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Effect of neurofeedback training on consumption temptation, depression and anxiety of smokers

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Abstract

Purpose: Cigarette smoking annually threatens the health of thousands and causes the deaths of its consumers and even their neighbors, mainly due to the dumping of carbon monoxide and carbon monoxide by smoke. In addition, nicotine in person's cigarette smoke also causes psychological disorders (such as anxiety and depression) that are added to physical symptoms. **Methodology:** These issues are the main motivation for health professionals to find an effective way to quit smoking. The purpose of this study was to evaluate the effectiveness of neurofeedback training on reducing depression, anxiety and temptation in cigarette smoking in Isfahan smoker's volunteers. In this study, the sample size was 30, and were randomly divided into two groups of 15 subjects. The 42-item questionnaire of the DASS questionnaire was used to measure the depression and anxiety of the two groups in the pre-test and post-test phases, and the Fagerstrom test was used to assess the nicotine dependence of the subjects in the post-test pretest. **Findings:** The experimental group received 15 sessions of neurofeedback training. Each session included 20 minutes of practice. This tutorial was conducted with the help of the DeyMed device and TruScan software to amplify the alpha wave amplitude in F3-F4 and Fz-Pz areas, and the theatrical wave suppression. **Discussion:** The data were analyzed using SPSS software using covariance analysis method. The results showed that the effectiveness of the neurofeedback exercises on reducing the anxiety, depression and temptation of smoking in the experimental group was.

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1. Introduction

Material dependence disorder is a set of cognitive, behavioral, and psychological symptoms, along with a pattern of repeat consumption that results in tolerance, withdrawal symptoms and compulsive behavior. In this category of disorders, the main focus of the patient's severe and inevitable craving is to continue to use drugs, which is the root cause of the recurrence of the use and failure of commonly known treatments (Dehghani Arani and Rostami, 2010). In general, the effects of the drug, which show double-blind studies with false drugs (placebo or placebo), are related to the chemical nature of the substance, which are related to the neurological and biochemical aspects of drug use. The effects of a chemical or drug that are dependent on psychological and sociocultural variables are called generic effects. Often the effects of a drug or psychoactive substance are far more powerful than its overall effects. The four main psychological variables involved in taking drugs or psychotropic substances include: history of drug use, expectations or readiness of the consumer, consumer mood, and what the consumer is doing under the influence of the substance (Khademi and Roshan, 2006).

2. Literal review

The history of the use of the substance is similar to what it is supposed to be used and how much previous consumption has a major impact on the consumer's expectation of the effects of the substance. The effect of a fraction of the material, such as marijuana, can be so slight that people need to be trained to enjoy it. In addition, the expectations are from the effects of the consumption of a substance on the individual's experience of consumption, the views of friends and colleagues, the mass media, education, and the descriptions that specifically refer to it (consumer beliefs Is related. On the Consumer's Consumers " Wilder's Value for Value " can be a solution. According to this principle, the effects that a substance can have on a consumer's primary creation and his belief in the maximum ability of that material depends (Lewit, 1982; quoted from Khademi and Roshan, 2006).

Basically, according to Wilder's law, substance or medication cannot lead the person to behavior or cognition to exceed his ability, and the effect of the substance on the consumer depends on his or her condition before consumption. The higher the individual's mental distance from its maximum ability, the greater the potential effect of the substance. So, if the person is completely irritated before taking the substance, the substance will have a fairly small effect on the person, but when the person is tired, the same substance with the same amount of use can have a significant effect on him. Also, Wheeler's law indicates that contradictory or contradictory effects (the opposite of what the person has already experienced) occurs when the consumer is at the maximum or near his maximum state prior to use and in order to increase This is the state of your mind. For example, methylphenidate is a stimulant used to control overactive children (Khademi and Roshan, 2006).

