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EFFECT OF STRUCTURED PHYSICAL EDUCATION PROGRAM ON FUNDAMENTAL MOTOR SKILL DEVELOPMENT OF CHILDREN BETWEEN 5 TO 6 YEARS OF AGE

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ABSTRACT

The purpose of this research was to study the effect of Structured Physical Education Program (SPEP) on Fundamental Motor Skill (FMS) development of children between 5 to 6 years of age. For this experimental research, 50 children from Challenger Public School, Pune were selected using non-probability based convenience sampling technique, 25 of which formed the control group and 25 formed the experimental group. The experimental group underwent a 12 week SPEP designed by the researcher which consisted of locomotor and manipulative skills based on the Physical Education (PE) framework. The control group underwent the regular PE program for the same duration. The performance of the children was observed 4 times i.e. once before commencement of the SPEP, after 6, 9 and 12 weeks using researcher designed assessment tool, where the FMS were divided into sub- skills that were rated on a 5 point scale. Based on all the 4 observations, Paired Sample 't' test was computed to study the effect of 6 weeks, 9 weeks and12 weeks of SPEP separately, which showed 6 weeks, 9 weeks and 12 weeks of SPEP had significant effect on all the locomotor skills except walking. Similarly only 9 weeks and 12 weeks of SPEP had significant effect on all the manipulative skills.Change in performance i.e. the effect of 6 weeks, 9 weeks and 12 weeks were calculated and compared using Paired Sample 't' test which showed that there was significant improvement in 6 weeks and 9 weeks of SPEP, after which plateau was observed in the improvement of the same. Similarly in case of manipulative skills, no significant improvement was observed in 6 weeks, 9 weeks and 12 weeks of SPEP. Independent Sample 't' Test was administered to compare the effect of 6 weeks, 9 weeks and 12 weeks between the groups which showed, as compared to the control group, in experimental group, there was significant effect of 6 weeks, 9 weeks and 12 weeks of SPEP in case of the locomotor skills except walking. Similarly, there was no significant effect of 6 weeks, 9 weeks and 12 weeks of SPEP in case of all the manipulative skills. Hence it was concluded that there was significant effect of SPEP on all the FMS components (except walking).

Key Words: Fundamental Skills, Locomotor Skills and Manupulative Skills.

INTRODUCTION:

Physical Activity (PA) is defined as any bodily movement produced by skeletal muscles which ultimately result in energy expenditure. Regular participation in Moderate to Vigorous Physical

Activity (MVPA) is beneficial in the prevention of coronary heart diseases and other cardiovascular diseases (Anderson and Haralsdottir 1994; Bovenset. Al., 1993). It has been proved through various researches that there are a number of 'Lifestyle Diseases' that could be positively affected by participation in regular physical activity (Corbin and Pangrazzi, 1993). In 1993, The American Heart Association added 'lack of physical activity' to its list of the major causes for heart diseases. Participation in MVPA hasalso been cited as one of the major preventive measures against the diseases like colonal and breast cancer, diabetes, obesity and inactivity is an established cause for such diseases (Powell and Blair, 1994). According to Welberg and Ward (1985), increase in physical activity is essential for long term weight control.

The development of Fundamental Motor Skills (FMS) in early years forms the basis for later movements and physical skills (Clark, 1994; Gabbard, 2000; Haywood & Getchell, 2002; Payne & Isaacs, 2002; Seefeldt, 1982). It is a well-known fact that FMS mastery forms the foundation for learning advanced motor skills, such as sport-specific skills (Gallahue and Ozmun, 2002). In addition, it plays an important role in the general development of children (Krombholz, 2005; Haga, 2008). Fundamental Motor skills help children control their bodies, manipulate their environment and form complex skills and movement patterns involved in sports and other recreational activities (Payne and Isaacs, 2002; Davis and Burton, 1991). Although physical activity and movement experience are valuable factors in the developmental process of FMS (Graf et al., 2004; Hume et al., 2008; Kahl and Emmel, 2002), nowadays a majority of children participate insufficiently in such activities (Anderssen et al., 2006; Ekelund et al., 2005).

Given this knowledge, it becomes clear that there is a substantial need to stimulate the development of Motor Skills with the focus on a healthy and physically active lifestyle (Barnett et al., 2009). In general, it is assumed that FMS are established between 2 to 7 years of age(Gallahue and Ozmun, 2002). It is also proved that FMS proficiency in elementary school children predicts adolescent PA behaviour (Barnett et al., 2009; Cliff et al., 2009). To be physically active and engaged in sport-specific skills, development of different performance areas as stability, locomotion, object control and fine motor skills are necessary.

