



The effects of instructional and motivational self-talk on students' motor task performance in physical education[☆]

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ARTICLE INFO

Article history:

Received 4 March 2010
Received in revised form
8 September 2010
Accepted 10 September 2010
Available online 18 September 2010

Keywords:

Instructional self-talk
Motivational self-talk
Physical education
Motor task performance

ABSTRACT

Objective: The aim of the study was to examine the effects of instructional and motivational self-talk on students' motor task performance in a chest pass and a modified push-ups test in physical education.
Design: The design involved one between-groups factor, the group with three levels (instructional, motivational, no self-talk), and two within-groups factors, the task (chest pass, modified push-ups) and the time (pre-test, post-test).
Method: Participants were 54 fifth and sixth grade students who were randomly assigned to two experimental groups (instructional self-talk, motivational self-talk) and one control group. Students were pre-tested in a chest pass and in a modified push-ups test, were instructed to use the respective self-talk type and were post-tested in the two tests.
Results: Results showed that both self-talk groups surpassed control group in both tasks. Instructional and motivational self-talk were equally effective in the chest pass test, but motivational self-talk was more effective compared to instructional self-talk in the modified push-ups test.
Conclusions: Self-talk was an effective technique for motor task performance enhancement in physical education. These results were discussed with reference to the task-demand-oriented matching hypothesis.

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Research supports that the use of psychological techniques can enhance performance in sports (Hardy, Jones, & Gould, 1996; Krane & Williams, 2006) and physical education (Anderson, 1997). Overall, mental training has been found to be effective in enhancing the performance success and the mental skills in athletes (Vealey, 2007). Furthermore, the use of mental skills (e.g., imagery, goal setting, and relaxation) has been proposed as a mean of performance enhancement in elementary physical education (Anderson, 1997) as it is supported that children are highly capable of learning and applying a variety of such mental techniques (Orlick & McCaffrey, 1991). A common mental technique which is used in sport settings is self-talk (Hardy, Oliver, & Tod, 2009). The present study examined the effects of self-talk on students' motor task performance in primary physical education.

Self-talk refers to "those automatic statements reflective of, and deliberate techniques (e.g., thought-stopping) athletes use to direct, sports-related thinking" (Hardy et al., 2009, p. 38).

Additionally, according to Hardy (2006, p. 84) "self-talk should be defined as: a) verbalizations or statements addressed to the self, b) multidimensional in nature, c) having interpretive elements associated with the content of statements employed, d) somewhat dynamic, and e) serving at least two functions: instructional and motivational, for the athlete". That is, self-talk helps athletes, through the use of appropriate cue-words, to control and organize their thoughts, to focus on basic skill components, or to motivate themselves to exert more effort during practice (Zinsser, Bunker, & Williams, 2006). Therefore, many coaches incorporate self-talk into their programs and theorists consider it as an integral part of psychological skill training programs (Hardy et al., 1996).

Hardy et al. (2009) have presented possible mechanisms that might help to explain the self-talk/performance relationship, including cognitive, motivational, behavioural, and affective processes. Cognitive mechanisms, which reflect processes such as information processing, concentration, and attention control, have received most attention from self-talk researchers. Landin (1994) has proposed that cue-words can be used to increase focus on task-relevant stimuli. Drawing from Nideffer's (1993) approach to attentional style, Hardy (2006) has also proposed that the use of cue-words may help switching attentional focus but also maintaining appropriate focus for specific tasks. Furthermore, Hardy (2006) has

[☆] This research was supported by a scholarship to the first author from the Greek State Scholarship Foundation.

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proposed Bandura's (1997) self-efficacy theory as a framework for explaining the motivational function of self-talk. Verbal persuasion through positive self-talk might increase self-efficacy and subsequently effort, persistence, and performance.

Empirical research has provided evidence for the effectiveness of self-talk in sport settings. In particular, self-talk had a positive effect on young basketball players' dribbling and passing skills (Perkos, Theodorakis, & Chroni, 2002), elite female soccer players' shooting performance (Johnson, Hrycaiko, Johnson, & Halas, 2004), university physical education students' basketball shooting skill (Theodorakis, Chroni, Lapidis, Bebetos, & Douma, 2001), collegiate tennis players' volleying skill (Landin & Hebert, 1999), and it was beneficial for injury rehabilitation (Theodorakis, Beneca, Goudas, Antoniou, & Malliou, 1998).

Two major types of self-talk have been identified, namely instructional and motivational self-talk (Hardy, 2006). Instructional self-talk refers to statements designed to enhance performance by stimulating desired actions through attentional focus on the technical aspects of a skill. Motivational self-talk refers to statements designed to facilitate performance by building confidence, increasing effort and energy expenditure and creating a positive mood (Hardy et al., 1996; Theodorakis, Weinberg, Natsis, Douma, & Kazakas, 2000; Weinberg & Gould, 2007).

