

The Effectiveness of Teaching Mindfulness on Reduction of Stress, Thinking Control and Working Memory of Military Personnel

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<http://dx.doi.org/10.13005/bbra/2591>

(Received: 12 November 2017; accepted: 04 December 2017)

The purpose of this study was to determine the effectiveness of mindfulness training on reducing stress, thinking control and work memory of military staff. This quasi-experimental study was conducted with pre-test, post-test and control group. The statistical population of this research was all military personnel. Using available sampling, 60 people were selected as the sample volume and they randomly placed in two control and test groups of 30 people. Intervention of Mindfulness-Based Stress Reduction (MBSR) on test group was performed in 8 sessions for two months and after intervention, a post-test was performed again. The data gathering tool was DASS-21 questionnaire. After collecting data through a questionnaire, SPSS software version 22 was used to analyze the statistical data. The results of covariance analysis indicated that there is a significant difference between the average scores of the post test of the test and control groups, and teaching mindfulness has been effective in reducing stress, thinking control and work memory of military personnel. This means that reduction of mindfulness-based stress has been able to influence the reduction of stress, thought control, and work memory by creating a more positive attitude towards their abilities, creating a proper attention environment and self-control.

Keywords: Mindfulness Training, Stress, Thought Control, Work Memory.

The advancement of industry and technology in human societies, in addition to increased power and wealth, has deprived people of their peace and security, and has increased neuropsychiatric and psychosocial problems. As a result, researchers and psychologists have always been looking for ways to reduce these problems. Stress can be mentioned, including mental neurological problems.

In recent decades, the topic of stress and its effects on organizations has attracted a

lot of attention. Stress is said to be manifest in a behavioral, psychological, or physical environment adapted to an abnormal external state, and is one of the phenomena that vary in degree or severity in relation to the environment and situations. Stress causes a lot of mental stress on the person, which shows different pressures in the behavior of person in their work environment. All of these factors ultimately lead to reduce productivity and increase lesions, and on the other hand, these people find themselves incredibly talented for themselves and

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others due to the disability to control their feelings, the disability to make the right decisions and great talent for causing incident to yourself and others and so on¹.

Existence of stress at the workplace in security organizations results in harmful consequences for the organization and causes harmful effects on mental health and physical well-being of individuals. In particular, exposing people to stress causes emotional and behavioral problems such as depression, anxiety, sleep disturbances, occupational burnout, alcohol consumption, early retirement, mental illness or accelerated course of disease. Stress can be considered as an aggravation of stressors. The concept of stress is nowhere more obvious than military collections. Military environments have a more serious atmosphere than other administrative agencies, because the personnel of the system should be prepared to fight and defend and sacrifice their lives in this way. Also, the nature of these organs increases the risk of anxiety and stress among military personnel and disrupts their activities².

In the process of controlling thought, the main purpose is suppressing disturbing and unwanted thoughts. The uninvited thoughts are generally internal and are defined as thoughts, images, or repetitive shocks, which are unacceptable and unpleasant³.

Quach et al. (2016) studied the effect of mindfulness awareness on the capability of work memory in teenagers, in students attended several courses at different levels. The results show that there were no any statistical differences between stress and anxiety of the groups. It is the first research that supports the benefits of short time mindfulness and specifically mindfulness awareness in optimizing work memory ability of teenagers. The results emphasized the importance of mindfulness among teenagers⁴.

Mindfulness not only with facilitating the evaluation of the positive process causes reduction of harmful consequences of stressful situations, but also through habituating the use of inappropriate coping strategies causes reduction of the problems associated with stressful situations⁵.

Controlling thought is one of the concepts that have received much attention in psychology. The concept of thinking control is the skill of thinking that helps people to learn direct their

thoughts and feelings in the desired direction. The first process in suppressing a thought is to deliberately and consciously seek unsuppressed thoughts or to think about the purpose and keep up an alternative choice mindset in consciousness. Each time the thought of the object comes to mind, it causes a person to seek for a factor that distracts his senses from the disturbing variable. This distractor may be an external stimulus (such as talking to others) or an internal stimulus (such as thinking of minds in harmony with the creation). The second process is called automatic search of a goal, in which repression requires monitoring of the presence of the thought of the goal in order to search and apply this divergent process in the event of a failure⁶.

