

# Investigation of the Effect of Life Kinetic Exercise on Performance in Dart Athletes

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## ABSTRACT

The aim of this study is to examine the effect of life kinetic exercises on performance in darts athletes. A total of 40 volunteer women, aged between 12 and 14, residing in Kilis city center and playing darts, participated in the study, 20 of which were in the experimental group and 20 in the control group. Life kinetic exercise was applied to the experimental group for 8 weeks along with dart training. In the control group, only dart training was applied. The data were analyzed in the SPSS package program. Normality analysis of the data was done with the Shapiro-Wilk test. Paired Sample T-Test was used for the comparison of normally distributed data within groups. At the end of the study, statistically significant improvements were detected in the comparison of the pre-test and post-test values of the experimental group. It is identified that there was not any significant difference between the comparison of the pre-test and post-test values of the control group. As a result, it can be said that life exercises applied to dart athletes contribute to the increase of sports performance by providing improvements in the mental and physical skills of individuals.

**Keywords:** Darts, Life Kinetics, Performance.

## INTRODUCTION

In today's life, where technological developments accelerate and information is easily accessible, developments are observed in different fields every day. In these days when the starting age for sports is lowered to younger age groups and very different education systems are emerging, instructional systems are emerging to help children gain sports and complete their development. Individuals make a communication with the environment through motor behavior.

Motor skills are very important in terms of recognizing children's independence and their role in managing and directing, their adaptation to the environment and their presence in social activities. Life kinetic is a new training model developed to maintain the mental and physical capacities of athletes at any time. It is stated that it will have a significant developmental effect on focus, reaction and ability to cope with difficulties, especially in childhood athletes, youth and adults. Life kinetic exercises combine motoric movements and intellectual content as a whole, and create new neuron networks in the brain (Peker, 2014). In this case, it is thought that it will affect the cognitive performances of the athletes such as perception, decision-making, concentration, as well as the movement element, as well as improve the coordinative abilities of the athletes and increase the athletic performance of the athlete (Lutz, 2011). When the literature on life kinetic exercise, which is a training model that emerged in Germany, is examined, it has been seen that there is a limited number of scientific studies both abroad and in our country. Therefore, with this study, it is aimed to reveal whether life kinetic training has an effect or not on sportive performance.

## MATERIAL AND METHOD

A total of 40 women, 20 in the experimental group and 20 in the control group, residing in the city center of Kilis and aged between 12 and 14 participated in the study. It was noted that the experimental subjects participating in the study did not have any discomfort. In addition to dart training, life kinetic exercises were applied to the experimental group in our study during 8 weeks. For control group only dart training was applied. In order to measure the dart performance of the subjects, before and after the 8-week training, 10 shots were made to the dart target board from 5 different distances, 100 cm, 150 cm, 200 cm, 250 cm and 300 cm, and the total scores for each distance were recorded.

**Height and weight measurement:** Height measurement values of the subjects were made in shorts and bare feet.

Weight measurements were taken on a scale with an accuracy of 0.01 kg, and the values were written in centimeters and kilograms.

**Determination of Body Mass Index:** Calculation of the subjects' body mass indexes was determined by the formula below.  $BMI = \text{Weight}(\text{kg}) / \text{Height}(\text{m})^2$

**Statistical Analysis:** SPSS statistical package program was used in the evaluation of the collected data. Normality analysis of the groups was done with the Shapiro-Wilk test. Paired Sample T test was used to compare the within-group pre-test and post-test values of normally distributed data. In this study, the error level was accepted as 0.05.

**Life Kinetic Exercise Program:** In the life kinetic exercises, which were performed 3 days a week for 8 weeks, the experimental group performed movements that were easy to perform in the first weeks, and movements that were more difficult to perform in the following weeks.

