

The effect of mental imagery and muscular relaxation trainings on the emotional intelligence of national Karate team members of Iran

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ABSTRACT

This research is aimed to study the effect of mental imagery and muscular relaxation trainings on the emotional intelligence of karate national team of Iran. The research is a two-group experimental research with pretest and posttest, and the statistical population includes 70 adult members of national karate team in the areas of male Kata and Kumite that 15 male members were selected as the experimental group and from among the third year high school students who were participating in one of sports fields for three consecutive years, 15 individuals were randomly selected as the control group. The measurement tool includes Bar-on Emotional Intelligence Inventory (1997). This test includes 90 items measuring subjects in 15 subtests and 5 interpersonal scopes, including: 5 components of emotional self-awareness (ES), assertiveness (AS), self-regard (SR), independence (IN) and self-actualization (SA); intrapersonal scope, including: 3 components of empathy (EM), interpersonal relationships (IR) and social responsibility (RE); compatibility scope, including: 3 components of problem solving (PS), reality testing (RT) and flexibility (FL); stress management scope, including: 2 components of stress tolerance (ST) and impulse control (IC); and general mood scope, including: 2 components of happiness (HA) and optimism (OP). Data were analyzed through the multivariate covariance analysis. Findings showed that there was a significant difference between two experimental and control groups in terms of emotional intelligence ($P < 0.01$). In addition, results showed that mental imagery and muscular relaxation trainings were effective on five scopes of the emotional intelligence and had the maximum effect on the stress management scope.

Keywords: Muscular relaxation, mental imagery, emotional intelligence.

Introduction

It is believed by psychologists that psychological skills are trained and practiced like any other skill, and lacking them will lead to the inability to achieve the maximum performance; therefore, elite athletes at different levels as well as their coaches must be familiar with practical concepts and psychological preparation development methods. For this reason, currently coaches and athletes attempt to improve their

performance and achieve more successes using scientific achievements and psychological techniques ^[1]. Nowadays, in the sports world, frequent physical exercise and practice are not the only key factor of success and the maximum performance. Undoubtedly, in addition to the physical and tactical abilities and specialized skills, personal capabilities and characteristics are effective factors in the sports development. Also, as athletes have to compete in stressful situations, they will face stress and anger. As a result, a potentially stressful situation will lead to the excitement of individuals ^[2]. The prevalence of stressors such as bad judgment in the competition, bad environmental conditions, audience reactions during the competition, desire to win by getting away from sports ethics, injury, observing the competitors' fraud, the possibility of fraud for winning, players punishment by the coach, and criticizing the coach during the competition ^[3] lead to the necessity of effective coping skills for maintaining the mental health of athletes and achieving sports success because the inability in coping with stressors will harm the successful performance of athletes ^[4]. Therefore,

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psychological skills and emotional intelligence are among important personality characteristics that seem to affect the athlete's performance in stressful situations such as sports environments and prevent from the effect of interfering factors. In recent years, psychological or mental skills were considered by sports psychologists, coaches, supervisors and athletes. Recently, the significance of this issue has been due to the proof of these skills' learning effect on elite athletes and champions. The term "skill" shows the acquisition of psychological skills and consequently sports psychologists and coaches can teach athletes to master these skills by allocating several hours per training to these skills and help them to improve their performance. Studies on athletes who used psychological skills indicate the important role of psychological skills in forming the success and improvement of sports performance in different age groups and sports which potentially improve the performance of athletes (Hill, 2001; Martin & Schwartzman; 2005, quoted by Morgan, 2006) ^{15, 61}. In different researches, the role and effect of psychological skills on the improvement of team or individual performance were confirmed by researchers in the area of sports psychology. Psychological skills, including body relaxation, think positive, mental imagery, concentration, energy control and goal setting affect the successful performance ¹⁷. The result of Devonport's research (2006) on Kickboxing athletes showed that 7 psychological skills (imagery, positive self-talk, body relaxation, concentration, emotional self-regulation, goal setting and visual strategies) and two personality traits (self-efficacy and sports motivation) were related to athletes' success ¹⁸. A research was conducted by Vinter (1984) on participators in Olympic Games in Los Angeles ¹⁹. One of the most interesting research findings was that approximately 20% of stressed athletes performed less than their abilities. If they improved their psychological skills like mental and physical skills, they would not experience that failure ¹⁹. In a research with the title "using psychological skills and perception of success" on 199 athletic students who were the members of baseball and softball teams, it was concluded by Fery et al. (2003) that when athletes used their psychological skills in the exercise and competition, they had a better conception of success and their conception of success significantly increased. In this research, according to the extent of psychological skills, researchers worked on their two components, including mental imagery and body relaxation and their effect on the emotional intelligence. The first research variable is the mental imagery. One of the most important psychological skills is the mental imagery which is used by many Olympic athletes. Mental imagery is of different types which are often called mental practice in sports psychology (Shaw et al., 2005; quoted by Sohrabi & fathi, 2009) ¹¹⁰. Mental imagery is an internal and conscious process which imitates the real life experience in the absence of perceptual and sensory experience. In other words, mental imagery addresses the recreation of an experience in the mind using all senses and information saved in the sensory memory source, short-term memory and long-term memory ¹¹¹. For more effectiveness, images must be clear and controllable as much as possible; therefore, athletes must be

