
THE EFFECT OF GAMES AND TRAINING PROGRAMS OFFERED AT BALL SCHOOL (BALSCHULE), ON BALL-COORDINATION AMONG FIRST AND SECOND GRADE STUDENTS

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Annotation. The aim of this study is to investigate the effect of games and training programs offered at the Ball school (Ballschule Heidelberg), on ball-coordination among first and second grade students. For this purpose, 38 students from 13 schools covered by the Ball school (Heidelberg Balschule), were chosen as the experimental group (non-random) ; in the meantime the consent of the students' parents were also received. Forty students as well as a control group (non-random) of eight normal schools were selected with parental consents. Then through using ball-coordination tests [BKT (BallKoordinations-tests). Ball Coordination's Tests], the level of the ball skills among both groups were measured in the pre-test and Post-test. Tests included kicking ball against the wall (under five conditions). The research methods were semi-experimental with experimental and control groups. Independent variables were also applied to the experimental group and the means and standard deviations were calculated through descriptive statistics. And then, a T-test for statistical analysis of data in related groups were applied. The results showed a significant effect of games and training programs offered at the school ball in the ball-coordination of subjects.

Keywords: ball school, coordination, ball-coordination tests, coordination capabilities.

Introduction

Unfavorable lifestyle habits and lack of motor experiments, induced by sedentary lifestyle tends to threaten the health of more and more children. Sedentary children often implement clumsy and awkward movements and skills. The continuation of such a process may reduce their confidence and eventually lead to the resignation of their friends. To avoid such a problem, we must take control of the it. And then /solutions should be offered to change their lifestyles and unhealthy habits.

Many sports experts believe that by providing more opportunities for children to have motor experiences during their childhood we can provide a variety of basic skills for them. Successful athletes have had this experience many times in their childhood (Kröger and Roth 1999). One way to encourage children to exercise at an early age is by offering a variety of simple games. By doing these games, especially ball games, children can learn the necessary skills and thus their quality of life changes in a positive way. The power of magic of the ball can be a long time, one or more of the Childs engaged. Maybe something like a ball can prove to be desirable for mobility in children. Hence, the idea of creating a center for ball and ball games began to take shape. This center eventually came to be called Ballschule (Ball School). Ball Schools in Heidelberg started in 1998 under the supervision of Prof. Doctor Klaus Roth; their aim was to restore the spirit of streets games among children. Games and exercises in this school were based on the latest scientific discoveries in physical education; moreover, the ideas of different science experts and specialists in psychology were also taken into consideration. Children between the ages of 4 to 12 practiced the games and exercises for 45 minutes once or twice a week. They did these exercises and games under the supervision of special trainers. Heidelberg Ball School is comprised of three separate but closely related-together. Each of these sections is designed with a specific purpose. In other words, each section completes the previous section. Ball School is move alphabet for children. Similar to learning to read and write at school, children are first taught the alphabet of the games and exercises in The Ball School (Kröger and Roth 1999). The aims and benefits of Heidelberg Ball School Project include; providing recreation for children in a happy and friendly atmosphere, fun games (especially for young children), identification and development of individual talent in children, developing multiple capabilities in children (physical, motor skills and coordination), survival skills , the ability to transfer the experience gained to the ball sports, increasing the level of confidence and self-esteem among children, preparing children to participate in team games and championship and eventually a gradual introduction of ball games (Kröger and Roth 1999). An athlete is not born with coordination capabilities. Children with learning and repeating moves and skills, their motor coordination gained (Weineck 2000). The motor coordination is the rhythmic movements of the body. These motions are done through different senses such as vision, audition and tactile. Development of coordination requires physical growth, gaining direct information from the environment and development of the body motor system (strength, endurance, balance, flexibility, etc). Motor coordination may be related to a body part or several parts of the body. The main part of coordination is controlled by brain and spinal cord. In general, the neuromuscular system is controlled by the brain and the spinal cord (Domkin et al. 2002 and Garrett 2003).

Motor skills are applicable in both areas; one of these areas is the gross motor skills and the other one is fine motor skills. In gross motor skills, the emphasis is on coordination control of the major muscle groups of the body and in the fine skills, the emphasis is on the control of small muscle groups (Guyton 1986). Accordingly, children who for any reason cannot learn the proper use of their large and small muscle probably will not get a lot of success in sports and personal affairs. Regular exercise and proper frequency skills can increase the quality of coordination in performance. McCall (2004) showed that children can make good coordination of their motor behavior and mobility

opportunities during their first two years of life. He believes that it will continue to have positive effects in their later life.

