Research Paper

Effect of Yoga Training on Psychological Well-being, Emotion Regulation, and Sleep Quality of Prisoners

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ABSTRACT

Background: Addiction is a behavioral state, in which a person has difficulty controlling her/his will and desires due to mental instabilities or the consumption of certain chemicals, leading to the repetition of certain behaviors. This study was conducted to determine the effectiveness of yoga training on psychological well-being, emotion regulation, and sleep quality of prisoners suffering from industrial drug abuse.

Methods: The current quasi-experimental study used a pre-test and post-test design with a control group. The statistical population included all individuals incarcerated in the prisons of Uremia City, Iran, in 2022, who abused industrial drugs. Thirty individuals were screened in a targeted manner based on the inclusion and exclusion criteria and were randomly assigned to two groups (experimental group=15, control group=15). One group was designated as the yoga therapy group and the other was designated as the control group. A training package was used for yoga training, and emotional regulation was assessed using the questionnaires developed by Garnefski. Psychological well-being was measured using the questionnaire by Ryff and Keyes, and sleep quality was evaluated using the Pittsburgh sleep quality index by Buysse. Data were analyzed using a multivariate covariance test and SPSS software, version 22 was used for data analysis.

Results: For the 30 prisoners with drug abuse, the research data were analyzed in the experimental and control groups, with a mean age of 39.23±6.04 and 42.4±7.59 years, respectively. The yoga training had a positive effect on the psychological well-being, emotional regulation, and sleep quality of prisoners suffering from industrial drug abuse ($P<0.05$).

Conclusion: Yoga training could increase the mental well-being, emotion regulation, and sleep quality of prisoners suffering from industrial drug abuse.

Keywords: Yoga, Psychological well-being, Emotional regulation, Sleep quality, Drug abuse

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Introduction

Addiction is considered a social disease and is one of the most important social harms. The increasing and unrestrained increase in drug abuse and addiction, along with the alarming reduction in the age of consumers, is regarded as a serious phenomenon and an objective threat to the security of individuals and society [1]. From a psychological perspective, drug abuse is defined as any kind of triggering and dependency on a stimulus that is pleasurable for the individual, in spite of its undesirable and adverse effects. Each time the individual experiences that stimulus, their internal desire for its repetition increases [2]. Therefore, a person's use of an illegal drug or a medication that changes their feelings or behavior in a way that is harmful to them physically and mentally is defined as drug abuse [3]. Drug abuse and addiction is a multi-dimensional behavior with different biological, psychological, and social components, each of which can play an important role in the formation and progression of this disease [2]. There are different types of drugs, including industrial and traditional drugs, and their effects on people's psyche vary. Among them, industrial drugs have more destructive effects because these substances are produced through chemical alterations [3]. The occurrence of hallucinations, cognitive disorders, and performing risky behaviors are definite side effects of industrial drug use that manifest over the long term [4].

The DSM-5 states that the most prominent feature of drug abuse disorder is the presence of one of the cognitive, behavioral, and physiological symptoms, which lead individuals to continue drug abuse despite significant problems related to drug abuse. Addiction to drugs is fundamentally a neurological condition that affects human willpower, resulting in neurological changes that compel the addicted person to use drugs at any cost [5]. The number of drug users, particularly those using industrial drugs and individuals with drug use disorders, is significantly higher than previous estimates. Worldwide, approximately 35 million people suffer from drug use disorders [6], and in Iran, the number of drug users is estimated to be between 1.8 and 3.3 million, with industrial drugs being the most commonly consumed substances [7].

The literature confirms the effect of industrial drug abuse on mental well-being [1]. Psychological wellbeing has been defined as a state, in which people realize their potential abilities and plays a key role in reducing anxiety, depression, and other emotional problems [8]. The psychological well-being approach considers the observed growth and changes against life's existential challenges and strongly emphasizes human development, particularly the pursuit of meaningful goals, transformation, and progression as individuals who need to communicate with others effectively [9]. Studies have suggested a significant relationship between psychological well-being and the tendency to drug abuse and the components of aptitude and acceptance of addiction [10].

Furthermore, previous studies have confirmed the relationship between psychological well-being and emotion regulation strategies [11-13]. Emotions are considered adaptive functional phenomena that assist organisms by guiding human behaviors toward their goals; however, they can also disrupt cognitive and behavioral processes and direct attention toward specific stimuli [14]. Emotion regulation is a special form of self-regulating that plays a significant role in the management of cognitive emotions [15] and can be considered an inherent aspect of emotional response tendencies [16]. Difficulties in emotion regulation and its components could predict 37.5% of the acceptance of addiction [17]. The findings have shown that drug addiction and consumption, especially industrial substances, affect and disrupt the brain-behavioral systems, specifically the approach (BAS) and inhibition (BIS) behavioral systems of the users. This disruption causes increased sensitivity, and the sensitivity of BAS and BIS has a direct effect on emotional regulation and responses. In other words, disturbances in the sensitivity of these systems affect emotional dysregulation and hinder the application of adaptive emotion regulation strategies [18].

