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The effect of theatrical rope with and without music on the balance of adolescent boys

RunningTitlel: The Balance effect of rope and music

Abstract

This study aimed to evaluate and compare the effect of 8 weeks of show rope with and without music on the balance of 9 to 12-year boys. For this study, the type of research was quasi-experimental with a pre-test design with two training intervention groups and a control group. The statistical population included male students aged 9 to 12 in primary schools in the western cityIslamabadabad.statistical examples are among studies with rope. skills who were selected voluntarily. After selecting 36 people as a statistical sample from the mentioned community all the subjects participated in the experiment. the training programs used for the groups included 8 weeks of show rope with and without music.to measure equilibrium Y balance test was used to evaluate dynamic equilibrium with reliability(91/0) Data analysis was performed at a significant level of p<0/05 and spss software version 22.
The results showed that 8 weeks of theatrical rope with and without music on motor and cognitive function of children was associated with a significant increase in children's balance on motor and cognitive function of children compared to the control group. There was no significant difference in children's cognitive function in this regard. Rami rope program can be used as a way to improve some indicators related to health promotion in children, and by creating variety and attractiveness in exercises, it attracted more of this group and as a result, injected health into the whole society.

Keywords: *Rope Skipping, Music, The Balance, Sport, Boys, Teens.*

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Introduction

Today, due to industrial life and apartment living, physical activity during the day is reduced, human health is endangered and the basic role of society (children and adolescents) in this time cycle and acceptance of physical activity for health and well-being to achieve future health goals. Body and soul are necessary, and they should be targeted in education, of course, the Ministry of Education and Training in our country has this sensitive and important task, and in recent years by attracting specialists in physical education and sports science at the beginning of the revolution with They have played a long-term vision, but they have also determined and implemented programs that are one of the projects approved by the Deputy Minister of Health and Physical Education (1).

Roping is a complete and fun physical activity that is done individually, in pairs, and groups using short and long ropes and in one, two, or more ropes. This sport has been popular as a game and entertainment for different ages since ancient times, and athletes in other disciplines also used this discipline for agility, endurance, nerve and muscle coordination, balance, and physical fitness (2).

Scientific research shows that tightrope walking is very effective in improving cardiovascular function as well as increasing the body's strength and flexibility. The findings also show that rope reduces tension and stress and increases energy levels in the body (3).

On the other hand, one of the most important goals of studying child development is to help educators to communicate effectively and constructively with children.

Basic skills are the foundation of specialized sports skills, and most effectively and efficiently, the greatest progress in the implementation of these skills is made in childhood. Play and physical activity play a very important role in improving the level and perceptual-motor development of children. When a child engages in an activity or motor behavior, the pleasure, freshness, and joy that result from physical activity and play, in a way, cause the activity and practice to be repeated in his motor and physical actions. Play and physical activity play a very sensitive and refining role in improving the level and perceptual-motor development of children. When a child engages in an activity or motor behavior, the pleasure, freshness, or joy that results from physical activity and play will cause the activity and practice to be repeated in his motor and physical actions (4). Research shows that performing rope jumping exercises is a valuable activity that leads to the development of muscle strength, physical endurance, cardiovascular health, and balance. Agility and coordination between body organs.

The goal of physical education in primary school is the active participation of all children in activities. A child who does not have the motor skills necessary to successfully participate in activities that engage his or her friends. Needs help to improve skills (5).

Therefore, research on cognitive-motor development and influencing factors in childhood is necessary and can help teachers in designing school physical education programs. Since the poverty of movement in the critical period of growth. It leaves irreparable all children need to have useful movement experiences during these periods, especially in the form of play in their environment. These games give children the opportunity to practice perceptual-motor abilities: from Messi. Be in control of their environment and trust in their abilities (5).

