



The effect of using rhythmic kinetic exercises on improving the kinetic speed of junior soccer players

Professor Dr. Mahmoud Hassan Al-Hofy¹, Dr. Mahmoud Mohamed Refat Torky² Abdel Hady Mahmoud Abdel Hady¹

¹*Professor Emeritus of Football, Department of Theories and Applications of Team Sports and Racquet Sports - College of Physical Education - Sadat City University.*

²*Lecturer, Department of Theories and Applications of Team Sports and Racquet Sports - College of Physical Education - Sadat City University.*

³*PhD researcher, Department of Theories and Applications of Team Sports and Racquet Sports - Faculty of Physical Education - Sadat City University.*

Abstract

The research aims to identify the effect of using rhythmic kinetic exercises on improving the kinetic speed of junior footballers, where the researcher used the experimental method, and used the experimental design with measurement (pre-post) for two groups, one experimental and the other controlling, due to its relevance to the nature of this research. The research sample was chosen by the intentional method from football juniors at Al Salam Sports Club in Sadat City, Menoufia Governorate, under 15 years old, who are enrolled in the Menoufia Football League in the 2020/2021 sports season. The injury, so that the number of the sample members (22) young people were divided into two equal groups, one experimental and the other controlling the strength of each of them (11) young people. The experimental and control groups were subjected to the application of the proposed training program using rhythmic exercises. Where the proposed training program was applied during the stage of special preparation, and preparation for matches for a period of (10) weeks, with several (4) training units during the week, while the control group completed the implementation of the program conventional during the same period. The most important results of the research found that there were statistically significant differences between the mean of the two-dimensional measurements of the experimental group and the control group in the kinetic speed under study in favor of the dimensional measurement of the experimental group.

Keywords: kinetic rhythm - kinetic speed - junior soccer players.

Introduction and research problem:

Football activity witnessed rapid development during the current century. This development did not come from chance or individual self-action. Still, it came because of the contribution of specialists from

officials and academics to this game through their research and scientific studies (theoretical and applied), where the various sports sciences had a major role in that development.

Jamal Abu Bishara (2010) points out that reaching the level of players to the degree that enables them to achieve





the requirements of modern play requires the establishment of the player from his childhood according to codified and appropriate training programs in all aspects, physical, skill, planning, physiological, mental, psychological, and harmonic to build a base of talented players (2:5).

The harmonic capabilities are the key to the success of the processes of teaching, improving, and developing the level of skill performance

The availability of these abilities correctly and accurately helps in good thinking and ease of learning and development of kinetic skills. The story of the level of harmonic abilities plays an important role when acquiring kinetic skills. These skills express the skill level's complex basis and develop these abilities. Combinatorial abilities It combines expectation and the conditions of kinetic and psychological performance. It is the preparation for kinetic performance, while kinetic performance is the actual implementation of the movement. It represents the coordination between the central nervous system and muscles during the stages of skillful performance. (12:12) (14:10) (18:20)

Rhythm is considered one of the effective aids in the education and training processes, as it is linked to the kinetic sense and aid in clarifying and perceiving movement. In its acquisition and mastery, Southard,

Amos (1996) explained the importance of rhythm in skilful performance. Likewise, Southar & others (1993) indicated that rhythm is of great importance during kinetic performance. (6:325 - 246) (16:288 - 296) (17:284 - 290)

Smolensky (1996) points out that the correct timing and rhythm in the performance of the skill has a great role in the accuracy and control of kinetic performance and helps the player to make movements and feel every movement. (15)

Hirtz (1985) and Pratorius (2008) agree that the applied importance of kinetic rhythm comes primarily from its role in acquiring and mastering skills in various activities and from its specific nature of performance in many sports, as Hotz adds (2002). It is important in terms of beauty, economy, and harmony during kinetic execution. (9:35) (7:102) (10:84-90)

According to both Gerhard Kirchner & Rilo Pohlman (2005 AD), the scientific definition of kinetic rhythm is "the athlete's ability to perceive the temporal and dynamic arrangement of the kinetic performance that he performs, and then save this abundant information as a simplified directional rhythmic pattern and use this style to direct kinetic transactions during Kinetic control process. (11:115)

Kinetic rhythm is also of great importance for group games due to the





specificity of its various exercises and movements, like all movements of kinetic rhythm require balance and change in position of the body between bending, stretching, and straightening, and it is also used in most types of warm-ups for group games.

