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Basic Gymnastics Exercise Intervention to Improve some Fundamental Movement Skills for Children with simple Movement Difficulties

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Abstract

Objective: study's aim was to evaluate the using of basic gymnastics exercises for (6) weeks as an intervention in physical education lecture to improve some Fundamental Movement Skills (FMS) for children with simple movement difficulties. The question of the study was if there is any effect for using basic or simple gymnastics exercises on improving some Fundamental movement skills for children who have simple difficulties in movement...? Design: The study used an experimental method by using two groups a control group and experimental group. Method: The researcher divided the participants into two groups, a control group and experimental group each group include (20 pupils) the total for the research sample were (40 pupils 25 male & 15 female age 6-7 years) (SD=0.28), the intervention was for (6) weeks (18 units) as (20 min) during the PE lecture Results: The results showed there were significant differences between the pre-test and post-test for the experimental group in comparison with the control group, which showed improving, but less than the experimental group. Conclusion: The improvement in performance was a different between skills because of the degree of difficulties as well as the individual differences between the children. Study demonstrated that a gymnastics basic exercises used in the study have accelerated the improvement of some FMS ability for the children with simple movements difficulties.

Keywords: Children, gymnastics skills, movements difficulties

تأثير استخدام تمارين الجمناستك الاساسية في تطوير بعض مهارات الحركة الاساسية للأطفال الذين يعانون من صعوبات حركية بسيطة

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ملخّص

هدفت الدراسة إلى تقييم استخدام تمارين الجمباز الأساسية لمدة (6) أسابيع كتدخل في محاضرة التربية البدنية لتحسين بعض مهارات الحركة الأساسية (FMS) للأطفال الذين يعانون من صعوبات في الحركة البسيطة، وكان سؤال الدراسة ما إذا كان هناك أي تأثير لاستخدام تمارين الجمباز الأساسية أو البسيطة في تحسين بعض مهارات الحركة الأساسية للأطفال الذين يعانون من صعوبات بسيطة في الحركة؟ أمّا تصميمها فاستخدمت طريقة تجريبية باستخدام مجموعتين: مجموعة مراقبة ومجموعة تجريبية؛ إذ قسم الباحث المشاركين إلى مجموعتين؛ ضابطة وتجريبية، تضم كل منهما (20) تلميذاً) كان إجمالي عينة البحث (40 تلميذاً (25) ذكورًا و(15) إناثًا تتراوح أعمارهم بين (6-7) سنوات (SD = 0.28) كان التدخل لمدة (6) أسابيع (18 وحدة) إلى (20 دقيقةخلال محاضرة PEوأظهرت النتائج وجود فروق ذات دلالة إحصائية بين الاختبار التمهيدي وما بعد الاختبار للمجموعة التجريبية مقارنةً بالمجموعة الضابطة، التي أظهرت تحسنًا، ولكن أقل من المجموعة التجريبية.أمّا الاستنتاجات،فكانت التحسينات في الأداء مختلفة بين المهارات بسبب درجة الصعوبات، وكذلك الفروق الفردية بين الأطفال وأثبتت الدراسة أن التمارين الرياضية الأساسية المستخدمة في الدراسة قد سرّعت من تحسين بعض قدرات FMS للأطفال الذين يعانون من صعوبات حركية بسيطة.

الكلمات الدالة :الأطفال، مهارات الجمناستك، الصعوبات الحركية.

Introduction

Research and literatures in health, society proved the benefits of using physical activities for general health with all ages from childhood to the senior.

Fitness, physical activity behavior and motor skill development are important components of the physical education curricula and are potential indicators of child health (Gleave Whatman, 2012).

All the pupils at an earlier age are very enthusiastic to play a big role in the primary school as a new stage of their life because of the importance of this stage as the first step toward the foundation of a child character.

School is the main societal institution for the development of physical skills and the provision of physical activity in children and young people (Bailey, 2006).

The health benefits of physical activity for children: - (Public, 2007)

• Physical activity has small but significant physical health benefits for children, particularly the prevention of overweight, obesity, and type II diabetes, and improvements in skeletal health.

• Physical activity has moderate psychological health benefits for children, particularly for self-esteem, but also for depression.

• There is limited evidence that childhood physical activity directly affects health in adulthood.

• However, health indicators such as obesity do track from childhood to adulthood, therefore physical activity in childhood may have an indirect influence on adult health.

There is little evidence for the differential effect of physical activity on childhood health by gender, age or ethnicity.

In different times in Iraq history, there were wars and invasions and because of economic blocked which include all the life fields such as education and health as well as loss and weakness of infrastructures such as electricity, sewage and healthy water, all of these factors lead to creating a large number of children with different problems such as mental or mobility or posture deformities, this created large numbers of children with differences cases of movements inability or handicap or others deformities such as scoliosis of the spine, fallen shoulder, rickets as well as mental problem or palsy, all these reasons motivated the researcher to find the best way for helping children to involve in their school life and play an active role among the other's pupils.

