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Original Article

The Effect of a Course of Bray tonic Exercises on Improving Oppositional Disobedience and Anxiety in Children with Attention Deficit Hyperactivity Disorder

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Abstract

Background: Children with attention deficit/hyperactivity disorder are the first victims of emotional, behavioral and educational neglect, so the treatment of these children is necessary. Therefore, this study aims to determine the effect of a course of Bray tonic exercises on improving confrontational disobedience and anxiety in children with attention deficit hyperactivity disorder. Attention was designed and implemented.

Method: In this semi-experimental research, 40 female students aged 8 to 10 with coping behavior disorder were randomly divided into 2 experimental groups (20 people) and control group (20 people). The mean score of confrontational anxiety and disobedience was measured before and after 8 weeks of Bray tonic exercises, and finally the data was analyzed using descriptive and inferential statistics such as analysis of variance using version 21 of Spss software.

Results: The mean and standard deviation of anxiety before performing Bray tonic exercises in the control and experimental groups were 17.3±15.80, 21.2±10.98 and after performing Bray tonic exercises in the control and experimental groups, respectively, 30±3.18. 18.4±35.39, 18.17, as well as the mean and standard deviation of oppositional disobedience before performing Bray tonic exercises in the control and experimental groups, respectively, 7.40±1.23, 8.15±745, and after performing Bray tonic exercises. In the control and experimental groups, it was 7.20±1.28, 7.20±1.95, respectively. Therefore, there is a significant difference between the amount of confrontational disobedience and anxiety of children with attention deficit hyperactivity disorder before and after a period of Bray tonic exercises (p≤/05).

Discussion and conclusion: The results of this study showed that a course of Bray tonic exercises can improve confrontational disobedience and anxiety in children with attention deficit hyperactivity disorder.

Keywords: Bray tonic exercises, improving oppositional disobedience, anxiety, hyperactivity disorder, attention deficit

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1. Introduction

The prevalence of attention deficit hyperactivity disorder in children is estimated to be 3-5% (1). Behavioral problems, including attention deficit/hyperactivity disorder, occur in all countries, cultures, races, and socioeconomic groups and can occur in all children and adults with different levels of intelligence (2). People diagnosed with hyperactivity often have other disorders along with hyperactivity. In samples taken from psychological clinics, children who were diagnosed as naturally hyperactive have at least two or more disorders (3). The most common associated disorders of hyperactivity disorder are confrontational defiantness, followed by conduct disorder, and the presence of hyperactivity increases the likelihood of confrontational defiantness up to tenfold in the overall population studies (2). Therefore, hyperactivity has a strong relationship with conduct problems, oppositional defiant disorder and antisocial personality disorder (4). And one of the most reliable primary predictors of these disorders. Recent studies have shown that the severity of hyperactivity is an effective risk factor for confrontational defiance regardless of the severity of confrontational defiance (5). Perhaps this problem is caused by problems with hyperactive children controlling emotion (anger). Among these disorders, family connections have always been found, whether among boys and girls with hyperactivity or in American, European and African Americans (6). If this disorder is unknown, complications such as academic failure, rejection by peers and growth of self-esteem in affected children will occur. Therefore, it is noteworthy that attention deficit disorder and hyperactivity disorder should be identified in a timely manner and diagnosed before weakening the child's academic performance and stress in child-parent relationships (7). Some evidence suggests that defiant coping disorder not only acts as a predisposing effect for conduct disorder and antisocial behavior, but also predicts mood and anxiety disorders (2 and 3).

Another childhood disorder is anxiety, which can be treated if diagnosed on time. Fear and encouragement underpin the prevalence of anxiety in children and show themselves naturally if these fears are not pathological (8). Shyness and isolation are among the most common social anxieties in children that can disrupt their lives (4). Children learn fear and anxiety through conditioning. The incidence of fears in children is not predictable and is not the same in all ages (9). As children understand the concept of activity, movement and ability to do work during exercise and exercise, their evaluation often progresses (7). The symptoms of child anxiety in the physical dimension (physiologically accompanied by rapid breathing,

tremor of hands and feet, warming and redness of the face, noise cramps and palpitations) that can be corrected by calming down, and in the intellectual dimension of the child's attempt to be satisfied, approved and rejected by others (10). Pharmacotherapy, behavioral therapy and family education. However, specialists use other methods to improve behavioral symptoms in children with attention deficit and hyper-action disorder, including exercise (11, 12, and 6). Research has shown that exercise can be useful for many children's problems, as it is a natural remedy for children with simple and marginal problems to more complex issues such as coping disorder, hyperactivity, anxiety and fear, depression, nervousness, impulsive behaviors or are shy and isolated (4, 5, 6 and 13).