Also, increasing the awareness and knowledge of athletes' coaches about new methods governing sports is one of the most important factors in the development of sports. The presentation and implementation of plans and organizations by creative coaches provide the ground for the rapid development of sports and is one of the effective tools for training coaches with new research findings. Various exercises, including rope exercises, are used to improve the coordination and function of the nervous and muscular systems. Rope training is the method that creates the most desirable relationship between speed and power and ultimately manifests itself as explosive power. And it increases the coordination, strength, balance, and power of all the muscles of the body, including the cardiovascular system, which in turn affects the function and volume of the lungs. Therefore, considering today's machine life and obesity in society due to inactivity and the importance of children and adolescents' health for the future management of society, by doing this research, the effect of dramatic rope exercises with and without music on children's motor and cognitive performance can be more realistic.

Benefits of Tug of War

Roping is one of the least expensive physical activities. The effect of rope on the physical fitness of the body has been studied by researchers. The rope tightens the muscles of the arm and leg and improves cardiovascular function and metabolism. On the other hand, ropes are much cheaper than other sports (6).

According to research in the United States, 10 minutes of rope is equivalent to 30 minutes of running at an average speed of 7.5 miles per hour. If a person weighing 150 pounds ropes 120 times per minute, his body consumes 12 calories per minute (7). Rope exercises engage the pelvic floor muscles and improve cardiovascular and metabolic function, coordination,

flexibility, muscle strength, endurance, and body composition (8).

The role of music in rope exercises

The human response to rhythmic music is alike for all human beings. Numerous studies, including studies in Newcastle, Australia, and the Southern study group in the United States, have shown that using music improves athletes' performance during training, especially endurance training. Rhythmic and appropriate music during rope training has very profound and significant effects on the quality and efficiency of training sessions. Rhythm is one of the basic and common elements between music and rhythmic sports, especially rope and aerobics. The sound of ropes hitting the ground in various skills is a very valuable method in learning and proper performance of rope skills and rhythm is a common feature of rhythmic sports and music. Repetition of a certain rhythmic pattern in the performance and execution of rope skills, especially in group exercises, will have a very positive effect on the development of rope exercises.

the balance

"Ability to maintain balance" is one of the most important abilities that are effective in performing human movements from childhood to old age. Balance is a motor skill and a foundation learned in other skills. Every physical activity requires some degree of balance. Equilibrium depends on the integrity of the stimuli received from the visual and sensory systems. The sense of sight provides us with information about the relative position of the body in the environment, and motion sensation data from the deep receptors of the body gives us information about the relative position of different organs and parts of the body in comparison. In fact, balance is a kind of work plan of the inner sense and vision that enables us, in different situations, to keep our body in the right position against the force of gravity. Balance exercises can speed up response times and reduce unnecessary movements. These two effects improve performance and help reduce injuries. "Equilibrium awareness reduces the potential for injury," Roberts believes. He states that the instructors of fitness classes, martial arts, etc. have a moral responsibility to teach balance to the participants.

Objectives of balance exercises

The ideal balance program involves challenging static and dynamic balance with a focus on coordination. Practitioners should practice static exercises standing, sitting, and sitting on all fours. The second goal of balance training is to teach people how to change their center of gravity (thighs) and change their head and neck position to increase mobility and return to normal under a variety of uncontrolled conditions. The key here is to design tasks that, while maintaining safety, challenge the normal range of motion of individuals.

Finally, a balance training program should educate people to recognize the inner cues that elicit reactions to limb movement. Through awareness of these symptoms, awareness of the body progresses in them. Balance and awareness of the body are prerequisites for all movements, from the simplest daily activities of life to the most complex sports movements.

Research background

Due to its diversity, the rope program affects the underlying factors of different dimensions of perceptual-motor abilities, especially fine motor skills, and if practiced correctly and appropriately, can play an important role in improvement and development. Response speed, speed, and agility of the upper limbs and overall fine movements of students, and another study stated that the BMI of the subjects did not change after 8 weeks of training with the rope (9).

Another study examined the effect of rope training on young basketball players and showed that these exercises did not have a significant effect on the subjects' reaction time, but improved resting heart rate and anaerobic power (10).

Research Methods

In this study, the research method was quasi-experimental research with a pretest-posttest design with two training intervention groups and a control group.

