

The Effect of multi Directional Endurance Training on some Physical Variables and the level of skill Performance on the Floor Exercise Apparatus Gymnastic juniors

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Introduction and research problem

Sports has recently developed in general and the developed countries have become in a constant struggle to hit the record numbers and reach world championships. This has not come as a result of the scientific method through long-term training and training with the youth as the basis for achieving high sports results.

And Using of stereotyped exercises to develop the endurance of a single track motor, which depends mostly on the performance of air and aerobic do not work to improve the various physical and skill capabilities as players tend to seek change and innovation and creativity in training, which increase their motivation and performance without interruption to achieve the highest performance levels. Special emphasis is given to endurance exercises with

multiple motor paths and are designed to develop the abilities of players.

Rania Abdullah (2001) suggests that various endurance exercises are a series of different intensity training exercises in multiple directions, shapes and distances that increase the ability to cope with fatigue resulting from high physical exertion for the longest possible period of time. (21: 257)

"Weineck" (2009) suggests that exercises aimed at developing and improving endurance must be varied and their pace varies and in a competitive shape, which contributes to maintaining the performance level for a long period.

This type of training should be innovative, Stability of rhythm does not cause boredom during performance and contributes to the development of special

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endurance and this is achieved by multi-track motor endurance exercises (24: 55)

Ahmed Al-HadiYousef (2010) says that gymnastics has an effective effect on the efficiency and vitality of different body organs and results in physiological and behavioral changes in the body's various organs. This explains the relationship between these physiological changes and the level of motor performance in gymnastics.

Developed countries in gymnastics are concerning to plan the preparation and development the physical and physiological abilities of the gymnast as a scientific meanwhich improve the performance of the players (2: 7)

In order for the functional organs to function during physical activity with high efficiency, they must have a high degree of physical fitness to bear the physical work.

Therefore, sports activities differ in their energy requirements, some of which require a large amount of energy in a very short time while others need energy for a long period of time. (9: 234-236)

The gymnast's skill is shown in his ability to complete the motor sentence efficiently based on his physiological and physiological abilities.

The end of the sentence gives a complete impression of the sentence. Here, the anaerobic endurance plays the main role in this field where the player needs to resist the fatigue caused by the anaerobic muscle action within the motor sentence. : 11)

The importance of the use of circular exercises on some special physical abilities and the level of performance of the group of ground movements in gymnasiums and the study of purity Mohsen Mohammed (2001) (6) entitled Effect of a program using kinetic chains in mini-training courses on improving the performance of gymnasts under 8 years .

And the study of Abdul HameedIssaMatar (2010) (8), entitled Effect of the use of anaerobic exercises to improve the muscular ability and the level of skill performance of the gymnastics on the floor exercises apparatus, which refers all its results to its interest in the use of endurance

exercises with a single motor path,

In gymnastics (1), (7), (17), (18), there was a large failure in the study and use of various endurance exercises and multi-track motor because of the difficulty of codification of these exercises and methods of measurement and are exercises endurance a variety of motor paths of exercises that contribute to the sense

The physical abilities and physiological characteristics of the players, which are reflected at the skill level and during the period of performance of the group of floor exercises, the player is subjected to a high effort in performance until reaching the final skill and ending the sentence at the specified time and this requires high physical and physiological abilities to complete that stage, (2012) (14),

Najwa Mahmoud Ayed (2012) (16), whose results indicated the effectiveness of the use of endurance exercises a variety of tracks in improving the physical qualities of the players and thus emerged the problem of research

To conduct the study of vinegar For the design of a range of endurance exercises

diverse and multi-track motor to develop and improve endurance, which contributes to raising the level of physical and skill variables for junior players

Research goal

The aim of the research is to identify the effect of multi-track endurance training on some physical variables and the level of skill performance on the floor exercises apparatus among gymnastic women.

Research hypotheses

١ -There are statistically significant differences between the averages of pre and post measurements at the level of some physical variables among the junior artistic gymnastics.

٢ -There are statistically significant differences between the averages of pre and post measurements in the level of skill performance on the movement of the floor exercises among the junior artistic gymnastics.

Search terms:

Endurance Exercises Various Motor Tracks Endurance exercises multiple kinetics tracks is a set of different intensity training exercises lead in multiple directions and in different shapes and distances that

contribute to increasing the ability of players to cope with fatigue for the longest possible period of time (25: 57.)