able to create images in their minds using all their senses consciously. Imagery methods are important parts of athletes' preparation during their performance. Some performers do imagery in a non-structural form without using it specifically for a specific purpose. They only do imagery and may not be able to express their image's special theme orally. Others do imagery in a more organized and professional manner for their different needs, including self-confidence, capability of relaxation, learning new skills and concentration on others ¹¹². Also, some findings showed that the effects of mental practices with body provocations are more obvious. In a large experiment, it was concluded by Landers (1983) that if mental practices were before practical tasks, they would have better effects and a mental practice lasting 1 to 3 minutes has more desired effects than a mental practice lasting 5 to 7 minutes ¹¹³. Imagery improves the sports performance in a vast group of sports such as basketball, hockey, diving, golf, especially combat sports. Imagery practices alone or in combination with body practice are useful for all sports groups. Imagery is used for a number of reasons which the performance improvement is the most common and justified incentive ¹¹⁴. A general theory for athletes called "think positive" shows that if mental practices include negative results, the performance level is reduced. Negative mental practices probably affect other mechanisms such as trust and motivation. Paivio suggested that different types of images must have cognitive and motivational effects. Briefly, imagery and mental practice are used for the improvement of sports performance, but there is little information on the imagery involvement process ¹¹⁵. The second research variable is the muscular relaxation. Muscular relaxation was first explained by Jacobson (1938) and then was widely used. In the muscular relaxation, a person systematically loosens and tightens his muscles leading to the ability of muscles to rest more than their initial state. The sample of following researches across the world showed that muscular relaxation training helped individuals to restrain their stress: muscular relaxation and expansion are a protective factor against stress and chronic headaches ¹¹⁶. Using the muscular relaxation method affects the nurses' coping with exhaust and stress while taking care of patients with chronic pains (Cold et al., 2002; quoted by Darvishi, 2009) ¹¹⁷. A number of health psychology methods include methods which help individuals to cope with pressure (Ratos, 2007; quoted by Shirbim, Soudani & Shafiabadi, 2009) ¹¹⁸. When individuals are under the pressure, they must psychologically and socially try to reduce the pressure effect. In addition, if these skills are easier and more accessible with fewer side effects, individuals can better use them in meeting their life needs and problems ¹¹⁹. In a research, Parish and Rasid (2006) studied the effect of two types of relaxation trainings on stress levels and stress reduction in women with breast cancer and concluded that the stress level of patients with 1 month trainings, 3 times per week, was significantly lower than patients without such trainings. In addition to studies about the effect of muscular relaxation on stress, there are studies which show that gradual stress relieving with biofeedback also affect the stress reduction (Parish &