Sleep quality and emotion regulation are intertwined variables [19]. Researchers have consistently recognized the importance of sleep in health and disease, noting that disturbed sleep is a significant cause of health problems across all age groups [13]. Sleep quality is a complex phenomenon that is difficult to define; however, it can be characterized by subjective indicators related to how sleep is experienced, such as sleep satisfaction [20]. When someone abuses drugs, particularly industrial drugs, the energy and euphoria they experience result from a short-term increase in dopamine levels circulating in the brain. This heightened alertness can directly interfere with sleep, and chronic use can lead to reduced REM sleep [21].

Considering that sleep quality, psychological well-being, and emotion regulation are interrelated in humans, and given that the literature has demonstrated the role of addiction in reducing sleep quality, affecting various dimensions of health, and impairing psychological functions in individuals with drug abuse, it is evident

that these variables are interconnected [14]. Therefore, sleep, psychological well-being, and emotions of individuals with drug abuse have attracted significant attention. Researchers have reported an increasing trend in the co-occurrence of drug abuse and mental disorders [15]. Hence, health problems related to drug abuse lead individuals to adopt different coping strategies [22]. To address these issues, various non-pharmacological methods have been developed to treat health problems and enhance mental well-being, sleep quality, and emotion regulation, with yoga training being considered one of the most important methods.

Yoga is one of the important methods for developing physically, mentally, and socially. Participation in yoga activities brings individuals closer together from a spatial perspective. It also positively affects health, physical fitness, emotional balance and stability, increased self-confidence, a positive body and social image, calmness, and the empowerment of thoughts. From the researchers' perspective, if yoga training is conducted correctly, it could theoretically be effective in increasing psychological well-being and emotion regulation [23], although this conclusion should be proven experimentally. Yoga is a kind of soft exercise, and many of its practices are used in rehabilitation and physiotherapy. Deep breathing forms the foundation of yoga. It consists of body movements that are related to breathing and mental concentration, meaning that a combination of harmonious body movements and mind is formed and intensified through deep breaths [24]. Literature shows that yoga exercises can be effective for mental and physical well-being [25] and yoga techniques can improve the sleep quality of patients [26]. By reducing body tension and increasing adaptability and adjustment, from a psychological perspective, yoga exercises can help individuals limit their mental and emotional states, reduce the excitability of the cerebral cortex, and enhance physical and mental calmness from a psychological perspective [27]. However, although these results indicate that yoga has an effect on these variables, the effect of yoga on these psychological factors has not been experimentally studied within the community of addicts, who have distinct and unique psychological conditions. Furthermore, although the literature suggests that yoga exercises could improve sleep quality, psychological well-being, and emotion regulation, it is necessary to determine the effects of yoga among drug abusers. Given the increase in drug abuse in our country, it is crucial to address the psychological and mental damage caused by drug abuse, particularly in areas related to emotion regulation, which are vital for the health and performance of individuals in interpersonal relationships and social behaviors. Therefore, this study aimed to determine the effect of yoga training on the psychological well-being, emotion regulation, and sleep quality of individuals with industrial drug abuse.

Methods

This quasi-experimental study employed a pre-test and post-test design with a control group. A quasi-experimental design aims to establish a cause-and-effect relationship between an independent and dependent variable [28]. The statistical population included all individuals with drug abuse imprisoned in Uremia, Iran, in 2022, who were addicted to industrial drugs (glass and its derivatives) (n=920). From this population, 30 individuals were selected as the sample size, which is sufficient for quasi-experimental studies [29], based on inclusion and exclusion criteria and through a convenience sampling method due to their willingness to participate in the research. Then, they were grouped into two groups, including an experimental group and a control group. Inclusion criteria were being 30-50 years old, absence of significant physical diseases, and absence of psychological disorders, with the exception of substance abuse disorder. These criteria were chosen to control the effect of intervening variables on the research. The exclusion criteria were no response to scale items in the pre-test and post-test (for both groups), absence for more than two sessions in yoga training sessions, and the lack of tendency to do yoga training. The research process began with an invitation to participate in the study, and written consent was obtained from the participants. Next, the individuals were randomly grouped into two groups, including the experimental group (n=15) and the control group (n=15). Before starting the yoga training, both groups were asked to participate in tests assessing psychological well-being, emotion regulation, and sleep quality (pre-test phase). Then, the experimental group received the yoga training, and the control group did not receive any therapy. Yoga exercises were performed by a yoga specialist instructor introduced by the Uremia Youth and Sport Organization.

The following scales were used to measure variables:

Emotion regulation scale: This self-report scale [30] has 36 items, where participants are required to respond to items based on a five-point Likert scale, ranging from strongly disagree (1) to strongly agree (5). This scale distinguishes nine subscales, each of which considers a special strategy of emotional cognitive regulation (four items), including self-blame, acceptance, rumination, positive re-focus, re-focusing on planning, positive re-evaluation, taking a point of view, catastrophic thinking,

and blaming others. The validity of this scale has been confirmed in the literature [30], and its reliability has been established through Cronbach's α (α=0.82) and test re-test reliability (0.61 and 0.81) [31]. In our study, we also measured and confirmed its reliability using Cronbach's α (0.86).

