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THE EFFECTS OF LIFE KINETIC EXERCISES ON TECHNICAL SKILLS AND MOTOR SKILLS PERFORMANCE IN YOUNG FOOTBALL PLAYERS

Yaşar Arslan[1],
Egemen Ermiş[2i]
[1]Physical Education and Sports Teacher,
Ministry of National Education,
Samsun, Turkey
[2]Yaşar Doğu Faculty of Sport Sciences,
Department of Coaching Training,
Ondokuz Mayıs University,
Samsun, Turkey

Abstract:
The place of Life Kinetic exercises in technical skill and motor skill performance of football players is gaining great importance in science. For this reason, the present study aims to examine the effects of this training method, which is used all over the world, on the technical skills and motor skill performance of football players of this. The study was conducted on a total of 40 football players, 20 in the experimental group and 20 in the control group, who were actively training at Çarşambaspor club at least three days a week. While the control group continued their routine training, the experimental group was asked to train for 30 minutes with Life Kinetic exercises for 8 weeks, 3 days a week, in addition to their routine training. Mor and Christian Football Aptitude Test, Yeagley Football Test and Motor Skill tests were applied to the football players. In terms of total, a statistically significant difference was found between the first and the second measurement values of T agility, vertical jump, flexibility, 20-meter sprint, long jump, dribbling, pass accuracy, shooting, and kick-ups ($p<0.005$). In terms of total, a statistically significant difference was found between the first and last measurement values of dribbling, pass accuracy, shooting test, kick-ups, 20-meter sprint, vertical jump, and standing long jump test ($p<0.005$). A statistically significant difference was found between the first and last measurement values of the experimental group in dribbling, pass accuracy, shooting, kick-ups, 20-meter sprint, and standing long jump tests ($p<0.005$). As a result of the study, it was concluded that Life Kinetic exercises provide a positive development in technical skills and some motor skill performances of the footballers and that they have a significant effect, especially on dribbling, pass accuracy

[i] Correspondence: email egedeath@hotmail.com

and shooting performance of the football players. In addition, even though statistically significant differences were not found in some measurements, it was found that the measurements of the experimental group were higher than those of the control group. For this reason, infrastructure athletes can train every day with Life Kinetic exercises for the development of basic skills such as more contact with the ball, dribbling, shooting and passing, while coaches can include Life Kinetic exercises in their training plans.

Keywords: football, technical skill, motor skill, Life Kinetic

1. Introduction and Purpose

Football is one of the most popular sports in our country and in the world today (Günay, 2008). Due to the high interest in football, the expectations of fans increase and the expectations footballers to be successful causes anxiety in them (Çankaya, 2005).

An increase in game tempo during activity in team sports has brought with it developing international trends. Some of the developing demands are tackles with high competition power and increased diversity in tactical and technical capacity (Minz, 2013).

Technical skills in football can be briefly explained as all the activities that the football player does with the ball (Muniroğlu, 2005). In order for skills such as dribbling, passing, and shooting, which form the basis of football, to be displayed with a high level of performance, players must have developed their technical skills (Tokgöz and Dalgakıran, 2015). For this reason, the necessity of planning and applying the best and most up-to-date training methods have emerged in order to increase the performance of players. By questioning the accuracy of the decisions made by players during the decision-making process, it is questioned how and at what level they should use their intelligence during the game. For this reason, the idea of using renewed training programs and models in football has emerged. Life Kinetic exercises is a training model that enables players to think actively during the competition (Lutz, 2010).

It is stated that the main components in performing Life Kinetic exercises are movement and training science, anatomy and kinesiology, training method, modern nerve and brain system research, and measurement of visual capacity. It can be said that the effects of Life Kinetic exercises on individuals and athletes are mental and physical performance development, minimizing mistakes, increasing self-confidence, reducing pressure, strengthening memory, providing maximum concentration, better quality and faster learning.

