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The Effect of Coordinated Teaching Method Practices on Some Motor Skills of 6-Year-Old Children *

Mustafa ALTINKOK[1]

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ABSTRACT

Purpose: This study was designed to examine the effects of Coordinated Teaching Method activities applied for 10 weeks on 6-year-old children, and to examine the effects of these activities on the development of some motor skills in children. **Research Methods:** The "Experimental Research Model with Pre-test and Post-test Control Group" was used in the study. To examine the effects of the Coordinated Teaching Method activities on the development of some motor skills in children, the agility, quickness, throwing a tennis ball, controlling the ball with feet, throwing a ball to a ring, and turning coordination motor performance tests were used.

Findings According to the statistical results, no significant differences were identified between the pre-test values of the experimental group and the control group, and between the averages of the pre-test and post-test values of the control group. Although a significant difference was found between the pre-test and post-test values in favor of the post-tests in the experimental group, significant differences were found at various levels between the post-test values of the experimental and control groups in favor of the experimental group.

Implications for Research and Practice: It has been shown that planned and long-term coordinated teaching activities can make children more active, develop the motor skills of 6-year-old children, and bring them up to an upper level education in terms of psychomotor development levels, and the efficiency of the intragroup and intergroup social relations will be developed at an optimum level.

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[1] Akdeniz University, TURKEY

Introduction

The effect of the advancement and development in scientific, technological, educational, and social fields is also rapidly, effectively, and functionally reflected in the fields of sports sciences and movement education. As for an outlook on movement education, along with the integration of recent developments into this field, it is of great importance to increase the functionality of the educational methods used in learning-teaching environments to provide an effective and efficient education as well as increase the activities of children for their participation in educational activities. "Practices of movement education are regarded as the overall activities aiming at developing the physical and motor competences and perceptual motor developments of children as well as improving their movement skills."

It has been reported that throughout the period of activities in which children are actively involved, children's basic movement skills positively affect their physical awareness, motor aptitudes (strength, coordination, speed, agility) and physical aptitudes (flexibility, strength, endurance) as well as increase their socialization levels (Kosel, 1994; Schilling & Kiphard, 1974; Prätorius & Milani, 2004; Kiphard, 1970). One of the most effective methods for improving muscle groups during lessons involving games and physical activities in primary school is education through coordination. Hollmann and Hettingere (1976) defined coordination as the harmony between the central nervous system and the musculoskeletal system for the targeted movement (Hollmann & Hettinger, 1976), whereas according to Gallahue (1982), it is the skill of concertedly integrating different motor systems with the varying sensations while the organism creates an effective series of movements (Gallahue, 1982). Jalcuer (1993) defined coordination as "a system arranging the cooperation among systems", but when considered in terms of physiology, this is expressed as "the intermuscular and intramuscular cooperation" (Hirtz, 2002). The more complex the movement becomes, the higher level the coordination necessary for a good performance reaches (Roth & Winter, 1994; Kiphard, 1972). Coordination in contemporary sports sciences is one of the significant factors that determines the technique, and it is reported to be defined as the activity performed fluently, rapidly, and favourably in accordance with the purpose to learn and develop sports skills and attain a certain maturity level (Hirtz, 1985). In line with this, coordination can be defined as "the ability to react quickly to challenging actions in various situations within a short span of time by serving the purpose as well as the ability to teach or learn by maintaining the muscular harmony through internal processes."

Modern sports scientists use the term "co-ordinative abilities" in general rather than using the terms, "skill and agility." Co-ordinative abilities are known to be the determinants of performing and teaching a challenging action or movement as well as being the identifier of how rapidly an action or movement is taught (Bös & Wohlmann, 1987). As for the education of co-ordinative abilities, particularly in training for children, in each warm-up stage and in all the technical training performed later on, co-ordinative activities should be performed in the form of games and skills exercises to develop conditional characteristics (Wellnitz & Hirtz, 1983; Meinel & Schnabel, 2007). Coordination practices are more efficient at an earlier

age and the processes of receiving information and processing concepts and information weaken with age (Altfeld, 1998; Kiphard, 1970). Harre (1982) identified coordinative abilities as balancing ability, rhythm ability, integration ability, reaction ability, sense of direction, and sorting ability (Harre, 1982).