The researcher, through his work as a coach in the junior sector at Al-Salam Sports Club, noticed the slow movement of the players' rhythm, which appears in the low mastery of different skills, and the low level of changing the position of the body between bending, stretching, and straightening, which in turn affects the link between kinetic skills in football and the speed of its performance in the form Required.

By reviewing previous studies and specialized scientific references, it was found that most of the scientific studies conducted in this field did not adequately address the importance of rhythmic movement exercises and their impact on the development of kinetic speed for junior footballers.

And then, the research problem becomes clear, which is represented in designing a training program to identify the effect of kinetic rhythm exercises on developing the kinetic speed of football juniors.

1- Search objective:

The research aims to identify the effect of kinetic rhythm exercises on improving the kinetic speed of junior footballers.

2- Research hypotheses:

Through the research problem and its goal, the researcher assumes the following:

1. There are statistically significant differences between the mean of the tribal and dimensional measurements of the experimental group in the kinetic speed in favor of the post measurement.
2. There are statistically significant differences between the averages of the pre and post measurements of the control group in the movement speed in favor of the post measurement.
3. There are statistically significant differences between the means of the dimensional measurements of the experimental and control groups in the movement speed in favor of the dimensional measurements of the experimental group.

3- Terms used in the search:

1.Kinetic rhythm:

Kirchner and Pullman (2005 AD) see that the movement rhythm is "the athlete's ability to perceive the temporal and dynamic arrangement of the kinetic performance that he performs, and then save this abundant information as a simplified directive rhythmic pattern, and finally use this pattern to direct kinetic transactions during the kinetic control (control) process." (11: 115)

2.kinetic speed:

Jürgen Weinek (2010) sees that kinetic speed is the athlete's ability to





perform kinetic performance effectively in the least possible time to achieve technical and tactical goals. (19: 612)

4- Search procedures:

1. Research Methodology:

The researcher used the experimental method due to its relevance to the nature of this research through the experimental design of two equal groups, one experimental and the other is controlled.

2. The research sample:

The research sample was chosen by the intentional method from football juniors at Al-Salam Sports Club in Sadat City, Menoufia Governorate, under 15 years old, enrolled in the Menoufia football league in the

2020/2021 sports season. So, the number of the sample members (22) young people were divided into two equal groups, one experimental and the other controlled the each of them (11) young.

The researcher chose (12) young people from the same age at Al-Nujoom Sports Club in Sadat City to calculate the scientific transactions for the tests and to conduct exploratory studies for the research.

3. The homogeneity of the research sample:

The researchers calculated the homogeneity between the members of the research sample in growth rates (age, height, weight) and training age.





Table (1)The moderation of the data of the research sample in the variables of growth and training age

n = 22					
Variables	Measuring unit	Mean	Mediator	Standard Deviation	Skew Modulus
Age	year	15.382	15.450	0.335	0.195-
Length	cm	165.045	166.000	5.627	0.217-
the weight	kg	66.318	68.000	5.875	0.797-
training age	year	7.318	7.500	1.171	0.496-

The results of **Table (1)** refer to the arithmetic mean, standard deviation, and skew coefficient of the growth variables for the two research sample groups

It is also clear that the distribution of the individuals of the total research sample is moderate in these variables, as the skew coefficient ranged between (± 3).

**Table (2)
The significance of the differences between the experimental group and the control group in the growth and training age variables**

n1 + n2 = 22						
Variables	Group	Number	Average Rank	Total Ranks	"Z" Value	Error Indication
Age	Experimental	11	11.23	123.50	0.199	0.843
	control	11	11.77	129.50		
	total	22				
Length	Experimental	11	11.59	127.50	0.066	0.947
	control	11	11.41	125.50		
	total	22				
the weight	Experimental	11	11.18	123.00	0.231	0.817
	control	11	11.82	130.00		
	total	22				
training age	Experimental	11	9.36	103.00	1.602	0.109
	control	11	13.64	150.00		
	total	22				

The tabular value of "z" at the 0.05 level of significance is 1.96



The results of **Table (2)** indicate non-statistically significant differences between the experimental group and the control group in the growth variables, which suggests the equality of the two groups in the research sample.

