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**Comparison of effectiveness of pharmacotherapy interventions and Yoga to reduce symptoms in children 6 to 8 years old with hyperactivity disorder/attention deficit**

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شکل ۳

**Abstract:** The purpose of this study was to compare of pharmacotherapy interventions and yoga to reduce the symptoms of the hyperactivity among children ranging from 6-8 years. The statistical population included children between 6-8 years old with the symptoms of the hyperactivity. The sample group was 50 volunteer patients participated in this research; then they were accidentally divided into a two 25 one groups of pharmacotherapy and yoga. Every two group was investigated by the use of deficit symptoms diagnosis questionnaire of attention/ hyperactivity of Coners (parent form) in order to determine the degree and intensity of the interventions. T test was used to compare to analyze the related data. Generally, the statistical results showed that the therapy method can reduce the symptoms of the attention/hyperactivity in this regard. In reducing the contrastive behaviors of children with hyperactivity/attention deficit, pharmacotherapy interventions had the highest effectiveness in this field.

**Key words:** attention/hyperactivity deficit, pharmacotherapy, yoga

**Introduction**

Due to the increasingly occurrence of the hyperactivity/attention deficiency disorder in the world and our country Iran and according to the published statistics the degree of this disorder has been shown in the US and the UK 700% and 350%, respectively; in our country the degree of this disorder has been represented between 6 to 18% in different cities based on the related statistics. Due to the increase of this disorder, the hygiene and educational systems have been also affected according to the economical and managerial issues; it also is affected on the family relations and mental health; due to the biological influence of the related deficiency, other factors including the nutritional, air contamination, pressures and stresses of the pregnancy can be activated and influenced on the personal environment. The different studies have shown that a child with the hyper-activity/attention deficiency cannot use the abilities of social relations and behavioral management having lots of problems with their parents and teachers as well as their classmates; for the reason, they will be rejected or separated from their co-ages due to their weak self confidence, also they will tend to participate in criminal actions awfully. If the following-up programs cannot be achieved for these children, the consequences of the deficiency will affect on their adulthood separating them from their usual lifetime; these people also

cannot optimize their life abilities and opportunities as well. The carried out researches in the country have shown that medication-therapy is applied more than non-medication treatments. As we know based on the studies about 70% of these individuals can be benefited from the medication-therapy and only 30% cannot be treated by this way. Also due to the side-effects of these drugs or medications in childhood time, there have been usually some tolerable issues for applying these medications. The existence of these important issues and the lack of enough and vast studies have been caused the present study researcher to compare the medication and non-medication therapy impacts potentially. In the completion of this research both medication and non-medication therapies have been applied as independent variables; of course the Yoga and behavior therapy were applied in this case potentially. The behavior therapy was applied due to one of the most essential factors making the tension between children and parents influencing on the social relations of these children. The disability is subjected to the lack of suitable behavior function of the same children; if the behavioral function of these children gets amended, they problems of the children with their parents will be also reduced potentially. Yoga has been considered as the most essential treating or curing intervene because of its techniques; first, it assists to the application of physical activities and regular breathing system leading to the body relaxation and this can be directly influence on the

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child's attention reducing the tensioning behaviors; second, by the use of yoga conceptual and cognitive issues, the recognition of a child from his or her environment can be increased making the behavioral functions such as patience into the children potentially. This also can reduce the children's problems increasing their attention potentially. For this solution the researcher of the present study tries to compare three therapeutically treatment approaches investigating the effectiveness of these approaches on the subscales of overcoming behaviors, cognitive problems and the lack of attention, hyper-activity and hyper-activity with attention deficiency; this makes to investigate other effective treating methods for applying the combination of these approaches in order to specify the related purposes potentially. It should be mentioned that the volume of the sample is subjected to children ranging from 6-8 years old having hyper-activity attention deficiency; because six years old is the beginning of entering into the school as the first social environment for these children in compare to their family setting. They may see some environmental signs for the first time. It has been represented in the book of mental pathology DSMV that more than a one sign should be existed in an environment and secondly in pre-school age, there is another aspect for entering into formal educational affair; due to Coners test (parents form) as the research instrument, these children have been considered in an equal balance for scoring in this study; also parents are facing with some formal educational issue, hence they have to cooperate potentially in their children's affairs. According to the reasons, this age has been considered for the related volume of the sample. In continue, the theories of the research will be discussed. Individuals with hyper-activity attention deficiency disorder may have little education in compare to their co-ages and they cannot also progress in their occupational issues. Also, the intelligence level of these children is lower than other children; the changeability is also seen in the intelligence quotient of these children with hyper activity/attention deficiency. This disorder is very dangerous in its intense and acute level influencing on the social and family life of these children drastically. These three forms have relationship together. The lack of attention is consisted of two mainly and combined forms influencing on the educational issues while the rejection from other children and accidental damages can be happened in hyper activity and combined forms. People with non-attention disorder are really inactivated socially; it seems that these are not rejected by their co-ages (Iolindezi and Powel quoted of Avadisians and Nikkhou, 2009). A considerable proportion of children are referred to clinics having the pertinacious or obstinate for going to the hospitals.