Carmody and Baer (2016) studied "the effects of mindfulness and its different levels on stress reduction programs which are based on mindfulness". It was found that both the type and the amount of mindfulness have wonderful effects on different stress reduction programs and it is possible to organize these programs in a way that they can reduce different effects resulting from these programs. The results showed that using the effects of mindfulness movement it is possible to reduce stresses while in this method the amount of stress is very important⁷.

All exercises in the mind are designed to increase the attention to the body. The important role of the body has been proven in new interdisciplinary areas such as mind-body medicine. In researches that use mindfulness, the interaction between physical, cognitive and emotional processes is emphasized. Mindfulness also affects the memory of individuals. Work memory which is one of the dimensions of memory is the center of thinking. Creating new strategies, computing the solutions of math problems, reading comprehension, etc., all occur in memory. Memory is a system with limited capacity, where information is stored there for a short time. This memory interacts with long-term memory, uses long-term memory information and transmits information for longer storage⁸.

Many researches have shown that control of thinking is positively associated with injuries and psychological problems such as depression, obsessive-compulsive disorder, post-traumatic impairment, Stress and slowness of major depression, depressive disorder, diffuse

neurological disorder and indirect thoughts and behaviors¹.

Researchers have also shown that anxiety have a reverse relationship with thinking control. In other words, the more the anxiety, the more the thinking control fails, despite more effort to prevent it.

At present, the most common way to reduce mental health problems, including stress, is to educate the mindfulness. Mindfulness is the observation of external and internal stimuli, as it happens, without any judgments, and in fact, is a skill that allows people to receive at present the incidents less than it is uncomfortable.

Mindfulness is the special and purposeful attention and without judgments and prejudices. In mindfulness, the person is aware of his mental method every moment and after awareness of the two mental methods, one implementation and the other presence, he learn to change the mind from one method to the other that is required Teaching behavioral and Cognitive and Metacognitive Strategies for focusing the process of attention.

Table 1. Cronbach's alpha value in the thought control questionnaire

Dimension	Cronbach's alpha
distraction	0.74
worry	0.70
social control	0.65
punishment	0.72
re-evaluation	0.64

Mindfulness-based interventions have shown their effectiveness in treating various psychological problems. Preventing the recurrence of depression, drug abuse, and reduction of psychological and physical responses to stress, hyperactivity disorders are issues that have responded to the awareness of the mind ⁹.

The most common method of teaching mindfulness is based on stress reduction, stress reduction plan, and teaching relaxation¹⁰. All exercises in the mind are designed to increase the attention to the body. The important role of the body has been proven in new interdisciplinary areas such as mind-body medicine. In researches that use mindfulness, the interaction between physical, cognitive and emotional processes is emphasized. Mindfulness also affects the memory of individuals. Work memory which is one of the dimensions of memory is the center of thinking. Creating new strategies, computing the solutions of math problems, reading comprehension, etc., all occur in memory. Memory is a system with limited capacity, where information is stored there for a short time. This memory interacts with long-term memory, uses long-term memory information and transmits information for longer storage⁸.

For some reasons such as the importance of research on military personnel and the lack of researches on this area, the researcher is going to evaluate the effect of mindfulness training on stress reduction, thinking control and work memory of military personnel.

Table 2. The frequency distribution based on sex

Gender	Control group		Test group	
	Frequency	Percentage	Frequency	Percentage
male	30	100	30	100
female	0	0	0	0
total	30	100	30	100

Table 3. Percentage of samples by age

Sex	Control group		Test group	
	Frequency	Percentage	Frequency	Percentage
male	30	100	30	100
female	0	0	0	0
total	30	100	30	100

METHODOLOGY

This is a quasi-experimental research which was conducted using pre-test, post-test and control group. After getting a positive feedback from the related organization and its staff, stress, work memory and thought control questionnaires were distributed between both test and control groups. Then stress reduction intervention based on mindfulness (MBSR) was conducted on test group during 8 sessions for two months. After repeating stress reduction intervention, post-test was performed. The statistical community in this research was all employees of Group 405 Psychological Operations Nazaja among whom 60 individuals were selected through availability sampling and randomly divided in two test and control groups including 30 individuals. In this research three tools were used to collect statistical data. The tools were DASS-21, Wells and Davis thought control questionnaire and Daneman and

Carpentet work memory (active mind) test. The collected data was analyzed using SPSS software version 22.