This research was conducted to present the effects of the activities performed in primary schools on the social fields and the development of muscle groups and motor skills of six-year-old children; the involved activities were based on the method of education through coordination performed during the lesson involving games and physical activities in primary schools.

Method

Research Design

This research used an experimental pretest-posttest design including a control group and the relationships between the dependent variable and a series of independent variables were examined. The effect of coordination was determined to be the independent variable to be investigated, and the effect of the lesson involving games and physical activities based on the educational method on the development of motor skills was the dependent variable.

Research Sample

In line with the purpose of the research, the subjects selected for the study consisted of students enrolled in the 1st Grade of primary school and who had no problem in attending the school. Half of the 60 children incorporated into the research comprised the control group, while the other half formed the experimental group. The parents of all the students were informed about the study, and the study was started after the necessary permissions from the involved parents had been received. The children were randomly assigned to the experimental and control groups.

Research Instruments and Procedures

The coordination courses were designed and performed with the active participation of the children in activity classes, sports halls, and the school yard in accordance with the characteristics of the practices. The measurements and assessments were performed with the help of three individuals involving a researcher, assistant, and an interviewer who processed the scores received from the tests into the form. The collection of the data was performed in four stages:

Preliminary study. The activities based on the educational method through coordination performed during the research were prepared in accordance with the characteristics of motor skills by also considering expert opinions. Before the commencement of the activities based on the educational method through a 10-day-coordination, a preliminary study was performed for the purpose of applying the test instructions; arranging the measurement and assessment

environments; calculating the mean duration per test; and testing the measurement tools to allow all the subjects involved to start the pre-tests on the same level.

Application of pre-tests. According to the results of the preliminary study, the pre-tests were performed by separating them into five days by being arranged in a way that the tests of both groups would follow one another. The pre-tests included motor performance skills tests of agility, swiftness, tossing a tennis ball, controlling the ball by foot, throwing a ball into the ring, and footrace coordination, and the pre-test measurements and assessments were, thus, completed.

- Day 1 included tests on "agility" and "tossing a tennis ball",
- Day 2 included a "swiftness" test,
- Day 3 included a "controlling the ball by foot" test,
- Day 4 included a "footrace coordination" test, and
- Day 5,included a test on "throwing a ball into the ring".

When the motor performance skill tests were performed, the movements were demonstrated once, with attention drawn to the characteristics of the movements, and then the instructions of the test tools were explained. During the trials, the children were provided with feedback, re-adjustments, and reinforcers.

Performing the physical education program. During the study period, the activities based on the educational method through coordination, which had a rich content and in which there were activities for developing motor skills, were performed after the pre-test assessments on the experimental group during the hours of Games and Physical Activities course for a total period of 10 weeks comprising five course-hours per week, by also promoting the students' activeness and activities in participating in these events. The control group performed the Games and Physical Activities course regularly for a period of 10 weeks in line with the activities included in their annual program.

Application of post-tests. To identify the effectiveness of the educational method through coordination used as the method of education during the Games and Physical Activities course in the 1st Grade of primary school and to assess whether some of the motor skills were developed, the post-tests were combined with the test procedures and test tools for motor performance skills applied during the pre-test period.

Data Analysis

During the research period, the statistical package program was benefited from in obtaining the research results. An "independent t" test was used to identify the difference between the experimental and control groups, while "paired samples t" statistical tests were used to determine the within-group differences between the experimental and control groups. The statistical significance levels varied according to motor performance tests.

Results

The data obtained from the statistical tests were analyzed, and the general findings are presented in light of the development of motor properties observed during the application.

