

**PENGARUH LATIHAN KOGNISI TERHADAP KONSENTRASI ATLET INTELEKTUAL
RENDAH PADA CABANG OLAHRAGA OPEN-SKILL**

**THE EFFECT OF COGNITION TRAINING ON THE CONCENTRATION OF LOW INTELLECTUAL
ATHLETES IN OPEN-SKILL SPORTS**

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Abstrak

Penelitian ini membahas tentang pengaruh latihan kognisi (*life kinetik* dan *brain gym*) terhadap konsentrasi atlet intelektual rendah pada cabang olahraga *open-skill*. Cabang olahraga *open-skill* merupakan olahraga yang lingkungannya bergerak secara dinamis, bervariasi dan tidak dapat diduga. Penelitian ini dilakukan untuk mengetahui pengaruh latihan kognisi (*life kinetik* dan *brain gym*) terhadap konsentrasi atlet intelektual rendah pada cabang olahraga *open-skill* serta mengetahui perbedaan pengaruh diantara keduanya. Penelitian ini menggunakan metode eksperimen. Populasi sebanyak 48 atlet cabang olahraga *open-skill*. Sampel berjumlah 27 atlet yang diambil dengan teknik *purposive sampling*. Instrumen yang digunakan pada penelitian ini adalah *Advanced Progressive Matrices* (APM) dan *Concentration Grid Test* (CGT). Teknik analisis data yang digunakan yaitu uji *paired sample t-test* dan uji *independent sample t-test*. Hasil penelitian yang dilakukan menunjukkan bahwa terdapat pengaruh yang signifikan latihan *life kinetik* dan *brain gym* terhadap konsentrasi atlet intelektual rendah pada cabang olahraga *open-skill*, namun tidak terdapat perbedaan pengaruh yang signifikan antara latihan *life kinetik* dengan latihan *brain gym* terhadap konsentrasi atlet intelektual rendah pada cabang olahraga *open-skill*.

Kata kunci: *brain gym*, intelektual rendah, konsentrasi, latihan kognisi, olahraga, *open-skill*

Abstract

This research discusses the effect of cognitive training (life kinetik and brain gym) on the concentration of low-intellectual athletes in open-skill sports. This research was conducted to determine the effect of cognitive training (life kinetik and brain gym) on the concentration of low-intellectual athletes in open-skill sports and to determine the differences in influence between the two. This research is using experimental method. The population is 48 athletes in open-skill sports. The sample consisted of 27 athletes taken using purposive sampling technique. The instruments used in this research were Advanced Progressive Matrices (APM) and Concentration Grid Test (CGT). The data analysis technique used is the paired sample t-test and the independent sample t-test. The results of the research showed that there was a significant influence between life kinetik training and brain gym training on the concentration of low intellectual athletes in open-skill sports, but there was no significant difference in the influence between life kinetik training and brain gym training on the concentration of low intellectual athletes in sports. open skill sports.

Keywords: *brain gym*, low intellectual, concentration, cognitive training, sport, open-skill

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INTRODUCTION

Concentration is a person's ability to focus attention on one selected object at a certain time. This means that concentration will be preceded by a person's attention to a chosen object (Nusufi, 2016). Concentration plays an important role in an athlete's performance and is mutually sustainable. Concentration is defined as the mental effort an individual makes on things he considers important in any situation (Dereceli, 2018). Athletes must concentrate and give full attention to the match (Gustian, 2016).

The intelligence (intelligence) of an athlete in sports is very important, especially in open-skill sports where the environment moves dynamically and is unpredictable and requires high technical skills, complex tactics and playing strategies such as volleyball, football and basketball. Intellectual intelligence is the ability needed to carry out various mental activities: thinking, reasoning and solving problems (Andika et al., 2020). The level of intelligence will influence an athlete's ability to find solutions to problems faced in training and competition. Athletes with a high level of intelligence will more quickly solve problems faced in training or competitions than athletes with a low level of intelligence (Fitria et al., 2023).

Open-skill sports are sports where players are required to react in a dynamically changing, varied and unpredictable environment (volleyball, football, basketball). Meanwhile, closed-skill sports are defined as sports where the environment tends to be consistent and predictable (swimming, athletics, etc.) (Wang et al., 2013). Because the environment changes dynamically and unpredictably, athletes in open-skill sports must have a high level of concentration to be able to make quick decisions and also execute these decisions through movement.