Life Kinetic exercises provide athletes with a chance for quality performance and healthy life by contributing to the more active and effective use of the brain parts that the athletes cannot use very actively. Life Kinetic exercises have started in Europe recently, their popularity has increased, and they have become a frequently used training system in the infrastructures of the world's leading football clubs. There are not many scientific studies on these new Life Kinetic trainings. It has been found that none of the studies examining the effects of Life Kinetic exercises has been conducted to determine their

effects on football. Further studies are needed to determine the contribution of Life Kinetic exercises to football technical skills and motor skill performance, to assist future studies, and to support the creation of scientific literature. For this reason, the aim of our study is to examine the effects of Life Kinetic exercises, which make the brain work effectively and enable the athletes to think actively in order to perform challenging and complex movements, on football technical skills and motor skill performance.

2. Method

The study was conducted with players in the U11 (born in 2010), U12 (born in 2009) and U14 (born in 2007-2008) groups, who actively trained at least three days a week in Çarşambaspor club. Four different age groups (U11-U12-U14) from Çarşambaspor club, with a total of 40 male football players, 20 as the control group and 20 as the experimental group, participated in the study. Each of the four different age groups was divided into two groups, half as the control group and the other half as the experimental group. Controlled first test-two mid-tests and a post-test model were used in the study. No special effort was made to equalize the groups through neutral assignment, but as much effort as possible was made to have participants with the same characteristics. The groups were assigned randomly. While the control group was performing their normal training programs, the experimental group was asked to train for 30 minutes with Life Kinetic exercises for 8 weeks in accordance with the protocol created by the researchers, three days a week in addition to their normal training program. Football players and parents were informed, since the football players were under the age of 18, "Children Consent Forms" were given and approvals were obtained. At the beginning of the study, at the fourth week, at the sixth week and at the end of the study, football technical skill tests were given including Mor and Christian Football Aptitude Test (dribbling, accurate passing, accurate shooting) and Yeagley Football Test (kick-ups test); and Motor Skill Tests were used such as T agility test, 20-meter sprint test, standing long jump test, vertical jump test and sit and reach flexibility test. Which test the subjects would participate in was determined according to the availability of the subjects and randomly. Approval was taken from Ondokuz Mayıs University Ethics Committee to conduct the study.

2.1 Statistical Analysis

Excel program (Microsoft Office, Professional Plus 2019) was used for calculating and classifying the data and SPSS.22 package program was used for statistical analysis. Data were presented as arithmetic mean and standard deviation. The normality distribution of the data was analyzed with the Kolmogorov-Smirnov test. The difference between the means of two independent groups was investigated with a t-test between independent variables for normally distributed data, and with the Mann-Whitney U test for the data that were not normally distributed. Paired t-test and Wilcoxon sign test were used to

compare the related variables according to whether the data were normally distributed or not. The significance level was taken as 0.05 in all statistical analyses.

3. Results

Table 1: Comparison of pre-test and second-test technical skills of footballers

Measurement time		n	Mean	St. deviation	t	p
Dribbling test (sec)	Pre-test	40	19.82	2.01	4.96	0.000**
	Second-test	40	18.29	1.27		
Pass accuracy test	Pre-test	40	5.75	2.39	-8.99	0.000**
	Second-test	40	9.43	1.89		
Shooting test	Pre-test	40	69.05	26.04	14.95	0.000**
	Second-test	40	8.35	1.97		
Kick-up test	Pre-test	40	46.98	13.22	-3.86	0.000**
	Second-test	40	51.08	12.57		

**p<0.005

A statistically significant difference was found between pre-test and second-test dribbling, pass accuracy, shooting and kick-up test values (p<0.005).