The proportion of the occurrence of this disorder is higher than other psychiatric disorders and this is simultaneously higher than both forms of hyper activity disorders potentially. According to Lara et al study (2009) about 50% of children have hyper activity/attention deficiency disorder but it does not show the same symptoms in adulthood. Due to the fact that families are a small society, these disorders make a kind of noise or disruption into the same family members; and these disorders intensify the other problems into the families awfully (Rowshanbin, 2006). Thus it can be easily imagined that the various sides of the behavior can influence on the mothers' depressive issues (Befera and Barkley, 1985). These will lead to the anxiety, depression of parents, lack of parents' ability regarding to educational affairs, weak dependency of children between parents, negative relations of these children with their brothers and sisters and raising the level of tension between family members (Sheeber and Jonson, 1992), increasing the divorce and family separation among the children with hyper activity/attention deficiency disorder. The hyper activity/attention deficiency can conduct the worse affairs among family members drastically (Johnson, 1996). This disorder is increasing other mental problems such as behavioral and anti-social personality, abuse of drugs and anxiety (Ehabi et al, 2010). The related reports have shown that children with the related disorder are susceptible to depression (Kendall and Hatton, 2002), behavioral problems (Vladislav et al, 2008), educational drop off (Kendall and Hutton, 2002), abuse of smoking (Barkley, 2000; Molina and Pelham, 2008), criminal actions (Moore and Gordon, 2005), driving criminals (Fischer et al, 2006). Also children with the related disorder tolerate higher medical expenditures (Guevara et al, 2001). In an unprinted report of the hygiene ministry (2003), the rate of this disorder was about 600 times for both genders in Iranian population that this degree is comparable with the Iranian population depression (600). Dashtii et al (2006) in a research tiling the hyper activity/attention deficiency in Iranian population in 2003 used the index of health (balanced life years per their disability, DALY) and calculated both genders in the whole ages as 22.4 for the related population. The comparison of this disorder ion Iran with other countries showed that the disability from the hyper activity/attention deficiency is considerably increasing in our country (Weiss et al, 1985). In recent years, many different studies have shown that the annually expenditures of the families is also increasing dramatically. Also the there is hidden expense for these patients (Matza et al, 2005). Parents accepting the medication therapy suggestions hope their children to be treated with the reduction of their children's hyper activity symptoms. The experts of this

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field believe that the benefits of taking these drugs can overcome over its harms because children feel higher control over their problems. In addition, they can make positive interaction with their parents because these drugs can help them to behave independently (Barkley, 1998). However unfortunately it can hardly guarantee that these children take the related drug even it can be more beneficent. It is reported that about 20 to 30% of these children do not take the related drugs; for example, the parents are worried about the side-effects of these drugs; or they feel that the medications can make stigma their children (Hulljin and Vitborn, 2003; quoted of Seyd Mohammadi, 2005). The obtained data is different between parents and teachers. When the obtained data from the school environment judges about the application of these drugs, the degree of taking the drugs will be considered low in this regard because parents are not aware of their children at school setting; Moreover, since parents see their children in different situations, they will have controversial information about the side-effects of these medications. Parents conducting a daily task of the children require feeling the same medication potentially while parents challenging with their children may not treat by this way (Coners and Jet, 1933; quoted of Alizadeh et al, 2008). It is observed in some studies that about 60% of children cannot afford taking their drugs or medications (Pisteman et al, 1992). People with weak dependency to the drugs or medications have lower intelligence level with intense symptoms and educational problems (Brown and Swear, 1988). The attitudes of teachers also affect on taking these medications. It seems that training of teachers and parents can be an important phase for increasing the dependency of the medication regimen for long time medication therapy issues (Ashley, 2005). Yaghoubi et al (2008) carried out the investigation of the effectiveness and comparison of neuron-feedback, retina therapy for reducing the hyper activity/attention deficiency among their own subjects. The whole subjects were investigated in terms of Iran TOVA computer-assisted program being revised by WISC-R intelligence test. The results showed that the neuron-feedback therapy along with retina-therapy has the effective influence on reducing the impacts of the hyper activity/attention deficiency. Although the effectiveness of the related therapies have been satisfactory by many parents but the scores of the pre-test is higher than the neuron-feedback scores. The results of the study are coincident with the results of applied studies in this regard. The SPECT, PET, FMRI and MRI studies have shown that the hyper activity/attention deficiency is originated from the low motivation of the brain as well as the behavioral pattern (Monastra, 2004). Based on this model or pattern, the therapies with purpose of