Psychological well-being scale. This is a self-report scale [32]. The original version of this scale contained 120 items; however, subsequent research on its psychometric features led to the development of shorter forms that have been utilized by researchers. The short version (18 items) of the psychological well-being scale by Ryff was designed in 1989 and revised in 2002. We used this shorter version in this study, which includes six subscales, including independence (items 9, 12, and 18), dominance over the environment (items 1, 4, and 6), personal growth (items 7, 15, and 17), positive relationships with others (items 3, 11, and 13), having goals in life (items 5, 14 and 16) and self-acceptance (items 2, 8 and 10). The sum of scores from these six subscales was calculated as the total score of psychological well-being. Responses were scored on a six-point scale ranging from "strongly disagree" to "strongly agree," with higher scores indicating better psychological well-being. Of the 18 questions, 10 were scored directly, while 8 were scored inversely [29]. This scale has been normalized for Iranian culture, and its validity has been confirmed in the Iranian population [33]. Reliability was confirmed using Cronbach α (α=0.71) [34]. We also calculated and confirmed its reliability using Cronbach α (α=0.79).

Pittsburgh sleep quality index (PSQI): This scale was designed at the Petersburg psychiatry institution [35]. Originally, it consists of nine items; however, since item five includes ten sub-items, the scale has a total of 19 items, which are scored based on a four-point Likert scale ranging from zero to three. This scale has seven subscales, including sleep quality, delay in falling asleep, duration of sleep, sleep efficiency, sleep disorders, use of sleeping pills, and daily functional disorders. To score the scale, the 19 items must be scored differently. Items one and three do not receive points, but their scores are calculated with the other items. Item two is scored as follows: Less than 15 minutes (0), 16 to 30 minutes (1), 31 to 60 minutes (2), and more than 60 minutes (3). The remaining items are scored on a scale from zero to three, with responses categorized as never (0), once a week (1), twice a week (2), and three or more times a week (3). The content validity of this scale has been confirmed [36]. The internal consistency of this scale was measured using Cronbach's α (α=0.83) [35]. In the Iranian version, the validity (0.86) and reliability (0.89) of this scale were confirmed by researchers [37]. In this study, we also calculated and confirmed its reliability using Cronbach α (α=0.81).

For yoga training, we utilized a training package [38] with six sessions, each lasting 90 minutes. However, since this study included pre- and post-tests and required us to introduce the package to participants, the number of sessions was increased to eight. This package includes four categories of training. Table 1 presents the yoga training sessions used in this study.

In our study, data were analyzed using descriptive statistical methods, including Mean±SD, and frequency, as well as multivariate covariance tests to test hypotheses. SPSS software, version 22 was used for data analysis.

Results

Descriptive results showed that the mean age of the experimental and control groups was 39.23±60.04 and 42.4±7.59 years, respectively. There was no significant relationship between the two groups in terms of age (P=0.125). Table 2 shows the descriptive information related to research variables in both groups for the pre- and post-tests.

Before conducting data analysis using multivariate covariance, its pre-assumptions were analyzed in detail. The Kolmogorov-Smirnov (K-S) test was used to assess the normality of the data, and the results indicated that the K-S test was not significant for each of the three variables and their subscales in both groups during both phases of the study (pre-test and post-test) (P>0.05), suggesting that the data distribution was normal. Furthermore, Levene's test was used to evaluate the equality of variances, and the results suggested that the test was not significant for the three variables, including psychological well-being (P=00.073), emotion regulation (P=0.63) and sleep quality (P=0.63). This means that the F value related to Levene's test was not significant, and the error variance did not differ between the two groups. Therefore, the variances of the dependent variables were equivalent, and the assumption of equal variances was accepted for both groups. Next, we utilized the M-Box test to assess the equality of co-variances, and the results showed no significant difference between the covariances of the two groups, and this was accepted regarding the data (F=1.30, P=0.34). We then checked for the absence of multicollinearity among the Pre-test data related to the research variables in both groups, and the results showed that there was no linear relationship between the variables of psychological well-being (F=3.07, P=0.06),

Table 1. Yoga training sessions [38]

Session	Goal
1st	Familiarity with participants and conducting the pre-test
2nd	Teaching the selective use of the mouth and nose both to pass the respiratory flow and increase participants' awareness of blame
3rd	Body muscle stretching exercise, weight-bearing, back and front, and lateral bending and inversion in sitting, standing, and lying positions
4th	Back training (arched) and butterfly (palm position) and combined exercises
5th	Performing combined body posture exercises with lung exercises in static and dynamic mode
6th	Teaching methods to relax and reduce muscle tension
7th	Conducting a trite exercise in which participants focus on a word or shape and see the focused image on a blank piece of paper with their eyes closed
8th	Thanking participants and conducting the post-test

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emotion regulation (F=2.41, P=0.11), sleep quality (F=3.31, P=0.19), and their subscales (P>0.05). Since the pre-assumptions of multivariate covariance were met, we proceeded to use the multivariate covariance test to analyze the effect of yoga training on the psychological well-being, emotion regulation, and sleep quality of prisoners addicted to industrial drug abuse. First, we analyzed the effect of yoga training on the emotion regulation of prisoners addicted to industrial drug abuse (Table 3).

