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The Effects of Instructional Self-Talk on Female Volleyball Performance during Training

S., Boubouki, & Perkos, S.

School of Physical Education and Sports Sciences, University of Thessaly, Trikala, Hellas

Abstract

The present study examined the effects of a 12-week self-talk intervention on young ($M_{age} = 10.11$, $SD = .88$) female athletes' performance in two fundamental volleyball skills. Participants were randomly assigned into one experimental (instructional self-talk) and one control group. The results revealed that instructional self-talk group improved its performance significantly in comparison to the control group. In general, the findings of the present study suggest that instructional self-talk can be an effective technique for novice volleyball players to acquire simple volleyball skills.

Keywords: *cognitive strategies, young athletes, volleyball, self-talk*

One of the cognitive techniques that has attracted particular interest the last decade in sport literature is self-talk. Self-talk refers to all the things individuals say to themselves, to stimulate and reinforce, direct and evaluate events and actions (Hatzigeorgiadis, Zourbanos, Latinjak, & Theodorakis, 2014). In a recent meta-analysis, Hatzigeorgiadis, Zourbanos, Galanis, and Theodorakis (2011) revealed that training in self-talk is a significant moderator with studies involving some training having a greater effect compared to others including no training at all. Furthermore, they noticed that in only few studies, interventions lasted several weeks providing participants enough time to practice and familiarize themselves with the self-talk application and procedures. Athletes spend more time in training rather than in competition (McCann, 1995), thus it is very important to maximize training effectiveness and transfer their performance into the competition domain (Woodman, Zourbanos, Hardy, Beattie, & Mc Quillan, 2010). Taking into consideration Hatzigeorgiadis et al.'s recommendations about the importance of training on the use of the self-talk strategy, the purpose of the present study was to examine self-talk effectiveness in learning two fundamental volleyball skills in a 12-week self-talk intervention during training.

In general, numerous experimental studies have focused on the positive influence of self-talk on sport performance. Relative early attempts revealed self-talk effectiveness on many sport areas including endurance performance (Weinberg, Smith, Jackson, & Gould, 1984), basketball (Hamilton & Fremour, 1985), tennis (Ziegler, 1987), skiing (Rushall, Hall, Roux, Sasseville, & Rushall, 1988) and track and field events (Mallet & Hanrahan, 1997). Hatzigeorgiadis et al. (2011) suggested that the most important aspect for a self-talk intervention is training. According to Theodorakis, Hatzigeorgiadis, and Zourbanos (2012), the majority of experimental studies are short-term in duration with few days of intervention (e.g., Hatzigeorgiadis et al., 2004; Hatzigeorgiadis, Zourbanos, Goltsios, & Theodorakis, 2008; Hatzigeorgiadis, Zourbanos, Mpoupaki, & Theodorakis, 2009; Zourbanos, Hatzigeorgiadis, Bardas, & Theodorakis, 2013a; Zourbanos, Hatzigeorgiadis, Bardas, & Theodorakis, 2013b). In only few studies, interventions lasted several weeks providing partici-

pants enough time to practice and familiarize themselves with self-talk application and procedures (e.g., Anderson, Vogel, & Albrech, 1999; Harbalis, Hatzigeorgiadis, & Theodorakis, 2008; Perkos, Theodorakis, & Chroni, 2002). Anderson et al., (1999) found that instructional self-talk had a positive effect on young students' overhead throwing skill over a 3-week period of practice. Perkos et al., (2002), using a 12-week ST intervention, found that self-talk improved young athletes' performance in two out of the three basketball skills. Furthermore, athletes reported that self-talk helped them to improve their self-confidence and concentration. Finally, Harbalis, et al., (2008) applied a 12-week intervention program on wheelchair basketball athletes. They found that the self-talk group improved its performance in both passing and dribbling skills compared to the control one.

Taking into consideration that in only few studies interventions lasted several weeks (e.g., Harbalis et al., 2008; Perkos et al., 2002), the purpose of the present study was to examine the effects of a 12-week ST intervention program on volleyball performance using two fundamental volleyball skills (passing and serve) in amateur female athletes.

