

Research of Performance Change Before and After in-Service Training for Relocation and Object Control Skills

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ABSTRACT

Aim: This study aimed to understand the effect of a customized physical education program on displacement and object control skills of classroom teachers and to compare the performance change of their skills before and after in-service training.

Methods: 25 classroom teachers who participated in the research were evaluated at the beginning (pre-test) and after the four-day in-service training program (post-test). It includes the sum of the skills of running, Galloping, bouncing, jumping, horizontal jumping, sliding, hitting the ball with the shuttlecock, bouncing, catching, kicking the ball, throwing and rolling.

Results and Conclusion: Findings from both assessment tools show that he had significantly lower coordination and skills at the beginning, and this difference changed significantly and significantly after the training program. It was concluded that the basic movement skills differed after the training. The post-in-service training shows that the displacement and object control skills of the classroom teachers increased.

Keywords: In-Service Training, Object Control, Performance Change,

INTRODUCTION

The development of motor competence in children has been identified as the main influencer of physical activity and participation in sport in adolescence and adulthood.¹ The adequacy of motor skills defines human movement as goal-oriented or goal-oriented and defines the extent to which a person can control basic movement skills.² Controlling basic movement skills is often divided into motor movement and object correction skills, also known as object control skills or ball skills. Object control skills include throwing, dribbling, catching and kicking/hitting a fixed or moving object.³ Object control skills are particularly important as they are often highly correlated with adolescent participation in sport and recreational choices and are one of the predictors of lifetime participation in physical activity.¹

The ability to consistently and competently perform various basic movement skills (e.g., running, catching, jumping, throwing) is generally defined as movement competence.³ High levels of basic mobility skills in childhood are associated with a range of health and physical activity outcomes.⁴ Children with high levels of basic movement skills have a better chance of maintaining their health. They are more likely to participate in physical activity and have better fitness later in life.⁵ In addition, with physical activity, the individual gains the ability to cope with physiological or psychological problems.²³

All children can benefit from a tool that assesses a child's basic movement skills. Such a tool would provide opportunities for classroom teachers and sports trainers working with young children in the context of sport and physical education to have a more objective understanding of children's skills, better meet children's developmental demands, and analyze the effectiveness of education. There are several tools that can measure the performance level of children in basic movement skills. For example, Movement Evaluation Battery,⁶ Bruininks-Oseretsky Motor Proficiency Test 2⁷ and Gross Motor Development Test measurement tools have been developed for children. Most of these tools focus on identifying children with basic motor development disorders and are very time consuming.²² However, in the context of sports education and physical education, it can be invaluable to measure not only at-risk children, but rather basic movement skills that cover a wide range of performances and can only be accomplished in a limited time.

Basic movement skills are basically formed by gross motor coordination skills, which are the building blocks of more specific sports skills learned in later developmental stages.⁸ Specifically, adequate basic movement skills are recognized as a requirement for functionality in regular daily activities and as a positive element to encourage the initiation and maintenance of physical activity.⁶ It includes motor skills (for example, walking, running, jumping),

balance skills (for example, balancing, turning, running), and object control (for example, throwing, catching, kicking).³ Around the age of 6-10, typically developing children are at a sensitive stage to develop these basic movement skills.⁹ Undoubtedly, children will continue to develop basic movement skills after the age of 10. However, this sensitive period is generally seen as very important.¹⁰ Results of a longitudinal study showed moderate to high long-term stability of performance level of basic movement skills from primary school to early adulthood.¹¹ In addition, the level of motor proficiency at the ages of 9 and 10 was found to be related to the physical activity level of children after 32 months.¹¹ As a result, it seems reasonable to focus first on children aged 6-10 when developing a tool to assess basic movement skills.

The genders of children also differ in basic movement skills. Boys are generally more talented in object control skills in childhood and adolescence than girls.¹² As the development of childhood object control skills is an important predictor of body physical activity during adolescence, early awareness of object control skills as part of broader basic movement skills programming is critical to foster competence and confidence in childhood and beyond.

Physical literacy, including the development of control of basic movement skills, is one of the main goals of physical education. In addition, the quality of the program of Physical Education and Sport as a part of the primary and secondary school curriculum can contribute to the development of displacement and object control skills. Studies have shown that detailed programmed physical education is critical in reorganizing control of basic movement skills.¹³ Studies in the field of control development of basic movement skills have shown that object control skills are revealed in children following physical education program.¹⁴ In this study, the researcher found that after a four-day in-service training program, the participant group showed a significant gain in the skills of running, Galloping, bouncing, jumping, horizontal jumping, sliding, hitting the ball with the racket, bouncing, catching, kicking the ball, throwing and rolling. It has been revealed that they can continue the learning outcome until the permanence test four days after the in-service training.