The results of between-group effects in the post-test, after accounting for the pre-test effects, as shown in Table 3, indicated a significant relationship between the means of the two groups concerning emotion regulation. Table 4 demonstrates that yoga training significantly impacted emotion regulation and its subscales (P<0.05). Furthermore, the eta-squared statistic (eta value), which describes the proportion of total variability attributable to a factor, indicated that yoga training could reduce self-blame (0.08%), increase acceptance (11.1%), reduce rumination (34.5%), increase positive re-focusing (10.1%), increase re-focusing on planning (0.08%), increase positive re-evaluation (11.1%), increase taking a point of view (38.1%), reduce catastrophic thinking (25.7%), and reduce blaming others (18.6%).

Next, we used a multivariate covariance test to analyze the effect of yoga training on the psychological well-being of participants (Table 4).

The results of examining the effect of yoga training on emotion regulation indicated a significant difference between the means of the control and experimental groups in psychological well-being and its sub-scales. Table 5 shows that yoga training significantly affected psychological well-being. The eta value indicated that yoga training could increase independence (0.07%), dominance over the environment (0.09%), personal growth (0.08%), positive relationships with others (0.08%), having goals in life (0.08%), and self-acceptance (13.7%).

Finally, we used the multivariate covariance test to analyze the effect of yoga training on sleep quality of participants (Table 5).

The results of Table 5 show that there was a significant difference between the means of the two groups regarding sleep quality and its subscales. According to Table 5, yoga training significantly impacted sleep quality, and the eta value showed that yoga training could increase sleep quality (12.4%), reduce delay in falling asleep (20.03%), increase sleep duration (12%), increase sleep efficiency (20.1%), reduce sleep disorders (21.8%), reduce the use of sleeping pills (12.2%), and reduce daily functional disorders (12.1%).

Discussion

The objective of this study was to analyze the effect of yoga training on emotion regulation, psychological well-being, and sleep quality of prisoners addicted to industrial drug abuse. The results showed that yoga training had a positive effect on the psychological well-being of participants. In this regard, our results are consistent with other research [39-41]. However, no research with conflicting results was found. What makes the current research different is that our research was conducted

Table 2. Mean±SD values of the research variables in both experimental and control groups

Variables	Subscales	Phase	Mean±SD	
			Control	Experimental
Emotion regulation	Self-shame	Pre-test	2.17±1.01	2.17±1.01
		Post-test	3.10±0.93	2.16±0.98
	Acceptance	Pre-test	2.39±0.93	2.38±0.93
		Post-test	2.30±0.82	3.33±0.71
	Rumination	Pre-test	2.49±0.97	2.40±0.97
		Post-test	2.50±0.89	3.54±0.69
	Positive re-focus	Pre-test	3.20±1.16	3.10±1.16
		Post-test	2.75±1.10	3.72±1.02
	Re-focus on planning	Pre-test	3.32±1.08	3.29±1.01
		Post-test	3.00±0.99	3.75±0.72
	Positive re-evaluation	Pre-test	3.05±1.24	3.14±1.21
		Post-test	2.75±1.01	3.75±0.94
	Taking views	Pre-test	3.12±1.13	3.21±1.01
		Post-test	3.0±1.11	3.94±1.02
	Catastrophic thinking	Pre-test	2.12±0.89	2.09±0.88
		Post-test	2.87±0.68	1.87±0.73
	Blaming others	Pre-test	1.86±0.73	1.80±0.73
		Post-test	1.0±0.49	25.0±0.36
Psychological well-being	Independence	Pre-test	2.75±0.35	2.79±0.39
		Post-test	2.74±0.42	3.64±0.45
	Dominance over the environment	Pre-test	2.01±0.21	2.01±0.24
		Post-test	2.05±0.48	2.73±0.52
	Personal growth	Pre-test	3.92±0.45	3.92±0.49
		Post-test	4.01±0.65	4.54±0.61
	Positive relationships with others	Pre-test	4.78±0.94	3.78±0.61
		Post-test	4.71±0.54	4.56±0.63
	Having goals in life	Pre-test	3.45±0.52	3.60±0.57
		Post-test	3.30±0.45	4.30±0.80
	Self-acceptance	Pre-test	3.60±0.64	3.69±0.74
		Post-test	3.73±0.39	4.73±0.65

Variables	Subscales	Phase	Mean±SD	
			Control	Experimental
Sleep quality	Sleep quality	Pre-test	2.20±0.67	2.13±0.35
		Post-test	2.23±0.63	2.26±0.96
	Delay in falling asleep	Pre-test	1.40±0.50	2.00±0.00
		Post-test	1.43±1.03	1.60±0.50
	Duration of sleep	Pre-test	0.93±0.59	0.80±0.41
		Post-test	0.96±0.51	0.86±0.25
	Sleep efficiency	Pre-test	1.80±0.56	1.46±0.51
		Post-test	1.86±0.51	1.96±0.48
	Sleep disorders	Pre-test	1.93±0.45	2.06±0.25
		Post-test	2.01±0.51	1.40±0.50
	Using sleeping pills	Pre-test	1.06±0.25	2.00±0.53
		Post-test	1.08±0.82	1.56±1.09
	Daily functional disorders	Pre-test	1.66±0.48	2.20±0.41
		Post-test	1.61±0.51	1.40±0.63