Rasid, 2006; quoted by Darvishi, 2009) ^[17]. The Meta-analysis of Holroyd & Penzien (1990) also showed that using different types of relaxation methods such as gradual stress relieving with biofeedback, muscular relaxation and transcendental meditation affected the reduction of headaches in patients with migraine ^[16]. Furthermore, the Meta-analysis of Rainforth et al. (2007) indicates the effect of these methods on the reduction of blood pressure. The effectiveness of mental imagery methods and muscular relaxation on the stress of children and elderly with joint dislocation was emphasized by Antall and Kresevic (2004) and it was believed that these methods affected the reduction of stress and depression and the improvement of physical and mental condition in these patients. Imagery and muscular relaxation practices lead to the excessive reduction of body contraction against stress which prevents from physical and mental effects of stress ^[20]. The research aims to determine whether relaxation can affect athletes' emotional intelligence or not. Another research variable is the emotional intelligence which is a new subject in the area of sports psychology. Success at different levels and aspects of personal and professional life is the concern of everybody who is physically and mentally healthy. But, which factors including intelligence quotient (IQ), educations, skill or specialty can guarantee the success of a person in future? It is worth mentioning that why individuals with similar IQ and in proper situations do not grow similarly; one achieves self-actualization and creativity, while the other does not achieve its logical and real purposes despite being aware of his abilities and is marginalized from the life field. Researches show that 20% and 80% of successes in the professional life depend on IQ and emotional intelligence (EI), respectively ^[21]. Individuals with high emotional intelligence can notice their feelings and emotions, and control and manage them with a better understanding ^[22]. In the early 1990s, the emotional intelligence was introduced for the first time and was called a type of pure mental ability like IQ in the first theory ^[23]. The second theory called the emotional intelligence as a set of capabilities and skills comprised of behavioral states and individual perceptions relating to the ability of a person in the recognition, process and utilization of emotional information depending on the domain of personality ^[24]. The emotional intelligence is a set of capabilities and skills which enables a person to effectively adapt to the environment and achieve success in his life. It is believed by Bar-On (1997) that in addition to IQ tests, the emotional intelligence can help individuals to better understand their capacity in achieving success in different life aspects. He considers the emotional intelligence as an important factor in determining the psychological health and success of a person in his life (Bar-On, 2001; quoted by Nicols, 2003) ^[25]. Based on the theory of Bar-On (1999), the emotional intelligence has the improvement capability, is grown and changed over time, and can be improved by training and corrective programs such as therapy techniques. From emotional intelligence theorists' point of view, psychotherapy, consultation and preparation of individuals can increase their emotional intelligence skills ^[26]. Using the emotional intelligence at the workplace is the skill of

paying attention to different emotions in different situations, the ability of controlling feelings which prevent a person from continuing his job and the courage for showing new behaviors (Beradbari, 2005; quoted by Ganji) ^[27]. The emotional intelligence is so necessary for success that encompasses 60% of an individual's performance at the workplace and is the strongest power for leadership and success (Golman; quoted by Parsa, 2003) ^[28]. The emotional intelligence makes the prediction of success possible because it shows that how a person immediately uses his special reaction in any situation ^[29]. Based on the observations of Retla, currently great champions train the application and use of emotions facilitating the performance in order to control emotions which harm their performance ^[30]. It is believed by Arnold Birez that the mental state of an individual affects his performance as much as his physical preparation because exercise can help him to adapt to the surrounding environment ^[31]. Results of other researches showed that extroverts with less stability were influenced by the emotions and pressures of acute condition of competitions and could not have a good performance ^[32]. Many evidence prove that individuals with emotional skills, i.e. individuals who know and manage their feelings well and understand and effectively cope with others' feelings, are successful and efficient in different practical areas of life. But, individuals who cannot dominate their life emotionally are involved in internal conflicts. Some of this evidence is mentioned later: It seems that ^[26] emotional intelligence is an extraordinary ability which determines the way of using other skills optimally, including IQ ^[26]. It was found by Salovsky and Cartrayt (2002) (quoted by Austin (2004)) that individuals with high emotional intelligence were under less psychological pressure and had better psychological and physical satisfaction. Findings show that the emotional intelligence is negatively related to the psychological distress and depression. Interpersonal and intrapersonal aspects of the emotional intelligence are related to the behavior's health and individuals with a high emotional intelligence may be more sensitive to their health and more resistant against mental pressure and risk (Salovsky & Cartrayt, 2002; quoted by Austin, 2004) ^[33]. Among factors affecting the professional success, paying attention to the emotional intelligence and study of this intelligence in athletes are basic necessities. Despite the significance of psychological evaluation and special personal characteristics which affect the success of champions, less attention has been paid to them in our country and individuals are often selected based on mental and personal judgments for participating in different sports competitions while this important subject requires a more objective and accurate scientific knowledge. According to contradictory results, the weakness of some researches, ambiguities among coaches and researchers' interest, the present research was conducted in order to answer some relating questions. However, the effect of these methods in Iran, especially on athletes is not considered enough. Therefore, in this research, the effect of two methods of muscular relaxation and mental imagery on the increase of emotional intelligence in National karate Team of the Islamic Republic of Iran was included in an experimental design in

order to compare the effect of these two methods. This effect determined the amount of effectiveness on the component of emotional intelligence and showed its role in enhancing the psychological skill which was among necessary and main skills for championship, and paved the way for effectively helping national team members in other fields. Therefore, the research aims to determine the effect of muscular relaxation and mental imagery trainings on the emotional intelligence of National Karate Team.