The aim of this study is to design and evaluate a customized Physical Education program to improve the displacement and object control skills of classroom teachers who teach physical education and Sport in Turkey. The displacement and object control skills program designed as a part of this study is to apply to primary school teachers who give physical education and Sport lessons in in-service education with twelve different basic skills. The underlying theory is based on principles known as self-determination theory. Self-determination theory assumes that people are naturally proactive, curious, and have a natural love of

learning.¹⁵

Self-determination theory has been widely applied to the understanding of physical education and lifelong motivation.¹⁶ Specifically, three psychological needs are required for motivation related to physical activity. The first of these is autonomy in the choice of movements. The second is competence, which is to feel confident and effective. Finally, it is relatedness arising from the need to feel a sense of connection with others.^{17,26,27,28} Based on these important needs, it was emphasized by classroom teachers that in-service training on displacement and object control skills facilitated.

MATERIAL AND METHODS

In this study, a "pretest-posttest" design was used to evaluate the change in displacement and object control skills of classroom teachers who gave the teacher education and Sport lessons before and after in-service training. Object control skills were measured at the beginning (pre-test), after a four-day in-service training (post-test). The in-service training consists of a displacement and object control skills program for 25 teachers, all of whom are selected from the classroom teachers who give physical education and Sport lessons, directed by a physical education teacher.

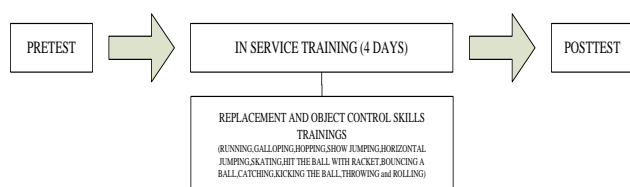


Figure 1: Overview of study design

Participants: 25 classroom teachers giving physical education and Sport lessons in Turkey agreed to participate in this study. Before data collection, necessary approval was obtained from each classroom teacher and verbal consent was obtained by giving informed consent to them.

Procedures: Participants were evaluated individually by the researcher. Tests were conducted throughout the day in the test area, the in-service training area where the participants were present. Classroom teachers acted in a random order of conformity among the determined tests. The test sequence remained the same for each participant when they returned for the final and retention test. Evaluation of each individual took approximately 30 minutes. Pretest and posttest data were carefully collected.

In-Service Training Practice: The in-service training program was carried out during an in-service training period that class teachers would normally take. The four-day displacement and object control skills in-service Training program was developed in collaboration with a PE teacher and researcher, based on the expected curriculum criteria for the PE and Sport course level. The activities were carried out within the framework of the physical education and Sport lesson curriculum applied in primary schools, approved by the Ministry of National Education, and the activities related to physical education and Sport lessons were included. Participants participated in an in-service training program for specialized displacement and object control skills, consisting of 12 different basic movements spread over a four-day period as part of the Physical Education and Sport Lesson program.

The in-service training program design for this study was developed based on three basic psychological needs compatible with the theory of self-determination: autonomy, competence, and relatedness.^{15,24,25} Accordingly, in-service training was planned in line with the theory of self-determination by providing participants with equipment selection, allowing participants to form groups with their friends, and providing diversity in tasks by changing equipment or expected results. The table below shows the in-service training program.

Table 1: In-Service Training Program

Day	Education Group	Trainings	Instructions	
1 st Day	Running	Running1	Straight Running	
		Running2	?	
		Running3	?	
		Running4	?	
	Galloping	Galloping1	?	
		Galloping2	?	
		Galloping3	?	
		Galloping4	?	
	Hopping	Hopping1	?	
		Hopping2	?	
		Hopping3	?	
		Hopping4	?	
			Hopping5	?
	2 nd Day	Show Jumping	Show Jumping1	?
			Show Jumping2	?
Show Jumping3			?	
Horizontal Jumping		Horizontal Jumping1	?	
		Horizontal Jumping2	?	
		Horizontal Jumping3	?	
		Horizontal Jumping4	?	
Skating		Skating1	?	
		Skating2	?	
		Skating3	?	
		Skating4	?	
3 rd Day		Hit the ball with racket	Hit the ball with racket1	?
	Hit the ball with racket2		?	
	Hit the ball with racket3		?	
	Hit the ball with racket4		?	
	Hit the ball with racket5		?	
	Bouncing a Ball	Bouncing a Ball1	?	
		Bouncing a Ball2	?	
		Bouncing a Ball3	?	
		Bouncing a Ball4	?	
	Catching	Catching1	?	
		Catching2	?	
		Catching3	?	
4 th Day	Kicking the Ball	Kick the Ball1	?	
		Kick the Ball2	?	
		Kick the Ball3	?	
		Kick the Ball4	?	
	Throwing	Throwing1	?	
		Throwing2	?	
		Throwing3	?	
		Throwing4	?	
	Rolling	Rolling1	?	
		Rolling2	?	
		Rolling3	?	