Research plan and procedures

Research Methodology

The researcher used the experimental method using the post-pre measurement for one experimental group in order to achieve the objectives and hypotheses of the research.

Research community

The research society included gymnastic women at WadiDegla Sports Club in Cairo Governorate for the training season (2014-2015) who are enrolled in the

Egyptian Gymnastics Championships.

The research sample:

A sample of (18) junior players was chosen by the intentional method of artistic gymnastics from the Cairo gymnastics area from the age of 8-10 years. The entries in WadiDegla Club were selected as (10) experimental group and (8) girls for the **Experimental test**

Terms of selection of the research sample:

1-Attendance in the units of the proposed program.

2-not to participate in other sports programs.

3 - Young women agreement of participation in the application of the program units.

Table (1)
Homogeneity of the research sample in the search variables
N = 10

Serial	Variables	Measurement unit	Average	standard deviation	SMA	Torsion coefficient
١	height	Cm	122.52	3.21	122.00	0.485
٢	Weight	kg	25.68	1.29	25.50	0.418
٣	Age	Year	9.65	0.33	9.50	1.36
٤	The training age	Year	5.21	0.15	5.20	0.199
٥	The power	Cm	28.62	1.02	28.60	0.0588
٦	Agility	Time	13.52	0.91	13.50	0.0659
٧	Maximum aerobic capacity	Kg/time	31.25	0.52	31.20	0.288
٨	Maximum oxygen consumption Vital Capacity	Degree	55.21	2.11	55.20	0.0142

Follow Table (1)
Homogeneity of the research sample in the search variables

N = 10

Serial	Variables	Measurement unit	Average	standard deviation	SMA	Torsion coefficient
٩	Vital Capacity	Liter	1.65	0.17	1.60	0.882
١٠	Round – of flic – flacsaltostreched	Degree	2.15	0.26	2.10	0.576
١١	Handspring fwd.landed with both leg flowed by saltofwd tuck	Degree	2.62	0.24	2.60	0.249
١٢	Round – of flic – flac – flic – flac straddle pike jump	Degree	2.16	0.19	2.15	0.157
١٣	Switch leap flowed by leap to 1/2 turn	Degree	2.59	0.32	2.55	0.375
١٤	Total score	Degree	9.52	1.02	9.40	0.352

It is clear from Table (1) that the values of the torsion coefficient were limited to (+3, -3) indicating that distributions are distributed in a moderate distribution in the research variables in the research sample.

Data collection tools and devices used in research:

A: Devices used in research:

Basic tools and devices:

-Resistameter to measure length in centimeters.

-Medical balance to measure weight in kilograms.

-Dry Espermeter for measuring bio-capacity.

-Ground movement device to implement the proposed training 2-

B-Tools and aids

-Stopwatch to measure time for recording tests.

-Measured measuring tape to measure length in centimeters.

-Chalk and colors to determine distances in centimeters.

-Wide adhesive tape to show the starting distance and ends for running tests.

-Metronome to regulate the pacemaker in the Harvard test of **Physical fitness**.

C: Data collection tools

- Scientific tests to measure the variables of physical and technical research. Annex (2)

- Questionnaire forms for surveying expert opinions. Annex (3)

-Registration Form for Research Variables. Annex (4)

D: Tests used in research

Physical tests:

-Vertical jump test of stability to measure the muscular capacity of the two men.

-Vertical jump test of stability and modified moves to estimate the maximum anaerobic capacity

-Shuttle run test (4×10) to measure fitness level.

-Harvard test of step to measure the maximum consumption of oxygen.

-Dry Espermeter to measure biomass.

Skill tests of the floor exercises apparatus- :

The researcher used the method of jurors to measure the level of skill performance on the gymnastics apparatuses of the gymnastics establishments, whether during the pre measurement for homogeneity of the sample members or in the post measurement of the motility of the movements of the ground. This was done by three arbitrators of the faculty members with gymnastics awards,

Take the average of the three grades and the total grade of each skill of (5) degrees for each skill so that the total score of the sentence of (30) degree.

Multi-Track Endurance Exercise Program:

The researcher developed a multi-track endurance exercise program after a reference analysis of the scientific references and information on the network and see examples of these exercises.

Foundations of the program:

- Observe the individual differences among the members of the research sample in order to achieve the objective of the research.

