p < .01$, between motivational and kinaesthetic ST, $t(50)$

= 3.308, $p < .05$, and between instructional and kinaesthetic ST, $t(50) = -0.579$, $p < .60$.

Table 1. Descriptive statistics for performance in Study 1

Trial	Performance	
	Mean	SD
Baseline	6.89	1.86
Motivational	7.50	1.80
Technical / Instructional	7.31	1.76
Kinaesthetic	7.34	1.70

Participants' perceptions of ST. Similarly, in order to examine participants' perceptions regarding the effect of ST on performance, concentration, confidence, relaxation, feeling strong, and technique, we used paired-sample t-tests with Bonferroni corrections. We divided the nominated p value by 3 (types of ST used in the study) because of the increased likelihood of committing Type I error. As a result an alpha level of .016 was used for the t tests. Mean scores for the participants' perceptions about the ST functions are presented in Table 2.

Table 2. Descriptive statistics for Study 1 for the athletes' perceptions of the three types of ST

How much do you believe the words...	Technical / Instructional "Follow the shot"		Motivational "Come on / Hard"		Kinaesthetic "Fast"	
	Mean	SD	Mean	SD	Mean	SD
...helped you to perform better	4.73	2.50	6.02	2.70	5.04	2.52
...helped you to concentrate better	4.08	2.45	4.80	2.58	4.04	2.58
...helped you to feel more confident	4.33	2.49	6.25	2.39	4.71	2.82
...helped you to feel more strong	5.00	2.62	6.53	2.91	4.96	2.65
...helped you to improve your technique	4.59	2.82	4.96	2.73	3.86	2.48
...helped you to feel more relaxed	3.35	2.36	3.65	2.83	3.69	2.77

Regarding the participants' perceptions about the effect of ST on performance, the paired-sample t-test showed a significant difference between motivational and instructional ST, $t(50) = 4.36$, $p = < .001$. Moreover, there was a significant difference between motivational and kinaesthetic ST, $t(50) = 2.89$, $p < .001$, but no significant difference between instructional and kinaesthetic ST, $t(50) = -.86$, $p < .40$.

Regarding participants' perceptions about concentration, the difference between motivational and instructional ST was marginally

significant, $t(50) = 2.45, p < .05$, but there were no significant differences between motivational and kinaesthetic ST, $t(50) = 2.34, p < .05$, between instructional and kinaesthetic ST, $t(50) = .12, p < .91$.

Regarding the participants' perceptions about the effects of the three types of ST on their confidence, the results revealed a significant difference between motivational and instructional ST, $t(50) = 5.28, p < .001$, a significant difference between motivational and kinaesthetic ST, $t(50) = 4.19, p < .001$, but no significant difference between instructional and kinaesthetic ST, $t(50) = .88, p < .40$.

As for the participants' perceptions about the effects of ST on feeling stronger, there was a significant difference between motivational and instructional ST, $t(50) = 4.37, p < .001$, a significant difference between motivational and kinaesthetic ST, $t(50) = 4.14, p < .001$, but no significant difference between instructional and kinaesthetic ST, $t(50) = .11, p < .92$.

Similarly, paired sample t-tests were used in order to examine the effect of the three types of ST on participants' feeling relaxed. The results did not reveal any significant differences between motivational and instructional ST, $t(50) = -.13, p < .90$, between motivational and kinaesthetic ST, $t(50) = .85, p < .50$, and between instructional and kinaesthetic ST, $t(50) = 1.07, p < .30$.

Finally, participants were asked if the three types of ST helped them to improve their technique. The results did not reveal any significant differences between motivational and instructional ST, $t(50) = .90, p < .40$, between instructional and kinaesthetic ST, $t(50) = 1.85, p < .10$, but a significant difference between motivational and kinaesthetic ST, $t(50) = 3.17, p < .01$.

Overall, the results of this experiment showed that all three types of ST resulted in performance improvement relative to a baseline – no ST trial. Furthermore the amateur athletes showed greater preference to the motivational ST.

STUDY 2

The second study involved the jumping event of the standing long jump.

Method

Design. Similar procedures to those in Study 1 were followed. Participants were asked to perform 4 trials of two jumps each. One trial

without using ST and another three trials using in each one of them the three types of ST in random order.

Participants. Thirty-nine male students from a physical education department participated in the study. Their mean age was 19.7 years ($SD = 1.5$).

Measures. Twenty-five highly competitive long jump athletes participated in a pilot study. Their mean competitive experience was 10 years. They were asked to remember ST statements they use during competition or training when they execute long jumps. The most frequent and most representative statements for each of the three types of ST were used in the study. More specifically, for motivational ST: "I can do it" ($n = 13$); for instructional ST: "Push" ($n = 9$); and for kinaesthetic ST: "I fly" ($n = 5$).

Standing long jump performance. Participants were placed in the edge of the sandpit and were asked to perform 4 trials (1 baseline and 3 using the three types of ST) of two jumps each. Distance was measured using a tape from the edge of the sandpit to the point where the student was landing each time.

Post standing long jump Self-Talk Rating Questionnaire. The same items with those used in Study 1 were used with the stem for the items changed slightly to reflect the ST phrases used (see Table 4).