The use of exercise in reducing the internalizing behaviors of school-age children shows that this treatment method leads to a decrease in the average internalizing problems (especially anxiety) (10). Bray tonic is a method of practice based on illustrative movements. To which no equipment is needed, it is applicable in the smallest space and with the simplest garment, just imagine 6 points in space or under our feet and perform exercises by running movements on them. Bray tonic enhances memory, enhances creativity, increases concentration, nerve-muscle coordination, growth, motor development and reduces anxiety. Exercise training secretes endorphins and endorphins are energizing proteins that make people feel better and improve mental states (3). Bray tonic is a set of healthy thinking, creativity, words and movements that drive the athlete to health and happiness. Bray tonic is a method of using reading and writing characters for the blind and stepping at specific points of these characters and combining it with motion designs to build various sets for daily exercises. The sport has no age and physical limitations and all people of all diversity can do the sport. Doing this exercise is tasteful and without limitation in movements (6).

Exercise activities cause changes in anxiety levels by creating neuromuscular coordination and reducing heart rate and breathing. These types of activities include activities that have reported the results of anxiety reduction research and maintaining optimal levels, including Santana to Research (2020), Sabing et al. (2021), Penn (2016), Grossman (2017) (10, 11, 12 and 13). However, most researches in this field are contradictory and few researches have been done on children in this field. Therefore, the main issue is whether a period of Bray tonic exercises affects the improvement of oppositional defiance and anxiety in children with attention deficit hyperactivity disorder in Yazd.

Methodology:

In this semi-empirical study, 40 female students aged 8-10 years who got higher scores from coping behavior disorder scale through CSI-4 children's symptoms questionnaire were selected purposefully and randomly assigned to two experimental groups (20) and control group (20). Diagnostic interviews were conducted using statistical and diagnostic guidelines for mental disorders in order to determine hyperactivity and oppositional defiance in students. The instrument used was spence anxiety questionnaire which consists of 45 items, 38 of which are scored and six of which are positive question phrases are not calculated. Also, the CSI-4 children's symptoms questionnaire, which was created to sift through behavioral and emotional disorders in children ages 5-12 years, has been studied by clinical specialists in various studies.

At first, parents completed CSI-4 children's symptom questionnaire (cut-off point less than 60 as healthy). Each questionnaire has 4 degrees never, just a little, a lot and a lot. After completing the questionnaire by the parents, we will give the specified score, if the total score is more than 60, the child will enter into our training protocol and the score is less than 60 years old. The CSI-4 children's symptom rating scale is among the valid questionnaires used in the world to measure children's behavioral problems.

Before the start of the training program, the questionnaires were completed by the parents and after 8 weeks of training, the information about the questionnaire was completed from the parents.

Bray tonic Training Protocol

The Bray tonic training program was adjusted and used for 12 sessions, which increased to 4-5 sessions more in the exercises. The program includes 40 minutes of practice. Bray tonic exercise time can range from 20 minutes to 45 minutes, with low times for light exercise or morning exercise and high times related to more professional exercises or performances.

As mentioned earlier, this sport is based on a six-house table consisting of numbers 1 to 6, but here due to the use of this sport in elementary school, for more attractiveness of colors instead of numbers in the table, each house of the table was specified with a certain color and a certain movement was performed in each particular color.

The table coloring was considered as follows:

Brown	**Blue**
Red	**Purple**
Yellow	**Green**

To start gestures, the person is first outside the table. At first, the person enters the green house and performs 8 numbers stretching the hands to the opposite side, so that the right hand is pulled from the top of the head to the left, and the left hand is pulled from the bottom to the opposite side, and vice versa.

This exercise is one of the examples of exercises related to defects in the field of problems of unilateral use and crossing the middle line.

Next, entering the house runs red and 8 butterfly numbers. This movement is suitable for controlling motor coordination in unnatural hyperactive children.

Enter the Blue House and 8 runs the number "Lee Lee Off". Lee leeing is one of the balance movements.

Entering the brown house and running 8 numbers of "sit up", which is a move that leads to problems of one-sided use and crossing the middle line.

In the next step, the person enters the purple house, in this house a few movements are performed in a row by the leader and the child must perform the imitation of those movements. These include scissors, hand gestures such as swimming in water, spinning the waist, etc. is.