Children that appear to have extremely poor coordination they are suffering from difficulties to perform locomotor skills such as walking, running, jumping as well as galloping.

Locomotor skills as of a part of the categories of Fundamental movement skills (FMS) acquire more interesting among pupils and teachers who involved in physical activities, this is very important in Childe life especially in first years in the primary school, Fundamental movement skills (FMS) are considered to be the building blocks that lead to specialized movement sequences required for adequate participation in many organized and non-organized physical activities for children (Lubans, Morgan, Cliff, Barnett, & Okely, 2010).

Difficulties in engaging in play activities because of physical disabilities may affect child development and compromise a child’s perception of self-efficacy and self-competence, whether due to sensory impairments, limitations involuntary movement or mobility as well as environmental barriers, these children may experience limited opportunities to explore the world around them through engagement in play behaviors (Miller & Reid, 2003).

Some children have difficulty organizing their movements smoothly, often they realize they are not doing as well as other children, then their self-esteem can suffer, they may have lack in confidence and feel they are a failure (Partnership, 2012).

This study was designed to see the amount of intervention by using basics gymnastics exercises to help children who had some simple motor difficulties to improve their locomotor skills.

The question of the of this study is there any effect for using basic or simple gymnastics exercises on improving some Fundamental movement skills for children who have simple difficulties in movement...?

Method:

The study used an experimental method by using two groups a control group and experimental group (fig 1), the researcher intended to selecting the studied society to suit the inclusion criteria to include all children with simple

movement difficulties, that mean motor performance that is substantially below expected levels, given the person's chronologic age and previous opportunities for skill acquisition. The poor motor performance may manifest as coordination, problems, poor balance, clumsiness, dropping or bumping into things; marked delays in achieving developmental motor milestones (e.g., walking, crawling, sitting) or in the acquisition of basic motor skills (e.g., catching, throwing, kicking, running, jumping, hopping, cutting, coloring, printing, writing) (Cacola, 2014).

The researcher divided the participants into two groups, a control group and experimental group each group include (20 pupils) the total for the research sample were (40 pupils 25 male & 15 female age 6-7 years).

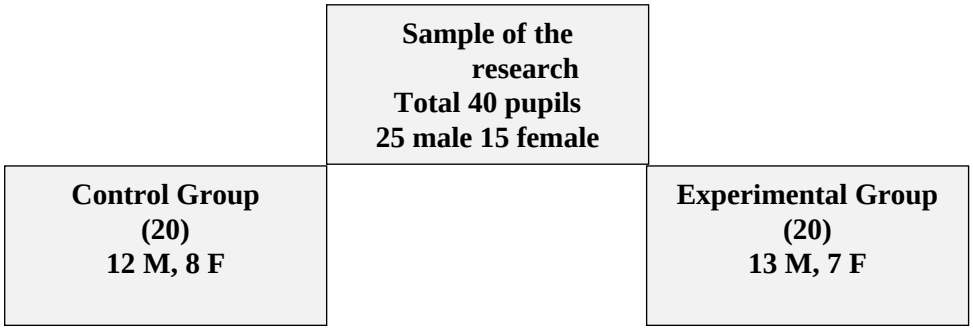

Fig1. The research experimental design

The researcher did equivalent for research groups in (Age in months, mass in kg, and length in cm) as in table 1.

Table 1. The equivalent of research groups

Variables	Experimental group		Control Group		t
	M	SD	M	SD	
Age (months)	78.21	0.31	78.34	0.28	0.417
Weight (kg)	24.41	3.10	23.82	2.62	1.51
Length (cm)	119.12	5.92	118.71	4.95	0.97

The (P) value an error < (0.05) and the degree of freedom (38) = (2.02).

Before starting the suggested program, the researcher did a pre-test for some selective motor ability, as in table 2.

Table 2. The equivalent of two groups in the selective movements test

Variables	Unit	Experimental group		Control Group		t
		M	SD	M	SD	
Running 20 m	Sec	5.08	0.34	5.11	0.29	.870
Hop on right foot	Repetition 10 sec	22.32	4.12	21.81	3.91	0.92
Hop on left foot	Repetition 10 sec	17.91	3.29	17.01	3.15	1.51
Long jump	Cm	112.31	7.81	111.85	8.01	1.21
Throwing ball from above the head	M	14.01	2.52	13.92	2.67	1.05
Walking on a balance beam	Degree	7.85	0.79	7.92	0.80	0.88

The (P) value an error < (0.05) and the degree of freedom (38) = (2.02)

After reviewing many references and articles about the research topic, the researcher designs a program includes simple and basic gymnastics exercises, usually these exercises used for children from 6-9 years, the researcher used the same statistical procedure results for both females and males because in this age all literatures mention no difference in

movements abilities between the gender .