Based on the results of the author's observations in the field, the author concluded that several athletes in open-skill sports experienced a decline in performance which indicated a low level of concentration, this is in line with research conducted by (Fatahilah et al, 2023) which explains that decreased performance in athletes can be caused by low concentration. This can be seen from several internal factors, including mistakes made by players during matches, both individually and as a team, as well as external factors such as shouts from coaches and spectators, weather and the media. As said by (Akbar et al, 2019) if concentration is low it can cause problems such as reduced movement accuracy, not being able to apply strategies so that it affects the mentality when playing. This is strongly supported by previous studies which reveal that the psychological state of players influences their performance on the field (Uludağ et al., 2021).

In overcoming the problems mentioned, the researchers concluded that training to improve concentration must be given to athletes, because previous studies stated that if concentration is not trained, athletes tend to fail in their concentration skills, which will affect the competition that will be held (Nusufi, 2016). Therefore, researchers want to compare two psychological methods that have been proven to be able to overcome problems related to basketball athletes' concentration levels (Cancela et al., 2015). The methods that will be tested are life kinetik and brain gym.

Life kinetik is a form of cognitive training based on the formation of locomotive habits combined with a high level of activity of the nervous system, especially the athlete's intelligence (Duda, 2015). There are three basic principles of life kinetik, namely flexibility in body control, visual and cognitive skills. The essence of this method lies in combining different motor activities thereby increasing the efficiency of an athlete's thinking. Life kinetik can increase new brain tissue, reduce neural symptoms, and can also improve the concentration and

performance of the visual system (Yildirim, 2022). Life kinetik has a system that provides cognition training through physical activity, using exercises that combine visual tasks, movement and cognitive tasks, creating new connections between brain cells.

Apart from life kinetik, the author also uses the brain gym training method, which is a brain exercise that combines head, eye and other movements simultaneously. Brain gym is a combination of movements that are developed to be more complex to improve the learning process and maximize individual abilities (Fields, 1993). The essence of brain gym training is to provide movements with certain patterns in the form of interventions, such as crossing the head, eyes or fingers to train brain coordination and breathing (Cancela et al., 2015). Brain gym has several benefits, including stimulating the brain, controlling stress, increasing self-confidence, and increasing concentration (Khairiyah et al., 2023).

Previously, there were several studies that had been carried out to determine the effects of life kinetik and brain gym training on athletes in open-skill sports, but the research was only limited to a few sports and there were still few that examined their effect on concentration in open-skill sports. The author sees that there is no research that compares the life kinetik and brain gym training models in open-skill sports. The author is interested in seeing the effect of life kinetik and brain gym training on low intellectual athlete concentration, especially in open-skill sports.

METHOD

The research method used in this research is experimentation. In general, the experimental method is defined as research that looks at and examines the consequences after the subject is given treatment on the independent variable. The research design used was a two-group pretest-posttest design, which can be seen more clearly in Table 1. The population taken in this research was 48 athletes who were athletes from various open-skill category sports, the sampling technique was purposive sampling with criteria training age 4-6 years and have a low intellectual level which will be identified through the Advanced Progressive Matrices (APM) test carried out by the Guidance and Counseling Services Technical Implementation Unit (UPTLBK). This test measures a person's intellectual capacity or level of intelligence by knowing that the total APM score for each individual will reflect the score qualifications. This test consists of 25 questions out of a total of 100 questions whose qualification assessment is carried out on a scale of one to five. This test is assumed to have met the validity and reliability criteria because it was created by UPTLBK and has become a standard test. So, the sample size was 27 athletes. The subjects will then be divided into two groups, namely the life kinetik group with 14 athletes and the brain gym group with 13 athletes.

Table 1. Two-group pretest-posttest design

Group A	O1	X1	O2
Group B	O1	X2	O2

Source: (Fraenkel et al., 2012)

The treatment will take place over 12 meetings with two meetings in one week (Demirakca et al., 2016). Before treatment, the subject will be given an initial test. Meanwhile, after the treatment has been given, a final test will then be carried out to see the effect of the treatment given to the subject. The life kinetik training program is carried out in stages with an intensity of 40 to 60% and is carried out with enjoyable activities (Demirakca et al., 2016). Researchers chose this method because they wanted to try out a cognitive training treatment, in this case life kinetik and brain gym training to increase the concentration of low-intellectual athletes in open-skill sports.

RESULTS

To determine the intellectual level of athletes, researchers used the Advanced Progressive Matrices (APM) instrument. The APM test results can be seen in Table 2.

