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The Effects of Self-Talk Intervention on Basketball Free Throw Performance Under Conditions of Physical Fatigue

by

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Declaration by author

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Abstract

The purpose of the present study was to examine the effects of a self-talk intervention on basketball free throwing under conditions of physical fatigue. Forty male basketball players (M_{age} = 22.97, SD = 6.43 years) participated in the study. Following a baseline assessment, a 3-week intervention was implemented. During this period participants of the two groups performed in training the same number of free throws; participants of the experimental group practiced using self-talk and developed personal free-throw self-talk plans. In the final assessment, the participants repeated the free throw test following a typical shuttle run that caused increased physical fatigue. The results showed that in the final assessment the self-talk group, whose performance was maintained compared to baseline, performed significantly better than the control group, whose performance was decreased compared to baseline. Overall, the findings indicate that self-talk can be an effective strategy for basketball players when performing free-throw in conditions of physical fatigue, which is a typical situation in basketball games.

Keywords: shuttle run, self-talk mechanisms, attention

Introduction

Self-talk research in sport has attracted significant research attention due to its direct applied value (Galanis, Hatzigeorgiadis, Comoutos, Charachousi, & Sanchez, 2017). In the self-talk literature, even the first studies focused on the relationship between self-talk and performance. In a recent review of self-talk, Theodorakis, Hatzigeorgiadis, and Zourbanos (2012) identified four levels of self-talk interventions implemented to athletes: (a) interventions testing the effectiveness of self-talk on fundamental motor task, such as vertical jump (Edwards, Tod, & McGuigan, 2008), (b) interventions testing the effectiveness of self-talk on performance components, such as basketball shooting (Perkos, Theodorakis, & Chroni, 2002), (c) interventions testing the effectiveness of self-talk on sport performance in non-competitive context, such as middle distance running performance (Weinberg, Miller, & Horn, 2012), and (d) interventions testing the effectiveness of self-talk in competitive sport performance, such as swimming (Hatzigeorgiadis, Galanis, Zourbanos, & Theodorakis, 2014). More emphatically, a meta-analysis stressed the effectiveness of self-talk interventions in sport (Hatzigeorgiadis, Zourbanos, Galanis, & Theodorakis, 2011). The results support an effect size of 0.48, indicating that self-talk can meaningfully facilitate learning and enhance performance in sport tasks. Summarizing, the self-talk literature on the effectiveness of self-talk strategies are providing robust support for the valuable effects of self-talk on performance.

Nevertheless, according to Hatzigeorgiadis, Zourbanos, Latinjak, and Theodorakis (2014) it is necessary to take into consideration some factors influencing athletes' self-talk, such as the type of the task, the situational demands, and personal preferences, in order to develop effective intervention programs. Additionally, Hatzigeorgiadis, Zourbanos, and Theodorakis (2007) suggested that different self-talk

cues may operate through different functions. Subsequently, a research direction with increasing interest is the exploration of the mechanisms that explain the facilitating effects of self-talk on task performance.

Tod, Hardy, and Oliver (2011) through a systematic review, provided some an initial insight into the potential mechanisms of the self-talk performance relationship. Specifically, they mentioned four possible sets of mediators, cognitive, behavioral, motivational, and affectual, through which self-talk strategies can enhance sport performance. More recently, in the same line of research, Galanis, Hatzigeorgiadis, Zourbanos, and Theodorakis (2016) based on the existing research on the mechanisms underlying the effectiveness of self-talk and taking into consideration the model of Hardy, Oliver, and Tod (2009), mapped out a prospective model of self-talk mechanisms to guide future research. Specifically, they identified two broad clusters of mechanisms mediating the effect of self-talk on performance. The first cluster involved an attentional interpretation, referring to the width and direction of attention, distractibility, and mental effort, whereas the second cluster involved a motivational interpretation, referring to self-efficacy, self-confidence and anxiety, and effort and persistence.

Preliminary evidence regarding the mechanisms through which self-talk operates has been provided by experimental studies. A series of experiments showed that self-talk reduced the occurrence of interfering thoughts, thus implying enhanced concentration (Hatzigeorgiadis, Theodorakis, & Zourbanos, 2004), increased effort and reduced interfering thoughts, anxiety, and automaticity (Hatzigeorgiadis, Zourbanos, & Theodorakis, 2007), improved self-efficacy (Hatzigeorgiadis, Zourbanos, Goltios, & Theodorakis, 2008), and increased self-confidence and decreased cognitive and somatic anxiety.