Table (3)
Characterization of the research sample in the kinetic speed tests in the pre-measurement of the two groups

Tests	Measuring unit	Mean	Mediator	Standard Deviation	n=22	
					Skew	Modulus
wall pass	second	32.698	32.050	6.464		1.080
speed of the movement of running with the ball and shooting	second	43.900	43.450	2.596		0.078

The results of **Table (3)** refer to the arithmetic mean, median, standard deviation, and skew coefficient of the kinetic velocity tests in the pre-measurement of the total research sample.

It is also clear that the distribution of the research sample members is moderate in these tests, where the skew coefficient ranged between (± 3).

Table (4)
The significance of the differences between the experimental group and the control group in Kinetic speed tests in pre-measurement

Tests	Group	Number	Average Rank	Total Ranks	"Z" Value	Error Indication
wall pass	Experimental	11	13.35	173.50	0.103	0.918
	control	11	13.65	177.50		
	total	22				
speed of the movement of running with the ball and shooting	Experimental	11	10.27	113.00	0.886	0.375
	control	11	12.73	140.00		
	total	22				

* The tabular value of "z" at the 0.05 level of significance is 1.96

The results of **Table (4)** indicate non-statistically significant differences between the experimental group and the controlled group in the kinetic speed tests, which suggests the equality of the two groups in the kinetic speed tests used under research.





Data collection methods and tools:

1. Reference survey:

Reviewing and surveying - what is possible - on scientific references, research, and previous studies related to research. Reference surveys and specialized references dealt with the basic axes to determine the most important and appropriate measurements and tests.

2. Expert opinion poll:

The researchers surveyed the opinion of (5) experts to determine the most important kinetic rhythm exercises related to kinetic speed, the elements of the proposed training program, and kinetic speed tests.

3. the tests:

- The wall pass test
- speed of the movement of running with the ball and shooting

4. Search forms:

- Player data registration form
- Research Exam Results Registration Forms

5. Tools and equipment used in the research:

Foot balls, soccer field, cones, tape measure, medical scale, rheostat device to measure the length (cm), stopwatch.

5- Survey Studies:

- The first survey:

The researcher conducted the first exploratory study on Wednesday and Thursday, 8, 9/7/2020, on the exploratory sample from Al-Nujoom Sports Club, consisting of (12) young people and from outside the basic research sample to conduct scientific transactions for the tests under research and to identify the sufficient time to conduct them. This study conducted for the following:

Ensure the appropriate time to apply the tests and train assistants on them.

- Discovering and treating deficiencies in the application of tests.
- Calculating the scientific coefficients of the tests used (honesty - reliability).

Scientific transactions:

1. Calculation of the validity coefficient of the tests used:

The researcher calculated the validity coefficient of the tests under study through the validity of the peripheral comparison of a group from outside the main research sample consisting of (12) emerging, and it was applied on Sunday 7/12/2020, and table (5) shows this.



The results indicate statistically significant differences between the highest quartile and the lowest quartile in the kinetic speed tests, which indicates the validity of the kinetic speed tests used in the study.

2. Calculation of the stability coefficient of the tests:

The reliability coefficient was calculated using the Test-Re-Test method on the sample of the exploratory study at Al-Nujoom Club, which consisted of (12) arising under the same conditions and the same instructions at an interval of (5) days in the period from Wednesday, Thursday, 8, 9/7/ 2020, then the second application on Tuesday and Wednesday 14, 15 / 7 / 2020.

The results of **Table (6)** indicate a statistically significant correlation between the application and re-application in the kinetic speed tests used under research, which indicates the stability of the kinetic speed tests used under research.