The statistical population included 9 to 12-year-old male students in primary schools in the western city of Islamabad. Statistical examples are among the rope students who were selected voluntarily.

After selecting 36 people as a statistical sample from the mentioned population, all the subjects participated in the test. After recording the preliminary results, the subjects were randomly divided into three groups. The training groups then performed their own training protocol for eight weeks under the supervision of the researcher, and the control group did not participate in any training program.

The first research session recorded the player's demographic characteristics and anthropometric measurements and body composition including height, weight, and body fat percentage. To measure equilibrium, the Y balance test was used to evaluate dynamic equilibrium with reliability (0.91). In this test, 3 directions (anterior, posterior external, posterior internal) were drawn at an angle of 135 degrees to each other. Since this test has a significant relationship with foot length, in order to perform this test and normalize the actual length of the foot, it was measured from the upper anterior iliac spine to the inner ankle while lying on the floor in an open position. Each subject practiced

the test 6 times to learn how to perform the test. The subject stood on one foot in the center of the test site and with the other foot in the direction chosen by the examiner performed the maximum achievement operation without error and returned to the original position. In order to eliminate the learning effect, each subject practiced each direction 6 times with a 15-second rest interval. After five minutes of rest, the subject began the test in a direction that the examiner randomly selected, measuring the contact point of the foot to the center of the test site in centimeters by the examiner. The test was repeated three times for each subject and the best record was divided by the length of the foot, then multiplied by 100 to obtain the achievement distance in the percentage of the length of the foot. If the subject was disturbed, the subject was asked to repeat the test.

In the next stage, the relevant exercises were considered for the training groups for eight weeks (3 days per week) and the control group did not participate in any of the mentioned exercises. Finally, at the end of the course, all groups were tested again for motor development to assess balance, and general endurance, and the Tower of London test to assess cognitive function. Then, by recording new information and comparing them with previous information, the effect of exercises on performance was investigated. The training programs used for the relevant groups included eight weeks of show rope with and without music.

Kolmogorov-Smirnov test was used to ensure the normal distribution of data. All data were analyzed using the analysis of covariance. Paired t-test was also used to compare the mean differences between the pre-test and post-test. Data analysis was performed at the significance level of $P < 0.05$ and SPSS software version 22.

Results

Descriptive analysis of data

Descriptive indicators related to the physiological and anthropometric characteristics of the research subjects can be seen in Tables (1).

Table 1- Physiological and anthropometric characteristics of research subjects

Mean and standard deviation	Mean and standard deviation of the control	Mean and standard deviation of rope without music	Characteristics of ropes with music
2/76±11	3/54±12	2/24±11	Age (years)
5/43±26/70	6/48±26/70	6/16±27/81	Weight (kg)
5/25±135	8/50±134	6/15±132	Height (cm)
1/94±25/09	1/94±24/09	1/62±24/46	BMI (kg / m2)

Table 2shows the description of the equilibrium variable.

Table 2: Changes in the mean and standard deviation of general endurance in different groups

P between groups	P within the group	Mean and standard deviation		Group	Variable
		post-test	Pre-test		
0/16	0/0001**	16/75±58	17/43±57	Dancing rope with music	the balance
	0/0001**	15/51±55	16/82±56	Demonstration rope without music	
	0/94	18/36±57	18/44±58	Control	

Considering that in the inferential analysis of research data, analysis of covariance has been used as one of the parametric tests, first, the assumptions required for the application of these tests were examined.

A- Default is the normal distribution of scores of sample groups in the community

In this study, the Kolmogorov-Smirnov test was used to test this hypothesis, the results of which are given in Table (3).