- Continuous and gradual increase in exercise difficulty and frequency.

- The rest period between exercises should be sufficient for the members of the research sample to reach the appropriate rest.

- The intensity of the exercises was determined according to the pulse rate by the following equation.

- Maximum pulse rate = $220 - \text{chronological age}$.

- Taking into account the scientific foundations of sports training in accordance with the Sunni stage and the training status of the research sample.

- Link physical and skill aspects during the performance of the content of the implementation of the program.

Program Planning:

After studying the many references, research and previous studies in the field of training in general and gymnastics in particular (3), (4), (23) and based on the pre measurement of the sample of

the researcher was able to connect to the following:

- Total program time (8) weeks.

- Number of training units during the week (3) units.

- The total number of units (24) training units.

The researcher divided the implementation period into three stages.

- The general preparation phase lasted 3 weeks and included multi-track endurance exercises in the weeks (2 nd, 3 rd and 4 th.)

- The 3-week special preparation phase included

multi-track endurance exercises in the weeks (VII-VIII-X)

- The pre-competition phase lasted 2 weeks and included multi-track endurance exercises in weeks (11-12)

- Multi-track endurance exercises were not used during the first (fifth, sixth, and ninth) periods. Thus, the number of periods of multi-track endurance training (8) weeks during the total programs applied to gymnastic women, which is (12) weeks.

Table (2)

Technical phases of the proposed training program

S	Phase	Objective of the stage	Duration per week
1	First	Pay attention to the time and rhythm of the skillful performance of the motor tracks of the skills	3
2	Second	Pay attention to the time and rhythm of the skillful performance of the half sentence of the kinetic sentence	3
3	Third	Pay attention to the time and rhythm of skillful performance of motor as a whole	2
Total period			8

View and discuss the results

Table (3)
The significance of the differences between the pre and the post measurement at the level of some variables
Physical gymnastics N = 10

Physical variables	measuring unit	Pre measurement		Post measurement		Differences between the two averages	Improvement rate	Value (T)	Level of significance
		S	E	S	E				
Agility	Cm	28.62	1.02	31.25	0.17	2.63	8.41%	4.85	Significance
Fitness	Time	13.52	0.91	10.88	0.16	2.64	24.26%	4.62	Significance
Maximum anaerobic capacity	Kg/time	31.25	0.52	36.58	0.21	5.33	14.57%	4.58	Significance
Maximum oxygen consumption Vital Capacity	Degree	55.21	2.11	61.52	0.14	6.31	10.25%	4.47	Significance
Vital Capacity	Liter	1.65	0.17	1.89	0.26	0.24	12.69	4.52	Significance

The value (t) of the scale at a level of significance (0.05) = 1.812

Table (3) shows that there are statistically significant differences between the averages of the pre and post measurements at the level of

some physical variables and for the sake of post , where the value of (t) is greater than the value calculated at the level of significance (0.5)

Table (4)
The significance of the differences between the pre and post measurement in the level of skill performance on the movement of ground movements among the artistic gymnastics N = 10

Physical variables	measuring unit	Pre measurement		Post measurement		Differences between the two averages	Improvement rate	Value (T)	Level of significance
		S	E	S	E				
Round-of flic – flacsaltostreched	Degree	2.15	0.26	4.12	0.17	1.97	47.81%	5.52	Significance
Handspring fwd.landedwith both leg flowed by saltofwd tuck	Degree	2.62	0.24	4.56	0.26	1.94	42.54%	5.26	Significance
Round-offlic– flac–flic– flacstraddle pike jump	Degree	2.16	0.19	4.25	0.22	2.09	49.17%	5.14	Significance
Switch leap flowed by leap to 1/2 tum	Degree	2.59	0.32	4.19	0.35	1.60	38.18%	5.32	Significance
Total score	Degree	9.52	1.02	17.12	0.87	7.60	44.39%	5.47	Significance

The value (t) of the scale at a level of significance (0.05) = 1.812

Table (4) shows statistically significant differences between the averages of the pre and post measurements in the level of skill performance on the ground movement apparatus among the artistic gymnastics and for the post measuring . The table value (T) is greater than its value at the significance level (0.5)

Discussion of results

Table (3) shows statistically significant differences between the averages of pre and post measurements at the level of some physical variables and for the sake of post , where the value of (T) is greater than the value calculated at the level of significance (0.5) And multi-track, which have contributed positively to the improvement of the physical characteristics of artistic gymnastics facilities.