Method

Participants

Participants were fifty-two novice female athletes ($M_{age}=10.11$, $SD=.88$). Athletes were informed that participation was voluntary and after providing information consent, they were assured that confidentiality would be maintained. Finally, their parents and coaches were asked to sign consent forms.

Measures

Passing skill. Passing test involved the use of Brady's (1945) volleyball battery that evaluates skill and precision under time limits. More specifically, for one minute athletes were passing the ball, trying to hit against a box (1.53x1.53cm) drawn in the wall 3.50m from the floor. All athletes were standing at one-meter distance from the wall. For 8-9 years old athletes a necessary modification regarding the height from the floor (2.50m) was adopted. Test-retest reliability coefficient was .93.

Serving skill. Serving test involved the use of Russell and Lange's (1940) test. Each athlete executed 10 services in a row to the opposite half-court, which was lineated into different zones, ranged according to its distance from the net. As in passing test, for younger subjects, a modification about the distance (5m instead of 9 m) was adopted. For this age group mini volley-balls were used. Test-retest reliability coefficient was .84.

During each practice session of 40 min, young athletes performed three drills for each skill under coaches' supervision (Bratton & Lefroy, 1980). For example, regarding passing skill, participants were passing the ball for 30 seconds, trying to hit against a box. Following each successful effort, participants took a step backwards to execute the second drill from a longer distance and so on. Each drill lasted two minutes followed by one minute rest and preparation period. In every practice session, the one of the authors was present, to ensure that the whole procedure was followed properly. Periodically coaches alternated the order of the drills to avoid routine. In the remaining time of each session (approximately 20 min) athletes followed a practice schedule appropriate for their ability and age that was different from that applied during intervention (Perkos et al., 2002).

Procedures

The intervention took place during 26 practice sessions in a 12-week period. Three assessment sessions were conducted during the 8th, 16th and 26th practice sessions and one assessment session took place two weeks after the training completion without the insertion of any kind of volleyball practice. Including the pre-test, the total number of assessments was five. Prior to the onset of the study, one of the authors, who was also the leader coach of the sport club, had an extensive meeting with the coaches and assigned them in each group to explain in detail the whole experimental procedure. Following the two separate meetings, a pilot trial was conducted to ensure coaches' that understood the training and assessment procedures. Upon completion of the pilot trial participants were randomly assigned in two groups ($n =26$) as "instructional" and "control" groups. Participants in the experimental groups were introduced to the use of instructional self-talk and were informed that they were going to use this strategy while executing each skill. In particular, for "passing" they were asked to repeat the words "fingers-target" while for "serve" they were asked to repeat the words "straight-net-target". Following Landin's (1994) suggestions, at the onset of each drill, the coach reminded athletes about the relationship of each cue-word with the executed skill, urging them for

audible use of these cues. Participants in the instructional self-talk group were advised not to discuss the self-talk cues they used during their practice with their teammates. To avoid any kind of interaction between the two groups, practicesessions were scheduled in different hours. The researcher was always present to ensure the proper application of the program schedule. Participants in the control executed the same drills for the same length of time as the instructional self-talk group, however their practice sessions didn't include self-talk statements. The rest of their daily workout was also the same with the instructional self-talk group. After the completion of the assessments a manipulation check protocol was administered for the control group. Participants were asked (a) to report whether they were thinking of something specific during the execution of the task (b) if so, what this was and (c) if so, the degree to which they used this other cue (1 = *not at all*, 10 = *all the time*). After the conclusion of the experimental procedures participants were explained the purpose of the study and were thanked for their participation.

Results

Two independent t-tests were conducted to test for differences for the baseline measure between the experimental and the control group. The analysis showed that there were no significant differences for passing, $t = 1.37(51)$, $p > .05$ and serving $t = 1.72(50)$, $p > .05$ respectively.

Repeated measures MANOVA to identify differences in the patterns of performance across the four trials between the two experimental and the control groups. A violation of sphericity was observed because Mauchly's Test revealed significant scores for passing ($W = .18$, $p < .001$) and serve ($W = .142$, $p < .001$). In order to avoid Type I error, analyses were based on multivariate tests of significance. Maxwell and Delany (1990) claimed that multivariate approach should be followed when number of subjects (N) is greater than $a+10$ (where "a" is the number of levels of the repeated measures). This condition was satisfied in this study, as $N = 26 > 5 + 10$.