Table 2. Advanced Progressive Matrices (APM) test results

Category	Number of Samples	Categorization
Average	11	Low Intellectual
Above average	16	Low Intellectual
Intelligent	14	High Intellectual
Very clever	7	High Intellectual
Total Sample	48	

Based on Table 2, from the data obtained through the APM test, there were 27 athletes who were classified as low intellectual and 21 athletes who were classified as high intellectual. Next, the researchers only took 27 athletes who were classified as low intellectuals and then divided them into two groups and given different cognitive training treatments (life kinetik and brain gym). The results of the initial test and final test data using the Concentration Grid Test (CGT) for the two groups that have been divided previously can be seen in Table 3

Table 3. Statistical Description of Low Intellectual Athletes

Group	Variable	Test	Min.	Max.	Mean	Std. Deviation
Life Kinetik (n=14)	Concentration	Beginning	2	10	7.14	2,143
		End	11	20	14.00	2,882
Brain Gym (n=13)	Concentration	Beginning	4	15	8.85	2,968
		End	11	36	17.08	6,714

Table 3 shows a statistical description of research data for the life kinetik and brain gym groups. For the initial test, the life kinetik group had an average value of 7.14, a standard deviation of 2.143, the lowest value was 2, and the highest value was 10. Meanwhile for the final test, the life kinetik group had an average value of eleven 14, standard deviation amounting to 2,882, the lowest value was 11, and the highest value was 20.

For the brain gym, the initial test had an average score of 8.46, a standard deviation of 2.367, the lowest score was 4, and the highest score was 11. Meanwhile, the final test in the brain gym group had an average score of 17.08. The standard deviation is 6.714, the lowest value is 11, and the highest value is 36. From the data presented, it can be concluded that there is an increase in concentration when the subject is given both life kinetik and brain gym treatment. After that, the researcher carried out a data normality test to find out whether the data was at the normal distribution level or not. The basis for decision making is that if the significance value is more than 0.05 then the data is normally distributed. Normality test data can be seen in Table 4.

Table 4. Normality test

Group	Variable	Test	Statistics	Sig.
Life kinetik (n=14)	Concentration	Beginning	0.154	0.200
		End	0.185	0.200
Brain Gym (n=13)	Concentration	Beginning	0.190	0.200
		End	0.203	0.148

Table 4 shows a significance value above 0.05. According to the Shapiro-Wilk method,

the basis for decision making is as follows: If the significance value is more than 0.05 then the residual value is normally distributed. or it could be said that the data taken is normally distributed.

After carrying out the normality test, the researcher will then carry out a paired sample t-test to find out whether there is a difference in the average of two paired samples. The two samples in question are the same sample but have two data. The basis for decision making in the paired sample t-test is if the Sig. (2-tailed) < 0.05, then there is a significant influence, whereas if the Sig. (2-tailed) > 0.05, so there is no significant effect. The test results for the life kinetik group can be seen in Table 5.

Table 5. Paired Sample T-test in the Life Kinetik Group

Group	t	df	Sig. (2-tailed)
<i>Life Kinetiks</i>	16,971	13	0,000

Table 5 shows that the significance value is 0.000. In accordance with the basis for decision making above, if the Sig. < 0.05, then there is a significant difference in the initial test and final test in the life kinetik group. Next, the Paired Sample t-test will also be carried out on the brain gym group based on the data that has been collected, which can be seen in Table 6.

Table 6. Paired Sample T-test on the Brain Gym Group

Group	t	df	Sig. (2-tailed)
<i>Brain Gym</i>	5,674	12	0,000

Table 6 shows that the significance value is 0.000. In accordance with the basis for decision making above, if the Sig. < 0.05, then there is a significant difference in the initial test and final test in the Brain Gym group.

Next, the researcher will carry out a hypothesis test using the independent sample t-test to find out whether there is a difference in the average of two unpaired samples. The two samples in question are different samples. The basis for decision making in the independent sample t-test is if the Sig. (2-tailed) < 0.05, then there is a significant difference in influence. The test results can be seen in Table 7.

Table 7. Independent Sample T-test Results

<i>Levene's Test for Equality of Variances</i>	<i>t-test for Equality of Means</i>				
	F	Sig.	t	df	Sig. (2-tailed)
<i>Equal variances assumed</i>	1,337	0.259	-1,156	24	0.259

In Table 7 in Test *Independent Sample t-test* shows the Sig value. (2-tailed) 0.259 > 0.05, then in accordance with the basis for decision making above if the Sig. (2-tailed) > 0.05, so there is no significant difference in the concentration of athletes given life kinetik and brain gym treatment.