Table 2: Comparison of pre-test and second-test motor skills of footballers

Measurement time		n	Mean	St. deviation	t	p
T-test (sec)	Pre-test	40	11.02	1.78	-0.20	0.839
	Second-test	40	11.08	0.67		
20-metre test (sec)	Pre-test	40	3.57	0.30	6.88	0.000**
	Second-test	40	3.35	0.35		
Long jump test (cm)	Pre-test	40	2.04	0.27	-2.15	0.038*
	Second-test	40	2.09	0.28		
Vertical jump test (cm)	Pre-test	40	31.10	5.31	-1.44	0.157
	Second-test	40	32.05	4.80		
Flexibility test right (cm)	Pre-test	40	11.02	1.78	0.00	1.00
	Second-test	40	11.08	0.67		
Flexibility test left (cm)	Pre-test	40	3.57	0.30	-0.06	0.953
	Second-test	40	3.35	0.35		

**p<0.005

No statistically significant difference was found between the pre-test and second-test t-test, vertical jump test, flexibility test right and flexibility test left values (p>0.005). A statistically significant difference was found between the pre-test and second-test 20-meter and long jump test values (p<0.005).

Table 3: Pre-test and post-test comparisons of footballers

Measurement time		N	Mean	St. deviation	t	p
Dribbling test (sec)	Pre-test	40	19.82	2.01	5.720	.000**
	Post-test	40	17.21	2.86		
Pass accuracy test	Pre-test	40	5.75	2.39	-8.315	.000**
	Post-test	40	9.03	1.69		
Shooting test	Pre-test	40	69.05	26.04	-4.938	.000**
	Post-test	40	100.28	28.09		
Kick-up test	Pre-test	40	46.98	13.22	-4.967	.000**
	Post-test	40	53.18	14.89		
T-test (sec)	Pre-test	40	11.02	1.78	.122	.903
	Post-test	40	10.99	0.59		
20-metre test (sec)	Pre-test	40	3.57	0.30	8.598	.000**
	Post-test	40	3.30	0.30		
Long jump test (cm)	Pre-test	40	2.04	0.27	-3.813	.000**
	Post-test	40	2.13	0.25		
Vertical jump test (cm)	Pre-test	40	31.10	5.31	-1.740	.090
	Post-test	40	33.08	7.55		
Flexibility test right (cm)	Pre-test	40	22.80	6.90	.744	.461
	Post-test	40	22.45	6.51		
Flexibility test left (cm)	Pre-test	40	23.18	6.86	-.521	.605
	Post-test	40	23.43	7.24		

**p<0.005

No statistically significant difference was found between the pre-test and post-test, t-test, vertical jump, flexibility test right and flexibility test left test values (p>0.005). A statistically significant difference was found between pre-test and post-test dribbling, pass accuracy, shooting test, kick-up test, 20-meter test and long jump test (p<0.005).

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

Measurement time		N	Mean	St. deviation	t	p
Dribbling test (sec)	Pre-test	20	20.04	2.55	5.450	.000**
	Post-test	20	17.39	1.48		
Pass accuracy test	Pre-test	20	5.70	2.32	-6.625	.000**
	Post-test	20	9.45	1.67		
Shooting test	Pre-test	20	64.90	24.80	-4.587	.000**
	Post-test	20	106.65	33.44		
Kick-up test	Pre-test	20	48.05	14.71	-5.115	.000**
	Post-test	20	56.20	17.65		
T-test (sec)	Pre-test	20	11.31	0.85	3.362	.003*
	Post-test	20	10.95	0.66		
20-metre test (sec)	Pre-test	20	3.60	0.34	6.721	.000**
	Post-test	20	3.31	0.31		
Long jump test (cm)	Pre-test	20	2.02	0.26	-3.365	.003*
	Post-test	20	2.13	0.28		
Vertical jump test (cm)	Pre-test	20	30.75	6.17	-1.098	.286
	Post-test	20	32.90	9.75		

Flexibility test right (cm)	Pre-test	20	22.50	6.34	1.942	.067
	Post-test	20	21.55	6.02		
Flexibility test left (cm)	Pre-test	20	23.05	6.38	1.428	.169
	Post-test	20	22.25	6.50		

**p<0.005

No statistically significant difference was found between the pre-test and post-test vertical jump, flexibility test right and flexibility test left values of the experimental group (p>0.005). A statistically significant difference was found between pre-test and post-test dribbling, pass accuracy, shooting, kick-up, 20-meter, and long jump test values of the experimental group (p<0.005).