7- Suggested training program:

1. Program objective:

The program aims to use kinetic rhythm exercises to develop the average kinetic speed of junior footballers, the research sample by implementing the proposed training program.

2. The foundations on which the researcher built his training program:

The proposed program using rhythmic exercises is subject to the team's general program plan and goal.

- Appropriateness of the program to the age group of the research sample.
- Flexibility of the program to the appropriate extent during the period of its application.
- Continuity and regularity in the implementation of the proposed program.
- Considering the gradual intensity of the loads throughout the proposed program.
- Use some programs that dealt with this topic before.
- Determining the content of the proposed program of kinetic rhythm exercises.
- Relying on the results of the exploratory studies in determining the appropriate starting doses for the junior research sample.
- Determining the time of the daily training unit in the team's general program (90) minutes for medium load, (100) minutes for high load, (120) minutes for maximum load, interspersed with (15) minutes for warm-up, (5) minutes for the conclusion.
- Determining the time allocated for rhythmic exercises ranged between (20: 25) minutes of the total time of the main part of the daily training unit in the general program of the team.



- Both the experimental and control groups perform the same program, except for the time allotted for the experimental variable of the experimental group.
- The proposed training program was implemented during the special preparation phase and the preparation of matches for ten weeks, at the rate of (4) training units during the week.
- Rhythm exercises are given at the beginning of the basic period of the daily training unit.

8- Time distribution of the proposed training program:

Table (7) Time distribution of the proposed training program

Month		August					September			October	
Week		1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th	9 th	10 th
Strength point	Max			*		*			*	*	
	High		*				*				*
	Moderate	*			*			*			*
Warm Up		60	60	40	40	40	40	40	40	40	40
Physical Load	General	120	100	40	40	20	20	20	20	10	10
	Specific			40	40	30	30	30	20	10	10
Rhythmic Kinetic Exercises		40	40	85	75	85	85	75	85	85	75
Skills		70	90	105	105	105	100	90	60	60	55
Tactical		50	50	50	60	60	70	85	115	135	150
Relax Exercise		20	20	20	20	20	20	20	20	20	20
3600 minutes											
Total	Physical Load			Skill			Tactical				
	40 %			30%			30%				
	1184 min			888 min			888 min				

Table (7) shows the time distribution of the Junior Preparation Period Programmed (Physical, Skill, Plan) for the three stages of public and private preparation and preparation for matches during the preparation period (10 weeks).





- Second survey:

The researcher conducted the second reconnaissance study on the reconnaissance sample from outside the core research sample of the Nujoom Sports Club and its number (12) youth from the same age stage on Tuesday 20/7/2020 with the aim of:

- Ensure the final preparation of training places.
- Assistants understand how the proposed exercises are performed.
- To determine the starting point of the training loads in proportion to the level of the research sample.

The survey resulted in the following:

- Full stability of training places, tools used, and distribution of roles.
- The researcher ensured that assistants recognized the plan to implement the training research modules.
- Testing some training modules to determine the starting point of the intensity, size, and intensity of the load of the research sample at the beginning of the program.

9- Prior measurement:

The researcher made the prior measurement on the basic research sample on Wednesday and Thursday 29. 30/7/2020 at the Al Salam Sports Club stadiums in Sadat.

10- Program implementation period:

The proposed program was implemented using Kinetic rhythm training during the special preparation and pre-competition period in the 3rd week and for eight weeks from 15/8/2020 to 21/10/2020.

11- Posterior measurements:

On Thursday and Friday 22. On 23/10/2020, the researcher made a posterior measurement of the basic research sample at Al-Salam Sports Club stadiums with the same conditions and method of tribal measurement.

