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## Impact of model physical education curriculum on development of strength on dexterity among pre-adolescent school boys

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### Abstract

The curriculum is based on the social philosophy which is changing phenomenon. Dexterous refers to the skill and grace in physical movement, especially with the use of the hands. The purpose of the study was to find out the impact of model physical education curriculum on bio-motor development of maximum strength among preadolescent dexterous boys. To achieve the purpose 40 right hand dominance preadolescent school boys with the age category of 11 to 12 years from Dream Land educational institute Kulgam district, Jammu & Kashmir, India were selected as subjects at random and, the selected subjects were divided in to two groups namely physical training (n=20) and control (n=20). The physical training group underwent training for 45 min/4 days/15 weeks. The maximum strength hand grip strength on right and left hand was tested by (Hand grip dynamometer) were selected as dependent variable and tested before and after the experimental period for both the groups. The collected data were analyzed by using ANCOVA and the magnitude of Improvement was also calculated to find out the level of improvement on dexterous. Level of significance was fixed at 0.05. The result of the study shows that the model physical education curriculum helps to improve the hand strength on dexterous among preadolescent school boys.

**Keywords:** Physical education curriculum, bio-motor, maximum strength, dexterous preadolescents

### Introduction

Curriculum is a mean to achieve the aims of education which are dynamic and go on changing with the changing social requirements. It includes all the experiences that child undergoes the guidance of school authorities. It is the interaction between and among pupils (Hamilton and David, 2014) [6]. Physical education is distinguished from other curricular areas by its primary focus on the body and on physical experiences and is an integral part of the educational process, without which the education of child is incomplete. Curriculum include activities that help kids obtain and improve skills, such as running, catching, throwing and striking, applicable to sports such as base ball, volleyball or karate. Balancing skills could be applied to dance or gymnastics. Physical education is distinguished from other curricular areas by its primary focus on the body and on physical experiences and is an integral part of the educational process, without which the education of child is incomplete.

Dexterity is usually defined as a function of control, the coordination of muscle movements usually in synchronization with the eyes, and it can also be defined as the quality of motor skills of hands and fingers (Baum C, 1995) [1]. It is a very valuable, versatile capacity involved in all variety of activities and situations, and demanded in many jobs and in everyday life. Dexterity in each person is qualitatively different and unique. Dexterity has been assessed by occupational therapists using tests of hand skill as aptitude tests for selection and vocational guidance purposes, while physicians have used assessment methods to measure motor recovery of patients after stroke (Clark, Czaja, & Weber, 1990) [4]. Despite the frequent use of such tests, there is a notable lack of information regarding the definition of the factors involved in manipulative performance and the different types of dexterity that account for quality of function. Handedness is an attribute of humans defined by their unequal distribution of fine motor skill between the left and right hands. An individual who is more dexterous with the right hand is called right-handed (sinistralists), and one who is more skilled with the left is

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said to be left-handed (dextralists). Minorities of people are equally skilled with both hands, and are termed ambidextrous (Kabbash, P, 1994) [8].

Strength refers especially to physical, mental, or moral robustness or vigor enough to do the work. Power is the ability to do something and especially to produce an effect (Brookfield, 1994) [3]. Strength is essential for physical activity. The value obtained for the strength of a muscle or muscles depends on the type of action, the velocity of the action, and the length of the muscle or muscles. Although early gains in absolute strength are influenced by neural factors, long-term gains depend mainly on increases in muscle size.

A curriculum is the instructors road map of what students need to learn and how it will be done, effectively during the class time specifying concrete objectives for students learning will help to determine the kinds of teaching and learning activates that we use in class.

### Method and Material

To achieve the purpose 40 right hand dominance preadolescent school boys with a selected age category of 12 year from Dream Land educational institute Kulgam district, Jammu & Kashmir, India were selected as subjects at random, the selected subjects were divided in to two groups namely physical training (n=20) and control (n=20). The physical training group underwent training for 15 weeks/ 4 days a week and 45 minutes per day, including warming up and cooling down exercises. The maximum strength was selected

as criterion variable. The hand grip strength (maximum strength) was tested by Hand Grip Dynamometer which was selected as testing tool. The subjects were tested for maximum strength for right and left hand with the help of hand grip dynamometer was selected as dependent variable and was tested before and after the experimental period for both the groups. The model physical education curriculum was implemented on the experimental group, while as the control group as usual perform their day to day activities normally. The chosen curriculum contains four parts, namely part 'A' (the physical exercises), part 'B' (the yogic asana), part 'C' (theoretical part) and Part 'D' (the recreational part). The physical exercises contain the simple exercises and some special exercises like Dribbling in Basketball (right and left hand alternatively), Chest pass in Basketball, Dribbling in Hockey, Under Arm and Upper Arm pass in volleyball Ball juggling (both right and left hand). The yogic part includes the asana like Tol Asana, Anand Bal asana, Parsvottan Asana etc. for fifteen weeks, four days per week and forty five minutes per day including warming up and cooling down exercises. The collected data were analyzed by using ANCOVA to find out the significant difference, and the magnitude of improvement was also calculated to find out the level of improvement on dexterous. Level of significance was fixed at 0.05.