The entire program includes the following: -

- The units numbered were (18) units for (6) weeks and (3) units on days (Sunday, Tuesday, Thursday) and the unit time (20) minutes within the physical education lecture time.

- All units include basic exercises like forward roll and backwards roll, jumping on a small trampoline, walking on installed tape on the ground, zigzag walking, and doing balance on one leg with hands extended to the side.

The pre-test was on Thursday 29/3/2018, the main program starts on 2/4/2018 for 6 weeks with three units in the week, and the time of intervention during weekly physical education lecture was 20 min for the experimental group.

Statistical analyses were performed using the two sample t-test is used to determine if two population means are equal (8).

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sigma\sqrt{1/N_1 + 1/N_2}} \qquad \text{where} \qquad \sigma = \sqrt{\frac{N_1 s_1^2 + N_2 s_2^2}{N_1 + N_2 - 2}}$$

Results:

Table 3. The statistical parameters of pre-test and post-test of selective movements test for experimental group

Variables	Unit	Pre-test		Post-test		t
		M	SD	M	SD	
Running 20 m	Sec	5.08	0.34	4.59	0.39	4.61
Hop on right foot	Repetitions 10 sec	22.32	4.12	27.01	3.82	5.92
Hop on left foot	Repetitions 10 sec	17.91	3.29	20.18	4.07	6.13
Long jump	Cm	112.31	7.81	116.82	6.14	3.93
Throwing ball from above the head	M	14.01	2.52	14.92	1.97	2.82
Walking on a balance beam	Degree	7.85	0.79	9.63	0.62	3.04

The(P) value an error < (0.05) and the degree of freedom (19) = (2.09).

As seen in table 3. there is a significant difference between the pre-test and post-test for the experimental group to interest of the post-test.

Table 4. The statistical parameters of pre-test and post-test of selective movements test for control group

Variables	Unit	Pre-test		Post-test		t
		M	SD	M	SD	
Running 20 m	Sec	5.11	0.29	4.93	0.38	3.32
Hop on right foot	Repetitions 10 sec	21.81	3.91	23.21	3.56	2.87
Hop on left foot	Repetitions 10 sec	17.01	3.15	19.74	3.02	5.23
Long jump	Cm	111.85	8.01	115.93	7.68	4.12
Throwing ball from above the head	M	13.92	2.67	14.83	2.53	2.68
Walking on a balance beam	Degree	7.92	0.80	8.35	0.69	2.74

The(P) value an error < (0.05) and the degree of freedom (19) = (2.09).

As seen in table 4. There is a significant difference between the pre-test and post-test for the control group to interest of the post-test.

Table 5. The statistical parameters of post-test of selective movements test for experimental and control group

Variables	Unit	Experimental group		Control Group		t
		M	SD	M	SD	
Running 20 m	Sec	4.59	0.39	4.93	0.38	1.85
Hop on right foot	Repetitions 10 sec	27.01	3.82	23.21	3.56	3.21
Hop on left foot	Repetitions 10 sec	20.18	4.07	19.74	3.02	1.64
Long jump	Cm	116.82	6.14	115.93	7.68	0.97
Throwing ball from above the head	M	14.92	1.97	14.83	2.53	0.83
Walking on a balance beam	Degree	9.63	0.62	8.35	0.69	2.93

The (P) value an error < (0.05) and the degree of freedom (38) = (2.02).

Table 5. Shown a significant difference in the post-test of selective movements test to interest for the experimental group.

Discussion:

The aim of the study was to examine the effectiveness of using basic gymnastics exercises to improve some fundamental movement skills in children (age 6-7 years).

The gymnastics intervention showed significantly larger improvement for some FMS that been selected for this study, gymnastics, is one of the important skills during PE curriculum, it helps to improve movement skills component for children on earlier age of the primary schools, skills in this environment is likely to have a greater influence on children's FMS development, as well as having a positive influence on their physical self-perceptions (Rudd, 2016).

Both the experimental and control group showed significantly improving, the improving was to the interest of the experimental group, the using of different sports skills in teaching help to improve FMS because these are seen as the foundation for more specialized movements required in many sports and physical activities (Farrow, 2017).

The control group also showed a good improvement and this because of the various activities in the physical education lecture, Table (4) shown There were significant differences between the pre and post -test for a favour of the control group, this because of the PE lecture also contains different activities and teaching methods that can improve FMS for students, Fitness, physical activity behavior and motor skill development are important components of the physical education curricula and are potential indicators of child health, physical fitness in children and adolescents has also been linked to positive health outcomes in adults (Gleave Whatman, 2012).

All selective FMS showed a differentiated improve degree because of the difference in skills performance and the degree of difficulties as well as the individual differences between the children.

Conclusion:

This study demonstrated that a gymnastics basic exercises used in the study have accelerated the improvement of some FMS ability for the children with simple movements difficulties, which mean that the gymnastics skills should take a main part in the PE curriculum in primary school for the first grade.

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