Children need both structured and unstructured motor activity experiences for well-rounded motor development. Unstructured activities include outdoor play on playground equipment and opportunities for the child to explore climbing, balancing and swinging skills. Providing unstructured motor play allows for child initiated experiences and physical play (NASPE, 2002). Structured experiences introduce children to a variety of new skills that explore movement individually, with a partner and ultimately in a small group. Structured activities teach the child about body awareness and the body's movement capabilities. It is important to lay a foundation upon which to build future motor skills.

Motor skills emerge and evolve during the preschool and early elementary school years (Ulrich, 2000). Quality Physical Education programs for the children are recognized as the foundation for healthy, physically active lifestyles as adults (Centers for Disease Controland Prevention, 2010a). It is believed that during the early elementary school years, children must develop FMS to a certain "proficiency level" in order to be able to perform more complex movement skills and patterns (Seefeldt, 1982). These movement experiences in the early years play a substantial role in the development and maturation of fundamental motor skills (National Association for Sport and Physical Education [NASPE], 2002; Ulrich & Ulrich, 1993).

Hence, the researcher wanted to investigate if a structured format of the PE Curriculum followed for the children of 5 to 6 years of age would make a difference in their FMS acquisition? And if yes, how much time do the children require to achieve the desired level of the FMS?

MATERIAL AND METHODS:

Experimental research method was used to study the effect of SPEP on FMS development of children between 5 to 6 years of age.

Subjects:50 children out of 90 between 5 to 6 years of age, from Challenger Public School, Pimple Saudagar, Pune were selected as sample using non probability based convenience sampling technique, which were further divided into two groups as experimental group (15 boys, 10 girls) and control group (13 boys, 12 girls). The experimental group underwent an SPEP for

12 weeks and the control group attended their regular PE classes in the School for the same duration.

Assessment Tool:The teacher made assessment tool was used to assess the level of FMS development of the children wherein every FMS (walking, running, hopping, horizontal jump, vertical jump, skipping, leaping, galloping, sliding, catching, throwing, kicking, trapping, ball rolling and dribbling) was divided into sub- skills and rated on 5 point scale, ranging from 0-4. The validity of the teacher made assessment tool was established with the help of the experts in the related field.

The Program: The program was a 12 week program which consisted of the activities and games based on all the FMS components. The length of each session was 30 minutes which took place thrice a week according to the specific lesson plans.

Procedure: Pre-test Post-test design with two mid-term observations was used to study the effect of SPEP on FMS development of the children wherein the children from experimental group and control group were assessed 4 time i.e. once before the commencement of the program (O1), after completion 6 weeks (O2), 9 weeks (O3) and 12 weeks (O4) of SPEP and regular PE program respectively. The collected data was analysed through following 3 steps:

A) For experimental group, Paired

Sample 't' test was used to study the effect of 6 weeks, 9 weeks and 12 weeks separately.

B) Change in performance was

calculated and compared using Paired Sample 't' test.

C) Independent Sample 't' test was

used to compare the effect of 6 weeks, 9 weeks and 12 weeks of SPEP between the groups.

Results:

Descriptive statistics was used to obtain the mean scores of all the 4 observations in the 15 FMS (Table 1) and the results were drawn through following steps.

A) Paired Sample 't' test: Paired

Sample 't' test was used to study the effect of 6 weeks, 9 weeks and 12 weeks of SPEP on FMS development and following comparisons were made:

1. O1 -- O2
2. O1 -- O3
3. O1 -- O4

The results of the above comparisons show that, in case of locomotor skills there was significant difference in all the three comparisons except Walking at 0.05 level of significance and in case of manipulative skills no significant difference was found in the 1st comparison at 0.05 level of significance but the significant difference was found in the rest of the two comparisons at 0.05 level of significance.

Table 1 Descriptive Statistics of All the FMS Components

Observations / Skills	O1	O2	O3	O4
Walking	22.60	22.68	22.76	22.84
Running	17.36	17.68	18.48	18.60
Hopping	8.48	15.16	19.08	19.12
Horizontal Jump	5.20	15.84	21.88	21.96
Vertical Jump	8.84	14.72	18.56	18.60
Skipping	9.84	17.92	19.28	19.28
Leaping	7.00	16.16	18.68	18.72
Galloping	8.80	20.40	22.84	23.24
Sliding	14.72	21.60	22.48	22.68
Catching	14.40	14.60	14.84	14.92
Throwing	16.32	16.40	16.52	16.76
Kicking	14.08	14.20	14.32	14.60
Trapping	10.32	10.40	10.52	10.64
Ball Rolling	16.32	16.44	16.48	16.76
Dribbling	10.08	10.16	10.28	10.48

B) Paired Sample 't' test: Change in performancei.e. the effect of 6 weeks, 9 weeks and 12 weeks were calculated and Paired Sample t Test was used to compare the effects of the same, i.e.