Table 1

Pre-Test Values for the Motor Skill Performances of the Experimental and Control Groups

Test	*Group*	*n*	*Mean ± SD*	*T test*		
				t	*sd*	*p*
Agility	Experimental	30	7.03 ± .60	2.13	58	.487
	Control	30	7.10 ± .75			
Swiftness	Experimental	30	6.71 ± .64	1.87	58	.294
	Control	30	6.69 ± .69			
Tossing a Tennis Ball	Experimental	30	8.95 ± 3.20	.83	58	.161
	Control	30	9.01 ± 3.01			
Controlling the Ball by Foot	Experimental	30	40.04 ± 4.88	3.47	58	.452
	Control	30	41.01 ± 5.11			
Throwing a Ball into the Ring	Experimental	30	3.86 ± .57	.64	58	.347
	Control	30	3.71 ± .61			
Footrace Coordination	Experimental	30	5.84 ± .41	-2.81	58	.95
	Control	30	5.80 ± .43			

As shown in Table 1, the result of the "independent t" test to determine whether there was any significant difference among the test averages of the pre-tests of the tested motor performance skills for the experimental and control groups showed that the differences between group averages were found to be statistically insignificant (p>0.05).

Table 2.

Pre-Test and Post-Test Values for the Motor Skill Performances of the Control Group

Test		**N**	**Mean ± SD**	**T test**		
				t	**sd**	**p**
Agility	Pre-test	60	7.10 ± .75	.91	29	.240
	Post-test		6.81 ± 1.01			
Swiftness	Pre-test	60	6.69 ± .69	1.14	29	.287
	Post-test		6.58 ± .84			
Tossing a Tennis Ball	Pre-test	60	9.01 ± 3.01	1.39	29	.074
	Post-test		9.10 ± 2.94			
Controlling the Ball by Foot	Pre-test	60	41.01 ± 5.11	.92	29	.142
	Post-test		43.54 ± 4.01			
Throwing a Ball into the Ring	Pre-test	60	3.71 ± .61	.41	29	.354
	Post-test		3.51 ± 1.11			
Footrace Coordination	Pre-test	60	5.80 ± .43	-.04	29	.426
	Post-test		5.94 ± .87			

As shown in Table 2, according to the pre- and post-test findings of "paired samples t" test of the control group, the difference between group averages was found to be insignificant (p>0.05).

Table 3
Pre-Test and Post-Test Values for the Motor Skill Performances of the Experimental Group

Test		***N***	***Mean ± SD***	***T test***		
				t	***sd***	***P***
Agility	Pre-test	60	7.03 ± .60	9.12	29	.000
	Post-test		6.09 ± .55			
Swiftness	Pre-test	60	6.71 ± .64	8.36	29	.000
	Post-test		5.99 ± .49			
Tossing a Tennis Ball	Pre-test	60	8.95 ± 3.20	5.87	29	.000
	Post-test		11.01 ± .91			
Controlling the Ball by Foot	Pre-test	60	40.04 ± 4.88	7.24	29	.000
	Post-test		34.01 ± 2.01			
Throwing a Ball into the Ring	Pre-test	60	3.86 ± .57	5.45	29	.000
	Post-test		4.41 ± .31			
Footrace Coordination	Pre-test	60	5.84 ± .41	6.13	29	.000
	Post-test		4.81 ± .30			

As shown in Table 3, according to the pre- and post-test findings of "paired samples t" test of the experimental group, a statistically significant difference was found ($p<0.001$). The differences in question showed up in favour of the post-tests.