### Results

Ancova of Experimental and Control Group Among Under 13 Boys On Hand Grip Strength Test Of Dextrality

| Test                     |      | Experimental group | Control Group | SOV | SS      | Df | MS     | F       |
|--------------------------|------|--------------------|---------------|-----|---------|----|--------|---------|
| Pre Test                 | Mean | 23.47              | 23.20         | B   | 1.513   | 1  | 1.513  | 0.295   |
|                          | SD   | 2.28               | 2.24          | W   | 400.375 | 78 | 5.133  |         |
| Post Test                | Mean | 25.22              | 23.20         | B   | 82.013  | 1  | 82.013 | 15.400  |
|                          | SD   | 2.36               | 2.24          | W   | 415.375 | 78 | 5.325  |         |
| Adjusted Post Test       | Mean | 25.09              | 23.33         | B   | 62.090  | 1  | 62.090 | 82.057* |
|                          |      |                    |               | W   | 58.264  | 77 | .757   |         |
| Magnitude of improvement |      | 6.54%              | 0.55%         |     |         |    |        |         |

\*Significant

Were SOV = source of variance, SS= sum of squares, MS = mean difference.

(The table values of df 1 and 78 and 1 and 77 was 3.96 and 3.97 respectively)

\* Significant at.05 level of confidence.

The result of above table shows that, there was a significant difference between experiment group and control group on hand grip strength of dextrality among 12 years old pre-adolescent dexterous school boys. Further, the result shows that the experimental group shows better improvement on hand grip strength of dextrality when compared with control group.

### Discussion

The findings confirm that model physical education curriculum has a significant impact on maximum strength on dexterous. The classification of handedness was based on the writing hand. It is speculated that a larger corpus (any body) callosum (technical) in left-handed men allows for the greater transfer of training between the hands.

The findings confirm that model physical education curriculum which includes the part A (Physical Exercises) Part B (Yogic Asana) Part C (theoretical part) and Part D (The Recreational Part), especially the physical exercises and yogic part has made a significant impact on strength. All these parts have a good impact on the neuromuscular system of the body which helps in the improvement of dexterous among 12 years old pre-adolescent school boys. The following findings

of different researchers were in conformity with this study.

Olafsdottir Zatsiorsky (2008) [9] investigated the effect of 6 week of Strength training on maximal pressing (MVC) force, indexes of Finger Individuation (enslaving), and performance in accurate force production tests and in functional hand tests in healthy, physically fit, elderly individuals. Twelve participants (average age 76yr) exercised with both hands. One of the hands exercised by pressing with the proximal phalanges (targeting mainly intrinsic hand muscles), where as the other hand exercised by pressing with the finger tips (targeting mainly extrinsic hand muscles). Training led to higher MVC forces, enslaving indexes, and improved performance on the peg board grooved test. The results suggest that strength training is an effective way to improve finger strength.

Incel *et al.*, (2002) [7] have evaluate the grip and pinch strength differences between sides for the right and left handed population. The study included 128 right and 21 left hand dominant volunteers. Grip strength of the participants was measured by using a Jamar dynamometer. Pulp pinch strength measurements were performed by manual pinch meter. When the study group was totally evaluated, a statistically significant difference was found between the

group and pinch strengths of dominant and non-dominant hand. For further information they were grouped 149 participants as right and left handed and investigated the number of subjects with stronger non-dominant hand for each group. The percentage of stronger non-dominant hand grip was 10.93% and 33.33% for right and left handed groups respectively. The rustles were less significant for pinch strength with 28.12% and 28.57% for right and left handed subjects respectively

Speed strength as the ability to quickly execute an unloaded movement or a movement relatively small external resistance. Speed strength is assessed by the speed of movement. The excessive maximum strength training can impair speed-strength. Man and women were compared on dexterous on writing and throwing and throwing performance. The result conforms a decrease with age in the prevalence of sinistrality, but indicates that age-specific rates of mixed and left handedness are distinct.

### Conclusion

It was concluded that the model physical education curriculum improves right hand and left hand strength (maximum) of dexterous (Hands). The non-dominant hand shows better improvement on hand strength. Hence, non-dominant has improves strength when compared to base level.

### Implication

With the help of this model physical education curriculum, the ambidextrous quality gets developed among the sports persons and professional students like engineer, surgeon and the people dealing with information and technology. Being ambidextrous (using both hands) in sports activity is especially helpful during high-level competition. Further the rocket and bat game players will be given such type of specific physical training to improve their dexterity, and to reduce higher use syndrome of hand.

The model physical education curriculum helps to develop the dexterous from early stage among preadolescents. If an individual is heaving better dexterity, they can able to do any sort of work with both hands simultaneously without getting tired. The findings of the study are helpful for physical educationists and coaches to enhance the dexterity of players who involved in various sports activities. The players can use their dominant and non-dominant hands effectively while performing any kind of physical activity. Being ambidextrous (using both hands) in sports activity is especially helpful during the competition

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