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Comparison of yoga and aerobic trainings for improving mental health of divorced women

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Abstract

Exercise is an acceptable method for improving and maintaining the physical and emotional health. The aim of the present study was to compare the effectiveness of yoga training program and aerobic exercise on the mental health of divorced women. Two experimental groups and one control group were employed in this quasi-experimental study. The number of 30 divorced women was randomly divided into three groups. The experimental groups involved in yoga (n=10) and aerobics training (n=10) and received 16 exercise sessions for two months. The control group (n=10) received no training. General health questionnaire-28 was employed to evaluate the mental health of participants. Covariance analysis was used as the statistical method. The obtained results indicated that the intervention improved significantly the mental health indices in the intervention groups of yoga and aerobics. In comparison of the effectiveness of yoga and aerobics exercises, the results showed that there is not significant difference between the effectiveness of yoga and aerobics. Therefore, the two methods of exercise are effective on improving the mental health.

Keywords: Aerobic, Divorce, Mental Health, Yoga

Introduction

The main goal of mental health is helping people to reach more harmonious life and widespread perception and to prevent mental disorders. Coping with mental disorders to create a healthy society is the responsibility of governments and individuals of the community. Every community which desires well-being and happiness for his people should cultivate people adapted and coordinated. In fact, the mental health is the ability for creating the balance in life and battling the problems [1].

Mental health means balancing between the life environments and human needs. However, events and mental stresses are threatening this balance. One of these events is about divorce in families. Some researches have shown that the quality of family life is closely related to the mental health of family members. Divorce is a psychological phenomenon that has many negative consequences on the mental balance of family [2].

Divorced women because of the social and familial problems are placed under many psychological pressures. The most important problems of women after divorce are the low quality of life [3], disruption of social relationships as a result of lack of social security [4], depression which is more prevalent in women than men [5], mental disorders, and less satisfaction in their life [6]. The psychological effects of divorce on women have more stable outcomes, so that the effects of divorce on women can led to the substance abuse and mental disorders [7].

There are many treatments for mental disorders such as psychological intervention. However in most cases the mental disorders of divorced women are not considered. Besides, divorce can increase the vulnerability of women. Therefore, the use of low cost and easily accessible preventive procedures can improve the mental health of divorced women. One of the effective factors to deal with the mental disorders is sports activities like yoga techniques. Yoga is a series of interventional procedures composed of the physical, psychological, social, and spiritual trainings, which provide holistic and systematic approach to meet human needs [8]. The physical and breathing exercises of yoga can increase the flexibility and muscle strength. Yoga can improve circulation, oxygen uptake, and performance of hormone system. Relaxation and meditation in yoga by stabilizing the autonomic nervous system and controlling the emotions can improve the sense of well-being [8].

Yoga is a theory of personality, which aims to understand the psychological mechanisms associated with the regulation of emotions along with the physical development. It heightens the potential growth of body and helps to overcome the stress and fatigue [9]. Yoga includes a series of physical exercises like position selection (asana), controlled breathing exercises (Pranayama), and relaxation exercises (shavasana) [10].

There are a lot of researches about the effectiveness of yoga in reducing the mental symptoms like depression, anxiety, and aggression [11-13]. The results of these studies showed that yoga increases social adjustment and mental health and reduces depression [11-13]. For example the study of Chris et al. [11] showed that yoga is effective in reducing depression so that the positive effects of yoga on controlling anxiety and depression is preferable to any other forms of exercise. Also, Boettger et al. [12] and Hamer et al. [13] concluded that yoga can reduce depression and improve the mental health. Goncalves et al. [14] showed that yoga enhances the flexibility, automatic performance, and the quality of life in elderly people. Also, the movements based on the mind-body exercises like yoga can increase concentration, body awareness, and mental health in daily life [15].

On the other hand, aerobics exercises (performing exercises with rhythmic music) have specific characteristics like happiness and joy, which is useful in the improvement of mental health [16]. Aerobics exercises are a series of alternating and rhythmic movements of muscles that raises the heart rate and breathing in certain periods of time. This exercise is only effective when it is conducted regularly and continuous [16].

Physical exercises can act as a coping strategy or vaccination, so that people are able to respond more effectively to the mental pressures. Physical exercises provide a more efficient system to deal with stresses by reducing the returning time of autonomic nervous system to the initial state. In fact, each session of exercise as a factor of vaccination may act similar to the repeated psychological pressure. These training sessions through the physical and psychological adaptations can contribute to cope with stress and develop the hardiness of personality [17].