Statistical Evaluation: All statistical analysis was performed using the SPSS program (version 25). The normal distribution of data was determined using both visual methods (box plots and Q-Q plots) and numerical methods of normal distribution (skewness and kurtosis) (P>0.05). Descriptive statistics (mean and standard deviation) were calculated and comparisons were made between in-service and post-in-service using two-sample T-tests. To determine displacement and object control skills, the total scores of the obtained data were calculated separately for each movement and mean values and standard deviations (SD) for all time points. The significance level was determined as $\alpha = 0.05$.

RESULTS

In order to determine displacement and object control skills, the necessary analyzes for the distribution of running, Galloping, bouncing, jumping, horizontal jumping, skating, hitting the ball with the racket, bouncing, catching, kicking the ball, throwing and rolling are given together in Table II below.

It is seen that the values of skewness and kurtosis of running, Galloping, bouncing, jumping from obstacles, horizontal jumping, sliding, hitting the ball with the shuttlecock, bouncing, catching, kicking the ball, throwing and rolling skills are

between +1.5 and -1.5 to look at the assumption of normality. In the research scale analysis, Hair et al. (2013) state that skewness and kurtosis values are between +1.0 and -1.0, it can be accepted as a parametric test and the action can be taken accordingly.¹⁹ Likewise, according to Tabachnick and Fidell, it is stated that when the skewness and kurtosis values are between +1.5 and -1.5, it can be accepted as a parametric test and can be processed accordingly.²⁰

Table 2: Normality Assumption of Scale and Sub-Dimensions

	N	Min	Max	Mean	Std.	Skewness	Kurtosis
R Average	50	1,0	5,0	3,820	1,3045	-,694	-,886
Gallop Average	50	1,0	5,0	3,140	1,7410	-,042	-1,403
Hopping Average	50	1,0	5,0	3,636	1,4386	-,506	-1,402
SJ Average	50	1,0	5,0	3,887	1,3395	-1,115	-,101
HJ Average	50	1,0	5,0	3,760	1,4629	-,817	-,952
Skating Average	50	1,0	5,0	3,615	1,5594	-,721	-1,119
HBWT Average	50	1,0	5,0	3,740	1,2969	-,549	-1,130
BB Average	50	1,0	5,0	3,965	1,2258	-,938	-,202
Catching Average	50	1,0	5,0	3,887	1,3310	-,903	-,628
KTB Average	50	1,0	5,0	3,960	1,2427	-,877	-,453
Throwing Average	50	1,0	5,0	3,840	1,2614	-,751	-,331
Rolling Average	50	1,0	5,0	3,640	1,4107	-,613	-,869

According to the table, the overall scores of the scales of running, Galloping, bouncing, jumping from the obstacle, horizontal jumping, skating, hitting the ball with the shuttlecock, bouncing, catching, kicking the ball, throwing and rolling were examined and an independent sample t-test was conducted to analyze the difference between them.

Table 3: Comparison of Pretest and Posttest Variables

Skills	Gender	N	Average	S.D.	t	p
Running	Before	25	2,730	,9761	-10,906	,000*
	After	25	4,910	,2151		
Gallop Average	Before	25	1,460	,4371	-30,255	,000*
	After	25	4,820	,3425		
Hopping	Before	25	2,400	,9899	-12,103	,000*
	After	25	4,872	,2509		
Show Jumping	Before	25	2,947	1,3112	-6,963	,000*
	After	25	4,827	,3209		
Horizontal Jumping	Before	25	2,620	1,2668	-8,843	,000*
	After	25	4,900	,2394		
Skating	Before	25	2,340	1,2414	-10,150	,000*
	After	25	4,890	,1920		
Hit the Ball with Racket	Before	25	2,664	,9552	-10,643	,000*
	After	25	4,816	,3313		
Bouncing The Ball	Before	25	3,000	1,0557	-9,087	,000*
	After	25	4,930	,1146		
Catching	Before	25	2,827	1,1227	-9,384	,000*
	After	25	4,947	,1247		
Kicking The Ball	Before	25	3,010	1,1168	-8,421	,000*
	After	25	4,910	,1594		
Throwing	Before	25	2,740	,8400	-12,893	,000*
	After	25	4,940	,1493		
Rolling	Before	25	2,413	,9193	-12,730	,000*
	After	25	4,867	,2887		

In the difference analysis of running, Galloping, bouncing, jumping from obstacles, horizontal jumping, sliding, hitting the ball with the shuttlecock, bouncing, catching, kicking the ball, throwing and rolling, it was revealed that there was a difference between the data obtained before the service and the data obtained after the in-service training. Accordingly, the difference is statistically significant since the values measured after the in-service training are higher than the average of the values obtained before the in-service training. In the table below, the results of pre-training (pretest) and post-testing (posttest) are given.