Table 5: Pre-test and Post-test comparison of the control group

Measurement time		**N**	**Mean**	**St. deviation**	**t**	**p**
Dribbling test (sec)	Pre-test	20	19.60	1.29	3.267	.004*
	Post-test	20	17.04	3.81		
Pass accuracy test	Pre-test	20	5.80	2.53	-5.176	.000**
	Post-test	20	8.60	1.64		
Shooting test	Pre-test	20	73.20	27.21	-2.481	.023*
	Post-test	20	93.90	20.38		
Kick-up test	Pre-test	20	45.90	11.81	-2.286	.034*
	Post-test	20	50.15	11.15		
T-test (sec)	Pre-test	20	10.73	2.36	-.546	.592
	Post-test	20	11.02	0.54		
20-metre test (sec)	Pre-test	20	3.55	0.25	5.417	.000**
	Post-test	20	3.28	0.30		
Long jump test (cm)	Pre-test	20	2.07	0.28	-1.987	.062
	Post-test	20	2.13	0.24		
Vertical jump test (cm)	Pre-test	20	31.45	4.43	-1.492	.152
	Post-test	20	33.25	4.66		
Flexibility test right (cm)	Pre-test	20	23.10	7.58	-1.492	.152
	Post-test	20	23.35	7.00		
Flexibility test left (cm)	Pre-test	20	23.30	7.48	-1.809	.086
	Post-test	20	24.60	7.90		

**p<0.005

No statistically significant difference was found between the pre-test and post-test vertical jump, long jump, t-test, flexibility test right and flexibility test left values of the control group (p>0.005). A statistically significant difference was found between pre-test and post-test dribbling, pass accuracy, shooting, kick-up test, and 20-meter test values of the control group (p<0.005).

4. Discussion and Conclusion

No statistically significant difference was found between the pre-test, second-test, third-test and post-test values of the experimental and control groups in terms of age, height

and body weight. A slight increase was found in height and body weight, which is thought to be due to the physical development of the athletes during the measurements. In this study, no statistically significant difference was found between the pre-test, second-test and post-test dribbling values of the experimental and control groups. However, a statistically significant difference was found between the third dribbling test values of the experimental and control groups.

In a study conducted on 13-14-year-old football players, Bozkurt (2000) found slalom with ball values of 13-year-old players as 11.69±1.64 sec. and slalom with ball values of 14-year-old players as 11.88±1.83 sec.

In this study, no statistically significant difference was found in the pre-test, third-test and post-test pass accuracy values of the experimental and control groups. A statistically significant difference was found between the second-pass accuracy tests of the experimental and control groups.

Tevetoğlu (2021) found significantly better results in the experimental group than the control group for the last-shot on target dominant foot in senseball exercises in football players.

In Sabah (2020)'s study, when the technical measurement differences of the groups were compared before and after small-sided games, a higher increase was found in the test group in dribbling, passing and shooting tests. In the second test of our study, a result similar to the studies of Tevetoğlu and Sabah was found.

No statistically significant difference was found in the shooting accuracy test values of the experimental and control groups. Yıldırım (2021) found a significant difference between the PBAG group and the other groups in Flick shooting score. A significant difference was found between the LKAG and PBAG groups and the other groups in the Flick shooting score. No statistically significant difference was found in the kick-up tests of the experimental and control groups.

No statistically significant difference was found in the T-tests of the experimental and control groups. Sabah (2020) compared the physical measurement differences of the groups before and after small-sided games, and found that there was a greater increase and a significant difference in t-test values of the experimental group. In his master's thesis on fencers, Mugan (2019) found no significant difference in the effect of Life Kinetic training on the agility performance of athletes. Considering the T-Agility test results in this study, there was a statistically significant difference between the pre-test and post-test results of the control group, while there was no statistically significant difference in the pre-test and post-test results of the experimental group.