Table 1: Life kinetic exercise program

| Week     | Exercise  | Time and Repetition              | Equipment                     |
|----------|---|----------------------------------|-------------------------------|
| 1st week | Toss the ball in the air with one hand  | 5 min. x 5 reps<br>Break 2-3 min | Tennis balls                  |
| 2nd week | Toss the ball with both hands   | 5 min. x 5 reps<br>Break 2-3 min | Tennis balls                  |
| 3rd week | Toss the ball in the air with one hand while walking                              | 5 min x 5 reps<br>Break 2-3 min  | Tennis balls                  |
| 4th week | Toss the ball in the air with one hand while walking back                         | 5 min x 5 reps<br>Break 2-3 min  | Tennis balls                  |
| 5th week | Walking by doing slaloms, throwing balls in both hands straight and crossing them | 5 min x 5 reps<br>Break 2-3 min  | Tennis balls and funnels      |
| 6th week | Bouncing a basketball on the court<br>While hovering a ball in one hand           | 5 dk x 5 reps<br>Break 2-3 min   | Tennis balls and basket balls |
| 7th week | Capturing the thrown ball on command  | 5 min x 5 reps<br>Break 2-3 min  | Handball balls                |
| 8th week | Catching a bouncing ball thrown from behind against the facing wall               | 5 dk x 5 reps<br>Break 2-3 min   | Small and big balls           |

When we examine table 1, there are movements made in the life kinetic exercise program

## RESULTS

Table 2: Descriptive statistical values for the subjects

| Variables                | Experimental Group<br>Average $\pm$ S.S. | Control Group<br>Average $\pm$ S.S. |
|--------------------------|--|-------------------------------------|
| Age (year)               | 13,6 $\pm$ 1,12                          | 13,7 $\pm$ 1,18                     |
| Height (cm)              | 156,6 $\pm$ 3,01                         | 155,4 $\pm$ 2,98                    |
| Weight (kg)              | 52,78 $\pm$ 1,86                         | 53,29 $\pm$ 2,05                    |
| BMI (kg/m <sup>2</sup> ) | 21,47 $\pm$ 1,55                         | 22,06 $\pm$ 1,62                    |

When Table 2 is examined, it is observed that the mean values of age, height, weight, and body mass index of the control and experimental groups.

Table 3: Pre-test and post-test values of the experimental group

| Variables       | Experimental group pre-Test Average $\pm$ S.S. | Experimental group post-Test Average $\pm$ S.S. | T      | P      |
|-----------------|--|---|--------|--------|
| 100 cm distance | 20,3 $\pm$ 4,38                                | 28,3 $\pm$ 4,18                                 | -6,751 | 0,000* |
| 150 cm distance | 22,2 $\pm$ 3,99                                | 24,6 $\pm$ 4,87                                 | -3,957 | 0,000* |
| 200 cm distance | 18,4 $\pm$ 3,27                                | 22,8 $\pm$ 3,68                                 | -4,003 | 0,000* |
| 250 cm distance | 16,6 $\pm$ 3,19                                | 21,6 $\pm$ 3,49                                 | -4,319 | 0,000* |
| 300 cm distance | 14,3 $\pm$ 3,11                                | 15,6 $\pm$ 3,17                                 | -5,102 | 0,000* |

\*( $p < 0,05$ ). Meaningful

When we examine Table 3; It was determined that there were statistically significant increases between the pre test and post test values in all of the performance values of the experimental group ( $p < 0.05$ ).

Table 4: Pre-test and post-test values of the experimental group

| Variables       | Experimental group pre-Test Average $\pm$ S.S. | Experimental group post-Test Average $\pm$ S.S. | T      | P     |
|-----------------|--|---|--------|-------|
| 100 cm distance | 22,1 $\pm$ 3,77                                | 23,0 $\pm$ 4,02                                 | -2,099 | 0,071 |
| 150 cm distance | 21,3 $\pm$ 3,41                                | 21,8 $\pm$ 3,69                                 | -2,294 | 0,062 |
| 200 cm distance | 18,7 $\pm$ 3,00                                | 19,4 $\pm$ 2,65                                 | -2,331 | 0,056 |
| 250 cm distance | 17,4 $\pm$ 3,10                                | 18,0 $\pm$ 3,01                                 | -2,128 | 0,068 |
| 300 cm distance | 16,2 $\pm$ 2,67                                | 16,5 $\pm$ 2,98                                 | -1,967 | 0,101 |

\*( $p < 0,05$ ). Meaningful

When we examine Table 4; No statistically significant improvements were found between pretest and posttest values in all performance values of the control group ( $p > 0.05$ ).