Studies have shown that certain neurochemical mechanisms of the brain are involved in the craving of patient’s dependent on the substance. Marvin argued one of the most important ideas in the field of Bloom's waterfall theory in explaining drug dependence disorder. It suggests that genetic abnormalities result in a disturbance in chemical-neuroprotective processes, which causes substance-dependent patients to crawl into a hard spiral. In these patients, brain frequencies and, consequently, a specific biochemical agent are locked up, and individuals are not able to grasp and sense the amplification under normal conditions, as healthy people are not. These people can only activate the locked biochemical agent with the use of substances, and they can get a sense of augmentation. This disorder, which is called a defective syndrome, is closely correlated with abnormalities of the alpha-brain waves. Hammond (2006), Newton, Cook, Calchestin, Duran, Monorouille et al. (2003), and Alper, Princhap, Kualik, Rosenthal, and Zen (1998) have also been responsible for many recurrent relapses and craving for drug-dependent patients. Continuity of nerve abnormalities in the brain (Dehghani Arani and Rostami, 2010).

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In the sense that many cigarettes are once again eating into a recurrence after a short period of time, it can be said that smoking cessation is likely to be difficult. Although it is difficult to stop smoking, the successful discontinuation packages have been designed so far. In these packs, nicotine replacements are often used, such as chewing gum, skin tags, or nicotine respirator sprays. Smokers who have successfully quit soon begin to experience a significant increase in well-being: better lung function, higher cardiac output and a lower rate of cancer (Parut et al., 2004). In order to make real judgments about the effect of existing smoking cessation therapies, there are a number of very serious criteria and criteria that should be applied: Inclusion of anyone who uses the package to stop smoking, Or avoiding consumption for 6-12 months and the prevalent biochemical reasons for not smoking are measured by measuring the presence of the main metabolite of nicotine, ie, cathinin, in blood plasma or the amount of carbon monoxide in the respiratory tracheal air (Dehghani Arani and Rostami, 2010).) Some of the most commonly used methods of behavioral therapy for patients with substance abuse are: 1) Behavioral self-esteem training, 2) Relaxation training, 3) Modeling, 4) Consolidation and coordination agreement, 5) Desensitization Regular, (6) cure in the form of hidden hatred, and (7) social skills training (Lewis, Dana and Blvins, 1939 p. 135).

Anxiety is often an accelerator of substance abuse. This does not mean that anxiety causes extreme consumption of substances. Rather, it is one of the most problematic symptoms that many addicted to substance abuse. Therefore, education in the Jacobson Way (1968), known as progressive muscle relaxation, is used to control the anxiety of drug abusers. This method of treatment has a positive effect, and is effective in reducing the adverse effects of the patient's life (such as persistent anxiety, or return to the substance) (Lewis et al., 1939, p. 139). When the authorities deal with substance abuse with a tense situation, his sense of self-restraint quickly gives way to insecurity, anxiety and hesitation (Marlat and Gordon, 1985; cited by Lewis et al., 1939 p. 228). In fact, the occurrence of stressful events may be the initiator of returning to consumption, and the use of positive coping mechanisms can facilitate the recovery process (Lewis et al., 1939).

One of the new therapies that has been considered today is neurofeedback education. Neurofeedback education is a non-invasive method that directly affects the brain. This method contributes to emotional drainage and positive emotional enhancement, and can affect the flow of regional blood-brain fluid (rCBF) and is a self-regulated self-regulation based on self-awareness (Demos, 2005). Nowadays, the neurofeedback training method is considered as a new therapist to help with the recovery of various types of disorders. In the treatment of drug dependence disorders, neurophysiologic studies have shown the relationship between brain wave thrombocytic mechanisms and psychological mechanisms of the brain. Also, it has been proved that making optimal changes in rhythm and frequency of brain waves by using neural therapies can result in optimal changes in neuropsychological states (Dehghani Arani and Rostami, 2010).