12- Statistical treatments:

In statistical data processing, the researcher used the SPSS10 statistical program for research results and used the following processors:

- Computational mean - intermediate - standard deviation
- Correlation Factor - Twist Factor
- Percentage improvement in performance. – “Z” Test



13- Presentation and discussion of results:

Through statistical processing of data obtained by the researcher from his study, he presents these results as follows:

1. Presentation and discussion of the results of the first assumption:

Table (8)

The significance of the differences between the pre-measurement and the posterior measurements of the experimental group in kinetic velocity tests

Tests	Direction	Number	Average Rank	Total Ranks	"Z" Value	Indication
Wall Pass	-	11	7.00	91.00	3.180*	0.001
	+	0	0.00	0.00		
	=	0				
	Total	11				
speed of the movement of running with the ball and shooting	-	11	6.00	66.00	2.934*	0.003
	+	0	0.00	0.00		
	=	0				
	Total	11				

* The tabular value of "z" at the 0.05 level of significance is 1.96

Table (8) results indicate statistically significant differences between tribal and telemetry and for the benefit of telemetry in the kinetic velocity tests of the experimental group.

Table (9)

Rate of change of kinetic velocity tests in the remoteness of the experimental group

Tests	Prior Measurement	Posterior Measurement	Variable Coefficient %
	Mean	Mean	
Wall pass	34.998	32.766	6.38%
speed of the movement of running with the ball and shooting	43.335	39.855	%8.03

Table (9) results indicate the rate of change in kinetic velocity tests in the telemetry of the experimental group in question.





Table (8) shows statistically significant differences between the before and the dimensional measurements of the experimental group and for the benefit of the telemetry in the kinetic velocity tests under consideration, as the calculated “z” value was greater than the tabular value at the 0.05 indicative level.

The results of **Table (9)** indicate the rates of change in the telemetry of the experimental group, which are as follows: "Test the wall pass (6,38%), test the speed of the ball run and shoot (8.03%)."

The researcher attributes these differences to the effectiveness of the proposed training program where selected exercises and rationing of kinetic rhythm exercises improved the kinetic velocity rate of players, so these results are consistent with what Hertz pointed out (1985) and Pratorius (2008) to the practical importance of kinetic rhythm, which comes primarily from its role in acquiring and mastering skills in various activities and from its specific nature of performance in many sports, as Hotz adds, (2002) is important in terms of beauty, economics, and harmony during kinetic implementation. (9:35) (7:102) (10:84–90)

This is also consistent with Hagedorn & others. "(1996). However, when designing training programs for young people, emphasis should be placed on the skill preparation and compatibility of the game so that they

account for at least 70% of the training content of this stage. (8:122)

It also agrees with the reference made by Essam Abdel Khaleq (2003) that states consensual capabilities are closely linked to the development of technical kinetic skills and that it is the specialized sports activity that determines the quality of those capabilities that must be developed and developed since the individual cannot master technical skills in the specialized activity if he lacks the compatible capabilities of the activity, as El-Sayed Abdul Maqsood points out. (1994) there is a correlation between consensual abilities and kinetic skills since consensual abilities constitute a fundamental basis for the acquisition of kinetic skills, and Hosni Ezzedine, Ali Salama Ali (1993), points out that consensual abilities are not only related to kinetic performance but may go beyond the performance of complex skills with a degree of difficulty and complexity in the technical and tactical aspects (5:188) (1:284) (4:136)

These results validate the first assumption, stating that "there are statistically significant differences between the mean before and after measurements of the experimental group in the kinetic velocity in question in favor of posterior measurements."





2. Presentation and Discussion of results of the second hypothesis:

Table (10)

The difference between the tribal measurement and the remote measurement of the control group in kinetic velocity tests

Tests	Direction	Number	Average Rank	Total Ranks	“Z” Value	Error Indication
Wall pass	-	9	7.46	89.50	3.077*	0.002
	+	2	1.50	1.50		
	=	0				
	Total	11				
speed of the movement of running with the ball and shooting	-	10	6.50	65.00	2.847*	0.004
	+	1	1.00	1.00		
	=	0				
	Total	11				

Table (10) results indicate that there are statistically significant differences between prior and posterior measurements for the benefit of prior measurement in kinetic velocity tests of the control group.