increasing the neurotic activity in this lobe, it is useful for treating this lobe of the brain. The most common therapy is subjected to the medication therapy so that about 75% of these children can be getting under the stimulant medications (Roland et al, 2002). Ritalin (MetilPhenidit) is a medication that it can influence on the same disorder potentially (Volkow et al, 1995; Dorcell, 2000). About 70% of children under medication therapy show the recovery signs being released of the hyper activity/attention deficiency disorder (Finanding and Dogin, 1998). Although it takes for two years (Dopal et al, 1991) but these stimulant medications can reduce the symptoms of the hyper activity/attention and educational problems and social affairs; it will also increase the life quality of these children potentially (Vence et al, 2007). Some studies have shown the effectiveness of taking these medications with MetilPhenidit than treating approaches in reducing the children attention problems based on their parents' evaluation (Biderman and Spencer, 2008). Biderman and Spencer (2008) have considered the medication therapy as the most common approaches for treating the signs of the hyper activity/attention deficiency among the related children. This effectiveness has been mentioned about 9000 subjects ranging from 50 to 70% of the children potentially. The medication therapy has been considered as one of the most essential approaches being mentioned in other studies (Van Oord et al, 2008). According to Barkley (1998) about 35-45% of patients with attention/hyper activity problems do not respond to these issues and about 70% of children treating by the way have shown the signs of recovery in this pavement (Fininding and Dogin, 1998). The application of every stimulant medication can be scary; they sometimes have weak effectiveness and only brave patients can take these medications potentially (Fininding and Dogin, 1998; Marcos et al, 2005). However, the impact of the medication therapy can recover the cognition issues, educational progression and social skills (Benete et al, 1999); this can also support a vast domain of patients' problems. Houshvar Parsa et al (2009) showed that parents' group training can be effective for reducing the hyper activity/attention deficiency and the anxiety and stressful issues; this intervention can also useful along with other medication therapy programs efficiently. Jaafari et al (2010) concluded that the positive child-treating issue can be effective in optimizing the mental health of mothers having hyper activity/attention deficiency children.

The carried out studies regarding to the yoga (Jensen and Kenny, 2011) showed the high potential benefits of this remedial approach for children with hyper activity/attention deficiency disorder. The main aim

was to find articles representing the scientific benefits in this pavement; hence, the quality-based articles were eliminated and three articles regarding to the researches of Jensen and Kenny (2004), Harrison et al (2004) and Pack et al (2005) were evolved in this subject potentially; they concluded that the positive process of the yoga along with medication therapy can be suitable for children with hyper activity/attention deficiency disorder. Grosswald et al (2008) showed that the yoga exercises can considerably reduce the symptoms of the anxiety and stress.

**Materials and Methods**

The completion method of the present study is based on True Experimental way. It should be mentioned that the present study is following the non-accidental sampling method (available and volunteer); the substitution of the children into the control and experimental groups was carried out as randomly. Due to the hypotheses of the research, the research plan was planned as pre and post- test with advanced control group. Thus, after the selection of the subjects, they were accidentally categorized into two groups.