Therefore, neurofeedback training, as one of the possible strategies for controlling and reducing biochemical tobacco use, can be effective. In this aspect, with special exercises, brainwaves can drive smokers to reduce their anxiety and tensions by eliminating volunteering. As previously mentioned, one of the main reasons for cigarette smokers to avoid excessive nicotine side effects is anxiety and tension, which is a major contributor to this problem. Also, according to a finding from a non-smoker depressed person, the use of nicotine labels has been shown to improve the symptoms of depression, and this is probably the reason why smoking is an attempt to self-healing depression (Salin-Pasqual et al., 1996; Ebrahimzadeh, Taheri, Sameri, Worlds, Tajeri et al., 2010). Therefore, control of symptoms of anxiety, tension and depression caused by nicotine failure may lead to decreased craving. In the meantime, many studies have been carried out on people with substance abuse disorders such as Saxby and Paintedon (1995) who have been researching alcoholics with depression symptoms; and Narimani and Rajabi's (2012) research on reducing depression, Anxiety, stress, and tempting beliefs about morphine addicts.

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3. Methodology

The present study is a pilot study with pretest, post-test and control group. The experimental practice in this study was neurofeedback education and the dependent variables included depression, anxiety and temptation of smoking in its users. In the neurofeedback method, the brain is actually taught. The focus of this training is on gradual learning with the help of conditioning techniques and, consequently, increasing or decreasing the range of some of the components of the EEG. The key word in this technique is the "gradual" training that requires multiple sessions. In general, the number of sessions and the duration of each neurofeedback training session is proportional to the severity and type of disorder, the individual characteristics of the referrals, the responsiveness of the referrals to the method of treatment, the educational protocol to be implemented, and the specialist purpose of treatment and education. The statistical population of this study was all smokers who were referred to psychiatric and psychiatric centers and clinics in Isfahan and were quit smoking who were randomly assigned into two experimental and control groups. To select the control group, smokers who referred or referred to psychiatric and psychiatric clinics and clinics were used. The existence of criteria for entering the research was a prerequisite for choosing both groups. (To study the criteria for entering the research and the criteria for leaving it).

Sampling with targeted target selection method was carried out among smokers with criteria for entering the research. The criteria for entry of subjects to this research project were smoking for at least one year, no brain damage and mood or anxiety disorders, and age range of 20 to over 60 years of age, which was determined by interviewing the diagnostic sample of adult smokers who were applying for cigarette smoking. Exit criteria The subjects of this research project are the presence of a specific mental or physical disorder (such as brain damage, depression and anxiety disorders), and the dependence or even consumption of other psychoactive substances (eg, alcohol and opiates) Age, sex, severity of nicotine dependence and history of abortion were not considered for this research project. Initially, an initial diagnostic interview was conducted to examine the presence of crippling and psychologically disrupted psychiatric disorders or other psychotropic substances other than cigarettes (volunteers' compliance with entry and exit criteria). After the initial diagnostic interview, 30 men and women aged 20 to 60 were selected, of which 15 were in the experimental group and 15 in the control group were randomly assigned.

Measurement tool

International Comprehensive Diagnostic Interview (CIDI)

The Comprehensive Diagnostic Interview (CIDI) is a structured, comprehensive, and comprehensive diagnostic interview for assessing psychiatric disorders. The tool is developed by the World Health Organization in collaboration with the former Department of Drug Abuse and Alcohol and Mental Health of the United States, which can help diagnose ICD-10 and DSM-IV definitions and criteria. This instrument, in addition to the section of symptoms and diagnosis of life-long and recent years, has symptoms, as well as psychosocial disturbances and other information related to disturbances (Cooper, Peters and Andrews, 1998; WHO, 1991; quoted from Arab, Hobbat Rad, Sharifi, Hakim Shushtari, Shabani et al., 2005). In the present study, the absence of crippling mental or physical disorder (such as anxiety and mood disorders and brain damage) was evaluated according to CIDI. In other words, in this research, a structured diagnostic interview is a tool for screening smokers. Also, the instrument for measuring the dependence of other addictive substances (such as opioid and alcohol) and nicotine dependency was a clinical interview.