1. Effect of 6 weeks and Effect of 9 weeks

2. Effect of 6 weeks and Effect of 12 weeks
3. Effect of 9 weeks and Effect of 12 weeks.

In case of locomotor skills, significant difference was found in effect of 6 weeks & 9 weeks and effect of 6 weeks & 12 weeks except Walking at 0.05 level of significance but no significant

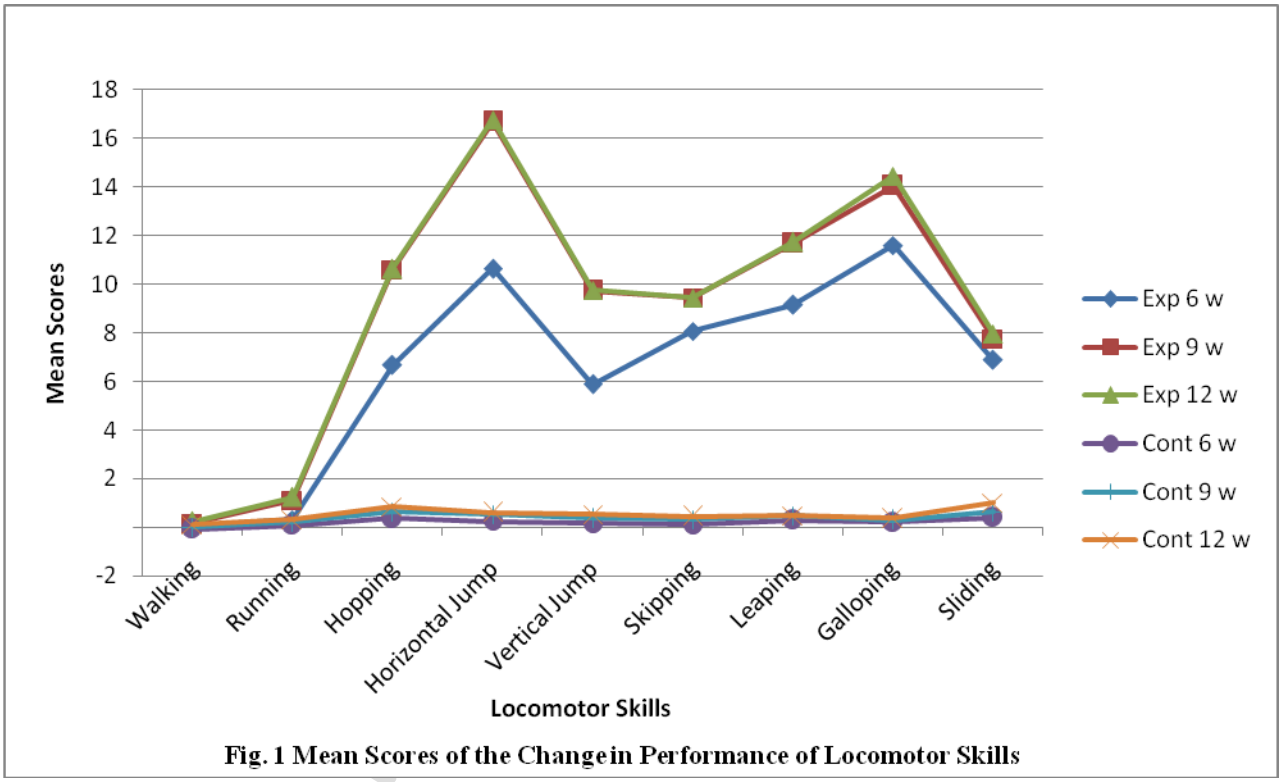

Fig. 1 Mean Scores of the Change in Performance of Locomotor Skills

difference was found in the effect of 9 weeks & 12 weeks in all the FMS (Fig 1).

