

The Effect of Brain Gymnastics Training on Incompatibility of Elementary Female Schools

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ABSTRACT: The aim of this research is to investigate the effect of brain gymnastics training on the training on incompatibility of elementary female schools. The design of this research was semi-experimental and an experimental design containing pre-test-post-test and control group was used due to following the effect of children's brain gymnastics training on incompatibility of elementary female schools. The statistical population in this research was all the children enrolled of girls' primary schools in Tabriz city in the academic year of 2023-2024. In the first stage of sampling, two education districts were selected and then in the second stage two primary schools were selected by cluster sampling method from all female primary schools of Tabriz city. In the third stage, 30 children were voluntarily selected for the research and randomly placed in two experimental and control groups. To collect information, Goodenough's manikin drawing test was used to measure incompatibility of the elementary female students. Brain gymnastics activities were used for motor performance. SPSS 22 software and one-way analysis of covariance test at 0.05 level were used to check the data. The results showed that brain gymnastics exercises have a significant positive effect on incompatibility of elementary girl schools.

Keywords: Brain Gymnastics, Incompatibility, Elementary Female Schools

INTRODUCTION

The gradual phenomenon of physical growth and development is the most beautiful phenomenon that Almighty has placed for humans in all periods of life, i.e. childhood, adolescence, youth, adulthood and old age. Physical changes occur in each of these periods, which can sometimes be confusing for students and children. It is completely normal for children to grow and change their appearance. Children grow taller and stronger with the phenomenon of growth, and they tend to develop skills in performing sports activities. But progress in performing motor skills never happens by itself. That is, if children are left alone, they will never reach the level of maturity in performing motor skills. Therefore, the task of educators requires that they change the environmental conditions in such a way that children can develop and improve their skills (Gallahue & Ozmun, 2012).

Many people are of the opinion that the entry of children into elementary school is the beginning of their learning and flourishing in all dimensions of growth, considering the recent changes and progress in all dimensions of human development at older ages and even the foundation stage for prevention and correction of actions and Different movements of children have brought about a kind of transformation of thought in the field of physical and movement development of children from the early years of childhood. On the other hand, in the last few years, in many educational institutions, there has been a tendency to change from motor and physical skills to the areas of cognitive and mental development of children. This kind of insight and mental tendencies show little information in the past planning, about the physical and movement condition and physical capabilities of children in the years of birth, in other words, after the birth of an elementary school. Without a doubt, correcting this belief and attitude can be the basis for the growth and prosperity of children in elementary years and above (Gallahue & David, 2018).

Most theories of child development agree that early motor experiences have a significant impact on later periods of development. In other words, a high percentage of children's ability in the field of play and sports, work and other aspects of life depends on the quality of their early experiences. By considering the type and initial experiences, the basis and foundations of the implementation and subsequent functions of the person are determined. Most physical education experts believe that the performance of basic motor skills, the opportunity to use equipment, motor and non-motor tasks should be planned according to a specific framework for children. The desired structure allows children to search for different forms of a skill individually and certain movement abilities and determine their limits, all of which can occur in a non-competitive learning environment (Norris, Van Steen, Direito, & Stamatakis, 2020).

Research has shown that a person's early experiences in life lay the foundation for his later learning based on what was said, although we accept that early experiences play a mediating role in his current learning, so the effective use of the child's body and attention to the development of his skillful movements in Education will play an important role (Abedi, Baghaei, Salehian, 2022).

It was revealed that brain gymnastics had a positive and significant effect on the mean scores of gross motor skills (running speed and agility, static balance, dynamic balance, bilateral coordination, and strength) of the trainable mentally retarded girls (Harzandi & Salehian, 2022; Angraini & Dewi, 2022).

Today, in most schools, the goal of movement programs should be to accelerate the flow of growth and development of children's motor skills. Because movement programs are usually based on this theory, that improving abilities through movement activities will eventually improve a person's academic and athletic performance in the future. According to what has been said, it seems that in order to develop motor proficiency as well as gross and fine motor skills, children should have the most opportunities to face sensory stimuli and experience various movements in the early years of their lives. It is obvious that first of all parents and education and then physical education specialists have a great responsibility in this regard.

With regard to the mentioned cases, the present research examines the question of whether children's brain gymnastics training has an effect on the cognitive and psychological functions of first and second grade female students.