**Completion method of the research:**

An interview was carried out from the whole participants referring to some consultant centers in Tehran with the symptoms of attention/hyper activity ranging from 6-8 years old and then their satisfaction form was achieved to cooperate in this study. The evaluation phase was carried out in two phases:

The first phase was achieved after receiving the registration package only before the beginning of training or treatment sessions and the second phase was completed after the end up the sessions. In the first phase the intervention plan of the samples (pre- test), family demographical features and Coners' hyper activity/attention deficiency disorder (parents' form) was evaluated efficiently. It should be mentioned that the whole participants were asked their written satisfaction form. Then the children were placed into a two experimental group (25 people); they were got under five months treating program. In this period, the group receiving medication therapy was supervised by a psychologist every three days in a week; the group receiving yoga was also got under a psychologist every two times in a week; then they were responsible for practicing at home for 30 minutes in four sessions.

Finally, in the second phase after the completion of the intervention program (post- test) every three experimental groups were measured in this case, the whole diagnostic questionnaires were also assessed in this case. In order to consider the moral

considerations, the researchers let these patients participate in other remedial programs potentially.

**Sample, sampling method and volume of the sample:**

The statistical population of the present study includes the children with hyper activity/attention deficiency disorder ranging from 6-8 years old. The volunteer-based sampling method was taken up in order to apply a suitable sample in this path. For the reason, a representation session was carried out for parents with hyper activity/attention deficiency children. Then based on the number of parents participating in this plan were accidentally substituted into three experimental groups and they were placed into three therapeutically 25 people groups. For the reason, among 25 people only the therapeutically group (with cooperation of a psychologist) and 25 people for training yoga for 5 months received the treatment affairs in this regard.

**Measuring instrument: diagnostic questionnaire of Coners hyper activity/attention symptoms (parents form):**

One of the most common and famous instruments for diagnosing the focus/attention disorder is subjected to the Coners rating scales. The short form questionnaire has been validated and translated by Iranian cognitive sciences institution including 27 questions with likert-based responding system (4 multiple choices) being achieved by personal and group-based case; the parents' rating scales was designed in short form; these questionnaires have been also designed based on DSM-IV diagnostic criteria as a suitable instrument for making distinction between the abnormal and hyper activity/attention deficiency children. Also this is a suitable instrument for experts to devote in their special tasks. The Coners rating scales have been applied in the field of reliable questionnaires in the world in order to measure children's behavioral problems. These questionnaires have been also available to measure children's behavior world widely. The process of scoring is completed by specialists along with various situations. The vast application of these questionnaires in clinical diagnosis and reliability and validity has been available among different cultures. This form has been also normed and validated by Dr. Tehraniidoust in the institution of Iranian cognitive sciences.

**Data analysis method:**

The SPSS21 and 8 statistical software have been applied in order to analyze the related data; T test was

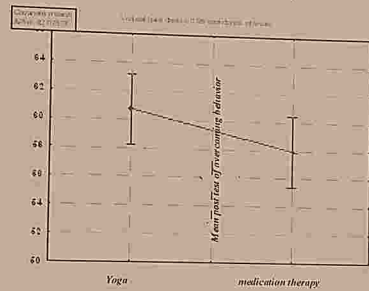
also applied in order to analyze the related data potentially.

**Results:**

**Table 1: Results of groups' difference in variable of overcoming behaviors dependency**

Group	Yoga	Medication therapy
Yoga		0.527

As it shown in above mentioned table, in dependency variable (degree of overcoming behavior), there is no a significance difference between medication therapy and yoga in 95% confidence level. The existence of this difference is given in below figure clearly.



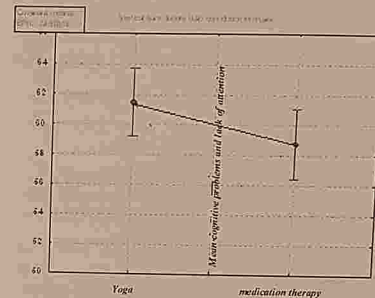
**Figure 1: Diagram of comparison of the effectiveness of Yoga and Medication therapy in reducing the overcoming behaviors**

The above mentioned diagram represents the difference between two experimental methods in reducing the degree of overcoming behaviors of children with hyper activity/attention deficiency. Due to the same diagram, it is specified that the behavior therapy has the highest degree or impact among the other two cases. Due to the distances of 95% confidence level, there is no significance difference between the medication therapy and yoga in this case.