Instructional self-talk has been investigated experimentally more extensively compared to motivational self-talk (Hardy et al., 2009). Indeed, it has been found that instructional self-talk had a positive effect on experienced golfers' performance (Harvey, Van Raalte, & Brewer, 2002), tennis players' skills (Cutton & Landin, 2007; Landin & Hebert, 1999), basketball players' skills (Perkos et al., 2002; Theodorakis et al., 2001), and figure skaters' skills (Ming & Martin, 1996). These results showed that instructional self-talk enhanced performance in various sports and tasks with athletes of different ages and expertise. However, the content of self-talk seems to play a role in its effectiveness. For example, Theodorakis et al. (2001) found that physical education students who used the cue-word "relax" improved their performance in a 3-min basketball shooting task more than those who used the cue-word "fast" and the control group students. Motivational self-talk has also been found to have a positive effect on motor task performance in dart-throwing (Van Raalte et al., 1995) and tennis (Hatzigeorgiadis, Zourbanos, Goltsios, & Theodorakis, 2008; Hatzigeorgiadis, Zourbanos, Mpoumpaki, & Theodorakis, 2009).

A recent line of research has focused on comparing instructional and motivational self-talk, testing the task-demand-oriented matching hypothesis (Hardy et al., 2009; Theodorakis et al., 2000). According to this hypothesis, instructional self-talk is more beneficial to tasks requiring skill, timing or precision, whereas motivational self-talk is more effective in tasks requiring strength or endurance (Hardy et al., 2009). Theodorakis et al. (2000) reported that instructional self-talk was more effective compared to motivational self-talk in a soccer passing task and in a badminton serve task, but in a sit-up task and in a knee extension task both types of self-talk were effective. That is, when the task required fine motor movements, instructional self-talk was more effective, whereas when it required strength and endurance both motivational and instructional self-talk were effective.

Hatzigeorgiadis, Theodorakis, and Zourbanos (2004) compared the effects of instructional and motivational self-talk on a precision and a power water polo task and found that both instructional and motivational self-talk were effective in the precision task, whereas only motivational self-talk improved performance in the power task. Recently, Goudas, Hatzidimitriou, and Kikidi (2006) found that instructional, motivational and kinaesthetic self-talk helped amateur adult athletes to improve their shot put performance whereas none self-talk type was effective in a standing long-jump task. Finally, both

instructional and motivational self-talk, compared to control group, increased adult male rugby union players' hip displacement and velocity in a vertical jump task, but only motivational self-talk had a positive effect on performance in this task (Edwards, Tod, & McGuigan, 2008). In a similar study, both instructional and motivational self-talk led to greater center-of-mass displacement, greater impulse, and quicker angular rotation about the knee compared to neutral self-talk (Tod, Thatcher, McGuigan, & Thatcher, 2009).

The aforementioned studies provided evidence in favor of the task-demand-oriented matching hypothesis. Nevertheless, they have also revealed some contradictory results that warrant further examination (Hardy et al., 2009). For example, both instructional and motivational self-talk were effective in tasks with different demands, such as precision in a water polo task (Hatzigeorgiadis et al., 2004), hip displacement and angular rotation about the knee in a vertical jump (Edwards et al., 2008; Tod et al., 2009), and power in the shot put (Goudas et al., 2006) and knee extension (Theodorakis et al., 2000). These inconsistent results might have resulted from the different functions that the selected cue-words served. In particular, some cue-words may play both instructional and motivational role. Therefore, in research testing the task-demand-oriented matching hypothesis, motivational and instructional self-talk should be clearly differentiated (Theodorakis et al., 2000). Thus, their unique effects could be empirically tested. Following this suggestion, we selected cue-words (see procedure section) using the guidelines proposed by Landin (1994) who has argued that cue-words should be: (a) brief and phonetically simple, (b) logically associated with the referent element of the skill, and (c) compatible with the sequential timing of the task.

Previous self-talk research has focused on athletes, either novices or experienced, from various sports. For example, previous studies have employed young basketball players (Perkos et al., 2002), amateur track and field athletes (Goudas et al., 2006), rugby players (Edwards et al., 2008), university physical education students (Hatzigeorgiadis et al., 2004), and experienced male and female golfers (Harvey et al., 2002). On the other hand, self-talk research in school physical education is limited. In a respective study, Anderson, Vogel, and Albrecht (1999) found that instructional self-talk had a positive effect on third grade students' over-hand throw performance. Therefore, more research is needed to examine the effectiveness of self-talk in school physical education.

Furthermore, self-talk research in young children is limited. Previous studies employed mainly university physical education students (Cutton & Landin, 2007; Goudas et al., 2006, study 2; Hatzigeorgiadis et al., 2004; Landin & Hebert, 1999) and adult athletes (Edwards et al., 2008; Goudas et al., 2006, study 1; Harvey et al., 2002). Exceptions are Perkos et al. (2002) who used young basketball players aged 12 years old and Hatzigeorgiadis et al. (2008, 2009) who used young tennis players aged 13–14 years old. Therefore, we focused on young elementary students to examine the effectiveness of self-talk in earlier ages.

Finally, no study to our knowledge has tested the task-demand-oriented matching hypothesis in physical education as Anderson et al. (1999) used only instructional self-talk in their study. However, this hypothesis has important practical implications for self-talk use in physical education. In particular, physical educators should know which type of self-talk, instructional, motivational or both match better with which tasks and which cue-words are the most appropriate for the various tasks used in physical education. Thus, self-talk can be used as a technique for enhancing learning and skill development in physical education (Hardy et al., 2009; Zinsser et al., 2006). Therefore, expanding previous self-talk research in sports, we tested empirically the task-demand-oriented matching hypothesis in primary physical education.

The aim of the study was to examine the effects of instructional and motivational self-talk on students' chest pass and modified

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