Even though empirical research on self-talk mechanisms is still developing, there is reasonable evidence that the facilitating effects of self-talk on performance may be, at least partly, attributed to attentional factors (Galanis et al., 2016). According to a recent review on the attentional effects of self-talk the relevant literature can be categorized in two types: (a) self-talk can enhance attentional focus and improve attentional performance and (b) self-talk can help countering the aversive effects of distraction and ego depletion (Hatzigeorgiadis & Galanis, 2017).

Regarding the positive effects of self-talk on attentional focus, Bell and Hardy (2009) examined the effects of self-talk on different attentional foci (distal external focus, proximal external focus, and internal focus) and performance under both neutral and anxious conditions. The results showed that the experimental group reported higher attentional focus, compared to the control group; in addition, task performance was significantly more accurate under both neutral and anxious conditions, suggesting that changes in attentional focus were linked to enhancements in performance.

Furthermore, regarding the effects of self-talk on attentional performance, Galanis and his colleagues (2016) reported on a series of six experiments testing the effects of self-talk on attentional domains (alertness, vigilance, selective attention, focused attention, divided attention, and spatial attention) as described by Sturm (2005). The results showed that the experimental group had better reaction times; than the control group in 16 out of 17 tests that were performed. Overall, the results suggesting that self-talk can improve attentional performance.

Regarding the effects of self-talk for countering the effects of distractions, evidence have been provided involving internal and external distractions. Hatzigeorgiadis and colleagues (2004) examined the effects of self-talk on the

occurrence of interfering thoughts (internal distraction) during task performance in precision and power water polo tasks. The results showed that the experimental group reported reduced occurrence of interfering thoughts in both tasks. Additionally, Galanis and colleagues (2017) examined the effects of self-talk on task performance under conditions of extreme, non-continuous, sudden, high tone noise (external distraction) in both lab (computer game) and field (free throws) settings. The results showed that in both settings the experimental group performed better than participants of the control group. Overall, the results of the two studies provided robust evidence that self-talk can effectively counter the effect of external distractions on performance.

Regarding the countering effects of self-talk on ego depletion, Gregersen, Hatzigeorgiadis, Galanis, Comoutos, and Papaioannou (2017) examined the effects of self-talk on selective attention (visual and auditory) in a state of ego depletion in controlled laboratory conditions. The results showed that the use of self-talk in the form of attention-alerting and attention-directing cues led to faster reaction times in a visual and an auditory task; in addition, the self-talk group had higher percentage of correct responses on the visual task. In a recently completed study (Nurkse, 2018), following-up the research by Gregersen and his colleagues, implemented a similar research in a sport task. In particular, he examined the effects of a self-talk on a golf putting task under conditions of ego depletion. The results showed that following a short self-talk training session and an ego depletion manipulation the self-talk group increased their putting scores, whereas the scores of the control group did not change, suggesting that the use of self-talk facilitated golf performance. Overall, the results from the above studies have documented that self-talk can be an effective strategy for

maintaining or enhancing attention in competition alike sport settings that generate ego depletion.

In sport conditions, apart from ego depletion the effect of physical fatigue may be even more detrimental for attention and subsequently performance. According to Hagger, Wood, Stiff, and Chatzisarantis (2010) both mental and physical fatigue have significant negative effects on self-control task performance. Ego depletion refers to an impaired ability to control oneself with hindering effect on a subsequent task requiring mental resources (Baumeister, Bratslavsky, Muraven, & Tice, 1998). Accordingly, physical fatigue refers to feelings of tiredness and lack of required muscular and cardiovascular resources. Physical fatigue has also been shown to negatively influence cognitive processing (Sparrow & Wright, 1993).

