Effect of Circular Strength Training on Some Special Physical Variables and Skill Level Performance of Squash Players

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Introduction and research problem

The rapid development and increase of physical abilities is a natural product to discover less sectarian abilities and it is necessary to identify the new of these qualities and their different structures to suit the nature of each specialized sports activity,

And squash game is one of the games that require several physical characteristics installed between different parts of the body, while we find that the lower end Depending entirely on the elements of strength and agility,

We find that the upper end of the arms and the free strike depends on the ability to bear because the strikes are fast and overwhelming for most of the game.

Syed Rizk H, Reza, Seyed (2012) points out that Scott Sonnon is the founder of this system with the aim of developing training methods that help players perform freely and efficiently. (24:22)

According to Bergumian (2009), what has helped spread circular strength training is that it avoids traditional training constraints as well as its high physical and health benefits and is characterized by kinetic diversity compared to other training methods. (25:13)

Margarita (2001) and William (2001) 28 agree that the circular strength training system consists of three main components:

1-Into-Flow:

It is similar to the exercises of stretching and flexibility, but it is distinguished from the exercises of stretching in that it focuses on the motor range of the joints,

Which performs two basic tasks at the performance (washing and lubrication) joint fluid synovial fluid and this method is called (joint feeding) in order Restores and coordinates joint movement without deformities of soft tissues in muscles, called (articular strengthening exercises)

2-**Prasara yoga exercises**:

It is considered the best types of yoga because it contains a set of positions similar in performance sports

movements, in addition to the absence of interruptions between each mode and the other, it is characterized by continuity and speed of movement from one situation to another,

While adhering to the basics of yoga of diversity breathing methods used and the use of meditation and concentration when performing.

3-Scepter Club bell exercises:

Scepter is one of the weapons used by the ancients for thousands of years, starting from the ancient Egyptians and then the Greeks and then the Persians and then the Indians and the end of the English.

Weights are therefore characterized by the diversity of their movements, especially the weightings performed through the three diagrams (vertical - transverse - sagittal). (19:77) (54:23)

Squash is considered one of the fastest and strongest sports because it develops speed, endurance, agility and compatibility among its practitioners and also because of the strength of this sport competition and exert physical effort in a short time,

and become more difficult as the level of competition increases, all the player does is hit a small ball To the front wall of the stadium to make the opponent cannot reach the ball and the higher the level of the opponent skill and physically the more intense competition and the difficulty of performing defensive and offensive technical skills during the game. (32: 5) (54: 8)

The researcher believes that the offensive skills are important in the implementation of performance requirements and the resolution of the results of games in the sport of squash if performed with the speed, accuracy and strength, with the appropriate physical specifications.

This concept reflects the relationship between the three vital physical abilities (force - speed - endurance), and the carrying capacity defined by Alon Moryan (2005) as the ability to perform muscular contractions characterized by explosive properties.

For the longest period of time and believes that the player's possession of the characteristics of maximum strength, maximum speed and

muscular endurance for a long medium allows the player the highest level of endurance training exercises taking into account the level of compatibility and agility also adds that the development of bearing capacity requires continuous performance (15 to 30 repetitions) It ranges from 70 to 80% using relatively large breaks, especially with young people. (12: 5-7)

Based on this concept, the squash player is in dire need to develop this important element and this is based on the great similarity between this concept and the nature of performance in the game of squash, especially in the preparation periods and through what was seen by the researcher from previous studies such as Ehab Saber Ismail (2) (2016) The effect of the use of physical and skill training in the way of individual training on some physical abilities and the speed of the performance of the front and back of the squash junior,
And the study of Randa Shawki (2006) (6) entitled the impact of weight training on some physical and physiological variables and the level of performance of play skills in the reverse Racket to the junior hockey field, and the study of Mohamed Nasr (2006) entitled the impact of the development of bearing performance on the skill level and some physiological variables that squash players of all references to the importance of muscle results in the ability to improve the level of performance skills in the sport of squash development.

Through the work of the researcher in the field of training junior and follow-up to the games and championships of squash, especially for young people and the best performance method is that the game of squash depends on returning the opponent to the end of the stadium so that the player to stand in the middle of the stadium The method is one of the best known global playing strategies in the field of squash, as it was found that youngsters play this way in the first game runs and as the game progresses, the player loses the ability to return the opponent to the end of the stadium with strong and quick strikes to control the Mint.