The researcher attributed this improvement to the improvement in the level of power characteristic of speed, which was reflected in the improvement of anaerobic capacity and that increased muscle capacity contributes to increase the ability to Working with lactic acid formation during work and the speed of oxidation by the muscles not directly involved in the

performance. Also, the body's efficiency increases the speed of elimination of lactic acid and the reduction of fatigue (15:27)

Variation in the use of endurance exercises renews the activity of the newborn and increases the continuity of performance for as long as possible. It also gives him opportunities to meet the changing performance situations that occur during the motor performance in addition to his help to avoid injury Which may result from frequent use of parts or muscle group for a long time.

Muhammad Nasreddine (1998) points out that the maximum oxygen consumption indicates the ability of the heart and lungs to transfer oxygen to the muscles during performance. This task is performed by three main organs in the body, namely the circulatory, respiratory and musculoskeletal systems.

The respiratory system supplies oxygen to the circulatory system in order to transfer it to the muscles. The muscles can not consume the oxygen they receive through the circulatory system even in the case of high performance,

so that the muscles are the determining factor for the efficiency of the aerobic athlete. (13: 174)

This result is consistent with the study of Ahmad Nur al-Din (2015), (2), Mahmoud Al-Houfi (2012). 14 The results indicated that endurance exercises increase muscle efficiency in oxygen consumption. Muscle fibers are responsible for long-term muscular performance. Contains more of the capillaries surrounding each fiber, allowing the spread of oxygen and the speed of disposal of metabolic waste.

Thus, the first hypothesis of the research was achieved, which states that there are statistically significant differences between the averages of pre and post measurements at the level of some physical variables in the artistic gymnastics

Table (4) shows statistically significant differences between the averages of the pre and post measurements in the level of skill performance on the floor exercises apparatus among the artistic gymnastics and for the post .

The value of the t-table value is greater than its value at the level of significance (0.5) This results in the use of the proposed exercises using multi-track endurance, which has a positive effect on the physical abilities and reflected on stimulating the skill performance on the ground movements.

The researcher also returns these differences to the ease and effectiveness of the use of endurance exercises with different motor paths for many young women and provide the conditions that require their performance during the competitions.

Any emerging often likes the new and useful in training and also tends to innovate in performance. The researcher also returns these differences due to the diversity and comprehensiveness of the exercises and linking them to all the skillful methods during training and competitions. In addition, the researcher focuses on planning and implementing the training program to give greater priority to the development of digital performance in general. e.

In this regard, "Mohamed Ibrahim Shehata"

(2003) indicates that the upgrading of skillful performance can only be achieved through the development of physical and physiological abilities that begin since the process of selecting the player to enter the sport of gymnastics and attention to the development of these qualities determines if the player will continue to practice gymnastics or not, so that he can pursue the development of the level of difficulties and skills on the motor sentence according to the prescribed level of the level (11: 163)

The researcher explained the reason for the improvement in the level of skillful performance of the group of floor exercises among gymnastic women to the use of multiple trainings and diverse tracks and focus on performance with the same speed and strength used in the competition period and the segmentation of the motor sentence to the ribs and then to half the sentence and then the gradient to reach the performance of the sentence. Has resulted in physical and physiological adaptation to the physical play on the emergence

of the performance of the motor sentence required of them, which led to an improvement in the level of skillful performance of the required mobility of the movement of the ground.

Thus, the second hypothesis of research has been achieved, which states that there are statistically significant differences between the averages of pre and post measurements in the level of skill performance on the floor exercises apparatus among artistic gymnastic youth

Conclusions

1- The effect of multi-track endurance exercises on the improvement of the level of some physical characteristics (strength characteristic of speed - agility - maximum anaerobic capacity - maximum oxygen consumption - the vital capacity) of artistic gymnasts.

2- The impact of multi-track endurance exercises on the improvement in the level of skilled performance among the artistic gymnastics juniors on the floor exercises .

Recommendations

1- The use of the proposed exercises using multi-track endurance because of its positive effect on improving

the physical and skilled level in artistic gymnastics.

2- Emphasis on the use of multi-track endurance within the period of general and private preparation in the development of physical attributes among gymnasts.

3- The link between the use of multi-track endurance exercises and their performance in a skilled manner to increase the benefit of them in improving physical and skill qualities.

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