Research Method:

The research statistical population includes 70 (male) adult national Karate team members in two areas of Kata and Kumite of Iran. 15 male Adult team members in the age group of 19-21 were randomly selected as the experimental group. 15 amateur athletes (the third year high school students with the age group of 17-19 in mathematics and physics who were participating in one of sports fields for three consecutive years) were randomly selected as the control group. First, the researcher conducted the emotional intelligence test at a same determined time on the experimental group (national team members) and control group (the third year male high school students) and maintained test results in a specified place. Then, for mental imagery and muscular relaxation trainings, researchers were present in camp trainings during a three-month plan and conducted trainings on 8 sessions with the assistance of the national team coach. In mental imagery, the athlete visualized himself in the situation of taking the exercise with all senses (sight, hearing, smell, etc.). This visualization's images include the successful performance of athletes and their satisfaction of their performance. In addition, one of imagery trainings was so that after each training session, athletes visualized themselves in the real competition and tested the application of tactic learned in the training session for the imaginary opponent in the future competition; the imagery must be so accurate that even the score obtained from the referee is felt. Athletes are advised to do the imagery on the way to the training session, during the training and after the training session in order to improve their skill. In training sessions, before doing sports skills, they must visualize those skills in their mind. During the imagery, athletes must observe and feel themselves performing sports actions so that they wish. They must do imagery before the competition and visualize themselves as a successful winner. For using the muscular relaxation, the subject group was asked to learn how to loosen and tighten their main body muscles (the research group practically performs it while explaining how to loosen and tighten muscles). In this research, Mesters' et al. (1997) methods of 14 groups of muscles' loosen and tighten were used (Milten berker, 1997; quoted by Fathi & Azimi, 2009) ^[34]. In addition, after the training, each champion was advised to take these exercises daily during his basic skills training, but conducted two methods of mental imagery and muscular relaxation in combination once a week for one hour. After the due time (3 months), each group was retested, corrected by Sina test Emotional Intelligence Software and compared with

each other. At this time, despite non-readability of questionnaires or as they were completed with fatigue, they were returned to the subjects and the retest was taken. Then, test scores were categorized and delivered to the analyst in order to statistically analyze data based on SPSS software. In this research, descriptive statistics (average, standard deviation, drawing graphs and tables) and inferential statistics (multivariate analysis of covariance (Mankova)) were used at a significant level ($p < 0.01$) which were analyzed by SPSS software.

Research Tools:

Bar-On Emotional Quotient Inventory (EQ-i): This inventory is constructed based on the social-emotional intelligence model and is a self-report scale for evaluating behaviors relating to social and emotional intelligence including 90 questions which the answer to each question has the value of 1 to 5. This inventory includes 90 Likert scale 5-option multiple-choice questions from strongly agree to strongly disagree answers. It measures the emotional intelligence of individuals in the following 5 scopes and 15 components:

1. Interpersonal scope, including: 5 components of emotional self-awareness (ES), assertiveness (AS), self-regard (SR), independence (IN) and self-actualization (SA);
2. Intrapersonal scope, including: 3 components of empathy (EM), interpersonal relationships (IR) and social responsibility (RE);
3. Compatibility scope, including: 3 components of problem solving (PS), reality testing (RT) and flexibility (FL);
4. Stress management scope, including: 2 components of stress tolerance (ST) and impulse control (IC);
5. General mood scope, including: 2 components of happiness (HA) and optimism (OP).