No statistically significant difference in the 20 m sprint tests of the experimental and control groups. When Mugan (2019) examined the pre-test and post-test speed values of the study and control groups, no significant difference was found between the pre-test and post-test results. Mugan (2019) found no significant difference in the effect of Life Kinetic training on the speed performance of athletes. Results similar to ours were obtained in these two studies, and no statistically significant difference was found between the 20-meter sprint test.

No statistically significant difference was found in the standing long jump tests of the experimental and control groups. Genç (2019) found no significant difference between the pre-test and post-test vertical jump and horizontal jump values of the study and control groups. Mugan (2019) found no significant difference in the effect of Life Kinetic training on the jumping performance of the athletes. Similar results to our study were obtained in the studies, and no statistically significant difference was found between the standing long jump tests.

No statistically significant difference was found in the vertical jump tests of the experimental and control groups. Genç (2019) examined the pre-test and post-test speed, agility, vertical jump, horizontal jump and claw strength values of study and control groups and no significant difference was found between the pre-test and post-test results. Mugan (2019) found no significant difference in the effect of Life Kinetic training on the agility, speed and jump performances of fencers.

No statistically significant difference was found in the flexibility tests of the experimental and control groups. Sabah (2020) compared the physical measurement differences before and after the small-sided games, and showed that there was a greater increase and a significant difference in the sit and reach flexibility test values of the experimental group.

A statistically significant difference was found between dribbling, passing accuracy, shooting, kick-up pre-test and second-test values. İri et al (2009) determined that the values of slalom with the ball, shooting to the goal, bouncing the ball on the head, and kick-ups showed a $p<0.05$ significance level difference as a result of the tests performed after the football skills training they applied. Şen (2018) found no significant difference in shooting and dribbling tests in the experimental group. Erkek (2021) found that post-test kick-up (Yeagley), shooting, passing, dribbling and wall pass test values of the experimental group football players were statistically significant. It can be seen that the results of İri et al (2009), Şen (2018) and Erkek (2021) were similar to the results of our study.

No statistically significant difference was found between the pre-test and second test t-test, vertical jump test, flexibility test right, and flexibility test left test values.

A statistically significant difference was found between the pre-test and second test 20 meters and Long Jump test values.

In terms of total scores, no statistically significant difference was found in the pre-test and second test t-test, vertical jump test, flexibility test right, and flexibility test left tests. A statistically significant difference was found between the pre-test and the second test dribbling, passing, shooting test, kick-ups, 20-meter sprint, and standing long jump test.

No statistically significant difference was found between the pre-test and post-test values of the experimental group in the vertical jump test, flexibility test right, and left flexibility test. A statistically significant difference was found between the pre-test and post-test values of the experimental group in dribbling, passing, shooting, kick-up, 20 meters, and standing long jump tests.

No statistically significant difference was found between the pre-test and post-test values of the control group in the vertical jump test, standing long jump test, t-test, flexibility test right and left flexibility test. A statistically significant difference was found between the pre-test and post-test values of the control group in dribbling, passing accuracy, shooting test, kick-up test and 20-meter sprint test.

When the above results were compared with our literature review, it can be seen that the research values of İri et al. (2009), Şen (2018), Erkek (2021), Mugan (2019), Genç (2019), Sabah (2020) were similar with our research.

When the experimental and control groups were compared in our study, although there was no statistically significant difference in all measurements; the second, third, and post-test shooting accuracy scores; pre-test, second, third, and post-test kick-up, passing accuracy and t-test scores were higher in the experimental group. For this reason, it can be said that the exercises had a positive effect on the shooting accuracy, passing accuracy, kick-up, and t-test scores.

Conflict of Interest Statement

The authors declare no conflicts of interest.

About the Authors

Yaşar Arslan, Physical Education and Sports Teacher, Ministry of National Education, Samsun, Turkey.

Dr. Egemen Ermiş, Yaşar Doğu Faculty of Sport Sciences, Department of Coaching Training, Ondokuz Mayıs University, Samsun, Turkey.

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