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among a special population with special conditions, while the other studies have been conducted among different populations. To explain our results, we can state that many studies and training programs have been conducted on psychological well-being and have shown that such interventions are effective in enhancing psychological well-being. If yoga exercises are performed correctly and based on standards, they will be effective in improving psychological well-being [42]. Yoga exercises lead to the release of hormones from various glands, thereby impacting the neural system. Through yoga exercises, oxygen consumption can reduce stress and anxiety, promote relaxation, and increase calmness in individuals. Furthermore, there is a relationship between the mind and body. The objective of yoga, as a life philosophy from the East, is to balance this relationship, and its exercises positively affect both physical and mental health by enhancing the compatibility of the mental, neural, immune, and cognitive systems. This is achieved through the balancing of the autonomic nervous system, increased physical stability and resistance, and the balancing of the body's immune system. Consequently, it increases physical health, which in turn improves mental health [41], helping to explain our results. Additionally, it appears that individuals participating in yoga exercises and performing them in coordination can improve their motivation. They engage in conversation during sessions, practice techniques together, and ultimately enhance their psychological well-being.

Next, our results showed that yoga training positively impacted the emotion regulation of prisoners with industrial drug abuse. In this regard, the results of other studies [43, 44] are consistent with ours, while the results of other research [45] are inconsistent with ours, as they concluded that yoga training had little effect. However, what distinguishes the current research is that it was conducted among a specific population with unique conditions, whereas the other studies were conducted among different populations. To explain our results, we can state that yoga helps individuals regulate negative emotions and arousal, allowing them to control their emotions by concentrating on positive goals and thoughts, thereby enhancing their physical and mental abilities. Cognitive metaphors were employed in yoga techniques that motivate individuals addicted to drug abuse to utilize positive emotion regulation strategies, as well as to improve their overall emotion regulation. Due to increased frontal lobe activity and decreased parietal lobe activity during yoga exercises, attention, and special awareness are enhanced.

Table 3. Effect of yoga training on emotion regulation

Variables	Subscales	Sum of Squares	df	Mean Square	F	Sig.	η^2
Group	Self-shame	248.223	1	248.223	4.745	0.034	0.088
	Acceptance	231.954	1	231.954	6.136	0.017	0.111
	Rumination	240.708	1	240.708	143.308	0.000	0.345
	Positive re-focus	18.466	1	18.466	5.532	0.023	0.101
	Re-focus on planning	67.209	1	67.209	4.499	0.039	0.084
	Positive re-evaluation	86.814	1	86.814	6.138	0.017	0.111
	Taking views	438.946	1	438.946	175.246	0.000	0.381
	Catastrophic thinking	167.575	1	167.575	93.777	0.000	0.257
	Blaming others	30.764	1	30.764	11.166	0.002	0.186
Error	Self-shame	2563.238	49	52.311			
	Acceptance	1852.303	49	37.802			
	Rumination	82.303	49	1.680			
	Positive re-focus	163.552	49	3.338			
	Re-focus on planning	731.974	49	14.938			
	Positive re-evaluation	693.037	49	14.144			
	Taking views	122.732	49	2.505			
	Catastrophic thinking	300.535	49	6.133			
	Blaming others	135.445	49	2.764			

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Additionally, the increased understanding of the internal proprioceptive sense of the brain, or the ability to perceive the body, improves the balance of individuals addicted to drug abuse, enabling them to achieve a higher level of emotion regulation, which explains our results. Furthermore, yoga emphasizes relaxation, and its exercises are performed in both static and dynamic forms, which differ from conventional exercises and sports. It seems that, in our study, performing yoga exercises and their dynamic nature could positively affect the emotion regulation of participants.

Table 4. Effect of yoga training on psychological well-being

Variables	Subscales	Sum of Squares	df	Mean Square	F	Sig.	η^2
Group	Independence	154.587	1	154.587	4.144	0.047	0.075
	Dominance over the environment	247.509	1	247.509	5.273	0.026	0.094
	Personal growth	312.289	1	312.289	4.937	0.031	0.088
	Positive relationships with others	45.517	1	45.517	4.692	0.035	0.084
	Having goals in life	85.608	1	85.608	5.012	0.030	0.089
	Self-acceptance	99.248	1	99.248	8.077	0.006	0.137

Variables	Subscales	Sum of Squares	df	Mean Square	F	Sig.	η^2
Error	Independence	1902.341	51	37.301			
	Dominance over the environment	2393.929	51	46.940			
	Personal growth	3225.838	51	63.252			
	Positive relationships with others	494.702	51	9.700			
	Having goals in life	871.062	51	17.080			
	Self-acceptance	626.645	51	12.287			

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Table 5. Effect of yoga training on sleep quality

Variables	Subscales	Sum of Squares	df	Mean Square	F	Sig.	η^2
Group	Sleep quality	2.741	1	2.741	4.384	0.045	0.124
	Delay in falling asleep	216.853	1	216.853	7.892	0.009	0.203
	Duration of sleep	1.637	1	1.637	4.216	0.049	0.120
	Sleep efficiency	57.600	1	57.600	7.791	0.009	0.201
	Sleep disorders	685.730	1	685.730	8.633	0.006	0.218
	Using sleeping pills	1.802	1	1.802	4.292	0.047	0.122
	daily functional disorders	0.980	1	0.980	4.271	0.047	0.121
Error	Sleep quality	19.381	31	0.625			
	Delay in falling asleep	851.838	31	27.479			
	Duration of sleep	12.034	31	0.388			
	Sleep efficiency	229.177	31	7.393			
	Sleep disorders	246.416	31	79.433			
	Using sleeping pills	13.014	31	0.420			
	Daily functional disorders	7.113	31	0.229			