Table (11)

Rate of change of kinetic velocity tests in the remoteness of the control group

Tests	Prior Measurement	Posterior Measurement	Variable Coefficient %
	Mean	Mean	%
Wall Pass	30.398	29.365	3.40%
speed of the movement of running with the ball and shooting	44.464	43.151	2.95%

This is consistent with what Mufti Ibrahim (1997) states that planning training programs in football are necessary to develop the performance of players and the team as

it includes training content in an orderly manner that leads to the best performance during competitions. (13: 257)





The training program is developed scientifically according to a time plan, which is characterized by flexibility and clear purpose, all these factors must provide for the success of this program and the coach must achieve the objective of this program through means, purposes, and phased objectives that ultimately bring us to the ultimate and main goal to be achieved. (18:17)

The assertion by Hassan Abu Abdo (2013) (3) that planning for sports training is the process of determining what is necessary and important to achieve a specific goal, including determining what can be

done, how it is performed, what time and where it is taken to implement it and who is implementing it, It is the basic work of determining and directing the course of any meaningful sporting action, It is the basic basis and pillar on which to build up the training process in sports.

These results validate the second assumption, which states that "there are statistically significant differences between the average prior measurements and dimensional measurements of the control group in kinetic velocity in favor of posterior measurements.

3.

Presentation and discussion of the results of the third hypothesis:

**Table (12)
The difference between the experimental group and the control group in kinetic velocity tests in the posterior measurements.**

Tests	Group	Number	Average Rank	Total Ranks	"Z" Value	Indication
Wall Pass	Experimental	11	16.69	217.00	2.128*	0.033
	Controlled	11	10.31	134.00		
	Total	22				
speed of the movement of running with the ball and shooting	Experimental	11	6.55	72.00	3.579*	0.000
	Controlled	11	16.45	181.00		
	Total	22				

The results of **Table (12)** indicate that there are statistically significant differences between the posterior measurements of the experimental group and the posterior of the controlled group and in favor of the posterior of the experimental group in the kinetic velocity tests, as the calculated "Z" value was greater than the tabular value at the 0.05 indicative level.





The researcher attributes these differences to the effectiveness of the proposed training program, where selected exercises and rationing of kinetic rhythm exercises improved and developed kinetic velocity, so these results are consistent with what Hertz pointed out (1985) and Pratorius (2008) to the practical importance of kinetic rhythm, which comes primarily from its role in acquiring and mastering skills in various activities and from its specific nature of performance in many sports, as Hotz adds (2002) is important in terms of beauty, economics and harmony during kinetic implementation. (9:35) (7:102) (10:84–90)

The kinetic rhythm is also of great importance for group games because of the specificity of their various exercises and movements. All kinetic rhythm movements require a balance and a change in the position of the body between bending, tide, and straightening.

This is also consistent with what Hagedorn and others (1996), however, when designing training programs for young people, emphasis should be placed on the skill preparation and compatibility of the game so that they account for at least 70% of the training content of this stage. (8:122)

Scientists have emphasized the need to develop consensual capabilities, especially those associated with the type of activity in which each activity requires certain

consensual capabilities more than others, and that the presence, training, and recognition of such abilities enable the player to perform effectively and perfectly. (8:48)

These results validate the third hypothesis, which states that "there are statistically significant differences between the mean of the two-dimensional measurements of the experimental group and the controlled group of the kinetic velocity in question of favor of the posterior measurements of the experimental group."

14- Conclusions:

Within the limits and characteristics of the research sample and the methodology used, and as indicated by the results of the statistical analysis and within the scope of this research, the following conclusions were reached:

The experimental group achieved positive differences in the statistical function at 5% in the telemetry in kinetic velocity and at rates of change and improvement ranging from (6.38%- 8.03%).

The control group achieved a positive advantage over statistically significant differences at 5% in telemetry and rates of change and improvement ranging from (2.95%- 3.40%).

The pilot group's training program outperformed the control group by statistically significant differences in the test of the wall pass, the test of the speed of the ball's running movement, and the shooting.





15- Recommendations:

Within the research sample, the methodology used and the statistical processors, the researcher was able to come up with the following recommendations:

- Guided by the kinetic rhythm programmed for junior football training workers.
- Utilizing kinetic rhythm training to develop kinetic velocity in young people
- Conducting the study at different ages.

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