Finally, the person enters the yellow house and executes 8 jumping numbers with the pair of feet. This movement is also one of the equilibrium movements.

Selected movements are methods to strengthen perceptual-motor skills based on Werner-Rainey, Galaho and Cortez researches.

The division of meetings is that in the first 3 sessions, the learns about table houses and learns how to work. In the second 3 sessions, he learns the movements of the first two houses with repetition and brings the colors to mind.

2 Sessions after training the movements of the next two houses and repeating the training of the previous sessions in a row, the next 2 sessions of training the movements of the remaining 2 houses and repeating from the first house and the last 2 sessions of repetition of the movements in the order that have been taught.

In the 40-minute time of this class, 10 minutes are devoted to warm-up, 20 minutes to the main exercise and the last 10 minutes to head off.

Finally, the data were analyzed using descriptive and inferential numbers such as one-way covariance analysis using editing 21 SSPS software.

Results:

The mean and standard deviation of anxiety before Bray tonic exercises in the control and experimental groups were 17.3±.15, 10.98±21.2 and after Bray tonic exercises in the control and experimental groups were 17.3±30.18, 3, respectively. 18.4±.35.9, as well as the mean and standard deviation of coping defiance before Bray tonic exercises in the control and experimental groups were 7.40±40.23, 8.±15.745 and after Bray tonic exercises in the control and experimental groups, respectively. 7.±20, 1.28±7.28.

After a significant value of all the research variables was greater than 0.05 from the desired alpha value in Shapiro-wilk test assumption, it is concluded that the distribution of the research data has a normal distribution and parametric statistical tests were used to analyze the research data.

Hypothesis 1: A period of Bray tonic exercises has a significant effect on improving child oppositional defiance with attention deficit hyperactivity disorder in Yazd.

Table 1 Results of Dependent t-Test in The Training and Control Group

Variable	Group	Pre-test	Post-test	Value t	P value
Confrontational defiance	Control	7/4±1/23	7/2±0/95	1/496	0/151
	training	8/15±0/745	7/20±1/28	-4/55	0/000

*Significance at the level of 0.05 ≥ P

The results of Table 1 show that changes in the level of oppositional defiance before the test and post-test of the training group have a significant decrease. However, the control group was not significant in pre-test and post-test.

Table 2 The mean difference between pre-test and post-test

Variable	Control Group	Training Group
Confrontational defiance	0/2	0/95

Table 3 Independent t-test results in the training and control group

	One-way variance		Independent t-sided	
	F	P	t	P
Confrontational defiance	0/054	0/817	3/3	0/002*

*Significance at the level of 0.05 ≥ P

The results of Table 3 show that there is no significant difference between the training and control groups, so the zero hypothesis is confirmed and hypothesis 1 of the research is rejected.

Second hypothesis: A period of Bray tonic exercises has a significant effect on anxiety in children with attention deficit hyperactivity disorder in Yazd.

Table 4 Results of Dependent T-Test in Training and Control Group

Variable	Group	Pre-test	Post-test	Value t	P value
Anxiety	Control	17/8±3/15	17/3±3/18	-2/93	0/008
	work out	21/1±2/98	18/35±4/39	-4/78	0/000

*Significance at the level of 0.05 ≥ P

The results of Table 4 show that the changes in anxiety levels before the test and post-test of the training and control group have a significant decrease.

Table 5 Mean difference between pre-test and post-test

Variable	Training Group	Control Group
Anxiety	2/75	0/5

Table 6 Independent t-test results in the training and control group

	One-way variance		Independent t-sided	
	F	P	t	P
Anxiety	7/91	0/008	5/41	0/000

*Significance at the level of 0.05 ≥ P

The results of Table 6 show that the level of anxiety between the training and control groups is not significantly different, so the zero hypothesis is confirmed and hypothesis 1 of the research is rejected.

Discussion:

According to the results, there was a significant difference between the experimental and control groups in the mean scores of oppositional defiance, indicating that Bray tonic exercises have been effective in reducing confrontational defiance in children in the experimental group.

The results of this section are in line with the research of Sibink et al. (2020), Gasolineg (2019), Penn et al. (2016) (11, 12 and 14). According to the results of these studies, Bray tonic exercise can be used as an effective treatment method to improve oppositional defiance in children and adolescents with ADHD. It has been shown that an exercise program reduces ADHD oppositional defiance (15) and can structurally have clinical and clinical communication in functional adaptation of children with ADHD and somewhat control symptoms such as restlessness and excessive activity. According to different researches, children with symptoms of oppositional defiant disorder deliberately to lack the social, emotional and cognitive skills needed to fulfill the demands of elders are weak in interpersonal relationships. These problems cause low self-esteem, low tolerance for frustration, depressed mood and attacks of nervousness, plus in children with this disorder moral judgment may be damaged.