Considering on one hand the evidence supporting that fatigue in general impairs attention (Hagger et al., 2010) and on the other hand the evidence suggesting that self-talk strategies can benefit attention (Gregersen et al., 2017) and sport task performance (Nurkse, 2018) under conditions of ego depletion, it becomes of interest to investigate whether self-talk may help counter the detrimental effects of physical fatigue through its attentional effects. Subsequently, the purpose of the present study was to examine the effects of a self-talk intervention on sport task performance requiring attention, in particular basketball free throws, under conditions of physical fatigue. Based on the previous findings, we hypothesized that the self-talk intervention would help free-throwing performance in physically fatigued basketball players.

Methods

Participants

Forty male basketball players from four different teams, two from first local division and the other two from second local division, participated in the study. The teams were randomly assigned as experimental (n = 19 basketball players) and control (n = 21 basketball players). The mean age of the players was 22.97 (SD = 6.43).

Procedure and intervention

The institution's ethics committee provided permission to conduct the study. The experiment included the baseline assessment, the intervention program and the final assessment. All players received instructions regarding the requirements and the procedures of the experiment. They were also informed that participation was voluntary and that they could withdraw from the study at any time. Subsequently, they signed a consent form.

Baseline assessment. Participants received instructions regarding the assessment of baseline assessment. Each player had to shoot eight sets of free-throws, in pairs of two, as free-throws in games are most often performed in pairs. The baseline assessment took place after their warm up.

Intervention program. Players of four teams were explained how the free-throw training would be for the following three weeks. The frequency of the intervention program was three times per week with duration about twenty minutes; it was implemented after the warm-up. Both control and experimental group had the same number of practices per week for three weeks, which included eight sets of free-throws (16 free-throws in total) after their warm up session.

Players of the experimental group received information about self-talk strategies through a presentation, where athletes were explained what self-talk is, how

it benefits performance, and how the self-talk training will be introduced into their training. For the training, players of the experimental group just before the onset of the scheduled sets were receiving instructions about self-talk plans (what to say, when to say, why to say it). The purpose of the intervention program was (a) to educate players on the use of self-talk, (b) to get them to train using self-talk consistently, and (c) to enable them to develop personal self-talk plans for free-throwing. During week 1 players practiced using instructional self-talk cues (e.g., "elbow", "target", "knees" etc.); during week 2 they practiced using motivational self-talk cues (e.g., "I can", "in", "ready" etc.); finally during week 3 they developed their own free-throw self-talk plan for the final assessment. Upon completion of each free-throwing session participants were asked to verbally report how frequently they were using the self-talk cues during the execution on a 10-point scale (1 = not at all, 10 = throughout the set).

Players of the control group received a short presentation regarding the importance of free throws in games. For the training they were performing eight sets of free throws following their warm-up.

Final assessment. The final assessment included two phases: the induction of physical fatigue and the final assessment. First, players first completed out a 6-item questionnaire assessing states of cardiovascular and muscular fatigue (Hecimovich, Peiffer, & Harbough, 2014). Subsequently, they performed a demanding physical task that was implemented to introduce of physical exhaustion. In particular, they completed the shuttle run task, which involves continuous running between two lines 20m apart in time to recorded beeps. The time between recorded beeps, decrease each minute (level). Upon completion of the run, players reported ratings of perceived exertion (RPE, Borg, 1970) and completed again the questionnaire assessing cardiovascular and muscular fatigue.

Immediately after the completion of the first phase of final assessment, the second phase of the final assessment was conducted. After receiving relevant instructions and similarly to the baseline assessment, players were asked to perform eight sets of free-throw pairs. Players of the experimental group were instructed to use their personal self-talk plan they developed during the intervention program. After the completion of the final assessment, all players completed a typical self-talk manipulation check protocol (Hatzigeorgiadis, Zourbanos, Mpoumpaki, Theodorakise, 2009).

Results

Control Measures and Manipulation Checks

Baseline differences

An independent sample t test showed no significant differences between the two groups in the percentage of successful free-throws for the baseline assessment, $t(49) = .28$, $p = .77$.

Physical fatigue manipulation

Run test and RPE: Analyses of variance were performed to examine for differences between the two groups in run time for the shuttle run and RPE upon its completion. The analysis revealed non-significant differences, $F(2, 39) = 1.47$, $p = .24$.