Passing and Serve Performance. The multivariate Hotteling's trace revealed a significant interaction between passing scores and groups $F(4,47) = 7.18$, $p < .001$, $\eta^2 = .38$ as well as between serve scores and groups $F(4,47) = 4.52$, $p < .05$, $\eta^2 = .28$. Significant difference was also revealed on passing $F(1,50) = 9.68$, $p < .05$ and on serve scores $F(1,50) = 16.21$, $p < .001$ between the athletes of the two groups. In order to ascertain in which assessments these differences were noted, t-tests for independent groups were calculated using Bonferonni adjustment with .05 set as level of significance.

Regarding passing performance, significant differences were found between groups in the 2nd assessment, $t = 3.79(50)$, $p < .001$, where participants of the instructional self-talk group outperformed control group participants. During 3rd assessment, performance difference between the two groups increased, $t = 3.35(50)$, $p < .05$, whereas in the 4th assessment instructional self-talk group continue to perform the volleyball skills significantly better compared to the control group, $t = 3.16(50)$, $p < .05$. Finally, during retention test experiment group athletes continued to outperform their control group teammates who were practicing in passing following the traditional method of training, $t = 2.296(50)$, $p < .05$. Figure 1 illustrates passing performance of the two groups during five assessments periods.

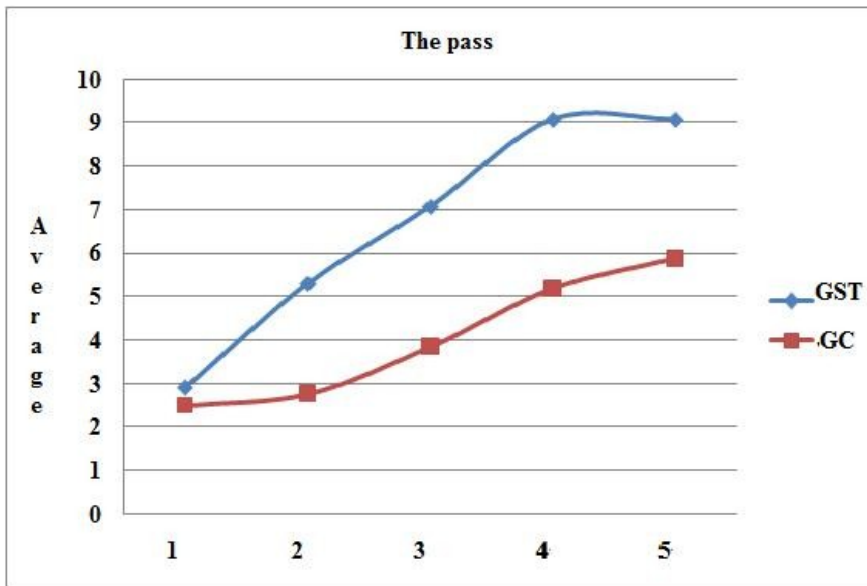


Figure 1. Passing performance of the two groups (GST = Group Self-talk, GC = Group Control)

Regarding serve performance, significant performance differences were found between groups in the 2nd assessment $t = 4.03(50)$, $p < .001$, in favor of self-talk group participants. Experiment group also exhibited higher scores than the control one during the 3rd $t = 3.08(50)$, $p < .05$ and 4th measure $t = 4.25(50)$, $p < .001$, a difference that was also evident during retention test $t = 4.04(50)$, $p < .001$. Figure 2 shows serve performance for the two groups in the five assessments periods.