Table 4: Results before in-service training (pretest) and after in-service

training (posttest)

Variable	N	PreTest		PostTest		p
		Average	S.D	Average	S.D	
Running	25	2,73	0,98	4,91	0,22	,00
Gallop Average	25	1,46	0,44	4,82	0,34	,00
Hopping	25	2,40	0,99	4,87	0,25	,00
Show Jumping	25	2,95	1,31	4,83	0,32	,00
Horizontal Jumping	25	2,62	1,27	4,90	0,24	,00
Skating	25	2,34	1,24	4,89	0,19	,00
Hit the Ball with Racket	25	2,66	0,96	4,82	0,33	,00
Bouncing Ball	25	3,00	1,06	4,93	0,11	,00
Kicking the Ball	25	2,83	1,12	4,95	0,12	,00
Throwing	25	3,01	1,12	4,91	0,16	,00
Rolling	25	2,74	0,84	4,94	0,15	,00
Catching	25	2,41	0,92	4,87	0,29	,00

DISCUSSION

The aim of this study is to design and evaluate a customized Physical Education program to improve object control skills of classroom teachers who teach physical education and Sports in Turkey. The participants' displacement and object control skills were tested using skills measured after a four-day in-service training program (posttest). The chart below shows the difference in performance values in displacement and object control skills after pretest and in-service training.

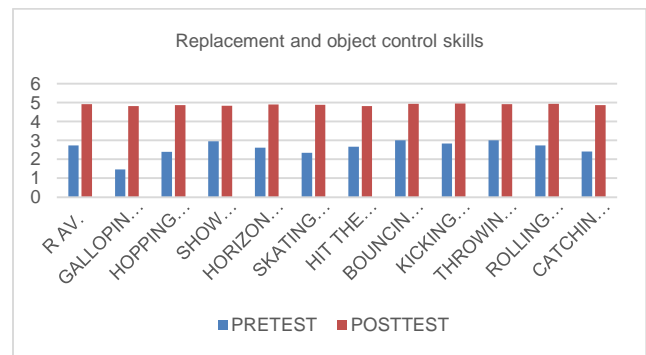


Figure 2: Displacement and object control skills (Pretest-Posttest)

In Figure 2, it is seen that the pre-test total score points of displacement and object control skills significantly increased the scores measured after in-service training (P<0.05).

The impact of these results may affect physical education teachers' perception of instructional design to control all basic movement skills. Classroom teachers, in particular, reveal that there may be a difference in place-holding and object-control skills depending on the various experiences children have at home before they start school. However, classroom teachers can support children who lag behind in space keeping and object control skills with an equalizing perspective. There is a similarity with the study of Veldman et al. (2017), who reported a significant gain in ground keeping and object control skills after a four-day intervention program in controlling basic movement skills.²¹

Other limitations of this study include the relatively small sample size (N=25) and also the lack of a randomized controlled group. It is recommended that future studies investigate the effect of the place-holding and object control skills program using a larger sample, including a control group of randomly selected physical education and Sport classroom teachers who continue the regular physical education program. In addition, future research should investigate whether the place-keeping and object control skills program with physical education teachers at the kindergarten, middle school and high school level has the same effect in reducing the school grade difference. The in-service training period can also be extended beyond four days or implemented in a number of smaller time periods. In future space-holding and object-

control skills programs, alternative methods of gaining ground-holding and object-control skills may also be considered, such as tailored warm-ups or lunch time.

The findings of this study reinforce the importance of establishing, implementing and evaluating basic movement skills control programs that are relevant and developmentally appropriate. Effective education in summer camps, school programs and sports teams must consider age and cultural sensitivity to maximize the potential of all children.

CONCLUSION

This research has shown that it is possible to develop the motor competencies of classroom teachers who teach physical education and Sport in Turkey in place-keeping and object control skills, with a specially designed in-service program.

In this research, teaching strategies and teaching tactics were used by focusing on the learning of classroom teachers who teach in-service education, physical education and Sport lessons. Physical education teachers should make a special effort to focus on students' development of space-keeping and object control skills by examining the current in-service training program. Because the ability to control basic movement skills in childhood is associated with lifelong physical activity. As a result of the research, it includes creating in-service trainings for controlling basic movement skills, which are strengthened, and thus more space-holding and object control skills, which will lead to more time to spend on sports and physical activity.

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