Neurofeedback hardware and software system

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EEG records brain electrical waves while performing or not doing certain activities; neurofeedback training is based on this. What causes the neurofeedback to be used as a treatment for psychiatric nerve disorders is neuroplasticity (Demos, 2005; quoted by Fayyad Sector, 2013), and thus the ability to condition the brain. The main goal of the neurofeedback is to increase one's awareness of what is happening in the brain and then to increase its control over it. In this research, computers (laptops or personal computers) and DeyMed devices were used as amplifiers from the brain to the computer (amplifier) and TruScan specialized software for recording and analyzing waves (Figure 3- 1).

Electroencephalogram (EEG) is a paper or digital record of raw brain wave signals not filtered. Psychotherapy is a means to enrich the mind, while nerve therapy is a brain enrichment tool. Conducting summations from peripheral events and making mental changes to the health of brain metabolism (Demos, 2005, p. 69-68). In the field of treatment of psychiatric disorders, neurophysiologic studies, investigating the relationship between brain electrical waveguide, brain thalamic cortical mechanisms and psychological states have shown that making optimal changes in rhythm and frequency of brain waves using methods Nervous system therapy can produce favorable changes in psychological states (Stremen, 1996; Narimani and Rajabi, 2012).

Neurofeedback is a comprehensive educational system that has been successfully used to treat a range of disorders such as depression, anxiety, post-traumatic stress disorder, personality disorders, addiction and emotional issues. Among these studies, Nainian, Babapour, Shoery and Rostami (2009) have pointed out that according to the results, neurofeedback exercises in patients with generalized anxiety disorder (GAD) increase the EEG alpha wave and reduce the symptoms of anxiety disorder in The group was treated. Neurofeedback can be considered as a technology response to psychotherapy, cognitive rehabilitation, and poor cortical function, and is a kind of educational system that increases the growth and change in the level of the brain's cell line (Demos, 2005; Berzgari and Yagwobi, 2009). In the neurofeedback training used in this study, electroencephalography was used as an introduction to treatment. First, the pattern of brain waves in the specified disorder, then the rate of deviation of the waves is determined from the normal pattern, usually done by quantitative electroencephalography (QEEG) or taking the substrate. Electroencephalography is a quantitative digital record of the electric waves of the brain and measures their activity (Amen, 2001; quoted from Berzgari and Yagwobi, 2009). This is a method for evaluating the function of the brain and not its structure, therefore, quantitative electroencephalography can detect and diagnose brain dysfunctions such as hyperactivity disorder, attention deficit disorder, anxiety, depression, substance abuse, and other disorders by assessing the level of activity of each area of use It will be. The method of determining the baseline for measuring the amplitude of the variations of each wave in two ways is to compare the oscillation of the brain waves in the two left and right hemispheres, and the anterior-posterior regions of the spleen, or by comparing the amplitudes of each wave in certain regions of the brain with the normal and clinical population, the first method is more useful in Iran.

Fagerstrom test (temptation test)

About a decade ago, a Swedish psychiatrist, Karl Fagerstrom, who has valuable experiences in smoking cessation therapy, designed this questionnaire as the Fagerstrom Tolerance Test. This questionnaire is currently being used as a standard method by the World Health Organization and the World TB and Pulmonary Diseases Union. The questionnaire contains 6 questions about the time of use, the number of threads, the best cigarettes, early use, consumption during illness and in prohibited places. The first 2 questions consist of 4 answers (3, 2, 1 and 0 scores).) And the next 4 questions have 2 answers (one and zero scores) (Heidari, Hosseini, Ramezan-e Khani, Sharifi and Masjedi, 2009).

Fagerstrom test (FT) is one of the most noninvasive methods for determining nicotine dependency, which evaluates the level of dependence of a person on nicotine. Scores range from zero to 10. Higher scores point to more degree of dependency. Based on this questionnaire, the low level of dependency

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between 0 and 3, the average level of dependency between 4 and 6 and its high level is between 7 to 10 (Azizi, Mirzaie and Shams, 2010 and Arianpour, Bahadori, Emami, Heidari, Arian and Masjedi, 1386).