The researcher attributed this to a decline in the level of carrying capacity of the hand strike in front straight and back strikes, which gives the opponent an easy opportunity to finish the balls from the middle of the stadium and resolve the match to valid, therefore, the nature of performance requires the contribution of the characteristics of maximum strength besides the maximum speed using this number of iterations Blended to show how much the squash player needs to develop muscular endurance.

By looking at the researcher's previous studies and looking at the Internet, the researcher noted that some tennis coaches in general and squash in particular are interested in developing special physical requirements along with developing the skill side.

The international and local level to say that the best squash training is the player himself and based on that if we notice the movements of the feet we find that it is similar to the plyometric exercise and the researcher believes that this aspect is tainted by some right and wrong, the repetition of performance may improve the player's muscle memory N, which in turn may lead to improved mobility,

But may result in players bored to repeat the daily performance where the focus on specific muscle groups may lack muscle integration of performance, hence the importance of diversity in the use of training forms and patterns used, including strength training system Ring.

Research Goal

The research aims to identify the effect of circular strength training on some special physical variables and the level of skill performance of squash players.

Research hypotheses

1- There are statistically significant differences between the mean of pre and post measurements in the level of some special physical variables and the level of skill performance of squash players experimental research group.

2- There are statistically significant differences between the mean of the pre and post measurements in the level of some special physical variables and the level of skill

performance of the squash players.

3- There are statistically significant differences between the two mean measurements in the experimental and control groups in the level of some special physical variables and the skill performance level of squash players for the benefit of the experimental research group.

Some of the terms in the search Circular force

One of the most recently used forms of training in the sports field is a system that combines tradition and modernity by combining modern science with ancient training methods and consists of three components of aerobics, Brasara Yoga and Scepter (1:16.)

Search procedures- :

Research Methodology-:

The researcher used the experimental method to design two groups, one experimental and the other control using pre and post measurement.

Research community- :

The research community was represented in (28) squash youth at Mansoura Sports Club

The research sample-:

The researcher selected the sample by deliberate method from Al Mansoura club's youth.

Table (1)

Characterization of the research sample Torsion coefficient of the research sample in growth rates and physical variables among squash players N = 28

Variables	Measuring unit	SMA	Mediator	standard deviation	Torsion coefficient
Age month	Year	13.91	63.95	0.458	-0.262
Height	Cm	150.7	150	2.093	1.003
Weight	Kg	47.55	46.5	4.287	0.734
Training age	Year	6.61	6.10	0.916	-1.28
Right grip strength	Kg	30.11	30.00	0.35	0.38
Left grip strength	Kg	25.32	25.30	0.25	0.02
Running or 1 km	Min.	3.71	3.70	0.41	1.16
Sit from lying	No.	63.28	63.20	0.33	-0,05

Follow Table (1)
Characterization of the research sample Torsion coefficient of the research sample in growth rates and physical variables among squash players N = 28

Variables	Measuring unit	SMA	Mediator	standard deviation	Torsion coefficient
Zigzagi ran between obstacles	S	9.44	9.40	0.58	0.56
Wide jump of stability	Cm	174.65	174.00	0.62	-0.71
Drape the trunk from sitting taller	Cm	13.85	13.50	0.15	0.12
Push a medical ball on the wall for 1 minute	No.	81.31	81.30	0.22	0.32
Push the ground with arms (30) seconds with touching the hands	No.	14.36	14.30	0.87	0.57
Withstand the power of the arms in front straight strikes	Degree	50.21	50.20	3.65	0.20
Withstand the power of the arms in back straight strikes	Degree	51.12	51.00	3.48	0.11

It is clear from Table (1) that the torsion coefficients in the physical variables ranged between ± 3, which indicates the homogeneity of the sample in these variables.

Tools and effects used in research

1- Medical balance to measure weight
2- the restameter to measure the length
3- Medical balls with different weights
4-Elastic cords
5-Stopwatch

6-boxes divided at different heights
7-Multi Gym devices
8-Dynamometer device to measure grip strength
9-squash court legal
10-tape measure
Tests Facility Used (2)
1-Test the right grip strength
2-km test
3-sitting test of lying
4- Glass test between the barriers
5-Wide jump test of stability
6-Test the flexion of the trunk from sitting tall.
7-Test push a medical ball on the wall for (1) BC
8-Test pushing the ground with arms (30) w with touching the hands
9-test the ability to bear the arms in front straight strikes
10-test the ability to bear the arms in the back straight strikes

Training program settings:

-Duration of the program (8) weeks.
- Number of weekly training units (3) units.
- The total number of training units (24) training units.