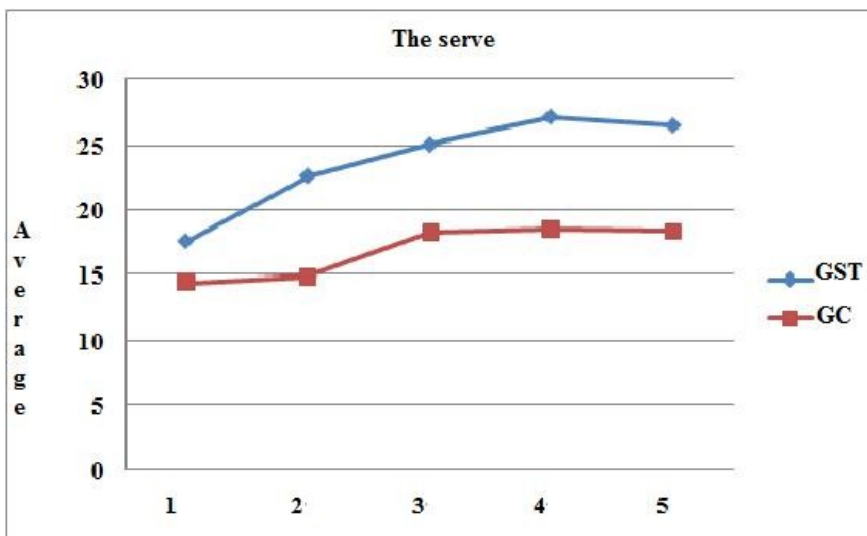


Figure 2. Serve performance for the two groups (GST = Group Self-talk, GC = Group Control)

Regarding the use of the cues from the control group, descriptive statistics were initially computed and then percentages were calculated. During 2nd measure, 65.4% of the athletes declared that they were thinking something, while 34.6% didn't think anything. In the 3rd assessment period, 53.8% of subjects had thoughts, while 46.2% of them didn't have any thoughts. In the 4th measure, 57.6% of participants had thoughts and the rest of 42.3% didn't have any thoughts. Finally, during retention test, 61.5% were thinking something while 38.5% didn't think anything at all.

Discussion

The aim of this study was to investigate the effectiveness of self-talk, as opposed to the traditional method of teaching in learning two volleyball skills in novice female athletes. Instructional self-talk was imple-

mented into the daily practice of experiment group participants in a 12 weeks period, whereas five measurement sessions were used in order to access possible differences between the two groups of athletes. To our knowledge, there are few relative studies in sport literature including such as long intervention period (Anderson et al., 1999; Harbalis et al., 2008; Perkos et al., 2002), while the majority of studies was shorter (or much shorter) in duration.

Our results are in line with previous research about task-specific instructional self-talk on athletic performance (e.g., Mallet & Hanrahan, 1997; Perkos et al., 2002; Rushall et al., 1988; Ziegler, 1987). When passing and serving, young athletes used the statements “*fingers-target*” and “*straight-net-target*” respectively. Analysis of the results revealed that in both skills, athletes using self-talk statements outperformed those who were practicing traditionally without self-talk use, with a rapid improvement in passing and serve that was evident throughout all measurements. As Theodorakis et al., (2012) concluded “self-talk seems to be more effective for novel compared to no novel tasks” p. 204.

A possible limitation of this study concerns the two volleyball coaches. Although the researcher was present in each practice session of both groups throughout the whole period to ensure proper functioning of the program and to prevent bias, differences between the two groups may be attributed to the different coaches and not to the intervention itself. Another possible limitation refers to the self-reported methodology used, with athletes reporting in a writing form about self-talk usage during intervention. Different approaches using videotaping of practice sessions or coaches’ observation and declaration (Perkos et al., 2002) are probably more objective solutions that could be followed to control methodology issues.

Further research on instructional self-talk applied on novice athletes is warranted. As both Perkos et al. (2002) and very recently Hatzigeorgiadis, Galanis, Zourbanos and Theodorakis (2014) suggested, effectiveness of self-statements should be further examined in real-game situations in team sports. Furthermore, more research is needed in more complex motor skills, in conjunction with the ability level of the performers. Well-designed manuals, with implemented self-talk cues for each section of various motor skills, should be useful tools for sport coaches as an alternative and interesting approach for teaching.

Overall, positive results of this study indicate that self-talk use should be further examined in long terms and in daily sport practice of young athletes as a mean of further improving performance and positively influencing thought patterns of promising age groups such as the female volleyball players of this study. Implementation of self talk and other cognitive processes in daily sport practice provides an opportunity for strengthening their position as an integral part of training procedures contributing to improvement of performance and positive thinking of larger populations independently of their level of expertise, ability and age.

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