General and muscle fatigue: Repeated measures were performed to examine for differences between the two groups in level of cardiovascular and muscular fatigue through self-report. The analysis revealed a significant time effect, $F(2, 39) = 31.96$, $p < .001$, and a non-significant group by time interaction, $F(2, 39) = .48$, $p = .61$, for both cardiovascular and muscular fatigue. Examination of the mean scores revealed that players scored significantly higher after the run task compared to before

run task, indicating that the physical fatigue manipulation was equally effective across groups. Descriptive statistics for control measures and manipulation checks are presented in Table 1.

Table 1. Descriptive statistics for control measures and manipulation checks.

	Control	Experimental
Baseline performance (% of successful free throws)	62.18±16.23	63.50±16.60
Shuttle Run - Run time	58.89±26.53	60.48±20.68
RPE	16.47±1.38	17.26±1.51
Cardiovascular fatigue – pre-run	2.77±1.90	3.27±1.54
Cardiovascular fatigue – post-run	7.92±7.70	6.79±2.04
Muscular fatigue – pre-run	3.26±1.83	3.42±1.85
Muscular fatigue – post-run	6.31±1.98	6.43±2.03

Use of Self-Talk in Training and Experimental Testing

Self-talk in Training: Players of the experimental group reported consistent use of self-talk during the training sessions across the intervention (M = 8.41, SD = 1.11). Specifically, the mean scores for the three weeks were respectively: 8.40 ± 1.30; 8.15 ± 1.10; 8.69 ± .95. These scores indicate an adequate use of self-talk for the experimental condition during the training sessions.

Self-talk in experimental testing: Similarly, for the final assessment players of the experimental group reported consistent use of self-talk during free-throwing (M = 8.78, SD = 1.20), whereas no player from the control group reported consistent use of self-talk (scored higher than 7 on the 10-point scale as recommended in previous

studies, e.g. Gregersen, Hatzigeorgiadis, Galanis, Comoutos, & Papaioannou, 2017) during the experimental testing.

Free-Throwing Performance

A two-way repeated measures ANOVA was performed to examine for differences in the percentage of successful free-throws between the two groups. The analysis revealed a significant multivariate group by time interaction, $F(1, 39) = 9.43$, $p < .01$. Examination of the pairwise comparisons per time revealed that (a) for the control group percentage of successful free-throws decreased significantly from baseline to final assessment ($p < .05$) and (b) for the experimental group there were no significant differences between the two measures ($p = .10$). In addition, examination of the pairwise comparisons per group revealed that while there were no differences between the two groups for the baseline assessment ($p = .92$), in the final assessment the experimental group had greater percentage than the control group ($p < .001$). The mean scores for the two groups at baseline and final assessments are presented in Figure 1.

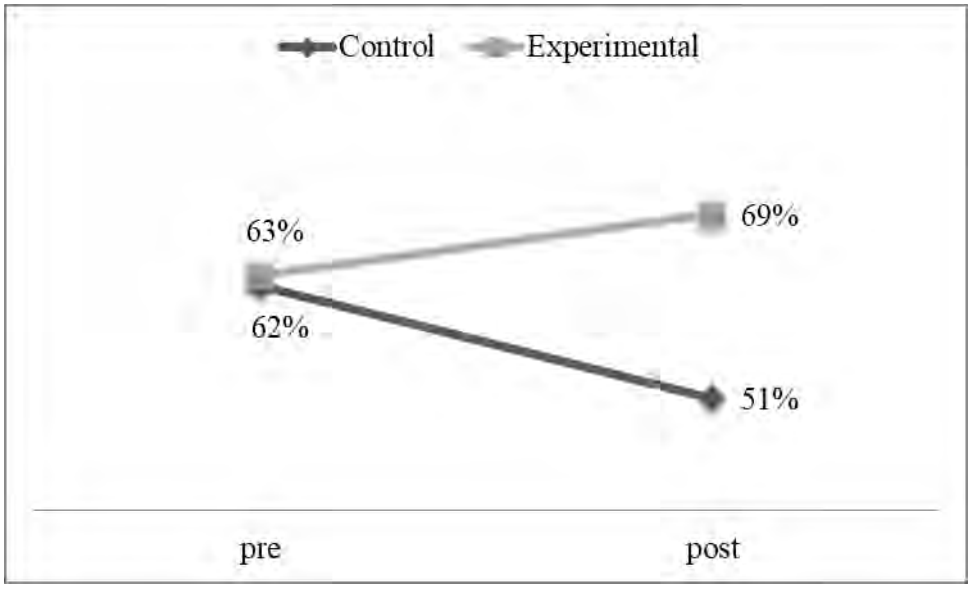

Figure 1. Mean score before and after intervention.