Table (2)

Distribution of setting ratios and times for the preparation period (Physical – Skill)

time	% Setting ratios	Setting period																الأسابيع والشهور نوع الأعداد
		٨		٧		٦		٥		٤		٣		٢		١		
		time	%	time	%	time	%	time	%	time	%	time	%	time	%	time	%	
2073.6	30	138.24	2	138.24	2	207.36	3	207.36	3	276.48	4	276.48	4	414.72	6	414.72	6	بدني
2350.08	34	207.36	3	276.48	4	276.48	4	345.6	5	345.6	5	345.6	5	276.48	4	276.48	4	
2488.32	36	414.72	6	345.6	5	345.6	5	345.6	5	276.48	4	276.48	4	276.36	4	207.36	3	مهاري
6912	100	760.32	11	760.32	11	829.44	12	898.56	13	898.56	13	898.56	13	967.68	14	898.56	13	مجموع

Presentation and discussion of the results- :

(First) View Results:

Table (3)

Significance of Differences Between Pre and Post Measurement of Physical and Skill Tests among Squash Starters N = 10

Variables	Measuring unit	Pre measure		Post measure		The average difference	Rate of improvement	T value
		SMA	standard deviation	SMA	standard deviation			
Right grip strength	Kg	29.20	0.18	35.62	0.22	6.42	18.02%	5.98
Left grip strength	Kg	24.69	0.29	33.20	0.30	8.51	25.63%	5.29
Running or 1 km	Min.	3.70	0.21	3.25	0.25	0.45	12.16%	5.42
Sit from lying	No.	63.12	0.10	72.65	0.65	9.53	13.11%	5.65

Follow Table (3)
Significance of Differences Between Pre and Post Measurement of Physical and Skill Tests among Squash Starters N = 10

Variables	Measuring unit	Pre measure		Post measure		The average difference	Rate of improvement	T value
		SMA	standard deviation	SMA	standard deviation			
Zigzagi ran between obstacles	S	9.41	0.69	8.85	0.71	0.56	5.95%	5.69
Wide jump of stability	Cm	174.61	0.45	180.32	0.71	5.71	3.16%	5.14
Drape the trunk from sitting taller	Cm	13.80	0.35	16.52	0.64	2.72	16.46%	5.69
Push a medical ball on the wall for 1 minute	No.	80.36	0.22	89.32	0.36	8.96	10.03%	5.47
Push the ground with arms (30) seconds with touching the hands	No.	14.33	0.84	18.32	0.74	3.99	21.77%	5.62
Withstand the power of the arms in front straight strikes	Degree	50.10	0.36	62.52	0.69	12.42	19.86%	5.11
Withstand the power of the arms in back straight strikes	Degree	51.10	0.17	63.69	0.21	12.59	19.67%	5.36

The value of T tabular at the level of significance 0.05 = 2.36

It is clear from Table (3) that there are statistically significant differences on the level of significance 0.05 between pre-measurement and post of the experimental group in favour of post.

Table (4)
Significance of differences between pre- and post-measurement of physical and skill tests among squash youths N = 10

Variables	Measuring unit	Pre measure		Post measure		The average difference	Rate of improvement	T value
		SMA	standard deviation	SMA	standard deviation			
Right grip strength	Kg	29.15	0.59	31.20	0.29	2.05	6.57%	2.69
Left grip strength	Kg	24.60	0.54	28.62	0.33	4.02	14.04%	2.58
Running or 1 km	Min.	3.66	0.18	3.45	0.17	0.21	5.73%	2.65
Sit from lying	No.	63.10	0.62	65.65	0.32	2.55	3.88%	2.67
Zigzagi ran between obstacles	S	9.40	0.89	9.10	0.10	0.30	3.19%	2.47
Wide jump of stability	Cm	174.55	0.56	176.20	0.19	1.65	0.936	1.88
Drape the trunk from sitting taller	Cm	13.75	0.57	14.82	0.60	1.07	7.21%	2.98

Follow Table (4)

Significance of differences between pre- and post-measurement of physical and skill tests among squash youths N = 10