Heydari, Hosseini, Ramezan-e Khani, Sharifi and Masjedi (2009) performed a Fagerstrom questionnaire on 822 male and female subjects with a mean age of 42.5 ± 13 and range from 18 to 86 years, which according to the rank scores Subjects score less than 4 reasons for poorly related to nicotine; in the range of 5-7 reasons, moderate dependence and scores in the range of 10-8 are indications of severe dependence on nicotine. The Pearson correlation coefficient between the total score of the test and the earlier time of smoking in the early morning was 0.82. Also, in Cronbach's alpha, the removal of the first question had the highest effect (-0.10) in the test result. The result of this study was a strong dependence of nicotine on smoking in the first 5 minutes of the morning.

Issue 42 of the Anxiety, Depression, and Pressure Scale (DASS-42)

Leobond and Lobond (1995) developed a tool called Depression, Anxiety and Pressure Scale (DASS). They believe that the triple scale, in comparison with other available scales, allows for the differentiation of two psychological mechanisms of anxiety and depression (Samani & Jokar, 2007). On this scale, the cause of depression, including behavioral syndrome associated with drowsy states (discomfort or unfeeling), anxiety causes include signs such as physiological stimulation, panic and fear, and ultimately a pressure factor that includes a sign of a feeling of pressure And anxiety (Anthony et al., 1998; Leobond and Leobond, 1995; quoted by Samani and Jokar, 2007). The DASS scale has been validated by Samani and Jokar in 2007 in Iran. The main form of this scale has 42 questions. In the present study, this version was used to measure the two psychological factors of anxiety and depression of smokers in pre-test and post-test. In this version, each of the psychological structures (depression, anxiety and psychological stress) is evaluated by 14 different questions. However, its shortened form consists of 21 questions that measure each one of seven questions in one factor or psychological process (stress, anxiety, and depression) (Leobond and Leobond, 1995, quoted by Samani and Jokar, 2007).

4. Finding

Results of the descriptive index of gender showed that of the total sample size of 30, 27 were male and 3 were female. In fact, it can be said that 90% of the samples were male and only 10% of them were female. Descriptive indicators of the age of the subjects show the total sample size. According to the findings, in the sample size of 30 (control and experimental group), the age range of 20 to 30 years was the most frequent (10) and 33.3% of the total sample size. The range of age from 31 to 40 years and 41 to 50 years old is both frequent with a frequency of 6, and each contains 20% of the total sample size. In the range of 51 to 60 years, the least frequent (3) and constituent is 10% of the sample size. Finally, the age range over 60 years old with an abundance of 5 includes 16.7% of the sample size. The mean age of the subjects (30) was 42 years and the standard deviation was 16.67. The youngest sample was 21 years old and the oldest was 83 years old. In relation to the descriptive indicators of the duration of smoking, the findings showed that among the 30 sample individuals who smoked between 1 and 5 years of age had the lowest frequency (6) and 20% of the sample size They give. Those who smoked between 6 and 10 years of age have an abundance of 7 and constitute 23.3% of the sample size. People who smoked more than 10 years to 20 years had the highest incidence (9%) and included 30% of the sample size. Up to now, samples with a history of smoking more than 20 years old have a frequency of 8 and account for 26.7% of the sample size. The average duration of smoking in a total of 30 people is 17 years and a standard deviation of 13.66 years, with a minimum duration of one year and a maximum of 46 years.

The descriptive indexes related to the history of smoking cessation in the whole sample size showed that among 30 sample size, those who did not quit smoking until the time of the research project, had a frequency of 19 and 63.3% of the sample size They gave. While those with a history of abortion had

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a frequency of 11 and 36.7% of the sample size. In sum, most of the samples did not have a history of smoking cessation.