Discussion

The self-talk literature has expanded in recent years, and self-talk interventions have attracted significant research attention. The purpose of the present study was to examine the effects of a self-talk intervention on a sport task requiring attention, basketball free-throw performance, under conditions of physical fatigue. Findings showed that the use of self-talk by the experimental group led to better performance in free-throws, compared to the control group. In particular, under conditions of physical fatigue participants of the experimental group maintained performance comparable to baseline and scored higher compared to participants of the control group, whose performance decreased. Overall, the results indicate that self-talk can be an effective self-regulation strategy to enhance free-throws in a state of physical fatigue.

In order to ensure the integrity of the experiment, several manipulation checks have been measured. First, has been evaluated the effectiveness of the physical fatigue manipulation. Players reported a significantly higher level of physical fatigue after the shuttle run task compared to before run task. Second, has been evaluated the consistent use of the self-talk during the training sessions and during the final assessment. Players reported an adequate use of self-talk throughout the intervention. Overall, the findings of the manipulation checks support the integrity of the experimental conditions and thus the internal validity of this field experiment.

Physical fatigue has been found to significantly lengthened central processing, such as reaction time (Sparrow & Wright, 1993), thus having a detrimental effect on information processing in general and attention functions. Considering that free-throws in basketball is a task characterized by precision and requiring high levels of focused attention, it can be suggested that self-talk can help countering the effects of

fatigue on attentional processes. Thus, the present study provides field evidence that the attentional effects of self-talk may be a viable mechanism explaining the facilitating effects of self-talk on performance.

Two interrelated but seemingly different interpretations could be suggested for this effect. The first interpretation is that self-talk can help diminishing the impact of physical fatigue. Galanis and his colleague (2017), in a similar study in the field with basketball players taking a free-throw test, reported that self-talk could countering the impact of external distractions and increased percentage of successful free throws rather than the control group. The second interpretation is that self-talk can helped enhancing the effectiveness of focused attention required when executing the tasks, thus minimizing the impact of fatigue. Galanis and his colleague (2016) reported on the effectiveness of self-talk use on six aspects of attentional focus. Specifically, they used direct measures of attentional performance through the Test Battery for Perception and Attention Functions of the Vienna Test System (Sturm, 2006) providing valuable support for the hypothesized effects of self-talk on attention.

The results regarding performance are in line with the self-talk literature. There is a plethora of empirical evidence supporting that self-talk strategies are effective in enhancing sport/task performance in a variety of settings, and this evidence has been well supported through systematic (Tod et al., 2011) and meta-analytic (Hatzigeorgiadis et al., 2011) reviews. The present study follows a series of experiments that have been conducted to test the effectiveness of self-talk under adverse conditions. Galanis et al. (2017) tested the effect of self-talk on task performance under conditions of external distraction, introduced by loud, intermittent noise, in lab and field settings. For the lab experiment, they reported that the self-talk group performed better than the control group on a computerized test requiring

focused attention; whereas for the field experiment involving free throws in basketball they reported that players of the self-talk group performed better than athletes of the control group. Gregersen and his colleague (2017) tested the effects of self-talk strategies under condition of ego depletion on a selective attention computerized test. They found that instructional self-talk in the form of attention-alerting and attention-directing cues led to faster reaction times and greater percentage of correct responses on the task compared to the control group, when in a state of ego depletion. The results of Gregersen have been recently confirmed in a sport task. In particular, Nurkse (2018) and Kooijman (2018) conducted experiments testing performance on golf-putting tasks under conditions of ego depletion. They both reported that putting performance for the experimental group was superior to that of the control group. Collectively the results from Gregersen (2017), Nurkse (2018) and Cooijman (2018) suggest that self-talk can counter the negative consequences that are caused by decreased strength of self-control (Baumeister, Vohs, & Tic, 2007). Overall, considering that ego depletion, distraction, and physical fatigue have detrimental effects to attentional functioning, the results all studies reported above along with the findings of the present study, make a rather strong case for the attentional interpretation of self-talk effectiveness introduced by Galanis et al. (2016).