Variables	Measuring unit	Pre measure		Post measure		The average difference	Rate of improvement	T value
		SMA	standard deviation	SMA	standard deviation			
Push a medical ball on the wall for 1 minute	No.	80.30	0.22	83.26	0.66	2.96	3.55%	2.94
Push the ground with arms (30) seconds with touching the hands	No.	14.30	0.91	15.63	0.52	1.33	8.50%	3.10
Withstand the power of the arms in front straight strikes	Degree	50.11	0.39	53.62	0.17	3.51	6.54%	3.37
Withstand the power of the arms in back straight strikes	Degree	51.15	0.69	55.25	0.65	4.10	7.42%	3.45

The value of T tabular at the level of significance 0.05 = 2.36

It is clear from Table (4) that there are statistically significant differences on the level of significance 0.05 between pre-measurement and post of the experimental group in favours of post.

Table (5)

Significance of differences between the two post measurements in the experimental and control groups of physical tests and skills in squash youth N 1 n1= n 2 = 10

Variables	Measuring unit	Experimental group		Control group		T value
		SMA	standard deviation	SMA	standard deviation	
Right grip strength	Kg	35.62	0.22	31.20	0.29	3.52
Left grip strength	Kg	33.20	0.30	28.62	0.33	3.17
Running or 1 km	Min.	3.25	0.25	3.45	0.17	3.65
Sit from lying	No.	72.65	0.65	65.65	0.32	3.59
Zigzagi ran between obstacles	S	8.85	0.71	9.10	0.10	3.17
Wide jump of stability	Cm	180.32	0.71	176.20	0.19	3.33
Drape the trunk from sitting taller	Cm	16.52	0.64	14.82	0.60	3.17

Follow Table (5)
Significance of differences between the two post measurements in the experimental and control groups of physical tests and skills in squash youth N 1 n1= n 2 = 10

Variables	Measuring unit	Experimental group		Control group		T value
		SMA	standard deviation	SMA	standard deviation	
Push a medical ball on the wall for 1 minute	No.	89.32	0.36	83.26	0.66	3.98
Push the ground with arms (30) seconds with touching the hands	No.	18.32	0.74	15.63	0.52	3.18
Withstand the power of the arms in front straight strikes	Degree	62.52	0.69	53.62	0.17	3.62
Withstand the power of the arms in back straight strikes	Degree	63.69	0.21	55.25	0.65	3.28

The value of T tabular at the level of significance 0.05 = 2.36

It is clear from Table (5) that there are significant differences between the two dimensions measurements in the experimental and control group in all physical and skill tests under investigation, where the calculated value of T was greater than the value of T table at the significance level (0.05) which indicates the improvement of physical variables. And the skill of the experimental research group.

Discussion of the results:

It is clear from table (3) that there are statistically significant differences on the level of 0.05 between the pre-measurement and post-measurement of the experimental group in favor of post-measurement, which indicates the improvement of the level of muscle capacity of the arms in the test of physical variables and this improvement is due to the researcher that the training program improved the strength and speed

And the endurance of the experimental sample achieved better performance in the variable bearing capacity muscular where players were able to overcome the resistance

of pushing the ball represented by the weight of the ball and the distance between the player and the wall to the maximum number of times the muscle capacity, which indicates that bearing performance cod It has improved its training program through the use of force training ring system.

The researcher is due to the impact of the training program and high levels of strength, speed and endurance combined, a compound carrying capacity and this is a difficult impact in performance as the player pushes the weight of the body on the arms for the largest number of times with touching the hands, which requires cooperation between the maximum strength and maximum speed and the longest period Possible during the time of impact and thus integrate elements carrying muscle capacity, which is due to the researcher to achieve the goal of the training program developed for the development of bearing capacity using the training program system circular force.

Bastawisi Ahmed (2005) and Essam Abdel Khalek (2003) emphasize that muscular strength is one of the most important physical elements needed by players because all movements depend on how to move a body. Movement through contractions and diastolics from one position to another, and the stronger the muscles, the more effective these contractions and helped in the completion of the skill. (3: 351-360) (47: 7)

In this regard, William (2001) (23) stresses that the circular strength training system is an integrated system of the most important objectives of the development of fitness elements, including muscle strength, muscle capacity, fitness and flexibility, because it contains the scepter exercises as a major part of the training system, which depends on the three schemes For movement because it contains circular weights for the arms.