Bar-On Emotional Quotient Inventory (EQ-i) is the first cross-cultural reliable inventory for evaluating the emotional intelligence. This test was reviewed in 1997. This review was done by Bar-On on 3831 persons (48.8% males and 51.2% females) in different countries, answers were studied through the factor analysis and consequently, a general scale and 15 sub-scales were developed for EQ. In this review, for computing the reliability, the Cronbach's alpha coefficient was used which the average was 0.76 for the relating population and this coefficient was 0.69 (social responsibility) to 0.86 (self-regard) for sub-scales, respectively. The test reliability was reported by test-retest method which was 0.85 and 0.75 after one month and 4 months, respectively. These results showed a good and acceptable reliability. The test validity was measured through the structure validity using different tools which confirmed the test validity and generally showed that 5 combined factors (above scopes) assessed the general structure of non-cognitive intelligence. In Iran, this test was conducted by Samoui (quoted by Karami, 2007) on Isfahan University students ^[35]. In Samoui's normalization, Bar-On 117-question inventory was used and the number of questions was reduced to 90 questions

after three levels of analysis (Samoui, quoted by Karami, 2007) [36].

Findings:

Table 1: Descriptive scales of the effect of imagery and muscle relaxation training on the emotional intelligence

Variable	Group	Pre-test Phase		Post-test Phase	
		Average	Standard Deviation	Average	Standard Deviation
Interpersonal Scope	Experimental	58.46	5.19	63.56	8.97
	Control	58.07	7.78	52.87	5.42
Intrapersonal Scope	Experimental	39.23	5.43	52.53	6.57
	Control	41.07	5.57	40.13	7.84
Compatibility Scope	Experimental	38.78	6.44	46.61	5.26
	Control	40.65	3.78	39.33	7.16
Stress Management Scope	Experimental	14.34	2.32	22.33	4.58
	Control	14.56	3.09	14.53	3.59
General Mood Scope	Experimental	30.28	4.31	34.07	7.05
	Control	31.63	4.69	29.13	6.51

As observed in table 1, after modifying scores of experimental and control groups in post-test, it was determined that they were different in the emotional intelligence. In other words, the average score of emotional intelligence (interpersonal, intrapersonal, compatibility, stress management and general mood scopes) of experimental and control groups showed a statistically significant difference in pre-test and post-test phases at 0.01 level. For studying these differences, the multivariate analysis of covariance (Mankova) was used. By taking a close look at the above table, it was found that the difference in pre-test and post-test scores were more related to scope 4 (stress management) and did not have significant differences in the control group. It can be explained that as muscular relaxation and mental imagery trainings are appropriate in stress reduction, national team members need these trainings more in the final moments of the competition (last 10-30 s); so, they perform better in this area.

Table 2: Box test for studying the matrix homogeneity

sig	dF ₂	dF ₁	F	Box's
0.27	3156.63	15	1.72	7.96

As shown in the Box test, according to the insignificance of $F=1.72$, $p>0.27$, the variance – covariance matrices are homogenous.

Table 3: Loun test for studying the variance uniformity

Variable	F	df ₁	df ₂	sig
Interpersonal Scope	1.29	1	28	0.37
Intrapersonal Scope	1.93	1	28	0.29
Compatibility Scope	1.33	1	28	0.36

Stress Management Scope	1.31	1	28	0.36
General Mood Scope	1.69	1	28	0.32

Loun test is conducted for studying the possibility of variances' uniformity. As table results show, the significance level of Fs is more than $P\geq 0.05$; therefore, the variances' difference is not statistically significant and variances are equal. Results of covariance analysis are shown in table 4.

Table 4: Results of covariance analysis for studying the effect of imagery and muscular relaxation trainings on the emotional intelligence

Emotional Intelligence	Combined Effect			
	Wilk's Lambda	F	sig	η^2
	1.241	4.89	0.01	0.39

As observed in the above table, the effect of imagery and muscular relaxation trainings on the emotional intelligence in a combined variable with Partial $\eta^2 = 0.39$, wilk's $\Lambda = 1.241$, $P < 0.01$ and $F(19.5) = 4.89$ is significant. It means that imagery and muscular relaxation trainings are effective on the emotional intelligence and the chi-square shows the extent of this effect equal to 0.39 which indicates a highly intensive effect.