Many exercises, especially those used for learning motion patterns, need to establish coordination between body limbs (Summerbell et al. 2005). There are many skills in everyday life and in sport activities that require appropriate and timely use of the arms and legs. Research studies done in this area show that in order to have a good performance in different skills in sports there should be a high degree of coordination between the limbs (Schumacher et al. 2003 and Skinner and Pike 2001). According to this research, it became clear that the ball sports had a positive effect on eye coordination-hand (Gillberg 1992). In addition learning the techniques and movement patterns such as paw in volleyball, coordination between limbs proved to be quite important (Hirani and Moradi 2012).

One of the major benefits for the child's coordination a capability, quality of life is lived in other years. Hollmann and Hettinger 1996 saving in energy costs, prevent injuries and delay fatigue from the advantages of a good coordination considered.

For skillful performance, the nervous system and muscle efficiency are required. Three components are involved in the system as a collection of closely related work. The first component consists of the sensory nerves. They receive information from the outside environment or from the outside of the central nervous system and transmit this information to the central nervous system (CNS). Information is transmitted through internal receptors (proprioceptors⁴ located in muscles, tendons and joints), or through external sensors such as the ears, eyes and touch are received. The second component is the central nervous system whose job is to process the information received from sensory nerves. The third part consists of the peripheral motor nerves transfer commands to the muscles and organs of the central nervous system (Guyton 1986). Defects in each of these components can cause a lack of coordination and movement disorders. Maurer et al. (2000) in their research demonstrated and confirmed the importance of cooperation between the eyes, the ears and the central nervous system. When the ball comes to a child, it comes from a variety of stimuli through sensory nerves to the central nervous system but the skilled Child just their desired goal respond and to other stimuli not responses. Chaos in a movement or skill occurs when the child is not required stimuli to respond.

4. Proprioceptors

One of the main reasons related to skillful or non-skillful performance in children's skills is the use of their hands and feet. Of course, other factors such as the nervous system can be affected in creating a good coordination. Some other important factors are the individual differences the genetic structure, some motor disorders, normal or low IQ, different training methods, access to sports facilities, children's motor history contains reflections, fundamental movements and motor skills or sports and participation of different senses such as hearing, vision, touch and sensomotor. In short, the movement for children's progress and success can found: Child + movement and manipulate the environment around = acquisition ability and skill + coordination between gained skills = performance skillful.

Motor coordination is debatable in two categories: one general coordination and the other specific skills coordination. General coordination is related to the infrastructure coordination and applies to various sports. It can also provided specific coordination patterns in motor skills (Hirtz 1997).

Specific coordination can be found in various sports. Specific coordination can provide the necessary ability for the athletes to perform with little flaw and high quality. In achieving a specific coordination (ball coordination), three major factors of eye, balance and precision are usually involved. Other factors such as intelligence, motivation levels, and adequate physical fitness and training efforts are effective in the success.

Coordination capabilities are a collection of different components. Athletes who do not integrate these components will not be able to perform skillfully (Weineck 2000). These components include coupling, reactions, differentiation, balance, organization, movement and rhythm (Meinel and Schnabel 1998). Weineck (2000) confirmed that a successful implementation of a skilled motor depends on the integration of components of coordination. To achieve higher levels of coordination and to improve coordination capabilities, exercises should be new, unfamiliar and harder than previous levels and better with a combination of simple movements be. Degree of difficulty in exercises from simple to difficult are slow but easy, quick but easy, slow but hard and finally fast but hard (Kphart 1977).

Research Methodology

The research method used in this study is semi-empirical. The research design of this study uses preliminary design and final test with the control and without the use of random selection. The sample consisted of two groups of students who were divided into experimental and control groups.

Sample Group: Samples of students were selected from first and second primary grades who participated in Heidelberg project Ball school. The students took part at school's sports classes in addition to bi-weekly participation in Balls school classes. Seventy nine consent forms were sent to parents of the students; 38 of the families completed the consent forms and agreed to let their children participate in the study.

Control group samples: First and second primary grade samples of students were selected. These students participated only in their school sports classes. Of the eight schools (165 students), 40 children participated in this study. Tests in the pre-test and post-test performed twice in the beginning and end of the school year. Ball skills to assess students in this study were ball coordination tests. Skills used in this study assessed the skills of kicking (shooting) balls against a wall (2.2 m.) from a distance of 1.5 meters. Each student practiced with the ball twice and then rested for a minute. The skills performed under five pressure conditions. Therefore, every child in total played 10 times. Tests lasted for 45; and there were two sessions every week. The total duration of the test took about 6 weeks (12 weeks for the pre-test and the post-test). Mean and standard deviations of the data were obtained through the descriptive

statistics estimated. The analysis of data was performed by using inferential statistics. To examine the differences in means, the t-test was used for related groups and a significant level of 0.05 was used to test the research hypotheses.

Research findings

Table 1 shows the number, the mean and the standard deviation of height, weight and age of the subjects in the experimental group. As you can see in this table, the average age of the subjects is 6/5 years old and the oldest is 7. Average weight is 27 kg and their mean height is 127 cm.