Table 4

Post-Test Values for the Motor Skill Performances of the Experimental and Control Groups

Test	***Group***	***n***	***Mean ± SD***	***T test***		
				t	***Sd***	***P***
Agility	Experimental	30	6.09 ± .55	9.46	58	.009
	Control	30	6.81 ± 1.01			
Swiftness	Experimental	30	5.99 ± .49	8.61	58	.000
	Control	30	6.58 ± .84			
Tossing a Tennis Ball	Experimental	30	11.01 ± .91	5.01	58	.007
	Control	30	9.10 ± 2.94			
Controlling the Ball by Foot	Experimental	30	34.01 ± 2.01	6.41	58	.000
	Control	30	43.54 ± 4,.1			
Throwing a Ball into the Ring	Experimental	30	4.41 ± .31	4.12	58	.035
	Control	30	3.51 ± 1.11			
Footrace Coordination	Experimental	30	4.81 ± .30	5.93	58	.000
	Control	30	5.94 ± .87			

As shown in Table 4, among the post-test values of the "independent t" test of the experimental and control groups, a statistically significant difference on the level of .001 ($p<0.001$) was found among the mean test values of Agility, Controlling the Ball by Foot, and Footrace Coordination; a statistically significant difference on the level of 0.01 ($p<0.01$) was found among the test averages of Tossing a Tennis Ball and Agility; and a statistically significant differences on the level of 0.05 ($p<0.05$) was found between the test averages of Throwing a Ball into the Ring. The differences in question showed up in favour of the experimental group.

Discussion, Conclusion, and Recommendations

The results of the present study conform to the results of previous studies. Studies by Rutledge (1993) and Parish, Rudisill and Onge (2007) noted that the activities on movement education performed through planning and for a long term were of importance for the education and development of motor skills when compared with leisure game activities, whereas they concluded that the game environment was not a determinant in acquiring motor skills. Results of other studies have shown that the development of motor skills, physical development, and physical aptitude components proved to be higher in children on whom different movement education models were performed (Kerkez, 2004; Dursun, 2004; Altinkok, 2006; Kerkez, 2006; Ozturk, 2009; Celebi, 2010; Fuchslocher, Romann & Gulbin, 2013; Boz, 2011; Altinkok 2015; Altınkök, 2016). Korkmaz & Erol (2004) concluded that the teachers educated and trained in Turkey did not support the coordinative abilities during the learning-teaching processes at a necessary and sufficient level.

The findings of this study show that the motor skill development of the experimental group was significant compared to the control group, which suggests that the contribution of the course based on the educational method through coordination produced a better development of motor skills than the course involving Games and Physical Activities performed on the control group. Including the activities based on the educational method through coordination during the learning-teaching process in the Games and six-year-old children. It has been reported elsewhere that children who don't attain higher activity levels develop cardiovascular problems during adulthood (Bower et al., 2008; Chatratli, 2002; Sandercock, Angus & Barton, 2010). Attaching importance to the activity programs performed during childhood and allowing children to participate in recreation activities during this period will subsequently ensure an active adulthood (Gray, Ty-Am & Judy, 2003; Jimmy, 2003).

Considering the results of the other studies, determining the appropriate time and place of the applied movement education and recreative activities and arranging them in a way that they will be beneficial for children are critically important. Such activities should be supported by government entities and private organizations (Ballard, 2004; Tzuriel & Egozi, 2010). It follows that, apart from clearly touching on the importance of the practices on movement education for developing muscles of the psychomotor field, the effects of the educational methods used here and the

activity levels of the children observed during these practices are, indeed, quite great. This study has shown that the coordination applied along with the educational method had a positive effect on the children's motor skill development.

During the games and physical activities courses, primary school teachers should often include activities in which children can manipulate various objects by using their larger and smaller muscles, thus, providing their bodily coordination for the purpose of promoting their control over objects as well as their visual perceptions. Researchers should plan studies that test the educational programs on visual perception involving activities in which larger and smaller muscles are actively used by children and educational programs in which children become more active at each stage of the activities, use their extremities more harmoniously with one another, and develop the coordinative abilities of their bodies.