**Table 2: results of groups' difference in variable of cognitive and lack of attention dependency**

Group	Yoga	Medication therapy
Yoga		0.132

As it shown in above mentioned table, in dependency variable (degree of cognitive problems and lack of attention), there is no a significance difference between medication therapy and yoga in 95% confidence level. The noneexistence of this difference is given in below figure clearly.



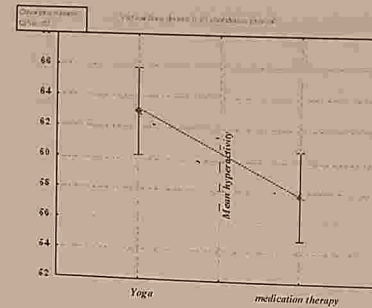
**Figure 2. Diagram of comparison of the effectiveness of Yoga and Medication therapy in reducing the cognitive problems and lack of attention**

The above mentioned diagram represents the difference between three experimental methods in reducing the degree of cognitive problems and lack of attention of children with hyper activity/attention deficiency. Due to the same diagram, it is specified that the behavior therapy has higher impact than yoga. Due to the distances of 95% confidence level, there is no significance difference between the medication therapy and behavior therapy in this case.

**Table 3: results of groups' difference in variable of hyper activity**

Group	Yoga	Medication therapy
Yoga		0.027

As it shown in above mentioned table, in dependency variable (degree of cognitive problems and lack of attention), there is a significant difference between two yoga and behavior therapy methods in 95% confidence level and there is no a significance difference between medication therapy and behavior therapy in 95% confidence level. The existence of this difference is given in below figure clearly.



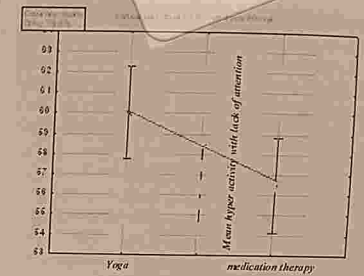
**Figure 3: diagram of comparison of the effectiveness of yoga and medication therapy in reducing the hyper activity**

The above mentioned diagram represents the difference between three experimental methods in reducing the degree of hyperactivity of children with hyper activity/attention deficiency. Due to the same diagram, it is specified that there is no significance difference between the medication therapy and yoga in this case.

**Table 4-33: results of groups' difference in variable of hyper activity with lack of attention**

Group	Yoga	Medication therapy
Yoga		0.059

As it shown in above mentioned table, in dependency variable (degree of cognitive problems and lack of attention), there is a significant difference between two yoga and behavior therapy methods in 95% confidence level and there is no a significance difference between medication therapy and yoga in 95% confidence level. The existence of this difference is given in below figure clearly.



**Figure 4. Diagram of comparison of the effectiveness of Yoga and Medication therapy in reducing the hyper activity with lack of attention**

The above mentioned diagram represents the difference between two experimental methods in reducing the degree of hyperactivity of children with hyper activity/attention deficiency. Due to the same diagram, there is a significant difference between the yoga and medication therapy in this case.

**Discussion and conclusion:**

In the investigation of the first hypothesis of the present study titling the medication and yoga therapy interventions in reducing the signs of the children with hyper activity/attention deficiency ranging from 6-8 years old, the results represented that two related methods were effective in reducing the related disorder's symptoms efficiently. But the medication therapy had higher impact in this pavement. This is coincident with the similar studies have been carried out as following; a study led by Kalantari and Abedi (1998), the effectiveness of parents' behavioral training has been shown in reducing and recovering the mothers in this disorder efficiently. According to Spencer et al (1996), Swanson et al (1995), both medication and behavior therapies have the vast observations for the hyper activity/attention deficiency disorder. Roland et al (2002) considered the medication therapy as the most common and sophisticated method for recovering the children with hyper activity/attention deficiency disorder so that about 75% of these children were become under the medication therapy stimulants efficiently. Due to the influence of the yoga on reducing the symptoms of the related disorder, it is carried out the investigation of the yoga influence on the related children in compare to other two methods. Saadat (2011) in a study titling which signs of the hyper activity/attention deficiency can change with the yoga intervention. The results showed that these interventions had equal influence on