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Finally, the results showed that yoga training positively impacted the sleep quality of prisoners addicted to drug abuse. In this regard, our findings are consistent with other studies [26, 46, 47]. To explain our results, we can state that yoga training positively affects sleep quality and overall individual health by influencing performance-based HPA and regulating the hormones in this area, including cortisol and ACTH. The normal functioning of physiological mechanisms, primarily governed by the HPA axis, plays a significant role in the physical and mental health of individuals and can improve sleep quality, which explains our results. Furthermore, it seems that in our study, yoga training could effectively reduce the stress and mental pressures that prisoners face in their daily lives, allowing them to achieve better sleep.

Conclusion

The results of our study showed that yoga training could increase sleep quality, psychological well-being, and emotion regulation of prisoners addicted to industrial drug abuse. It is hoped that the findings of this research can serve as a step toward freeing industrial drug addicts from the trap of addiction and improving their

psychological factors. The most important limitation faced in this study was that we could not control the psychological features of individuals, which could affect our results. Additionally, this research focused on a specific population (Uremia prison), so the results should be generalized with caution. Furthermore, because access to the control and experimental groups after the completion of the training sessions was limited because of the participants' release from prison at the end of their one-month training period, it was not possible to conduct follow-up assessments, which was one of the most important limitations of this study. According to our results, it is suggested that yoga training and techniques be incorporated into necessary programs to increase the well-being of prisoners in order to take a step to increase their psychological well-being. We recommend that future researchers study the effectiveness of yoga on psychological well-being, emotion regulation, and sleep quality while considering and controlling for the psychological characteristics of individuals. Furthermore, we encourage future researchers to study the effectiveness of yoga in behavioral control, stress management, and the reduction of psychological tensions of prisoners addicted to drug abuse.

Ethical Considerations

Compliance with ethical guidelines

This research was approved by the Islamic Azad University, Tabriz Branch (Code: IR.IAU.TABRIZ.REC.1401.201). The research was carried out after obtaining the necessary permits and written consent from the sample.

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Authors' contributions

Conceptualisation, and study design: Tohid Habibzadeh; Data analysis: Touraj Hashemi Nosratabad; Data gathering: Akbar Rezayi; Writing and final approval: All authors.

Conflict of interest

The authors declared no conflict of interest.

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References

[1] Lundqvist T. Cognitive consequences of cannabis use: Comparison with abuse of stimulants and heroin with regard to attention, memory and executive functions. Pharmacology, Biochemistry, and Behavior. 2005; 81(2):319-30. [DOI:10.1016/j.pbb.2005.02.017] [PMID]

[2] Roshannia S, Ghadampour E, rezaei N. Measuring the effectiveness of group spirituality therapy on sleep quality and mental toughness in elderly subjects in Khorramabad. Journal of Gerontology. 2018; 3(3):31-9. [DOI:10.29252/joge.3.2.31]

[3] Di Forti M, Marconi A, Carra E, Fraietta S, Trotta A, Bonomo M, et al. Proportion of patients in south London with first-episode psychosis attributable to use of high potency cannabis: a case-control study. The Lancet. Psychiatry. 2015; 2(3):233-8. [DOI:10.1016/S2215-0366(14)00117-5] [PMID]

[4] Pompili M, Serafini G, Innamorati M, Dominici G, Ferracuti S, Kotzalidis GD, et al. Suicidal behavior and alcohol abuse. International Journal of Environmental Research and Public Health. 2010; 7(4):1392-431. [DOI:10.3390/ijerph7041392] [PMID] [PMCID]

[5] Self DW, Staley Gottschalk JK. Staley behavioral neuroscience of drug addiction. Berlin: Springer; 2010. [Link]

[6] Akerele E. Opioids. In: Akerele E, editor. Substance and non-substance related addictions. Berlin: Springer; 2022. [DOI:10.1007/978-3-030-84834-7_15]

[7] Fakhrpour R, Yavari Y, Saberi Y. [The effect of eight weeks of pilates training on total antioxidant capacity and c-reactive protein in the blood in men addicted to methamphetamine who are quitting (Persian)]. Journal of Health Promotion Management. 2021; 10(2):46-52. [Link]

[8] Zamani Zarchi MS, Nooripour R, Hosseinzadeh Oskooei A, Afrooz GA. The effects of mindfulness-based training on psychological wellbeing and emotion regulation of menopausal women: A quasi-experimental study. Journal of Research and Health. 2020; 10(5):295-304. [DOI:10.32598/JRH.10.5.1669.1]

[9] Schonert-Reichl KA, Lawlor MS. The effects of a mindfulness-based education program on pre-and early adolescents' well-being and social and emotional competence. Mindfulness. 2010; 1:137-51. [DOI:10.1007/s12671-010-0011-8]