To our knowledge, this is the first study to examine the effects of self-talk in a state of physical fatigue. The findings provide valuable evidence regarding the effectiveness but also the mechanisms of self-talk in sport and encourage further research towards this direction.

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Appendix A[AH1]

Self-talk plans in training sessions

Example of self-talk plans

Εβδομάδα 1 – Ημέρα 1

ΣΕΤ ΑΣΚΗΣΕΩΝ		
Τι λέω	**Πότε το λέω**	**Γιατί το λέω**
Ελεύθερες Βολές		
Παρακίνηση		
Έτοιμος	**Λίγο πριν την εκτέλεση**	**Νιώθω έτοιμος, ψυχικά και σωματικά για την επόμενη βολή. Αύξηση αυτοπεποίθησης.**
Μέσα	**Λίγο πριν την εκτέλεση**	**Σιγουριά για την επόμενη επιτυχημένη βολή.**

Εβδομάδα 2 – Ημέρα 1

ΣΕΤ ΑΣΚΗΣΕΩΝ		
Τι λέω	**Πότε το λέω**	**Γιατί το λέω**
Ελεύθερες Βολές		
Τεχνική Καθοδήγηση		
Αγκώνας (μέσα)	**Λίγο πριν την εκτέλεση**	**Ο αγκώνας ρίψης πρέπει να δείχνει το καλάθι.**
Στεφάνι	**Λίγο πριν την εκτέλεση**	**Εστίαση της προσοχής στο στεφάνι. Αποκλείω όλα τα εξωτερικά ερεθίσματα.**

Εβδομάδα 3 – Ημέρα 1

ΣΕΤ ΑΣΚΗΣΕΩΝ		
Τι λέω	**Πότε το λέω**	**Γιατί το λέω**
Ελεύθερες Βολές		
Παρακίνηση & Τεχνική Καθοδήγηση		
Έτοιμος	**Λίγο πριν την εκτέλεση**	**Νιώθω έτοιμος, ψυχικά και σωματικά για την επόμενη βολή. Αύξηση αυτοπεποίθησης.**
Μέσα	**Λίγο πριν την εκτέλεση**	**Σιγουριά για την επόμενη επιτυχημένη βολή.**
Αγκώνας (μέσα)	**Λίγο πριν την εκτέλεση**	**Ο αγκώνας ρίψης πρέπει να δείχνει το καλάθι.**
Στεφάνι	**Λίγο πριν την εκτέλεση**	**Εστίαση της προσοχής στο στεφάνι. Αποκλείω όλα τα εξωτερικά ερεθίσματα.**

Appendix B

Shuttle Run Test Questioner

Πριν το παλίνδρομο τεστ

		Καθόλου									Πάρα πολύ
1.	Νιώθω κουρασμένος	1	2	3	4	5	6	7	8	9	10
2.	Νιώθω ότι δεν μπορώ να συγκεντρωθώ καλά	1	2	3	4	5	6	7	8	9	10
3.	Αισθάνομαι τα πόδια μου αδύναμα	1	2	3	4	5	6	7	8	9	10
4.	Νιώθω εξαντλημένος	1	2	3	4	5	6	7	8	9	10
5.	Νιώθω το μυαλό μου κουρασμένο	1	2	3	4	5	6	7	8	9	10
6.	Πονάνε οι μύες των ποδιών μου	1	2	3	4	5	6	7	8	9	10
7.	Νιώθω να ξεμένω από ενέργεια	1	2	3	4	5	6	7	8	9	10
8.	Νιώθω πνευματικά εξαντλημένος	1	2	3	4	5	6	7	8	9	10
9.	Αισθάνομαι τα πόδια μου κουρασμένα	1	2	3	4	5	6	7	8	9	10