Table 1. Mean and standard deviations of variables in the pre and post-test in both experimental and control groups and in total sample size

variable	group	Number	standard deviation	mean
Anxiety Preliminary test	experiment	15	8/96	21/07
	Control	15	7/35	24/33
	Total	30	8/22	22/70
Anxiety Check back	experiment	15	7/51	15/67
	Control	15	7/35	24/33
	Total	30	8/53	20/00
Depression	experiment	15	7/73	26/27
	Control	15	10/25	22/73
	Total	30	9/10	24/50
Preliminary test	experiment	15	7/27	19/73
	Control	15	9/94	22/87
	Total	30	8/71	21/30
Depression Check back	experiment	15	2/94	4/33
	Control	15	3/00	4/13
	Total	30	2/93	4/23
	experiment	15	2/36	2/47
	Control	15	2/82	4/33
	Total	30	2/72	3/40

According to the descriptive indexes in Table 1, the standard deviation of the experimental group for the anxiety variables changed before and after the training of neurofeedback (from 8.96 to 7.15), and the mean of this group was 21.07 in advance The test was changed to 15.67 in the post-test. However, the index of this variable's variables did not change in pretest and post-test control groups (7.35 for standard deviation and 24.33 for mean). In the total sample size, the standard deviation of the pre-test and post-test of the anxiety variables were 8.28 and 8.53, respectively; the mean of the case was 22/70 and 20/20, respectively.

For the depression variable, there is a change in the standard deviation of the experimental group before and after the neurofeedback training (from 7.73 to 7.27); the mean index has also changed (from 26.26 to 73.3) 19). According to Table 4-6, the status of this variable in the standard deviation of the control group is similar to that of the experimental group (from 10.25 to 9.99 after the test), and the mean depression of this group was also higher than that of the previous group The test has been changed to 87/22 post-test. In the total sample size, the standard deviation scores from 9/10 to 8/71 in the post-test were changed and the mean value was similar from 24/50 to 21/30.

In the experimental group, the standard deviations from 2.94 before the intervention to 2.36 after the intervention were measured for the nicotine dependency variable in the experimental group. The same variation was observed in the mean of the experimental group (from 4.33 to 2.47). Regarding the control group, these changes were less than the experimental group, ie, the standard deviation of the pre-test (3/00) to the post-test (2/82), and the mean of the pretest (4/13) to the post-test (33 / 4). In the total sample size, the standard deviation of the nicotine dependency varied from 2.93 to 2.72 in the post-test, and the mean varied from 4.23 to 3.40.

Table 2. Levin test results for each variables

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variable	Value	F	Sig.	Sig.
Anxiety	0/18	1/00	28/00	0/68
Depression	4/03	1/00	28/00	0/54
Nicotine dependence	1/07	1/00	28/00	0/31

Test result of M Box also showed that the significance level of F (0.66) was greater than 0.05. Therefore, we can say that the null hypothesis is accepted and we can see the equality of the matrices of observed covariance of dependent variables among different groups. According to the results of the Wilkes Landing test (Table 4-9), since the significance level of this test is less than 0.05, we can conclude that the model is meaningful.

Table 3 Results of single-variable covariance analysis on post-test scores Anxiety with pre-test covet

Change source	Sum of square	df	Mean of square	F	P	Eta square
group	247/89	1/00	247/89	40/16	0/01	0/89
Error	166/66	27	6/17		0/01	0/60
Total	14108/00	30				

According to Table 3, there is a significant difference between the two groups of test and control in the post-test scores of anxiety (F = 1.40 (F = 1.27) and P = 0.01). In this way, the anxiety scores in the post-test group were significantly different with the control group and the effectiveness of the treatment was 89%. In other words, neurofeedback exercises significantly reduce the anxiety of smokers.

Table 4. Results of single-variable covariance analysis on post-test scores Depression with Pre-test Covet

Change source	Sum of square	df	Mean of square	F	P	Eta square
group	288/74	1/00	288/74	32/97	0/01	0/89
Error	236/43	27	8/76		0/01	0/55
Total	15809/00	30				

According to the results of Table 4, there is a significant difference between the two groups of test and control in post-test depression scores (F = 1.27 (F = 1.27) and P = 0.01). In this way, depression scores in the post-test group were significantly different with the control group and the effectiveness of the treatment was 89%. In other words, neurofeedback exercises significantly reduce the depression of smokers.