Table 3 - Kolmogorov-Smirnov test on the default normality of variable scores in the post-test stage of society

Kolmograph-Smirnov test			Variable
Significance level	Degrees of freedom	Statistics	
0/532	36	0/564	General endurance
0/557	36	0/643	the balance
0/657	36	0/742	Cognitive function

The results of the Kolmograph-Smirnov test for the pre-test scores of the studied variables are presented in Table (3). As can be seen, the assumption of normalization of the distribution of pre-test scores of the studied variables in the experimental and control groups is not rejected (P> 0.05). According to the results of Table (3), it is clear that the default normal distribution of pre-test scores of the studied variables in the experimental and control groups is confirmed.

B- Assumption of equality of variances of groups in society

Another premise for using the analysis of covariance is the equality of variance of the groups. The basic premise of equality of variances is that the variances of the scores of the two groups in society are equal, and there is no statistically significant difference. Levin test is used to test this hypothesis (11). The results of this test are given for post-test scores of research variables in both experimental and control groups in Table (4).

Table 4 - Levin test results for equality of variances in the post-test stage for all research variables

Significance level	Degree of freedom 2	Degree of freedom 1	F	Variable
0/154	34	1	1/068	General endurance
0/174	34	1	1/631	the balance
0/286	34	1	2/321	Cognitive function

As can be seen in Table 4, the assumption of the equality of variances in all variables is confirmed in the post-test phase. Because the default of the distribution of scores has been confirmed and the sample size of the experimental (first and second) and control groups is equal (n = 36), the use of covariance analysis is unobstructed.

In this section, research hypotheses have been analyzed using the statistical method of analysis of covariance.

Investigation of research hypotheses

The first research hypothesis

Eight weeks of show rope with music affects the balance of 9 to 12-year-old boys.

Table 5 - Multivariate analysis of covariance of show rope with music on balance in experimental and control groups after controlling the intervening variable (pre-test), in the post-test stage

Statistical power	Squared η	Significance level	F	Average squares	Degrees of freedom	Groups	the level
1/000	0/365	0/001	31/27	432/12	1	pre-exam	Post-test
1/000	0/701	0/002	26/24	268/32	2	Group membership	
-	-	-	-	532/21	36	Error	

As shown in Table (5), after removing the effect of the pretest on the dependent variable and calculating according to the coefficient F, it is observed that between the adjusted means of balance scores in the subjects in terms of group membership (experimental groups (first and second) and Control) There was a significant difference in the post-test stage (F = 26.24) (P <0.0001). Therefore, the first hypothesis of the research is confirmed. Therefore, eight weeks of show rope with music affects the balance of 9 to 12-year-old boys.

The second research hypothesis

Eight weeks of show rope without music affects the balance of 9 to 12-year-old boys.

Table 6- Analysis of multivariate covariance of show rope without music on balance in experimental and control groups after controlling the intervening variable (pre-test), in the post-test stage

Statistical power	Squared η	Significance level	F	Average squares	Degrees of freedom	Groups	the level
0/425	0/223	0/000	25/16	367/12	1	pre-exam	Post-test
1/000	0/667	0/002	24/23	659/44	2	Group membership	
-	-	-	-	28/39	36	Error	

As shown in Table (6), after removing the effect of the pretest on the dependent variable and calculating according to the coefficient F, it is observed that between the adjusted means of the scores of the experiments in terms of group membership (experimental groups (first and second) and control) There was a significant difference in the post-test stage (F = 24.23) (P <0.0001). Therefore, the second hypothesis of the research is confirmed. Eight weeks of show rope without music has affected the balance of 9 to 12-year-old boys.

The third research hypothesis

There is a difference between the effect of eight weeks of show rope with and without music on the balance of 9 to 12-year-old boys.

Table 7- LSD post hoc test to compare the mean of the three groups in the research variables

Value of P	standard error	difference in averages	Group	Variable
0/018*	0/127	0/356	Dancing rope with music	the balance
0/004*	0/201	0/304	Demonstration rope without music	
0/122	0/184	-0/356	Control	

*Significant difference between groups at the level of P <0.05

In order to differentiate between groups and pairwise comparison of means, the LSD post hoc test was used in Table (4-4). Based on the results of this table (7), show rope with and without music has been effective on balance in the post-test stage.