Divorce is a difficult social phenomenon that involves some people. The life style after divorce especially in women is important and we should try to find ways to improve the mental health of women whom experienced divorce. The phenomenon of divorce is considered as a major inhibitor factor in improving the mental health. The most researches on the mental health promotion in divorced women are in the field of psychological interventions, and in the field of sport psychology it has not been well studied. Thus, considering the importance of exercises such as yoga and aerobics in improving the mood and mental health, we conducted a study to compare these two methods in improving the mental health of divorced women. Therefore, the question of this study was whether the two methods of yoga and aerobics are different in improving the mental health of divorced women.

Method

The quasi-experimental study was conducted employing two experimental groups and one control group. The statistical population of research composed of all divorced women covered by the health houses of Tehran Municipality, Iran in 2014. In these centers through a notification, the divorced women were invited to participate in aerobics and yoga programs. The sampling procedure was according to the snowball or the chain method. In this sampling method, usually some participants are chosen and they are asked to introduce similar participants until the completion of the sample size. In total, 75 divorced women agreed to participate in this research and among them, 30 eligible women in the age range of 34 to 45 years, who were divorced at least for one year, were selected for the sample group. Another inclusion criterion was that women who had not participated in any sports activities in two last years. The number of 30 divorced women was divided into three groups randomly: the experimental groups of yoga (n=10) and aerobics training (n=10) and the control group (n=10) of no training. To participate in the study, the written consent was received.

General Health Questionnaire (GHQ): In this study, GHQ-28 was used for data gathering. This questionnaire has been made by Goldberg and Hiller in 1979. This instrument has been suggested to be suitable for screening mild psychopathology in the general population and adults. The questionnaire has four subscales including somatic symptoms, anxiety, social dysfunction, and depression. The validity of questionnaire as the internal consistency has been obtained for the scale of somatic symptoms (0.85), anxiety and insomnia (0.78), social dysfunction (0.79), depression (0.91), and total questionnaire (0.85) [18]. Taghavi [19] reported the Cronbach's alpha coefficient in Iranian population as 0.9 for the total scale [19]. The score of each sub-scale is from zero to 21 and the total questionnaire from zero to 84. The score above 17 in each subscale and the score above 41 in the total scale show severe mental disorder of participant [19].

Yoga group: In this study, after determining population and sampling, the general health questionnaire was distributed to the both experimental and control groups in the pretest step. The first experimental group performed yoga for two months, 8 sessions of 45 minutes per month at the sport house of Tehran Municipality under the supervision of trained professionals. The yoga practice was based on Ashtatga Yoga or Eightfold yoga, which includes three principles of relaxing exercises (Hatha yoga), breathing exercises or extension of the life force with yoga breathing (pranayama), and concentration and controlling the mind through meditation (Rajayoga) [9, 10]. The control group received no training. Each session was initiated with the speech of trainer about human traits such as kindness. Then the participants were asked to avoid anger and be kind with each other. In each session, yoga postures started with the expansion of full body (prone to back) and lasted for 10 to 15 minutes. In this state, exercises on the mind and breathing were performed simultaneously. Mind of the individual was rotated in various parts to learn mind control.

Then, four slow movements were performed in the prone position and after each movement the mind was set on the member. After each movement, breathing exercises and mind control was performed on the member. Then, three slow movements were performed in the sitting position. Then, four slow movements were performed in the standing position. Also, participants were again subjected to the relaxing state of body. The exercises related to the mind were carried out for 10 to 15 minutes to feel well about themselves and the world around them. Then, with closed eyes in a silent place along with playing a very gentle music they tried to think about things to do in the next 24 hours and then try to imagine doing an act in the best possible condition. In total, each session composed of the three aspects of mind control, breathing control, and slow movements of body.

Aerobics group: The second group of intervention performed an aerobics exercise program for two months, 8 sessions of 45 minutes per month. The program was conducted at the sport house of Tehran Municipality under the supervision of aerobics trainers and health experts. The aerobics program included 5 minute warm-up, 35 minutes aerobics training with low and high intensity exercises, and in the last 5 minutes cool-down for recovery. To determine the training intensity (the percentage of maximum heart rate) the heart rate indicator was used, which is commonly used in healthy and sick populations. The music played during the training sessions was selected by the trainer with a rhythm consistent with 60 to 80% heart rate reserve of participants. Heart rate of participants during the exercise was determined by the Polar device. To evaluate the effect of exercise on the mental health of divorced women, the intervention and control groups after yoga and aerobics exercises were asked to fill in GHQ as the posttest step.

Results

The data were analyzed using the descriptive and inferential statistics in SPSS-18. The inferential statistics were employed initially for evaluating the normality and equality of variance. The analysis of covariance (ANCOVA) was used to accept or reject the null hypothesis of zero. A summary of data analysis on the raw score of mental health in the recently divorced women is presented in Table 1.