Results

Effects of ST on performance. Descriptive statistics for performance are presented in Table 3. Paired sample t-tests with Bonferroni adjustment indicated no significant difference between the baseline trial and kinaesthetic ST, $t(38) = -2.87, p < .05$. Moreover, there were no significant differences between the baseline trial and the motivational ST, $t(38) = -1.65, p < .11$, but also for the instructional ST, $t(38) = -1.71, p < .10$.

Table 3. Descriptive statistics for performance in Study 2

Trial	Performance	
	Mean	SD
Baseline	2.48	.19
Motivational	2.59	.43
Technical / Instructional	2.51	.19
Kinaesthetic	2.53	.19

Participants' perceptions of ST. Mean scores of participants' perceptions regarding the three functions of ST are presented in Table 4. The alpha level

was set at .016. The results indicated that students considered motivational ST as the statement that helped them in order to concentrate better, $t(38) = -2.45, p < .02$, and to feel more confident, $t(38) = -2.53, p = .016$.

Table 4. Descriptive statistics for Study 2 for the athletes' perceptions of the three types of ST

How much do you believe the words...	Technical / Instructional "Follow the shot"		Motivational "Come on / Hard"		Kinaesthetic "Fast"	
	Mean	SD	Mean	SD	Mean	SD
...helped you to perform better	4.48	2.53	6.10	2.18	5.38	2.41
...helped you to concentrate better	4.75	2.28	5.55	2.17	5.00	2.29
...helped you to feel more confident	4.78	2.52	5.85	2.40	5.30	2.20
...helped you to feel more strong	5.35	2.38	5.90	2.59	5.38	2.46
...helped you to improve your technique	4.85	2.46	5.08	2.07	5.03	2.41
...helped you to feel more relaxed	4.05	2.52	4.25	2.47	4.88	2.53

DISCUSSION

The aim of the present studies was to examine the effectiveness of three types of ST on shot put and standing long jump as well as participants' perception regarding the functions of ST. Amateur athletes increased their performance in shot put when they utilized the ST technique. Furthermore, participants showed greater preference for motivational ST. In the second study, physical education students did not improve their performance in standing long jump. Similarly with the first experiment participants showed greater preference for motivational ST.

In general, the two studies have obtained quite similar results with our first study reporting performance improvement between the control and the treatment groups. Specifically, Theodorakis et al. (2000) pointed out that for tasks, which require strength, instructional and motivational ST had equally significant effects. Shot put can be generally considered a power task. However, fine motor movements in shot put can play a critical role in performance as well. Consequently, participants improved their performance using either motivational or instructional ST. On the other hand, Hatzigeorgiadis et al. (2004) reported that for a power task only the motivational self-talk group improved performance significantly. In our study, both ST types improved performance significantly, providing further support for Theodorakis et al. (2000) findings. Furthermore, in our study kinaesthetic ST provided evidence of its effectiveness in performance enhancement. Although, this

type of ST is not frequently used in the literature, this finding is holding promise for further examination. Of course, the distinction between instructional and kinaesthetic ST is very subtle and there might have been a confounding between the two types of ST.

In contrast, the results from the second study did not reveal any performance enhancement between the baseline measure and the ST trials. This can be attributed to the novelty of the task. Indeed, participants did not have any extensive experience with this task and may have not established proper technique, which is important for this task. In contrast, Study 1 participants were experienced in the motor task used. However, this possible explanation warrants further examination by contrasting the effects of self-talk on performance of more and less experienced athletes.

As regards participants' perceptions of ST functions, results from both studies are quite similar with Hardy's et al. (2001) conceptualization model for the use of ST. These authors suggested that general ST could serve motivational and cognitive functions. Regarding motivational functions, participants in the first experiment reported that ST helped them feeling stronger and more confident. Similarly, Hatzigeorgiadis et al. (this issue) reported that use of ST enhanced participants' feeling of confidence for executing a swimming task. These findings fit within the frame of self-efficacy concept (Bandura, 1977, 1982). Self-efficacy can be described as a task-specific variant of self-confidence. According to Bandura (1977, 1982), one of the sources of self-efficacy is verbal persuasion. If this verbal persuasion comes from the self in the form of internal dialogue it is possible that this dialogue may influence the person's self-efficacy and further self-confidence.

Moreover, both studies revealed that participants perceived motivational ST as a technique which can help them in concentration, thus serving a cognitive function. Hatzigeorgiadis et al. (2004) provided preliminary evidence suggesting that the use of ST can reduce irrelevant thoughts during task execution, thus enhancing concentration to the task. Further, Hatzigeorgiadis, Zourbanos, and Theodorakis (2005) extended this line of research examining both participants' perceptions of the ST functions and cross-checking these perceptions by means of a scale measuring cognitive interference. Both assessments showed that attentional and anxiety control cues helped participants improve their attention to a water polo task. Taken together these results show that ST can be effective in enhancing concentration on the task at hand.

Despite these overall commonalities between the current study and the previous studies, one aspect of the results that holds promise for future research is to further investigate the effectiveness of metaphors in other sports and their effects on sport performance. The use of metaphors in the form of kinaesthetic self-talk was effective in enhancing shot put performance. However, its use in field experiments in sport psychology has been limited yet. One possible line for future relevant research is to examine the effect of individualized metaphors on sport performance. In the present study, the respective self-talk cues were predetermined as this is a possible limitation of the study. Alternatively, Hanin and Stambulova (2002) have suggested the use of athlete generated idiosyncratic metaphors although their effectiveness has not yet been tested.

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