[10] Armani Kian A, Vahdani B, Noorbala AA, Nejatisafa A, Arbabi M, Zenoozian S, et al. The impact of mindfulness-based stress reduction on emotional wellbeing and glycemic control of patients with type 2 diabetes mellitus. Journal of Diabetes Research. 2018; 2018:1986820. [DOI:10.1155/2018/1986820] [PMID] [PMCID]

[11] Roussis P, Wells A. Psychological factors predicting stress symptoms: Metacognition, thought control, and varieties of worry. Anxiety Stress Coping. 2008; 21(3):213-25. [DOI:10.1080/10615800801889600] [PMID]

[12] Morales-Jaimes R, Salazar-Martínez E, Flores-Villegas FJ, Bochicchio-Riccardelli T, López-Caudana AE. [The role of depression in the quality of life among patients undergoing renal substitutive therapy (Spanish)]. Gaceta Medica de Mexico. 2008; 144(2):91-8. [PMID]

[13] Kollei I, Brunhoeber S, Rauh E, de Zwaan M, Martin A. Body image, emotions and thought control strategies in body dysmorphic disorder compared to eating disorders and healthy controls. Journal of Psychosomatic Research. 2012; 72(4):321-7. [DOI:10.1016/j.jpsychores.2011.12.002] [PMID]

[14] Fiorentino L, Ancoli-Israel S. Insomnia and its treatment in women with breast cancer. Sleep Medicine Reviews. 2006; 10(6):419-29. [DOI:10.1016/j.smrv.2006.03.005] [PMID] [PMCID]

[15] Evans FJ. Subjective characteristics of sleep efficiency. Journal of Abnormal Psychology. 1977; 86(5):561-4. [DOI:10.1037/0021-843X.86.5.561] [PMID]

[16] Saarni C, Campos JJ, Camras LA, Witherington D. Emotional development: Action, communication, and understanding. In: Damon W, Eisenberg N, editors. Handbook of child psychology. New York: Wiley; 2008. [DOI:10.1002/9780470147658.chpsy0305]

[17] Esmaeilinasab M, Andami Khoshk A, Azarmi H, Samar Rakhi A. [The predicting role of difficulties in emotion regulation and distress tolerance in students' addiction potential (Persian)]. Scientific Quarterly Research on Addiction. 2014; 8(29):49-63. [Link]

[18] Memarpour Asiaban N, Imani S, Shokri O. [Structural relations of brain-behavioral systems and emotion regulation difficulties with craving of marijuana in students (Persian)]. Shenakht Journal of Psychology and Psychiatry. 2020; 7(1):103-16. [DOI:10.52547/shenakht.7.1.103]

[19] Gilchrist JD, Battista K, Patte KA, Faulkner G, Carson V, Leatherdale ST. Effects of reallocating physical activity, sedentary behaviors, and sleep on mental health in adolescents. Mental Health and Physical Activity. 2021; 20:100380. [DOI:10.1016/j.mhpa.2020.100380]

[20] Dewald JF, Meijer AM, Oort FJ, Kerkhof GA, Bögels SM. The influence of sleep quality, sleep duration and sleepiness on school performance in children and adolescents: A meta-analytic review. Sleep Medicine Reviews. 2010; 14(3):179-89. [DOI:10.1016/j.smrv.2009.10.004] [PMID]

[21] Ogeil RP, Phillips JG. Commonly used stimulants: Sleep problems, dependence and psychological distress. Drug and Alcohol Dependence. 2015; 153:145-51. [DOI:10.1016/j.drugalcdep.2015.05.036] [PMID]

[22] Addolorato G, Leggio L, Abenavoli L, Gasbarrini G; Alcoholism Treatment Study Group. Neurobiochemical and clinical aspects of craving in alcohol addiction: A review. Addictive Behaviors. 2005; 30(6):1209-24. [DOI:10.1016/j.addbeh.2004.12.011] [PMID]

[23] Rosen L, French A, Sullivan G; RYT-200. Complementary, holistic, and integrative medicine: Yoga. Pediatrics in Review. 2015; 36(10):468-74. [DOI:10.1542/pir.36-10-468] [PMID]

[24] Hernández SE, Suero J, Barros A, González-Mora JL, Rubia K. Increased grey matter associated with long-term sahaja yoga meditation: A voxel-based morphometry study. Plos One. 2016; 11(3):e0150757. [DOI:10.1371/journal.pone.0150757] [PMID] [PMCID]

[25] Banasik J, Williams H, Haberman M, Blank SE, Bendel R. Effect of iyengar yoga practice on fatigue and diurnal salivary cortisol concentration in breast cancer survivors. Journal of the American Academy of Nurse Practitioners. 2011; 23(3):135-42. [DOI:10.1111/j.1745-7599.2010.00573.x] [PMID]

[26] Moadel AB, Shah C, Wylie-Rosett J, Harris MS, Patel SR, Hall CB, et al. Randomized controlled trial of yoga among a multiethnic sample of breast cancer patients: Effects on quality of life. Journal of Clinical Oncology. 2007; 25(28):4387-95. [DOI:10.1200/JCO.2006.06.6027] [PMID]