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Koordinasyon ile Öğretim Yöntemi Uygulamalarının 6 Yaş Çocuklardaki Bazı Motor Becerilere Etkisi

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Özet

Problem Durumu: Bilim, teknoloji, eğitim ve sosyal alanındaki ilerleme ve gelişmelerin etkisi, hızlı, etkili ve işlevsel olarak spor bilimleri ve hareket eğitimi alanlarına da yansımaktadır. Çocukların aktif olarak katıldığı etkinlikler süresince çocukların, temel hareket becerileri, beden farkındalığı, motor ve fiziksel uygunluğunun yanı sıra sosyalleşme düzeylerindeki artışı da olumlu yönde etkilendiği bilinmektedir. Son gelişmelerin spor bilimi ve hareket eğitimi alanına entegre olması ile birlikte etkili ve verimli bir öğretim için hareket eğitimine bakış, öğrenme–öğretme ortamındaki kullanılan öğretim yöntemlerinin işlevselliği ile çocukların etkinliklere katılımındaki aktifliğin arttırılmasının önemini ortaya koymaktadır. İlkokuldaki oyun ve fiziki etkinlikler dersinde, büyük ve küçük kas gruplarını geliştirmek için kullanılan en etkili yöntemlerden birisi de koordinasyon ile öğretim yöntemidir. Koordinatif yeteneklerin eğitiminde; özellikle de çocuk dönemi antrenmanlarında, her ısınma evresinde ve sonrasındaki bütün teknik antrenmanlar da kondisyonel özelliklerin geliştirilmesi için, oyun ve beceri alıştırmaları şeklinde yapılmakta iken, koordinasyon çalışmalarının erken yaşlarda daha verimli olduğu, yaş ilerledikçe bilgi alma, kavram ve bilgiyi işletme süreçlerinin zayıfladığı ifade edilmektedir. Fakat alanyazına bakıldığında özellikle beden eğitimi alanında öğrenme–öğretme sürecinde kullanılan öğretim yöntemlerini inceleyen ve geliştiren araştırmaların az olduğu belirlenmiş, bu araştırma alanyazına katkı sağlayarak öğrenme–öğretme süreci içinde kullanılan öğretim yöntemlerinin etkililiğini belirleyerek ortaya konulması açısından önemlidir.

Araştırmanın Amacı: beden eğitimi derslerinde uygulanan 10 haftalık koordinasyon ile öğretim yöntemine dayalı etkinlikleri, öğrenme öğretme sürecinde 6 yaşındaki çocuklara uygulayarak, çocukların bazı motor becerilerinin gelişimine etkisini araştırmak amaçlanmıştır.

Araştırmanın Yöntemi: Araştırmada, "ön test – son test kontrol gruplu deneysel araştırma modeli kullanılmıştır. Çalışma grubundaki, 6 yaş ilkokul 1. sınıf, 30 deney ve 30 kontrol grubu olarak toplam 60 öğrenci, okul yönetimine ve ailelerine gerekli bilgilendirmeler yapıldıktan sonra çocuklarında kendi istekleri doğrultusunda araştırmaya dâhil edilmiştir. Araştırmada beden eğitimi derslerinde uygulanan koordinasyon ile öğretim yöntemine dayalı fiziksel etkinliklerin çocuklardaki bazı motor becerilerin gelişimine etkisini araştırmak için; çeviklik, çabukluk, tenis topu

fırlatma, ayak ile top kontrol, halkaya top atma ve koşu koordinasyon motor performans testleri uygulanmıştır. Verilerin çözümlenmesinde istatistik paket programı kullanılmıştır. Deney ve kontrol gruplarının ön test ve son testleri arasındaki farklılığı bulmak için "bağımsız grup t" kullanılır iken, deney grubunun ön test – son test ve kontrol grubunun ön test – son test aralarındaki farklılığı bulmak için ise "eşleştirilmiş grup t" istatistik testleri kullanılmıştır. Araştırmada veriler; koordinasyon parkurları, aktivite sınıfı, spor salonu ve okul bahçesinde çocukların da aktif katılımı ile çalışmaların özelliklerine uygun olarak dizayn edilerek uygulatılmıştır. Ölçümler; araştırmacı, ölçüm yardımcısı ve testlerden alınan puanları forma işleyen bir röportör olmak üzere üç kişi ile yapılmıştır. Verilerin toplanması dört aşamada gerçekleştirilmiştir.