Table 5: Covariance test results for studying the effect of imagery and muscular relaxation trainings on the emotional intelligence

Variable	Group	Post-test Phase		Post-test Phase		
		Average	Standard Deviation	F	Significance Level	Effect Size
Interpersonal Scope	Experimental	63.56	8.97	15.21	0.01	0.34
	Control	52.87	5.42			
Intrapersonal Scope	Experimental	52.53	6.57	12.67	0.01	0.31
	Control	40.13	7.84			
Compatibility Scope	Experimental	46.61	5.26	9.34	0.01	0.24
	Control	39.33	7.16			
Stress Management Scope	Experimental	22.33	4.58	17.12	0.01	0.37
	Control	14.53	3.59			
General Mood Scope	Experimental	34.07	7.05	5.09	0.01	0.16
	Control	29.13	6.51			

Results of multivariate covariance showed that imagery and muscular relaxation trainings were effective on the interpersonal scope with $F(1.23) = 15.21$, 0.34; intrapersonal scope with $F(1.23) = 12.67$, 0.31; Compatibility scope with $F(1.23) = 9.34$, 0.24; stress management scope with $F(1.23) = 17.12$, 0.37 and general mood scope with $F(1.23) = 5.09$, 0.16 ($P < 0.01$). In fact, imagery and muscular relaxation trainings had the maximum effect on the stress management scope (stress tolerance and impulse control

components) and the interpersonal scope (emotional self-awareness, assertiveness, self-regard, independence and self-actualization components) had a stronger effect on the intrapersonal scope (empathy, interpersonal relationships and social responsibility components) than compatibility and general mood scopes, and had the minimum effect on the compatibility scope (problem solving, reality testing and flexibility) and general mood scope (happiness and optimism), respectively. It can be explained that as mentioned above, studies emphasized the effect of relaxation on the stress and showed that gradual stress relieving with biofeedback affected the reduction of stress (Parish and Rasid, 2006; quoted by Darvishi, 2009) ^[17]. One of the methods of relaxation trainings is paying attention to the heart rate and respiration and athletes learn to regularly control their high heart rate and respiration because in Kata or Kumite competitions, Karate champions may not have a good performance due to the stressful conditions, but they can control their stress using these trainings. Therefore, acquiring these skills is significantly important and Karate champions should pay more attention to researchers' advices due to the significance of the case and do this exercise seriously in order to achieve a better result. In addition, athletes under stress perform lower than their abilities, but if they improve their psychological skills such as mental and physical skills, they will not experience this failure (Rainforth et al., 2007). Thus, as these trainings are continuously repeated in the mind of national team members, they will reduce stress because the repetition of an action leads to the simplicity of that action and the mind and body will naturally internalize it. Therefore, it can be concluded that the research hypothesis is confirmed, i.e. the imagery and muscular relaxation trainings affect the increase of emotional intelligence.

Discussion:

By conducting these two parallel researches on the mental imagery and muscular relaxation, we aimed to improve the emotional intelligence of Adult karate national team of Iran in order to obtain better results by enhancing the emotional intelligence in real medal granting competitions or in other words, increase their mental skills. At a general glance, the obtained results show that mental imagery and muscular relaxation can enhance the emotional intelligence. This is consistent with most previous researches on the effectiveness of mental imagery and psychological relaxation in athletes. In the previous results, more experienced athletes used motivational imagery more coherently ^[37], athletes with less self-confidence only used some mental imagery functions, but experienced athletes used all imagery functions, including cognitive and motivational aspects ^[38]. In researchers' investigations, the above research did not show the effectiveness of imagery on the emotional intelligence, but limited researches conducted on young football players showed that the general imagery training for 7 weeks could significantly increase the mental imagery application in all cognitive and motivational functions among players. In addition, the research conducted on the effectiveness