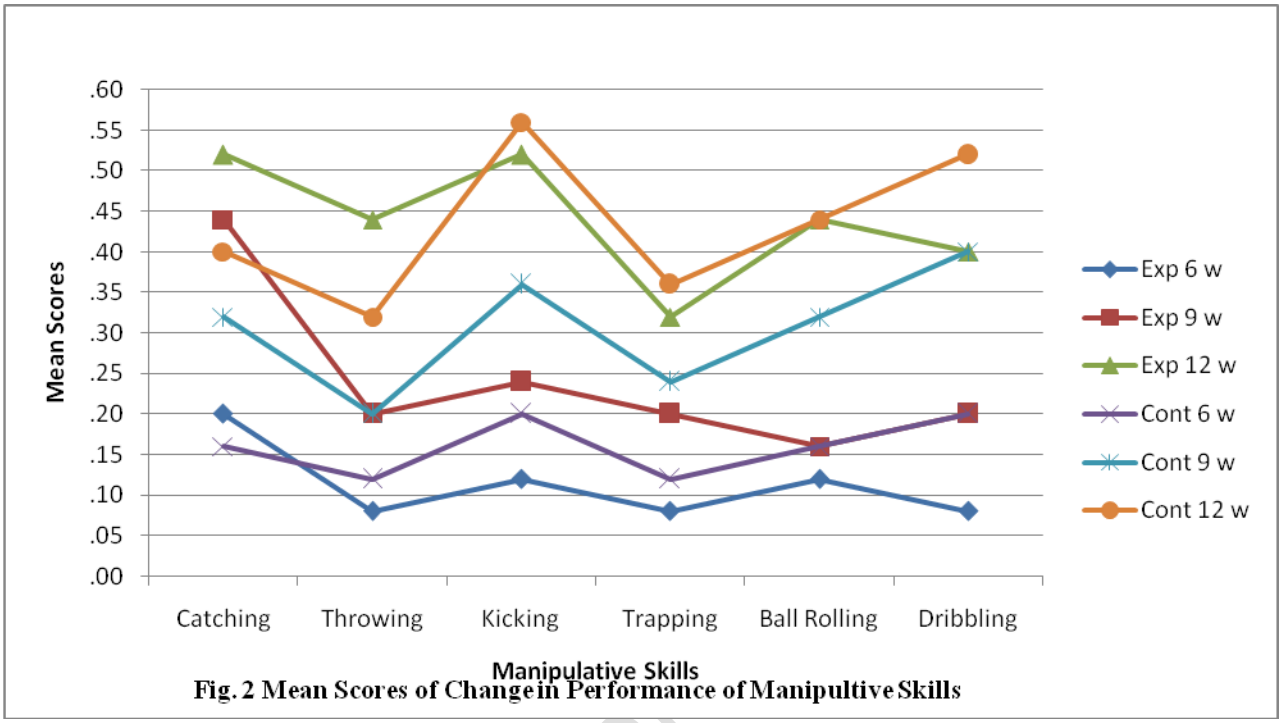

Fig. 2 Mean Scores of Change in Performance of Manipultive Skills

Similarly in case of manipulative skills, no significant difference was found in the effect of 6 weeks & 9 weeks at 0.05 level of significance but significant difference was found in the rest of the two comparisons i.e. in the effect of 6 weeks & 12 weeks and effect of 9 weeks & 12 weeks at 0.05 level of significance except catching and trapping (Fig 2).

A) Independent Sample 't' test: The change in performance of 6 weeks, 9 weeks and 12weeks of both the groups were compared to see the effect of SPEP on FMS development of the children where significant difference was found in all the 3 comparisons (effect of 6 weeks, 9 weeks and 12 weeks) between the experimental group and the control group except walking at 0.05 level of significance. Similarly, no significant difference was found in all the 3 comparisons (effect of 6 weeks, 9 weeks and 12 weeks) between the experimental group and the control group at 0.05 level of significance in case for manipulative skills.

DISCUSSION:

This study demonstrates that there was significant difference in change in performance between experimental group and control group in case of locomotor skills except walking. But in case of manipulative skills, no significant difference in change in performance between experimental group and control group was found. Different theorists in the 1980s proposed that motor skills could be improved through practice, learning and environmental interaction which promote the integration of identified sequential maturational stages of motor development (Gallague and Donnely, 2003; Gallahue and Ozmon 2006).

Waffa (2010), concluded in his study that, performed structured and unstructured pattern program is more effective than daily activity in order to develop the FMS. In his study, he found that the gross motor skills can be influenced by an appropriate movement program. Apache (2005) investigated the effect of physical activity program on the motor development findings of which indicated that this program is even more effective than direct instruction program. Goodway and Branta (2003) investigated the effects of intervention program (12 weeks) on the fundamental motor skill development of children at risk of developmental delay. They found that the intervention program group attained better results than control group in object control and locomotor skills.

Savage (2002) investigated the effects of object control intervention program and her study indicate that Object Control (OC) skills can be significantly improved in as little as eight-weeks (480 minutes) ofinstruction, and that following intervention, boys and girls demonstrate OC skills at a similar skill level. Without intervention, young children who are delayed in object control skill performance may not overcome these motor skill delays.

CONCLUSION:

In case of experimental group, 6 weeks, 9 weeks and 12 weeks of SPEP had significant effect on all the locomotor skills except walking. Similarly only 9 weeks and 12 weeks of SPEP had significant effect on all the manipulative skills.

In case of locomotor skills, there was significant improvement in 6 weeks and 9 weeks of SPEP after which plateau was observed in the improvement of the same. Similarly in case of manipulative skills, no significant improvement was observed in 6 weeks, 9 weeks and 12 weeks of SPEP.

As compared to the control group, in experimental group, there was significant effect of 6 weeks, 9 weeks and 12 weeks of SPEP in case of the locomotor skills except walking. Similarly, there was no significant effect of 6 weeks, 9 weeks and 12 weeks of SPEP in case of all the manipulative skills.

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