Also, the results of Table (7) indicate that there was no significant difference in the balance variable between the effectiveness of these two training methods in the post-test stage (P <0.05) (Figure 1).

This study aimed to determine the effect of eight to eight weeks of show rope with and without music on the balance of 9 to 12-year-old boys.

Examining the effect of eight weeks of theatrical rope with and without music on the balance of 9 to 12 years, it was found that the selected program had a significant and positive effect. Comparing the post-test of the experimental group with the control group showed that the experimental groups had a significant improvement in motor and cognitive function and had a positive and significant effect, thise results with the research results (10, 12-12). It is consistent. In general, by examining various researches on the effect of eight weeks of show rope with and without music on motor and cognitive performance of 9 to 12-year-old children, the following points are important:

Given the importance of motor development in children, especially becoming more efficient in the movements needed in life, training and practicing basic skills on their own or in combination or changing these skills, such as specific sports needs during mid-childhood and adolescence, is essential. Therefore, proper motor homework and proper training time are essential components of successful educational programs at this age. Various exercises to achieve advanced levels of basic motor skills of children and perform these skills in different forms. It is important (12). The rope program can be implemented as an educational program in schools.

One of the reasons for the lack of development of students in motor perceptual abilities is related to the lack of appropriate training in this field. Another reason is the use of a non-physical education teacher during exercise hours. Also, the lack of sufficient space and facilities and the few hours of sports alarm in schools, some of which are dedicated to other subjects, can be another reason for the lack of development of children in motor perceptual abilities. At the end of the comparison, a dramatic rope with and without music was performed between the three control groups, which showed that there was a significant difference between the dramatic rope group with and without music in the control group. In other words, the show rope with and without music had more growth in motor and cognitive performance than the control group, which is a confirmation of the effect of the show rope program with and without music on the perceptual-motor development of students who were under this program.

Another study (8) showed that 12 weeks of rope interval training significantly improved cardiorespiratory endurance, muscle strength, flexibility, and muscular endurance in mentally retarded children. Mechanisms in which aerobic power is increased by aerobic exercise in the present study are numerous. Physiologically, changes in the cardiovascular and pulmonary systems occur during aerobic exercise, leading to increased endurance capacity. Also, the volume of the ventricular cavity increases due to adaptation to aerobic exercise and increases the volume of the impact. As a result, more oxygenated blood reaches the muscles per unit of time. The level of pulmonary diffusion also increases, allowing more blood to be purified. Following aerobic exercise and an increase in plasma and hematocrit volume, the oxygen-carrying capacity of the blood also increases. On the other hand, on the surface of muscle tissue, several important adaptations occur that increase oxygen consumption and maximal aerobic capacity, including increased angiogenesis, increased mitochondrial density in sarcoplasm, increased myoglobin in muscle fibers, and increased enzymes of lipolysis, glycogenesis, glycolysis pathways. Oxidation of chorus cycles and chains; Are electron transfer and are consistently based on a significant difference in maximum oxygen consumption between the rope and control groups.

Conclusion

Based on the findings of this study, 8 weeks of dramatic rope with and without music on motor and cognitive function of children with a significant increase in levels of 8 weeks of dramatic rope with and without music on children's balance on motor and cognitive function of children compared to The control group was associated, but there was no significant difference between the two groups of 8 weeks of theatrical rope with and without music on children's cognitive function.

Based on the results extracted from the present study, the rope program can be used as a way to improve some indicators related to health promotion in children and by creating variety and attractiveness in exercises, attract more of this group and thus inject health into the whole community.

The message of the article: At the end of the article and in a part as the message of the article, in one or two sentences, the message or practical achievement of the article should be stated.

Thanks and appreciation: Dear Dr. Mojtaba Fattahpour, I do not know which sentence to write to describe your love. The secret of thanks is in laughter. Laughter is beautiful with gratitude. A heartfelt thank you is not worth it, thank you for all the efforts you have given us in writing this article.From all the participants in the research and all those who cooperated in the implementation of this research; Thanks and
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Conflict of interest

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