1- Ön çalışma

2- Ön testlerin uygulanması

3- Koordinasyon ile öğretim yöntemine dayalı etkinlikleri içeren beden eğitimi programının uygulanması

4- Son testlerin uygulanması

Araştırmanın Bulguları: İstatistik sonuçlarına göre, deney ve kontrol gruplarının ön test; çeviklik, çabukluk, tenis topu fırlatma, ayak ile top kontrol, halkaya top atma ve koşu koordinasyon "bağımsız grup t" testi sonucunda, ortalamalar arasında istatistiksel olarak anlamlı fark bulunamamıştır ($p>0,05$). Kontrol grubu ön–son test; çeviklik, çabukluk, tenis topu fırlatma, ayak ile top kontrol, halkaya top atma ve koşu koordinasyon "eşleştirilmiş grup t" testi sonucunda, ortalamalar arasında istatistiksel olarak anlamlı fark bulunamamıştır ($p>0,05$). Deney grubu ön–son test; çeviklik, çabukluk, tenis topu fırlatma, ayak ile top kontrol, halkaya top atma ve koşu koordinasyon "eşleştirilmiş grup t" testi sonucunda, ortalamalar arasında son testler lehine istatistiksel olarak anlamlı fark bulunmuştur ($p<0,001$). Deney ve kontrol gruplarının son test; çeviklik, çabukluk, tenis topu fırlatma, ayak ile top kontrol, halkaya top atma ve koşu koordinasyon "bağımsız grup t" testi sonucunda, ortalamalar arasında deney grubu lehine farklı düzeylerde istatistiksel olarak anlamlı fark bulunmuştur. ($p<0,05$; $p<0,01$; $p<0,001$).

Araştırmanın Sonuçları ve Öneriler: Araştırmada, deney grubuna uygulanan koordinasyon ile öğretim yöntemine dayalı aktiviteleri içeren beden eğitimi derslerinin, kontrol grubuna uygulanan beden eğitimi derslerine göre, motor becerin gelişimine katkısının daha yüksek olduğu gözlemlenmiştir. Beden eğitimi dersindeki öğrenme–öğretme sürecinde Koordinasyon ile öğretim yöntemine dayalı aktivitelere yer verilmesi, 6 yaş çocukların motor becerilerinin gelişimine etkisinin daha yüksek olduğu söylenebilir. Aktivite seviyelerinin yüksek olmasına dikkat edilmeyen çocukların, ileriki dönemlerde bazı solunum problemlerinin ortaya çıkabileceği, çocukluk döneminde yapılan fiziksel aktivite programlarına önem verilmesi ve bu dönemde, aktif yaşamın ve rekreatif etkinliklere katılımın ileriki yaşlarda aktif bir yetişkinliği sağlayabileceği düşünülmektedir. Sonuç olarak; plânlı, uzun süreli ve çocukların aktif olarak uygulamalara katılımının sağlanacağı, koordinasyon ile

öğretim yöntemi etkinliklerinin, 6 yaş çocukların motor becerilerini geliştirmesinin yanı sıra bu dönemdeki çocukları bir üst eğitim kademesine, psikomotor gelişim evreleri yönünden ve grup içi ve gruplar arası sosyal ilişkilerin etkililiği noktasında, optimum düzeyde bir birey olarak yetiştirilebileceği anlaşılmaktadır. Öğretmenlere; büyük ve küçük kasları kullanarak vücut koordinasyonunu sağlayan etkinliklere daha fazla zaman ayırmaları gerektiği, araştırmacılara ise; çocukların daha aktif olduğu ve vücudun koordinatif yetilerini geliştirmeye yönelik eğitim programlarını test eden araştırmalar planlamaları önerilebilir.

Anahtar Kelimeler: Hareket eğitimi, fiziksel aktivitede yöntemler, beden eğitiminde koordinasyon öğretimi, spor eğitimi, oyun eğitimi