Μετά το παλίνδρομο τεστ

		Καθόλου									Πάρα πολύ
1.	Νιώθω κουρασμένος	1	2	3	4	5	6	7	8	9	10
2.	Νιώθω ότι δεν μπορώ να συγκεντρωθώ καλά	1	2	3	4	5	6	7	8	9	10
3.	Αισθάνομαι τα πόδια μου αδύναμα	1	2	3	4	5	6	7	8	9	10
4.	Νιώθω εξαντλημένος	1	2	3	4	5	6	7	8	9	10
5.	Νιώθω το μυαλό μου κουρασμένο	1	2	3	4	5	6	7	8	9	10
6.	Πονάνε οι μύες των ποδιών μου	1	2	3	4	5	6	7	8	9	10
7.	Νιώθω να ξεμένω από ενέργεια	1	2	3	4	5	6	7	8	9	10
8.	Νιώθω πνευματικά εξαντλημένος	1	2	3	4	5	6	7	8	9	10
9.	Αισθάνομαι τα πόδια μου κουρασμένα	1	2	3	4	5	6	7	8	9	10

Questionnaires for the experimental group

1. Χρησιμοποίησες τις «λέξεις κλειδιά» που σου υποδείχθηκαν στο τεστ;

   ΝΑΙ [ ] ΟΧΙ [ ]

2. Αν ναι, **πόσο** τις χρησιμοποίησες;

Καθόλου									**Συνέχεια**
1	2	3	4	5	6	7	8	9	10

Οι «λέξεις κλειδιά» που χρησιμοποίησα είχαν ως αποτέλεσμα. . .	καθόλου	λίγο	αρκετά	πολύ	πάρα πολύ
. . . να προσπαθώ πιο σκληρά	1	2	3	4	5
. . . να ενισχύεται η αυτοπεποίθησή μου	1	2	3	4	5
. . . να εκτελώ σαν να έχω «αυτόματο πιλότο»	1	2	3	4	5
. . . να μειώνω τη νευρικότητά μου	1	2	3	4	5
. . . να συγκεντρώνομαι καλύτερα στην εκτέλεση	1	2	3	4	5
. . . να εντείνω τις προσπάθειές μου	1	2	3	4	5
. . . να νοιώθω πιο σίγουρος-η για τον εαυτό μου	1	2	3	4	5
. . . η εκτέλεση να βγαίνει αυθόρμητα	1	2	3	4	5
. . . να διώχνω το άγχος	1	2	3	4	5
. . . να διατηρώ την προσοχή μου	1	2	3	4	5
. . . να προσπαθώ περισσότερο	1	2	3	4	5
. . . να νοιώθω πιο δυνατός-η	1	2	3	4	5
. . . να εκτελώ αυτόματα	1	2	3	4	5
. . . να νοιώθω πιο χαλαρός	1	2	3	4	5
. . . να συγκεντρώνομαι καλύτερα σε αυτό που πρέπει να κάνω	1	2	3	4	5
. . . να συνεχίζω να προσπαθώ στο μέγιστο	1	2	3	4	5
. . . να εμψυχώνω τον εαυτό μου	1	2	3	4	5
. . . η εκτέλεση βγαίνει αυτόματα	1	2	3	4	5
. . . να διακόπτω κακές σκέψεις	1	2	3	4	5
. . . να κατευθύνω την προσοχή μου εκεί που πρέπει	1	2	3	4	5
. . . να διατηρώ την προσπάθειά που καταβάλω σε υψηλό επίπεδο	1	2	3	4	5
. . . να νοιώθω πιο σίγουρος-η για τις ικανότητές μου	1	2	3	4	5
. . . να εκτελώ ενστικτωδώς	1	2	3	4	5
. . . να επαναφέρω την ηρεμία μέσα μου	1	2	3	4	5
. . . να συγκεντρώνομαι σ΄ αυτό που κάνω τη στιγμή αυτή	1	2	3	4	5

3. Εκτός από τις «λέξεις κλειδιά» που σου υποδείχθηκαν στο τεστ, έλεγες στον εαυτό σου **κάτι άλλο συγκεκριμένο** κατά τη διάρκεια του τεστ;

   ΝΑΙ [ ] ΟΧΙ [ ]

4. Αν ναι, **τι** ακριβώς

   ……

5. Αν ναι, **πόσο** συχνά;

Καθόλου									**Συνέχεια**
1	2	3	4	5	6	7	8	9	10

6. Πόση προσπάθεια κατέβαλες κατά τη διάρκεια του τεστ ;
   (σημείωσε «Χ» στο σημείο που αντιπροσωπεύει την προσπάθειά σου)

Ελάχιστη	**Μέτρια**	**Μέγιστη**
0	75	150
. . . . .		