Table 1 *Individual characteristics of participants in the study groups*

Group	Age (year)	SD	Weight (kg)	SD	Height (cm)	SD	Education (year)	SD
Yoga	34.8	2.69	61.21	2.23	158.08	2.03	12.53	1.1
Aerobics	36.23	4.14	62.01	2.87	159.01	1.89	12.23	1.29
Control	35.52	3.65	62.65	3.01	158.99	2.12	12.4	1.22

The average year of education in the participants was higher than 12 years which is equivalent to the diploma level and higher. As can be seen in Table 1, the average of age, height, weight, and level of education has not meaningful differences in the three groups.

Table 2 *Description of mental health scores in subscales and different groups*

Group	Somatic symptoms		Anxiety		Social dysfunction		Depression		Total mental health	
	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
Yoga	6.40	4.60	6.66	3.46	8.16	6.56	7.68	5.58	28.9	20.2
Aerobics	4.78	4.60	6.66	4.48	8.16	6.56	6.68	4.58	26.8	20.4
Control	4.80	4.60	6.86	6.46	7.66	7.56	6.88	6.58	26.2	25.2

As can be seen in Table 2, the mean score of mental disorder has decreased in post-test in both yoga and aerobics intervention groups, while the average score in the control group shows intangible changes.

After ensuring the existence of covariance analysis assumptions in the first hypothesis of the research (i.e. the yoga training can increase the mental health of divorced women), the ANCOVA test was conducted and a summary of the findings has been reported in Table 3.

Table 3 *Results of covariance analysis for yoga exercises*

Resource of changes	SS	df	MS	F	sig	Eta
Pretest	280.3	1	280.3	48.05	0.001	0.75
Between group	105.3	1	105.3	17.42	0.001	0.52
Error	97.2	16	6.1			
Total	503.7	18				

As can be seen in Table 3, the F value was equal to 17.42 which was significant at p<0.001. The effect size was obtained as 52 percent that represents the effectiveness of yoga training on the mental health promotion of divorced women in the intervention group.

After ensuring the existence of covariance analysis assumptions in the second hypothesis of the research (i.e. the aerobics training can increase the mental health of divorced women), the ANCOVA test was conducted and a summary of the findings has been reported in Table 4.

Table 4 *Results of covariance analysis for aerobics exercises*

Resource of changes	SS	df	MS	F	Sig.	Eta
Pretest	165.5	1	165.5	13.5	0.002	0.44
Between group	178.7	1	178.7	14.8	0.001	0.47
Error	207	17	6.1			
Total	480	19				

As can be seen in Table 4, the F value was equal to 14.80 which was significant at p<0.001. The effect size was obtained as 47 percent that represents the effectiveness of aerobics training on the mental health promotion of divorced women in the intervention group.

After ensuring the existence of covariance analysis assumptions in the third hypothesis of the research (i.e. there is a significant difference between the effectiveness of yoga and aerobics training), the ANCOVA test was conducted and a summary of the findings has been reported in Table 5.

As can be seen in Table 5, the F value was equal to 14.80 which was significant at p<0.001, indicating that significant differences have not been found between the effectiveness of yoga training and aerobics training in the divorced women.

Table 5 *Results of covariance analysis for evaluating the difference between yoga and aerobics groups*

Resource of changes	SS	df	MS	F	Sig.	Eta
Pretest	172.1	1	172.1	13.5	0.001	0.482
Between group	8.45	1	8.45	14.8	0.405	0.044
Error	185.15	16	11.58			
Total	355.7	18				

Discussion

The findings of this study suggest that the selective exercises of yoga are effective in the promotion of mental health in divorced women. Yoga techniques by reducing the perceptions of unhealthy performance of the body, the negative thoughts of mind, and the sense of inferiority complex can improve the mental health of divorced women. These results are consistent with the findings of Chris et al. [11], Leite et al. [20], Tekur et al. [21], and Descilo et al. [22] who have investigated the effect of yoga on psychological problems such as depression and anxiety. Also, the results of this study are in line with those obtained by Mousavi, Vaez Mousavi and Najafi [23] who have found out that yoga practice reduces the mental symptoms in inactive older persons.

Yoga exercises by promoting the power of adaptability in the mental, nervous, immune, and cognitive systems and also by modulating the autonomic nervous system and increasing the physical stability can affect the general health. Since the yoga exercises should be performed in a quiet environment away from the negative thinking and the trainee is focused on his/her movements and since the divorced women are at the risk of negative mood, so yoga can be a kind of distraction in the mind. Yoga by establishing the autonomic nervous system and increasing the ability to

control the emotions in stressful situations can create a feeling of well-being, competence, and self-esteem in the trainees.