RESEARCH METHODOLOGY

This research was semi-experimental and an experimental design containing pre-test-post-test and control group was used due to following the effect of children's brain gymnastics training on the cognitive and psychological performance of elementary school girls.

Statistical Society

The statistical population in this research was all the students enrolled in Tabriz primary girls' schools in the academic year of 2023-2024, numbering 657 people.

Statistical Sample and Sampling Method

In the first stage of sampling from among the centers of the statistical population, all the first and second primary school girls of Tabriz city were 657 people who were selected by cluster sampling method of two education districts and finally two primary schools were selected. In the second stage, 30 children were voluntarily selected in the research and randomly replaced in two experimental and control groups.

Research Measurement Tools

Projection tests were used to collect information in this research. Projection tests are basically based on psychoanalytic theory. According to the supporters of the psychoanalytical school, many aspects of people's personality cannot be measured through conscious self-assessment and using questionnaires. In order to get an accurate picture of a person's inner world, one must choose a way to prevent unconscious psychological resistances and defenses. Drawing tests are used as a criterion for measuring mental functions, evaluating personality and family functions, evaluating emotions, fears and needs, and identifying gender roles (Milen, 1999).

Dummy Drawing Test

The use of pictures of people drawn by young children for various purposes has been popular for a long time. Godinaf's dummy test was used to score the cognitive performance of the paintings. This test was designed in 1926 by Florence Laura Godinoff to measure the cognitive, mental and intelligence abilities of children, and then revised by Harris in 1963. According to the creators of the test, there is a relationship between the child's age and his mental abilities. This means that with increasing age, the child paints more parts of the human image. This test is applicable for children between 3 and 15 years old. The way of drawing in this test is a reflection of the subject's anxieties, impulses, and self-confidence (Lilienfeld et al., 2000). Personality factors are also effective in the results of the Goodenough dummy test. Children who are more socially and behaviorally compatible draw more details in drawing. Mannequins have been noted (Bahrami, 2023).

Validity of Goodenough's Test

Considering the prevalence of the use of Godinaf test in the world and in Iran, the validity and reliability of Goodenough test for pre-primary children is not much discussed. Research has shown that this test is the most accurate for children between 3 and 10 years old (Hassanzadeh and Minaaei, 2000).

The reliability of specific signs in the manikin drawing test has been reported as relatively variable according to different studies. In the study of Thomas and Williams, the reliability coefficient using Cronbach's alpha was reported to be 82% and 92% for intelligence measurement (Thomas and Williams, 2006).

Family Drawing Test

A child's drawing can be used to determine a person's level of intelligence and evaluate his or her special perception (Goodenough test). Apart from the formal elements, the painting also has content and apart from intelligence, it also reveals emotions. (Sharifi, 2003). In addition to the subject's individual characteristics, the family drawing test also reflects his family relationships and needs. In this research, only individual characteristics were measured with this test (Bahrami, 2024).

Brain Gymnastics Training Program

1. Lazy8 s
2. Cross crawl
3. Sit-Up Cross
4. Neck rolls
5. Think of an X
6. The double doodle
7. The Rockre
8. Belly breathing
9. The Energizer
10. Calf pump
11. The Grounder
12. Gravity Glider
13. The Owl
14. The active arm
15. Brain buttons
16. Balance Buttons
17. Drink Water
18. Earth Buttons
19. Space buttons
20. Energy Yawn
21. Thinking Cap
22. Positive Points
23. Hook- up

Research Implementation Method

In the first stage of sampling from among the centers of the statistical population, all primary school girls of Tabriz city were selected by cluster sampling method of two education districts and finally two primary schools were selected. In the second stage, 30 children were voluntarily selected in the research and were randomly replaced in two experimental and control groups, and the post-test, which was the projection tests of drawing a mannequin and drawing a family, in the following order from both groups (experimental and control) taken:

A letter was sent to the parents of the children in the experimental group to participate in the brain gymnastics training to obtain their consent. Brain gymnastics training for children as an intervention program was conducted on the experimental group for two months and 3 sessions of 40 minutes each week. The sessions consisted of 5 minutes of warming up, 10 minutes of practicing learned movements, 10 minutes of teaching new movements, 10 minutes of performing new movements, and the last 5 minutes of cooling down. The teaching method was in such a way that cerebral gymnastics movements were taught. The control group was engaged in practicing lessons unrelated to body awareness or had non-educational activities during the training of the experimental group. Due to this training, the possibility of the control group learning more than the experimental group was eliminated during the intervention.

