

Physical Education Curriculum and Its Impact Up On Preadolescent Dexterous Boys

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ABSTRACT

Dexterous refers to the skill and elegance in physical movement, especially in the use of the hands, an individual who is more dexterous with the right hand is called right-handed (dextralists), and one who is more skilled with the left is said to be left-handed (sinistralists). The purpose of the study was to find out the effect of specific training on selected biomotor variables such as strength and coordination of dexterous. To achieve the purpose 40 right hand dominance preadolescent boys students from Anantnag district, Jammu & Kashmir, India were selected as subjects at random and their age ranged between 9-13 years, 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 60 min/4 days/15 weeks. The maximum strength (handgrip dynamometer) and hand screwing coordination (Bennit hand tool dexterity test), were selected as dependent variables and tested before and after the experimental period for both the groups. The collected data were analyzed by using ANCOVA. Further, independent 't' was calculated to find out the difference between left and right hand and the magnitude of improvement was also calculated to find out the level of improvement on dexterous. Level of confidence was fixed at 0.05. The result of the study shows that the physical training improved the maximum strength and coordination compared to control group. The difference between right and left hand on maximum strength and coordination is insignificant. Hence, it was concluded that physical training may be given to improve the dexterous (use of hands) level and quality.

Key Words: Physical Training, Strength, Coordination, Dexterous.

I INTRODUCTION

Dexterity is basic to our interactions with the physical, social, and cultural environment. Dexterity can be an expression of creativity and accuracy in a range of activities, including musical performance. Little is implicit about complex hand dexterity or how virtuoso expertise is acquired, due to the versatility of movement combinations available to complete any given task. This has historically limited progress of the field because of difficulties in measuring movements of the hand. Recent developments in methods of motion capture and analysis mean it is now possible to explore the intricate movements of the hand and fingers. Handedness is the natural or biological preference for using one hand more than the other in performing special tasks depending on which hemisphere is dominant for the task (Rice, 1998).

Curriculum a set of course is a mean to achieve the aims of education which are dynamic and go on changing with the changing social requirements. As already we know that 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.

The physical training involves long-drawn-out muscular work increases physical capacity such as strength, endurance, flexibility, co-ordination and so on. The abilities that involve the use of hands develop over time, starting with primitive gestures such as grabbing at objects to more precise activities that involve precise hand coordination. Fine motor skills, are skills that involve a refined use of the small muscles controlling the hand, fingers, and thumb. Being right or left-handed that matters, but the strength of preference for one hand over the other. The controversial idea, people are not either left-handed or right-handed but "strong-handed" or "mixed-handed" (Guiard, Y. 1987).

Physical training has been shown to be an effective way to improve the force-producing capacity of hand muscles and to partially reverse the changes observed in the muscle architecture (Izquierdo M, 2003). Mysterious reasons, the right hand significantly gains on the left hand, it is many times superior in accuracy, facility to dominate coordination. Trough dexterity testing is usually provided the result that shows the both quickness and accuracy of the subject in performing any kind of dexterity tasks. Dexterity testing products examine a person's motor skills with regards to the fingers, hands, and arms Bernstein N.A (1991).

Skilled finger movement training improves the ability to control sub maximal pinch force, hand steadiness, and manual speed in subjects, these improvements may be due to training-induced adaptations in the central and peripheral nervous systems. Vinoth K. Ranganathan et al (2001)

Various exams exist to measure such performance abilities as eye-hand coordination, quickness at performing assembly tasks, and overall motor skill development. The dexterity naturally involve the use of some combination of fingers on both hands to follow some designated testing procedure, such as placing pegs into a pegboard, accuracy of throwing the ball, and so on. Some dexterity tests check for the subject's ability to use not only the hands, but also test arms and shoulders more extensively as well **Starosta W (1990)**.

Handedness is a better(faster or more precise) performance or individual preference for use of a hand, known as the dominant hand, the less capable or less preferred hand is called the non dominant hand. An individual who is more dexterous with the right hand is called right-handed (sinistralsists), and one who is more skilled with the left is said to be left-handed (dextralists). Minorities of people are equally skilled with both hands, and are termed ambidextrous (**Kabbash, P, 1994**).

II COGNATIVE ASPECT OF COMPLEX HAND DEXTERITY

Preadolescent age is the best age for a child to learn the fine motor skills. It is the ideal time to learn to do as many things as possible. Even through early childhood is the ideal age to learn skills not all skills can, should be learned at the same time. Early childhood is too short for children to learn all the skills they will need for the rest of their lives.