Thus, the first hypothesis of the research has been achieved, which states that there are statistically significant differences between the averages of pre and post measurements in the level of some special physical variables

and the skill performance level of squash players.

It is clear from Table (4) that there are statistically significant differences on the level of significance 0.05 between the pre-measurement and post-measurement of the experimental group in favor of post. The researcher attributed this change as an indication that the traditional training program led to a slight improvement in the variable capacity of the arms and also showed the strength of the training The proposed increase in the level of carrying capacity in a positive manner.

The improvement in the level of physical and skill variables also indicates that the proposed training program had a stronger impact than the traditional program, which was concerned with the development of physical variables in a balanced way without standing on the problems related to that age,

Which requires a tracking analysis according to the nature of performance at this age, which was called The researcher to apply this special program to overcome some of the physical shortcomings of the junior in the variable bearing capacity that appear during the official games.

This is in line with what Mohamed Allawi, Nasruddin Radwan (2001) noted, that training is a well-planned and organized physical exercise to develop the physical abilities of an individual. (9: 177)

This is because the traditional program has improved the ability to withstand the ability in front strikes, but a small percentage, which did not achieve the required increase for this important physical variable for that stage.

Thus, the second hypothesis of the research, which provides that there are statistically significant differences between the averages of the pre- and post-measurements in the level of some special physical variables and the skill level of the squash players, has been achieved.

It is clear from Table (5) that there are significant differences between the two dimensions measurements in the experimental and control group in all physical and skill tests under investigation, where the calculated value of T was

greater than the value of T table at the significance level (0.05) which indicates the improvement of physical variables. And the skill of the experimental research group,
Which indicates that the proposed training program has a positive way in increasing the variable bearing capacity and achieve this research objectives and hypotheses, as it shows that the carrying capacity in front straight strikes has improved and since the front straight strikes are the most common In use It is consistent with Khaled Naeem (2000) (4), Mohammed Nasr (2010) and (10) the improved endurance of the performance of these strikes makes the player able to return the opponent in a frequent way to the end of the pitch throughout the game, which ensures him control of the midfield and possession of the game Therefore, the player can win because the player who can bear the straight strokes of the variable muscle capacity as many times as he can always win the game, which has been achieved by the training program to improve the muscle capacity of the arms in straight strokes.

In the opinion of the researcher that the proposed training program has a positive way in increasing variable bearing capacity and achieve this research objectives and hypotheses, and straight back strikes are the most important strikes through which a strategy is developed to play where players always resort to play those strikes to put the opponent in the corner of the back pitch

What requires super skill in getting out of this place and although this skill of the most skills also in use, but it is harder than the straight front in the way of performance as the strike hand is in the boot stage of the hit in an uncomfortable position for the young, which makes maintaining the level The ability to perform this skill needs a special program to develop this performance efficiently,

Which was done by the researcher in the proposed program for the development of muscular endurance with the use of circular force system exercises, which resulted in progress in the level of carrying capacity of the arms in the back straight strikes. The

ability is not limited to the strike hand, but also to the free hand, because equilibrium is coupled with the work of the free hand, which also requires muscular contractions rapid and successive to the opposite side of the strike hand.

Diversity in sports training methods is important and required, taking into account in the preparation of training programs, the need to take into account the different forms of movements that are performed during the training period,

And determine the size and intensity of the appropriate training and the optimal choice of speed of performance during training leads to improvement and development of physical performance. 21:17) (52:18)

Bilodeau (1999) 14 and Margarita (2001) 19 agree that many athletes and researchers agree that there is a strong correlation between physical abilities and skill performance. Master the basic skills of the type of sports activity in which he specializes if he lacks the physical abilities of this type of activity.

Thus, the third hypothesis of the research has been achieved, which states that there are statistically significant differences between the two dimensions of the average measurements in the experimental and control groups in the level of some special physical variables and the skill level performance of the squash players and for the benefit of the experimental research group.

Conclusions

-The use of the circular force system leads to improve the level of muscle capacity of squash beginners.

-The use of the circular force system improves the performance of the skills of forward and backhand skills for squash beginners.

Recommendations:

-Relying on the circular strength training system with the same intensity, repetitions and interfacial comfort on squash beginners.

-Conducting similar studies at different dental stages.

-conduct such a study in other games and compared to squash.

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