Also, in this research, library method is used to collect information about the history of internal and external studies. Using Taking notes from the theses, research and studies of other researchers and specialized journals, related information are gathered. To collect information on the theoretical foundations and literature of the subject, library resources, articles, books required from Latin and Persian books, theses, and especially Latin articles of the valid magazines Google Scholars, Scopus, have been used. The field method was used to collect numerical and statistical data. The questionnaires and the test were used to collect information from the experimental and control groups. After completing the questionnaire and test, the data were analyzed using proper software.

Table 4. Percentage of samples by grade

Grade	Control group		Test group	
	Frequency	Percentage	Frequency	Percentage
undergraduate	6	20	3	10
bachelor	15	50	17	56.7
masters	9	30	10	33.3
total	30	100	30	100

Table 5. Percentage of samples, broken down by work experience

Work experience	Control group		Test group	
	Frequency	Percentage	Frequency	Percentage
< 10 years	16	53.3	14	46.7
10 - 20 years	10	33.3	13	43.3
> 20 years	4	13.3	3	10
total	30	100	30	100

Table 6. Descriptive statistics of test group

Test group	Pre-test		Post-test	
	Average	Standard variation	Average	Standard variation
stress	4.80	1.882	2.433	1.651
Thought control	5.966	4.874	15.40	3.254
Work memory	9.833	3.374	16.566	1.906

At the end of the training, the research was entered into the field stage; a questionnaire and a test as a data gathering tool were used. In this study, three tools were used to collect statistical data.

The questionnaires of this study included a questionnaire of DASS-21 for measuring anxiety, depression and stress (we study only 7 stress related questions in this study), Wells and Davis (1994) in order to assess the ability of thought control and test of Dunnin and Carpenter (1980) for measuring work memory.

Because the data collection tool in this research is questionnaire, their validity and reliability were first assessed. So, how to determine the validity and reliability of these tools is discussed below:

Depression, Anxiety and Stress questionnaire includes 21 items and a set of three self-assessment subscales for measuring negative emotional states of depression, anxiety and tension. Each subscale has 7 items. The depression subscale includes expressions of unhappy mood, lack of self-esteem, disappointment, worthlessness of life, lack of interest in conflict in problem, lack of enjoyment of life, and lack of energy and power. Anxiety subscale has phrases that attempt to assess the physiological arousal, fears, and

situational anxiety, and a subscale of stress that includes expressions such as difficulty in achieving relaxation, nervous tension, irritability, and restlessness. The psychometric properties of the DASS-21 stress, depression and anxiety scale have been studied in several studies such as the study of Henry and Crawford (2005), which was done using a large English sample (1794 individuals).

Wells and Davis TCQ Control Thought Questionnaire: This questionnaire has 29 questions. It aims to assess the ability to control thinking against disturbing thoughts from different dimensions (distraction, worry, social control, punishment, re-evaluation) (Table 1).

In the research process, after collecting data, the next step involves analyzing the collected data by using SPSS software version 22. Normality of the data was verified by the Smirnov-Kolmogorov test. Lean test was used to determine the consistency of the variances and one-way covariance analysis was used to measure the difference between the groups.

The Smirnov-Kolmogorov test was used to evaluate the variability of the ranking variables in two samples (independent or non-independent) or equality of distribution of a sample with a distribution that was assumed to society. This test is

Table 7. Descriptive statistics of the control group

Test group	Pre-test		Post-test	
	Average	Standard variation	Average	Standard variation
stress	9.70	3.834	14.60	2.774
Thought control	10.233	3.297	7.20	3.252
Work memory	8.833	3.195	6.166	2.640

Table 8. One way analysis of variance to examine the difference between the two groups in the pre-test

Variable	Group	Average	Standard variation	P - value
stress	test	4.80	1.882	1.000
	control	9.70	3.834	
Thought control	test	5.966	4.874	0.640
	control	10.233	3.297	
Work memory	test	9.833	3.374	0.579
	control	8.833	3.195	