[27] Aghili SM, Afzali S. [The effect of yoga yoga breathing exercises on chronic low pain, anxiety, psychological and physical well-being of women with MS (Persian)]. Health Psychology. 2017; 5(20):109-24. [Link]

[28] Cook TD, Campbell DT. Quasi-experimentation: design and analysis issues for field settings. Boston: Houghton Mifflin; 1979. [Link]

[29] Khanjani M, Shahidi S, Fathabadi J, Mazaheri MA, Shokri O. [Factor analysis and psychometric traits of short form (18 items) of psychological well-being scale of Ryff in female and male students (Persian)]. Thoughts and Behavior in Clinical Psychology. 2013; 9(32):27-36. [Link]

[30] Garnefski N, Kraaij V, Spinhoven P. Manual for the use of the cognitive emotion regulation questionnaire. Liedendorp: DATEC; 2002. [DOI:10.1037/t03801-000]

[31] Gross JJ. Emotion regulation: Current status and future prospects. Psychological Inquiry. 2015; 26(1):1-26. [DOI:10.1080/1047840X.2014.940781]

[32] Ryff CD, Keyes CL. The structure of psychological well-being revisited. Journal of Personality and Social Psychology. 1995; 69(4):719-27. [DOI:10.1037//0022-3514.69.4.719] [PMID]

[33] Bayani AA, Mohammad Koochekya A, Bayani A. [Validity and reliability of psychological well-being by Ryff (Persian)]. Iranian Journal of Psychiatry and Clinical Psychology. 2008; 14(2):146-51. [Link]

[34] Lotfi-Kashani F, Mofid B, Sarafraz S. [Effectiveness of spirituality therapy in decreasing anxiety, depression and distress of women suffering from breast cancer (Persian)]. Thought & Behaviour in clinical Psychology. 2013; 7(27):27-36. [Link]

[35] Buysse DJ, Reynolds CF 3rd, Monk TH, Berman SR, Kupfer DJ. The pittsburgh sleep quality index: A new instrument for psychiatric practice and research. Psychiatry Research. 1989; 28(2):193-213. [DOI:10.1016/0165-1781(89)90047-4] [PMID]

[36] Kakui H, Zare S, Akhlaqi A, Panahi, D. [Investigating the sleep quality of professional drivers in intercity terminals (case study: Tehran) (Persian)]. Traffic Management Studies. 2010; 5(16):1-9. [Link]

[37] Heydari A, Ehteshamzadeh P, Marashi M. [Relationship between insomnia severity, drowsiness and mental health disorders with academic achievement in female students (Persian)]. Journal of Woman and Culture. 2010; 1(4): 65-76. [Link]

[38] Nagendra H, Mohan T, Shriram A. Yoga in education. Anekal: Vivekananda Kendra Yoga Anusandhan Samsthan; 1988. [Link]

[39] Savadkuhi S, Yaghoubi A.A. [Comparing the effectiveness of cognitive therapy based on mindfulness and yoga on resilience and psychological well-being (Persian)]. Paper presented in: International conference of global achievements in social science, psychology and educational sciences. 2017 November 3; Tehran, Iran. [Link]

[40] Astarabadi M. [The effectiveness of yoga exercises on reducing childbirth anxiety and increasing women's mental health (Persian)]. Paper presented in: National Conference of Jurisprudence, Law and Psychology. 2016 December 8; Tehran, Iran. [Link]

[41] Parshad O. Role of yoga in stress management. The West Indian Medical Journal. 2004; 53(3):191-4. [PMID]

[42] Brown RP, Gerbarg PL. Yoga breathing, meditation, and longevity. Annals of the New York Academy of Sciences. 2009; 1172:54-62. [DOI:10.1111/j.1749-6632.2009.04394.x] [PMID]

[43] Salehi H, Amini F. [The effectiveness of teaching yoga techniques on emotional regulation and quality of life of women (Persian)]. Paper presented in: 3th national conference of psychology innovations. 2018 December 23; Isfahan, Iran. [Link]

[44] Rao MR, Raghuram N, Nagendra HR, Gopinath KS, Srinath BS, Diwakar RB, et al. Anxiolytic effects of a yoga program in early breast cancer patients undergoing conventional treatment: A randomized controlled trial. Complementary Therapies in Medicine. 2009; 17(1):1-8. [DOI:10.1016/j.ctim.2008.05.005] [PMID]

[45] Fakhary Nejad S, Mojtabaie M, Mirhashemi M. [Comparison of the effectiveness of yoga training with emotion regulation training on students' working memory and cognitive flexibility (Persian)]. Iranian Journal of Learning and Memory. 2019; 2(7):33-41. [DOI:10.22034/iepa.2020.214025.1145]

[46] Kiani R, Ahmadi P, Jafari S. [Effectiveness of yoga-based mindfulness in improving symptoms of secondary insomnia (Persian)]. Journal of Modern Psychology Researches. 2014; 9(36):119-34. [Link]

[47] Hassani Saadi S, Vaeezi AA. [Study of the effect of yoga exercises on anxiety and sleep quality of patients with chronic heart failure in Kerman city in 2015 (Persian)]. Daneshvar Medicine. 2020; 24(5):35-44. [Link]