## DISCUSSION AND CONCLUSION

Life Kinetic includes a system that provides brain training through physical activity, using exercises that create new connections between brain cells, combining visual tasks, movement and cognitive tasks. The exercises are about concentration, problem solving skills, reflexes, balance, coordination and also the ability to cope with stress for performance athletes.

In a study conducted to examine the effect of life kinetic training on cortisol distribution and margin of error in psychological stress situations of 14 young golfers aged 12-17 years, the margin of error of the experimental group was significantly higher at the rate of 51.75% than the post-test results of the control group showed a decrease. When the experimental and control groups were compared in terms of cortisol values measured before, during, and after the competition, the post-test cortisol value of the experimental group measured during the competition was found to be significantly lower, by 39%, than the pre-test cortisol value measured during the competition (Lutz, 2014).

In another study [4] divided the subjects into two groups as experimental and control groups in his study that aimed to examine the effects of life kinetics on balance, attention and reaction time of young male basketball players. Auditory and visual reaction times of the study group were found to be significantly shorter than the control group. In our study on darts athletes with high mental focus, statistically significant increases were found between the pretest and posttest values in all of the performance values of the experimental group ( $p < 0.05$ ).

No statistically significant improvements were found between pretest and posttest values in all of the performance values of the control group ( $p > 0,05$ ).

It is known that physical and mental work activities affect the development of motor skills positively. Physical and mental work can be made difficult in two different ways. First, the cognitive task, which we call the mental task, can be made more complex by making it more difficult. Second, the way the exercise is performed can be made more difficult.

In this way, auto-response is prevented and new stimuli are generated.

Because the brain is constantly working and discovering different methods to adapt to new conditions. Basically, life kinetic consists of fun exercises that aim to improve mental capacity and mobility. Life kinetic exercises, which force all areas of the brain to learn and practice difficult and complex movements, allow new neural pathways to be formed in the brain with this feature. When we examine the studies in the literature; (Buraczewski, 2016) emphasizes that life kinetic training applied on female football players has a statistically significant effect on the kinesthetic discrimination and rhythm skills of the coordination components of the athletes in the dominant and non-dominant extremities.

In the study conducted by Taşkın and Biçer (Taşkın & Biçer, 2015) it was determined that 8-week proprioception training provided increases in individuals' quickness, agility and acceleration performances.

In a study conducted on 34 children aged 9-12 years with learning problems, the post-test attention and fluent intelligence values of the experimental group were found to be significantly higher than the pre-test attention and fluent intelligence values (Lutz, 2011).

Life kinetic training can be applied to increase the athletic efficiency of the players and athletes, by enabling them to judge how correct their decisions are during the decision-making process, and to learn how to use their intelligence throughout the entire competition.

Life kinetic is a training model that includes exercises that require continuous and active thinking. Life kinetic training helps to create new neural connections in the brain by combining intellectual content as a whole, simultaneously and dynamically.

In this way, athletes can reach the level where they can grasp quickly and make quick decisions in a short time (Lutz, 2011).

The learning speed and stability of skills is directly dependent on the level of various coordinative abilities. Skills need to be coordinated for the highest use of technical and tactical skills (Jain et al., 2015). Good performance in sports branches is determined by the harmony of motor coordinative abilities (Faigenbaum et al., 2013). Regarding the processes underlying mental rotation, (Funk et al., 2014); believes that the figures spinning in the mind is not just a mental effort, it is related to the physical movements of the individual. This understanding shows that mental processes mediate motor processes. In the researches, elite athletes in different branches and teams reported that they felt the effects of life kinetic exercises after the applications and that they had positive contributions on their coordinative abilities (Peker & Taşkın, 2016). (De Guast et al., 2013); observed an increase in the attention-grabbing skills of the athletes in the psychological skills training performed with wheelchair water ski athletes.

In line with the information obtained from the researches, life kinetics revitalizes the neuronal learning process. Learning takes place through synaptic plasticity (Nelson, 2000).

It has been determined that neuroplasticity in the brain in this process is especially in the areas of the brain related to vision, hearing and motor skills (Hyde et al., 2009). In line with these results, it can be said that life kinetic training will increase the attention and concentration skills of the athletes during competition or training and can improve their decision-making skills.

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