Πόσο συχνά κατά τη διάρκεια του τεστ είχες σκέψεις σαν τις παρακάτω . . .	καθόλου	λίγο	αρκετά	πολύ	πάρα πολύ
. . .δεν έχω καλή απόδοση	1	2	3	4	5
. . .δεν θέλω να πάρω μέρος στη μέτρηση άλλο πια	1	2	3	4	5
. . .δεν τα καταφέρω τόσο καλά σ' αυτό το τεστ όσο θα μπορούσα	1	2	3	4	5
. . .θέλω να φύγω από εδώ	1	2	3	4	5
. . .οι άλλοι είναι καλύτεροι από μένα	1	2	3	4	5
. . .θέλω να σταματήσω	1	2	3	4	5
. . .η απόδοσή μου είναι πολύ χαμηλή	1	2	3	4	5
. . .δεν την αντέχω άλλο αυτή τη μέτρηση	1	2	3	4	5
. . .έχω κουραστεί	1	2	3	4	5
. . .κάποιοι θα απογοητευθούν από την απόδοσή μου	1	2	3	4	5
. . .θέλω να τα παρατήσω	1	2	3	4	5
. . .θα έχω κακή επίδοση	1	2	3	4	5

Όνομα: ……

Ευχαριστούμε πολύ για την συμμετοχή σου.

Questionnaires for the control group

1. Χρησιμοποίησες κάποια στρατηγική για να είσαι πιο αποτελεσματικός/ή;

   ΝΑΙ [ ] ΟΧΙ [ ]

2. Αν ναι, **τι** στρατηγική χρησιμοποίησες;
   ……
   ……

3. Αν ναι, **πόσο** συχνά τη χρησιμοποίησες;

Καθόλου									**Συνέχεια**
1	2	3	4	5	6	7	8	9	10

1. Υπάρχει κάτι συγκεκριμένο που έλεγες συστηματικά στον εαυτό σου κατά τη διάρκεια του τεστ;

   ΝΑΙ [ ] ΟΧΙ [ ]

2. Αν ναι, **τι** ακριβώς έλεγες;
   ……
   ……

3. Αν ναι, **πόσο** συχνά το έλεγες;

Καθόλου									**Συνέχεια**
1	2	3	4	5	6	7	8	9	10

1. Πόση προσπάθεια κατέβαλες κατά τη διάρκεια του τεστ ;
   (σημείωσε «Χ» στο σημείο που αντιπροσωπεύει την προσπάθειά σου)

Ελάχιστη	**Μέτρια**	**Μέγιστη**
0	75	150
. . . . .		

Πόσο συχνά κατά τη διάρκεια του τεστ είχες σκέψεις σαν τις παρακάτω . . .

	καθόλου	λίγο	αρκετά	πολύ	πάρα πολύ
. . .δεν έχω καλή απόδοση	1	2	3	4	5
. . .δεν θέλω να πάρω μέρος στη μέτρηση άλλο πια	1	2	3	4	5
. . .δεν τα καταφέρω τόσο καλά σ' αυτό το τεστ όσο θα μπορούσα	1	2	3	4	5
. . .θέλω να φύγω από εδώ	1	2	3	4	5
. . .οι άλλοι είναι καλύτεροι από μένα	1	2	3	4	5
. . .θέλω να σταματήσω	1	2	3	4	5
. . .η απόδοσή μου είναι πολύ χαμηλή	1	2	3	4	5
. . .δεν την αντέχω άλλο αυτή τη μέτρηση	1	2	3	4	5
. . .έχω κουραστεί	1	2	3	4	5
. . .κάποιοι θα απογοητευθούν από την απόδοσή μου	1	2	3	4	5
. . .θέλω να τα παρατήσω	1	2	3	4	5
. . .θα έχω κακή επίδοση	1	2	3	4	5

Όνομα: ……

Ευχαριστούμε πολύ για την συμμετοχή σου.