Other findings showed that group aerobics exercises can promote the mental health of divorced women. The obtained results are in line with the findings of Meyer and Broocks [24], Magherensi et al. [25], and Jafari and Rahmanian [26]. Based on these results, regular aerobics exercises have a significant effect on increasing the happiness and enjoy of life. These studies showed that the aerobics exercises by improving the mood and increasing the self-esteem can promote the mental health of participants. The results obtained in the study of Mogharnasi et al. [25] showed that after 8 weeks aerobics exercises, the rate of depression, anxiety, somatic symptoms, and mental disorder in drug users have reduced. Also, MacMahon [27] and Ransford [28] showed that the aerobics exercises can improve the general health. According to Chang et al., the activities such as yoga, aerobics, and stretching movements can reduce the psychological disorders [29].

There is a significant relationship between the increased aerobics fitness and the decreased rates of depression [30]. One reason for the effectiveness of aerobics training in the improvement of mental health is probably the increased levels of serotonin and norepinephrine during exercises [31].

In comparison of the effectiveness of yoga and aerobics trainings, the results showed that there is no significant difference between the effectiveness of these interventions in divorced women. Therefore, the two methods of exercising are effective on improving the mental health. The obtained results are in accordance with those of similar researches obtained by West et al. [32] and Ross and Thomas [33]. West et al. [32] compared the effects of yoga and aerobics on the perception of stress and found out that both methods have a significant effect on improving the perception of stress, so that both groups demonstrated that their stress levels and negative mood decreased. In fact, yoga and aerobics both can improve the mood; however they are different in the mechanisms of action. Yoga by reducing the levels of cortisol hormone, which is the index of activation to respond to stress, can improve the mental health, while aerobics exercises by increasing the positive emotions may result in the promoted mental health [32].

Ross and Thomas concluded that the effectiveness of yoga and exercise in improving the health is equal; however yoga may show more positive effects on the general health of both healthy and ill subjects [33].

The reason for the positive effects of yoga and aerobics exercises on the mental health can be explained according to a theory proposed in the study of Asztalos et al. [34]. According to the theory, the regular physical exercises may predispose the person to be mindful that cause non-judgmental awareness of breathing, gestures, emotions, and thoughts. When people regularly and frequently are exposed to the physical performance, this leads to the increased breathing and heart rate, temperature regulation, and hormone release and hence, the awareness of the body can be increased. In fact, regular aerobics exercises through self-regulation of attention (moment to moment awareness), may show effects similar to mindfulness experiences [15]. In this study, aerobics and yoga exercises by reducing the psychological symptoms may result in the improved mental health indicators in divorced women. Although the mechanism of action in the mental health of divorced women is not clearly understood, it is likely that the reason for effectiveness is about improving the mood in subjects participated in this study.

Conclusion

In general, the group exercise provides an opportunity for trainees to recognize, understand, and release from the obstacles that block their freedom. Yoga exercises through the spiritual training can improve the mental disorders and hence, have therapeutic value [35]. Group exercise can help divorced women to find the meaning of life and the

gained social support helps them to adapt to the feelings of grief, loss, and emotional difficulties. Since divorced women suffer depression, negative thoughts, feelings of sadness and emptiness, and lack of ability to think, concentrate, and make decisions; yoga by changing the ability of person to respond to stressful situations can be considered as a way to reduce the depression in divorced women. On the other hand, aerobics exercises through making the experience of creative and enjoyable physical activities can cause the expression of emotions in a nonverbal way. In fact the purposeful exercises will enable individuals to respond more effectively to the psychological pressures [36].

Considering the psychological problems of individuals with mental disorders, yoga and aerobics exercises training can be addressed as an easy, appropriate, and cost-effective alternative to improve the mental health of divorced women through involving them in the physical activities. Therefore, in addition to planning the cultural programs and assigning supporting plans for divorced women, the measures should be taken into account to involve them in exercises, especially aerobics exercises and yoga. Yoga training is suggested at first because the divorced women are vulnerable and needs the mental relaxation. After the acquisition of relative calm of yoga, aerobics exercises can be employed. Indeed, the divorced women after several relaxing sessions in yoga may better accept exercises with faster intensity. Therefore, a combination of intervention programs is suggested to improve the mood of divorced women.

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Contribution

Study design: AM
Data collection and analysis: AM, LM
Manuscript preparation: AM, LM

Conflict of Interest

"The authors declare that they have no competing interests."

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