DISCUSSION

In the life kinetik group, the researchers concluded that there was a significant effect of life kinetik training on the concentration of low intellectual athletes in open-skill sports. The complexity of open-skill sports where the environment is always changing dynamically requires a high level of concentration to eliminate various options so that the decision-making process can be effective (Monsma et al., 2017). Athletes with a high level of concentration will try to do their tasks as best as possible, speed up the process of learning new skills, increase self-confidence, control stress and anxiety based on experience and focus on factors that can be

controlled.

To achieve maximum performance, athletes and coaches in open-skill sports must not only focus on physical, technical and movement coordination, but athlete psychology must also be considered (Mulyadi et al., 2021). Based on the research and data processing carried out, there is a significant influence from providing the life kinetik training model on the concentration of low intellectual athletes in open-skill sports. Previous research says that concentration is the most important factor in getting the best performance on the field (Aguss & Yuliandra, 2020). This is in line with several previous studies which say that life kinetik training not only forms movement skills, but also activates cortical movement representations (Kurt & Çolak, 2022). This allows people who do life kinetik training to concentrate better. With life kinetik, cognitive abilities are improved and abilities such as perception, problem solving, attention and judgment are developed, which are important elements in supporting sports performance (Yarim et al., 2019).

Life kinetik training combined with several familiar movements in open-skill sports forces the brain to learn difficult and complex movements that allow the formation of new neural pathways in the brain (Gür et al., 2022). Life kinetik training aims to stimulate and improve the brain's working system so that concentration, intelligence, motivation, multitasking ability, attention and physical fitness can increase (Ansyah & Komarudin, 2023). Apart from the treatment given by the researcher, the increase in concentration was also caused by several other factors such as physical condition, the food consumed by the sample, and sleep hours on the day the test was carried out.

Furthermore, in the brain gym group, based on research conducted, it shows that there is a significant influence of brain gym training on the concentration of low intellectual athletes in open-skill sports. The essence of brain gym training is to provide movements with certain patterns in the form of interventions, such as crossing the head, eyes or fingers to train brain coordination and breathing (Cancela et al., 2015).

During the course of the research, the author discovered something interesting about the samples that were given brain gym training treatment, namely that the brain gym training model given to the sample turned out to significantly influence the sample's concentration level which can be seen from the pre-test and post-test results. Even though the improvement was not as big as the sample given the life kinetik training treatment, in practice the brain gym training was easier to do so that the sample could follow without any significant difficulties. Carrying out brain gym exercises regularly can produce stimulation and integration of various parts of the brain which in the long term can encourage communication between the right and left brain to become faster and more integrated for higher level reasoning.

According to (Ansyah & Komarudin, 2023) the brain gym training model can increase concentration, alertness, reaction, and the brain's ability to make plans and make decisions. Brain gym is a good training model for individual development, enabling rapid transformation and improving the quality of life of various age groups (Siroya et al., 2020).

Furthermore, regarding the difference in influence between life kinetik and brain gym training, based on research conducted, there is no significant difference in influence between life kinetik and brain gym training on increasing concentration in open-skill sports. This can happen because both life kinetik training and brain gym training are both cognitive training methods that have been proven to be able to improve mental skills. Because the essence of life kinetik training is to combine several varied movements that can activate and connect the cortical parts for the development of athlete efficiency during the training process (Komarudin et al., 2021). Meanwhile, brain gym helps activate hearing so that we can hear more clearly, remember the material before and during a test (Kulkarni & Khandale, 2019). Brain gym can help activate the whole mind and body.

Previous research by (Ansyah & Komarudin, 2023) says that motor skills can improve if

someone does something to sharpen the brain so that it can trigger the release of endorphins. Endorphin hormones make individuals feel more relaxed. Because individuals can focus more when the body is relaxed (Zhang et al., 2017). Based on the research results, the life kinetik group was slightly superior to the brain gym group, although not significantly, this could happen because the life kinetik exercises whose movements were much more difficult and complex than the brain gym exercises.

When conducting research, the author faced several obstacles when conducting research, where one of the main obstacles was the large number of activities that had to be carried out by the sample, making it difficult to find the right time to collect data both during the initial test and the final test. The author suggests coaches and athletes in open-skill sports to pay more attention to cognitive factors and start creating training programs to improve cognitive abilities, especially concentration. Collaboration with various parties may be needed so that the efficiency of the planned program is achieved and athletes can produce their best performance when competing.

CONCLUSION

From this research it can be concluded that both life kinetik training and brain gym training can increase the concentration of low intellectual athletes in open-skill sports. This can happen because both life kinetik training and brain gym training can both be used to sharpen the brain so that motor skills improve. But when compared between the two, there is nothing superior between life kinetik training and brain gym training, so both are very good for use by athletes in open-skill sports who want to train their concentration.

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