Perhaps the effect of Bray tonic exercises on ADHD can be attributed to some hormone-like hormones whose secretion relaxes the body and consequently affects the reduction of hyperactivity (16). Studies by some researchers on body metabolism show that exercise has a positive effect on the chemical-neurosurgical part of the brain, and for example, with the increase of dopamine, it causes brain arousal. Increased sensitivity of dopaminergic receptors in response to dopamine secretion due to exercise - can be effective in reducing ADHD (17). The overall goals of sports activity are in line with the child's inner efforts for self-realization. The most important principle is to allow the child to grow positively in the presence of supportive and discerning adulthood so that the child can discover his or her inner abilities (18).

In explaining the second hypothesis, it can be said that there was a significant difference between the experimental and control groups in the mean scores of anxiety, these results indicate that Bray tonic exercises have been effective in reducing anxiety in children in the experimental group.

The results of this section were in line with the research of Sibley (2017), Cho et al. (2017), Ludga (2020) (2, 19 and 20). In explaining the results of this part of the study, it can be said that Bray tonic exercises due to adaptability reduce the secretion of norepinephrine and cortisol and increase hormones such as endorphins and increase in serotonin uptake in the brain, which plays a significant role in reducing attention deficit and hyper-control. Exercise reduces the potential of action in the heart valley by making physiological changes such as regulating the cardiovascular system, especially by affecting the autopsy system of parasympathetic nerves and stimulating the vagus nerve. It helps calm nerves and reduces aggression and deficits, which can also be expected to reduce development (8 and 7) One of the other mechanisms in reducing ADHD is to achieve the individual's well-being. Desirable physical activities are participation in group and competitive activities and increasing motivation for active participation in the group. Exercise is known as a strong astigrant for hypothalamus, mucosal-adrenal, hypophysis and neurodegenergenic systems. There are many agreed opinions about the progress of executive function through physical activity, which is especially important for children with ADHD. Exercise activities have a positive effect on executive control of movements, i.e., planning, scheduling, working memory, interventional control, and coordination of tasks (14, 15, 18). Researches show that exercise increases the positive aspects contingent on response and provides situations that divert attention from threatening and anxious situations. On the other hand, exercise strengthens the in-depth elementary nervous system and promotes superior brain functions such as motor skills and integrity in practice, which can reduce social disfiguration and depression by creating suitable grounds for increasing self-confidence and self-confidence. Exercise and rehabilitation while developing movement behaviors contribute to the growth of children's social behaviors, which are necessary to adapt them to the world around them and various environmental phenomena, and lead them to desirable social standards (16). The results of this study can be considered as lack of alignment in the body posture of the subjects, gender and type of training procedural. Increasing the amount of cathcolamine hormones and decreasing the secretion of dopamine and sufficient serotonin in response to intravaleral aerobic exercises and possible disruption in adrenergic and dopaminergic systems were the reasons for the lack of adrenergic systems. These findings can be a reminder that physical activity shows that exercise therapy is effective and parents can prefer behavioral and movement Thera therapy to purely pharmacotherapy. Exercise training should be designed

with the aim of developing behavioral needs and improving the basic physical abilities of children, so filling children's leisure time with exercise and promoting them to participate in sports competitions can have strategies to balance the subgroups of children's behavioral disorders, especially ADHD. Finally, it is hoped that this research will lead to further research in this field and help to increase knowledge in the field of body education and sports science and rehabilitation and its positive effect on all, especially the target children. It is suggested that similar researches be conducted with different types of training Proteles and with different age groups on other behavioral disorders in order to express the results more generally.

Conclusion:

According to the findings of this study, it can be concluded that a period of Bray tonic exercise improves and decreases the symptoms of children with ADHD. These findings point to the role and importance of exercise and regular and organized physical activity in prevention and treatment of children's behavioral disorders as a noninvasive and non-pharmacological method and emphasize the necessity of it according to the industrial conditions governing human societies.

Ethical considerations

The researcher has taken the consent form from each parent and explained their goals to them. And he has defined the method and training program for them and briefly provided them with the necessary cooperation with the researcher.

Competing interests

There is no competing of interest to disclose.

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