Table 5. Results of single-variable covariance analysis on post-test scores of nicotine dependency with pre-test covet

Change source	Sum of square	df	Mean of square	F	P	Eta square
group	30/91	1/00	30/91	41/04	0/01	0/89
Error	20/34	27	0/75		0/01	0/60
Total	562/00	30				

According to Table 5, there is a significant difference between the two experimental and control groups in the post-test scores of nicotine dependency (Fagerstrom questionnaire) (F = 1.27 (F = 1.27) and P = 0.01). In this way, the nicotine dependency scores in the post-test group were significantly different with the control group and the effectiveness of the treatment was 89%. In other words, neurofeedback exercises significantly reduce craving for smokers.

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5. Discussion

The hypothesis of the present study was that neurofeedback exercises by the experimental group reduced the nicotine dependence or the nicotine craving (Chapter 4, covariance analysis findings). To examine this hypothesis, two questionnaires of DASS-42 and nicotine-dependent Fagerstrom were used before and after intervention. After the covariance analysis, a significant decrease in nicotine craving was observed after the neurofeedback training sessions. This finding is a key factor for applicants to quit smoking. Because most of the therapists in this area of treatment fail to treat and relieve the consumption of patients as a factor in the temptation to consume. Therefore, one of the main aspects of psychotropic drug treatment (including cigarette smoking) is controlling this factor. Despite numerous researches on the effect of neurofeedback training on reducing craving for other types of psychotropic substances (such as heroin and alcohol), no research has been conducted on the effect of neurofeedback on reducing the temptation of smoking by the researcher.

In summary, the findings of this study were based on the selection of therapeutic protocol for neurofeedback education and therapeutic achievements in line with the results of those previous studies that focused on the temptation to use non psychiatric drugs other than cigarettes. These researches included: Arianpour, Bahadori, Emami, Heidari, Arian and Masjedi (2007) on nicotine dependence based on Fagerstrom's questionnaire and predicted smoking cessation. The alignment of the present study is based on the study of McBride, Bart, Kelly, Ave and Dafar (2006), Homer (1999) and Optional, Behzadi, Ganjiakhi, McRae, Justice and Associates (2008) on the brain regions of psychotropic substances addicts. Smokers who work in craving work in terms of choosing treatment protocols and treatment outcomes. The results of this study were reported by Dehghani-Arani and Rostami (2010), which examined the effectiveness of neurofeedback on the craving for opiate addicts; and Narimani and Rajabi (2012), which showed that neurofeedback exercises are effective on the tempting beliefs of morphine addicts.

It should be. Also, the findings of this study are consistent with the reports by Hunlun, Hartwell, Canterbury, Lee, Owens, et al. (2013) and Lee, Hartwell, Borcart, Presiscardi, Saladin et al. (2012). Lee et al. (2012) reported that with the help of fMRI, along with neurofeedback exercises, there is the possibility of self-regulation of the cortical activity of the nicotine dependent individuals and of the subsequent temptation to consume it. The alignment of this study with such research was confirmed with regard to its therapeutic outcome. In other words, it can be concluded that changes in the amplitude of the alpha and theta waves in certain brain regions change the function of that area and the lower parts of it. One of these changes is the temptation to consume psychoactive substances that neurofeedback exercises are used to reduce it in the precursor, ultra-visual, dorsolateral, and pre-coronal regions of the cortex (from Homer, 1999, quoted from Demos, 2005) . Hence, the nicotine consumption temptation, as well as the craving for other psychotropic substances, can be reduced by the use of neurofeedback exercises.

In general, the findings of this study indicate that exercises or neurofeedback training can be effective and reasonable therapy to help quit smoking. Neurofeedback training can help with drug abuse treatments (such as nicotine) through the reduction of anxiety and depression that is a disturbing symptom of cessation syndrome; and the reduction of psyllium temptation (including nicotine).

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