Table 1. Mean and standard deviation of the experimental group profile

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Age	38	6.00	7.00	6.6316	.48885
Weight	38	20.00	34.00	26.9474	3.55609
Height	38	118.00	134.00	127.2368	3.59755
Valid N (list wise)	38				

Table 2, shows the number, the mean and the standard deviation of height, weight and age of the subjects in the control group.

Table 2. Mean and standard deviation of the control group Profile

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Age	40	6	7	6.65	.47675
Weight	40	17	48	29.175	3.44636
Height	40	115	151	130.775	3.66744
Valid N (list wise)	40				

Table 3, shows the items marked with a dark color, kicking (shooting) skills under time pressure and composition. Average pre-test to post-test in the experimental group did not decrease but increased. However, this increase was very small. In other cases, the averages in post-test to pre-test was reduced.

Table 3. Comparison of pre-test and post-test averages of five pressure conditions

Pressure conditions	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Time pressure. Pre-test	36	16.76	111.90	37.6150	17.75947	315.399	2.379	.393	8.004	.768
Time pressure. Post-test	36	15.95	112.00	38.8633	19.22194	369.483	2.006	.393	5.130	.768
Precision pressure. Pre...	38	18.82	110.14	47.4384	25.97347	674.621	1.252	.383	.310	.750
Precision pressure. Post..	38	16.03	101.19	42.0932	21.98664	483.413	1.634	.383	1.839	.750
Composition pressure. Pre..	38	27.80	92.79	42.2253	14.65252	214.696	1.806	.383	3.441	.750
Composition pressure.Post.	38	27.10	93.60	42.3505	14.09804	198.755	2.017	.383	4.616	.750
Organisation pressure. Pre..	38	13.85	110.00	42.0088	18.33680	336.238	1.816	.383	4.886	.750
Organisation pressure.Post.	38	14.82	94.00	39.3811	16.09662	259.101	1.238	.383	2.402	.750
Variable pressure. Pre-test	38	18.80	83.50	42.2345	15.86979	251.850	.912	.383	.353	.750
Variable pressure. Post-test	38	17.60	83.50	40.4795	17.37904	302.031	.938	.383	.093	.750
Valid N (list wise)	29									

Before testing hypotheses, Kolmogorov-Smirnov test was used to ensure normality of the data.

Tables 4 shows the level of significance marked with darker color, more than 5%. So the normal distribution of all variables and t tests and other parametric tests can be used.

Table 4 One-Sample Kolmogorov-Smirnov Test

		Shoot-pre-test	Shoot-post-test
N		37	37
Normal Parameters ^{a,b}	Mean	45.3389	43.2392
	Std. Deviation	9.75105	9.27485
Most Extreme Differences	Absolute	.138	.124
	Positive	.138	.124
	Negative	-.091	-.071
Kolmogorov-Smirnov Z		.839	.757
Asymp. Sig. (2-tailed)		.482	.615

a. Test distribution is Normal. b. Calculated from data.

Conclusion

Research results show that exercises and games presented in Ball school have positive effects on many of the ball kicking skills among children who are in experimental group than the control group. The results of these findings are compatible with the results of the investigation that Prior, Sanson, smart, Oberklaid 1999, Rain et al. 2004, Scholz and Schöner 1999, Jeanne rod 1998 did. They believe that providing training, particularly through games allows children to experience other motor skills. Therefore, they can develop their motor coordination. In addition, ball exercises have a positive impact on children's ability to write. The findings also confirm Kröger and Roth's comments 1999. They believe that ball games can help to develop the ability to coordinate as well as helping to enhance confidence. As a result, the quality of children's lives is improves. The findings indicate the positive impact of involving children in ball games for development in ball coordination among children. In this context, the results achieved by Pique et al. 2010 are compatible. There can be seen significant improvement in motor coordination skills of children who underwent ball exercise. Accordingly, they predict that these children will have a more favorable performance in terms of performing ball skills in future. And thus, these children may enjoy higher intellectual and spiritual conditions. Since the experimental group participated both normal exercise classes and Ball school classes, they had than control group a higher level of fitness. Therefore, the performance of motor skills is better than their counterparts in the control group. Accordingly, our findings matched with the findings of Haga 2008 about the relationship between fitness and motor skills in children's. His aim was to determine whether the level of physical fitness and motor skills in children 9 to 12 years indicated if there was a relationship, or not. The study population consisted of a sample of 67 children with a mean age of 9.7 and variance 0.3. Statistical analysis results indicated a strong and significant relationship between level of physical fitness and motor skills of their children. So we can predict which children are undergoing fitness training program in terms of the level of motor skills better are.

Generally, the results of this study and similar studies show that although other factors may improve motor coordination and particularly ball coordination for children there are, however, appropriate ball exercise models that can be used to develop ball skills.

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