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the related disorder potentially; these can also reduce the symptoms of the hyper activity/attention disorder efficiently. Jensen and Kenny (2004) after 20 sessions reported considerable reduction of the disorder. Parshad (2004) stated that the physical exercises can make a cohesive arrangement between the muscles increasing the power of concentration and consciousness among the whole children. NardoRainold (2002 quoted of Saadat, 2011) and Jensen and Kenny (2004) in their studies stated that the influence of the self- controlling practices can be obtained from the yoga exercises reducing the whole behavioral tensions and other mental issues. Jessica Roder (2011) carried out a study to find the relationship of yoga and its benefits for children; she concluded that the positive process of the yoga along with other medication therapy issues can be suitable for the children with hyper activity/attention deficiency potentially. Harrison et al (2004) in a study considered the meditation as the best family therapy case among children with hyper activity/attention deficiency. The positive recovery of children was shown in this study using Sahaja Yoga meditation method. Grassowald et al (2008) carried out a research in order to indicate the impacts of observation meditation for decreasing the signs of the hyper activity/attention deficiency in this regard. The results represented that the degree of stress and anxiety can be decreased in this case. Due to the mentioned results of the researches the obtained results are coincident with together. The results represented that the behavior therapy had the highest impact in compare to the yoga; also there is no significance difference between the medication therapy and behavior therapy in 95% confidence level. The obtained results of Esmailian et al (2005) showed that frequent treatment with Ritalin is very effective in compare to behavior therapy issue; this result is coincident with Moharri et al (2009); the results of these researchers have also shown that there is observed considerable reduction of hyper activity/attention deficiency among the related children. Also a research led by HoushvarParsa et al (2009) titling the investigation of parents group education impact among children ranging from 4-10 years old concluded that the group-based educational affairs can be effective in reducing the impact or signs of hyper activity/attention deficiency. Zargharinezhad and Yazdandoust (2007) concluded that training parents can reduce the children behavioral problems with hyper activity/attention deficiency. The results of Esmailian, Bahrainian and Hashemian (2005) the tablet of metal phenidit (Ritalin) can reduce the impacts of the hyper activity/attention deficiency. Antschell and Barkley (2008) in a research about the training of behavioral management for parents

showed that the group training education can make considerable recoveries in children obedience raising their interaction; Paterson and Chamberlin (1994) stated that the weak parenting issue is one of the most essential factors for decreasing the efficacy of the therapeutically and behavior therapy approaches raising negative behaviors among the related children. In the investigation of the second hypothesis of the present study titling the medication, behavior and yoga interventions in reducing the symptoms of the cognitive and lack of attention problems, it is shown that the behavior and medication therapies had the highest impact than the yoga. The research results of Pouretamad et al (2009) showed that training mothers can play a key role in reducing the whole tensions of the same mothers potentially. Rogers et al (2003) stated that the parents' behavioral training programs can be observed in the related children; Anastapolous et al (1993) indicated that the medication interventions are really effective in this hyper activity/attention deficiency. The researches of Simoen (1993), Fininding and Doghin (1998) showed that about 70% of children are getting under the medication therapy; the studies of So, Leong and Hung (2008), Van Oord et al (2008), Biderman and Spencer (2008), Peterug et al (2006) showed that the medication therapy had the best impact on children with hyper activity/attention deficiency. Also the researches of Biderman and Spencer it is shown that about 9000 subjects ranging between 50 to 70% could be treated by medication therapy in this case. Hun et al (2009), Van Ord et al (2008), Peterug et al (2006), Wilson et al (2006) stated the medication therapy as the most suitable case for these children efficiently. Spencer et al (1996) and So et al (1995) found that most studies have shown the positive impact of medication therapy. In a meta-analysis led by Van Orde (2008) the medication therapy showed the reduction of the hyper activity/attention deficiency among children. The studies of Hin Shaw (2006), Wison et al (2006), Chaoter et al (2006) the impact of medication therapy was also shown efficiently. The study of MTA (1999) is coincident with the reduction of the hyper activity/attention deficiency symptoms. Jadidi et al (2012) carried out a study to show and compare the effectiveness of Ritalin therapeutically impacts as well as Nero-feedback and training of parents regarding to management issue; the results of the study showed that three therapeutically approaches are effective in decreasing the impact of hyper activity/attention deficiency among children. There is observed a significance difference between these three approaches.

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