Table 9. The results of covariance analysis to examine the significance of differences in the two groups in stress, thought control, work memory post-test variables (after mindfulness training)

Variable	Sum of squares	Degree of freedom	Average of squares	F	P-value
Post-test stress	194.0006	1	194.006	2.101	0.016
Post-test thought control	60.763	1	60.763	1.050	0.031
Post-test work memory	0.747	1	0.747	0.747	0.012

Table 10. Summary of Results

No.	Theory	Result
1	Mindfulness training reduces stress and affects controlling of thought and work memory of employees of Group 405 Psychological Operations Nazaja	Confirmed
2	Mindfulness training reduces stress among employees of Group 405 Psychological Operations Nazaja	Confirmed
3	Mindfulness training affects controlling of thought among employees of Group 405 Psychological Operations Nazaja	Confirmed
4	Mindfulness training affects work memory of employees of Group 405 Psychological Operations Nazaja	Confirmed

performed by comparing the distribution of relative frequencies observed in the sample by distributing the relative frequencies of the community.

Loon tests the homogeneity of variances in different samples. In other words, it tests the equation of the dependent variable for the groups determined by the distribution factor, and is less dependent on the assumption of normality than most tests, and is, in fact, resistant to normal deviation.

RESULTS AND DISCUSSION

Statistics is regular descriptive, data categorization, graphical representation, and computation of values such as faces, mean, median, etc., indicating the characteristics of each member of the community under discussion. In descriptive statistics, the data from the pre-test and post-test groups are described, and the information obtained is not generalized to the same categories. In general, three methods are used in descriptive statistics to summarize data: using tables, using charts, calculating specific values that represent important characteristics of the data. In the following of this section, descriptive findings and collecting data are mentioned by using descriptive

statistical indicators. This section describes the research samples and its variables.

According to the findings of Table 2, 100% of the statistical samples in the control group are men and 100% of the statistical samples in the experimental group are men (Table 2).

Based on the findings of Table 3, 46.7% of samples in the control group are less than 30 years old, 20% of them are between 30-40 years old and 33.3% of them in the control group are older than 40 years. 56.7% of individuals who have learnt mindfulness are less than 30 years old, 16.7% of them are between 30-40 years old and 26.7% of them are in the age group of older than 40 years old.

As you see in Table 4, 20% of controlling group has an undergraduate degree, 50% of them are bachelor and 30% of controlling group is masters and 10% of individuals, who have learnt mindfulness, have an undergraduate degree, 56.7% of them are bachelor and 33.3% of them are masters.

As you can see in Table 5, 53.3% of controlling group has less than 10 years of work experience, 33.3% of them have 10-20 years, and 13.3% of this group has more than 20 years of work experience. Among individuals who have been

taught mindfulness, 46.7% of them have less than 10 years of work experience, 43.3% of this group is 10 to 20 years, and 10% of them have more than 20 years of work experience.

Statistical indicators and descriptive statistics of the research variables such as mean, standard deviation, control groups and tests are available at the pre-test and post-test stages for variables in table 6 and table 7.

According to Table 8, the values of p-value are greater than 0.05 (significance level), there is no significant difference between the stress variables, thought control, working memory in the control and test groups before the test.

According to the values of p-value in Table 9 for stress, thought control, working memory variables after mind-awareness training are 0.016, 0.031, 0.012, respectively and less than 0.05 (significance level), there is a significant difference between the average of the two groups in the post-test stress, thought control, and working memory; as a result, mindfulness training has effect on reduction stress and controlling the thinking and working memory of employees of Group 405 Psychological Operations Nazaja.

Totally, the result of this study is in a sample of 60 employees in the 405 group of psychological operations Nazaja. The samples were then equally divided into control and experimental groups. In this study, after evaluating the following results are given,

All of individuals in sample are in the control group and in the test group are men. The majority of the samples in terms of the age group belonging to the group less than 30 years old in the control group and in the test group. Most of the individuals in terms of the degree are bachelor in both control and test group. In terms of work experience, the majority of the samples of control group have less than 10 years of work experience and the majority of the samples of test group have between 10 to 20 years of work experience.