of mental imagery in the physical preparation of students in Rasht Second District Administration of Education showed that mental imagery could enhance the physical preparation performance ^[36] which is relatively consistent with researches of Hadavy, 1988; Filtes and Landers, 1983; Paivio, 1985; Micky & Price, 1985; berouzian & Molinaro, 2005. In explaining this finding, it can be said that according to the significance of these skills, with the increase of mental skills of the emotional intelligence, the sports performance is improved for achieving success and as the successful performance is influenced by mental skills, it can be concluded that when mental skills are not only taught, but also a part of their training plan, their significance level in the sport is increased. Consequently, for the athletes to remain in today's competitive sports environment, they must equip themselves to mental skills and improve their abilities constantly. According to the significance of mental skills, it is obvious that at any level, in any sports field and for any age group, coaches need to know the mental state of athletes because this knowledge will guide them in the prioritization of using skills and facilitate obtaining the results. Regarding the second research variable, it must be mentioned that as sports competitions are full of mental stress and controlling these stresses is highly dependent on the muscular relaxation skills, research findings showed that muscular relaxation trainings in 8 weeks with main trainings were effective in the increase of emotional intelligence. This finding is relatively consistent with the researches of Vinter et al. (1984) ^[9], Holroyd & Penzien (1990), Cold et al. (2002) quoted by Darvishi (2009) ^[17], Antall & Kresevic (2004), Devineni & Blanchard (2005), Parish & Rasid (2006) quoted by Darvishi (2009) ^[17], Rainforth et al. (2007) and Henriques et al. (2011). It is believed by these researchers that the purpose of muscular relaxation training is to help individuals acquire adapted mental reactions and methods of coping with stress. These therapies will enhance athletes' resistance through behavioral antibodies (conditioning) and put them under stimuli which have enough power to tolerate stresses resulting from the competition's stressful factors ^[39]. The general assumption in muscular relaxation therapy methods is that individuals can consciously learn to voluntarily control their muscles and reduce their stress level. Consistent with the research result and previous findings of researchers, it can be mentioned that the autonomic nervous system is not so autonomic, but individuals can control activities which are not under their control and are active under the autonomic system (activities which are related to smooth muscles, such as the expansion and contraction of the heart rate and blood vessels) by repetition and practice ^[40]. The simplicity of conducting methods such as muscular relaxation and gradual stress relieving, actions of individuals under training, accessing adapted social interactions during the therapy and gradual changes are main advantages of these methods in stress reduction and management ^[40]. Therefore, it can be concluded that using muscular relaxation methods with stress reduction will change individuals' perception of the ability of coping with daily life stresses, especially during the competition. Thus, this therapy methods can be used along with other methods and

improve the psychological and behavioral problems resulting from stress among national teams' athletes. From practical point of view, it is suggested that national team coaches use experienced and knowledgeable psychologists in this area as team psychologists in order help trainees to perform better in stressful conditions using these skills. Regarding the third and last variable, it must be mentioned that as the emotional intelligence is a form of social intelligence and according to researches, if a person has emotional capability, he can deal with life challenges better and have a better mental health ^[41] and as the emotional intelligence attempts to help individuals achieve the self-awareness based self-control ^[42], it can be concluded that individuals with emotional intelligence can use emotions, knowledge, understanding, adjustment and emotional control for their interest as well as others'. In confirming previous findings, this research shows that mental imagery and muscular relaxation training course has a positive effect on the emotional intelligence. Results show that there is a significant difference between the experimental group which passed the mental imagery and muscular relaxation training course and control group in terms of the emotional experience in interpersonal, intrapersonal, compatibility, stress management and general mood scopes. Accordingly, it can be inferred that the mental imagery and muscular relaxation training has a significant effect on the emotional intelligence of experimental group subjects and in all 15 scales in the experimental group, a significant difference is observed before and after the mental imagery and muscular relaxation. In addition, it has the maximum effectiveness on the stress management variables and it can be explained that individuals with mental imagery trainings frequently practice stressful situations in their minds, do not face uncertainty in decision making and behave more effectively. Furthermore, individuals who perform muscular trainings more frequently can control their body system and behave more effectively in stressful situations. These findings are consistent with the researches of Vinter et al. (1984), Eliyas et al. (1991), Mayer & Salvy (2000), Bar-On (2001), Salovsky & Cartrayt (2002), Devineni & Blanchard (2005), Thomas et al. (2006), Devonport (2006), Rainforth et al. (2007), and Naseh (1997) in which individuals with high emotional intelligence are more resistant against psychological stress and risk and this intelligence potentially enhances athletes' performance and is associated with athletes' success. Consequently, mental imagery and muscular relaxation training is associated with athletes' success. Consequently, the mental imagery and muscular relaxation training is effective and useful in individuals' ability to manage stress (stress tolerance and impulse control). Finally, in conducting this research, there are two limitations: one is that the research sample was only selected from Adult national karate team in the limited time interval of spring and summer 2014 during the national team trainings. Therefore, in future researches, for studying the effectiveness of muscular relaxation and mental imagery used in this research, it is necessary to select more national team members in other fields using the stratified sampling method for the generalization of results. The other one is that in this research, due to the time limitation and

the extent of research, other methods of psychological skills such as positive self-talk, concentration, emotional self-adjustment, goal setting and visual strategies are not used.

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