In the pre-test stage, all the children of the experimental and control groups were given a white A4 sheet, a pencil and an eraser, and a pack of 6 colored pencils, and they were told that: "Children, I want you to draw the shape of a person, and try Draw your best picture." There was no haste in collecting the paintings either. After the students handed in their drawings. After a short break, the students were given the papers for the next test, which is family drawing, and this time they were told to "draw your family" like in the previous test, there was no rush to receive the drawings. Each child who completed his drawing was asked questions about his drawing, which of course are at the level of research, such as: Is this your family?, Who are you?, Where are mom and dad? And the answers were included in the drawings. In this way, the pre-test was performed.

After the completion of 2 months of intervention of brain gymnastics exercises, the research tests were conducted again and finally the pre-test and post-test were scored according to specific instructions by 4 psychology students in order to obtain the objectivity of correct scoring. And after scoring the scores of 3 people who were close to each other, the average of those scores formed the data.

Statistical Analysis Methods

For statistical analysis, the data was analyzed using SPSS version 22 software and the one-way analysis of variance test at the level of 0.05.

FINDINGS

Table 1. The results of the covariance analysis test to investigate the difference in inconsistency in the post-test in the control and brain gymnastics groups.

Source of change	SS	DF	MS	F	Sig.	Eta
Pretest effect	432.11	1	432.11	1459.6	0.001	0.979
Group effect	153.58	1	153.58	351.29	0.001	0.741
error	10.193	27	0.377			
Total	7543	30				

According to Table 1, it can be seen that the group effect is significant at the 99% probability level ($p = 0.001$, eta square = 0.74, $F = 351.29$). That is, after adjusting the pre-test scores, there is a significant difference in the inconsistency in the post-test in the control and brain gymnastics groups.

Table 2. Adjusted mean of inconsistency in the post-test in two groups of control and brain gymnastics

group	N	Adjusted mean and standard error	Adjusted mean and standard error
Control	15	18.321	0.123
Brain gymnastics	15	31.113	0.123

According to Table 2, it can be seen that the inconsistency in the post-test in the two cerebral gymnastics groups ($m = 31.11$) is significantly higher than the control group ($m = 18.32$). Therefore, it is concluded that brain gymnastics exercises have a more significant positive effect in the post-test of the incompatibility of the experimental group in first and second grade girls.

DISCUSSION

The results of covariance analysis showed that brain gymnastics training has a significant positive effect on the incompatibility of primary school girls. There has been no report about this research finding in the research literature; But the result obtained with the results of the studies of Panzilion et al.(2020), Yontifex (2019), Pratama et al. (2022), Davarpanah et al. (2013), Jeon (2015). It has been recognized as a positive factor in increasing the feeling of well-being, self-esteem, mood, high social adaptations and cognitive function, as well as self-utility and better self-confidence, as well as reducing anxiety and depression disorders, and no inconsistent research was found.

In explaining this research finding, it can be stated that feelings of hopelessness, constant crying, anxiety and depression, sleep problems, irritability and impulsivity, anorexia, lack of interest in daily activities, poor concentration and avoiding important tasks such as studying are important. The most characteristic of children is maladjustment. Since elementary school children are the main stratum of society who build the future of society, sports psychologists and education specialists have been studying the factors affecting their health and well-being for a long time. Physical activity is one of the effective and necessary factors in children's mental and cognitive performance. Sports as a mediator and agent of communication between a person and himself or others. This multifaceted knowledge can be involved in social adaptations and personality. Davarpanah et al. (2013) stated that brain gymnastics can be done by everyone, especially elementary children, because brain gymnastics is an academic kinesiology program that can not only facilitate the flow of blood and oxygen to the brain, but also work and function. To stimulate the brain optimally, that is, to activate more of the right and left brain abilities, so that the cooperation between the right and left hemispheres of the brain can be connected by performing brain gymnastics, and the quality of life of children will also increase. The research results prove that brain gymnastics is a fun, easy and suitable exercise for everyday activities because it can be done at any time and in any place and it can clean the brain and clean it from negative thoughts as well. reduce tension, incompatibility, stress and anxiety and increase cognitive performance (Pragholapati, 2019; Moradi et al., 2019; Prathama et al., 2022).

CONCLUSION

The clear message of the present research is that through teaching brain gymnastics to children, can be improved incompatibility disorder can be dealt with, and happiness, peace and improvement of mental performance can be achieved.

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