CONCLUSION

This study was conducted to determine the effectiveness of mindfulness training on stress reduction, thought control and working memory of military personnel. First, the collected data were summarized and categorized using descriptive

statistics, and then, using inferential statistics, the assumptions were approved or rejected. In the statistical section (standard deviation and error rate), independent and dependent variables have been reported. The results of covariance analysis showed that there is a significant difference between the average of post-test of the test and control groups, and mindfulness education has been effective in reducing stress, thought control and working memory of military personnel. The results show that reduction of mind-fulness-based stress has been able to influence the reduction of stress, thought control, and work memory by creating a more positive attitude towards their abilities, creating a proper attention environment and self-control.

REFERENCES

1. Nagtegaal, M.H., Rassin, E., & Muris, P. Aggressive fantasies, thought control strategies, and their connection to aggressive behavior. *Personality and Individual Differences*, 2006; **41**: 1397-1407.
2. Jiang, J., Rickson, D., & Jiang, C. The mechanism of music for reducing psychological stress: Music preference as a mediator. *The Arts in Psychotherapy*, 2016; **48**: 62-68.
3. Abramowitz, J.S., & Schweigwer, A. Unwanted intrusive and worrisome in adults with attention deficit strategies and beliefs as predicted by the meta cognitive model. *Personality and Individual Differences*, 2009; **40**: 111-122.
4. Quach, D., Mano, K. E. J., & Alexander, K. A randomized controlled trial examining the effect of mindfulness meditation on working memory capacity in adolescents. *Journal of Adolescent Health*, 2016; **58**(5), 489-496.
5. Wegner, D.M., & Zanakos, S. Chronic thought suppression. *Journal of Personality*, 1994; **62**: 615-640.
6. Cheyne, A. J., Carrier, S. A., & Jonathanand, S. D. Absent-mindfulness: lapses of conscious awareness and everyday cognitive failures. *Consciousness and Cognition*, 2006; **15**(3): 578-592.
7. Carmody, J., & Baer, R. A. Relationships between mindfulness practice and levels of mindfulness, medical and psychological symptoms and well-being in a mindfulness-based stress reduction program. *Journal of behavioral medicine*, 2016; **31**(1): 23-33.
8. Martins, A. Q., Kavussanu, M., Willoughby, A., & Ring, C. Moderate intensity exercise facilitates

- working memory. *Psychology of Sport and Exercise*, 2013; **14**(3); Pp: 323-328.
9. Duncan, L. G., Coatsworth, J. D., & Greenberg, M. T. A model of mindful parenting: Implications for parent-child relationships and prevention research. *Clinical child and family psychology review*, 2009; **12**(3): 255-270.
 10. Segal, Z. V., Williams, J. M. G., & Teasdale, J. D. *Mindfulness-based cognitive therapy for depression*. New York: Guilford 2006.
 12. Dekeyser, M., Raes, P., Lejssen, M. L., Saraand, D. D. Mindfulness skills and interpersonal behavior. *Personality and Individual Differences*, 2008; **44**(5): 1235-1245.
 13. Mitmansgruber, H., Beck, M.T., & Schubler, G. (in press). Mindful helper: Experiential avoidance, meta-emotion, and emotion regulation in paramedics. *Journal of Research in Personality*, **15**: 345-361.
 14. Grossman, P., Niemann, L., Schmidt, S., & Walach, H. Mindfulness-based stress reduction and health benefits: A meta-analysis. *Journal of psychosomatic research*, 2014; **57**(1): 35-43.
 15. Bränström, R., Kvillemo, P., Brandberg, Y., & Moskowitz, J. T. Self-report mindfulness as a mediator of psychological well-being in a stress reduction intervention for cancer patients—A randomized study. *Annals of Behavioral Medicine*, 2010; **39**(2): 151-161.
 16. Heredia, L., Gasol, L., Ventura, D., Vicens, P., & Torrente, M. Mindfulness-based stress reduction training program increases psychological well-being, and emotional regulation, but not attentional performance. A pilot study. *Mindfulness & Compassion* 2017.
 17. Hitzschke, B., Wiewelhove, T., Raeder, C., Ferrauti, A., Meyer, T., Pfeiffer, M., ... & Kölling, S. Evaluation of psychological measures for the assessment of recovery and stress during a shock-microcycle in strength and high-intensity interval training. *Performance Enhancement & Health* 2017.