Performance of any skilful activity is regulated by a highly refined and integrated system that includes motor planning, sensor motor integration, execution and adaptation, following either disruption or improvisation. A complex, integrated feedback loop is created by receiving information from sights and sounds, and by interacting with the external environment (the music, the orchestra/other musicians, the conductor, and the

instrument). The ability to harmonize a physiological response to changes in environmental alterations relies on the fluid integration of multisensory stimulus and appropriate physical adjustments in motor control.

Motor activity originates in the motor cortices, basal ganglia and cerebellum. Voluntary and automatic movements are initiated in the motor cortex and basal ganglia respectively. The cerebellum integrates vestibular, visual, proprioceptive and tactile sensory information, and by using this integrated information, adjustments can be made to cortical output to modify the amplitude and trajectory of movement, for example when you react to a perturbation in the environment (**Enoka, 2008**). Adjustments to the movement are auctioned via descending neural pathways, including the corticospinal tract. In addition, the vestibulospinal and reticulospinal tracts, arising in the brain stem, ensure the appropriate postural tone in the trunk and shoulder girdle, thus stabilizing the upper limb and allowing flexible control of the wrist and fine, dexterous movement of the fingers.

Strength refers especially to physical, mental, or moral robustness or vigor, enough work to do, and strength enough to do the work. Power is the ability to do something and especially to produce an effect (**Brookfield, 1994**). 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.

Handedness is a better(faster or more precise) performance or individual preference for use of a hand, known as the dominant hand, the less capable or less preferred hand is called the non dominant hand(**Holder 2012**).

Table 1
"ANCOVA for selected strength variables between physical training group and control group"
Adjusted post test mean

Variables	Dexterous	Physical Training Group	Control Group	Sov	Sum of squares	df	Mean square	"F" ratio
Maximum strength	R.H	7.11	5.96	B	13.29	1	13.29	39.60*
				W	12.47	37	0.34	
	L.H	5.60	4.76	B	7.79	1	7.97	46.69*
				W	6.31	37	0.17	
Explosive Strength	R.H	55.28	50.75	B	185.58	1	185.58	97.50*
				W	70.42	37	1.90	
	L.H	37.86	26.91	B	1165.76	1	1165.6	169.07*
				W	255.12	37	6.90	

R.H-right hand, L.H-left hand, SOV-source of variance, df-degree of freedom. Significance at .05 level of confidence. The table value required for significance at 0.05 level of confidence for 1 and 37 is 4.11.

Table 2
Dexterous "t" value and magnitude of distance

Variable	Dexterous	Mean	sd	"t" value	Improvement in %.
Maximum Strength	R.H	0.94	0.78	1.54	12.38%
	L.H	0.65	0.33		11.50%
Explosive Strength	R.H	4.17	1.75	6.88	27.69%
	L.H	10.08	3.42		7.32%

RH-Right hand, LH-Left-hand,. Significance at .05level of confidence (The table values required for significance at 0.05 level of confidence for 38 is 2.03 respectively.

III MATERIAL AND METHODS

For that purpose 40 right handed dominant preadolescent students from Dream land educational institute Anantnag Jammu and Kashmir India were taken as subjects. The age ranges between 09-13 years. The subjects were divided into two groups (n=20), the experimental group and control group. The model physical education curriculum was implemented on the experimental group. The curriculum contains three parts 'A' (the physical exercises), 'B' (the yogic asana), 'C' (the recreational part). The physical exercises contain the simple exercises and some special exercises like Bouncing the basketball (right and left hand alternatively), Wall catching (right and left hand alternatively), Ball juggling (both right and left hand). The yogic part includes the exercises like Dhanoor asana, Bhujang asana, Ananda Bal asana etc. The part 'c' that is the recreational part includes the recreational activities which helps to refresh the students after the finish of the above two parts, the main reason to include the recreational part in curriculum is that the children can feel the curriculum easy and can enjoy it and also prepare them to get ready for next work. Every three weeks the load and intensity of exercises was increased by 5%; so that the physiological will adopt by the model physical education curriculum on strength development among Dextrous Pre adolescents.

The model physical educational curriculum was implemented on the experimental group for 15 weeks, 4 days a week and 45 minutes per class including warming-up and cooling down exercises. The maximum strength and explosive strength were selected as criterion variables. The hand grip strength (maximum strength) and throw for distance (explosive strength) were selected as testing tools. The subjects were tested for maximum strength and explosive strength of left and right hand with the help of hand grip dynamometer and throw the ball for distance. The data was collected from two groups on hand grip strength and throw the ball for distance of left and right hand was statically examined by applying ANCOVA to find out significant difference.

Further independent "t" was calculated to find out the difference between left and right hand and also percentage was also calculated to find out the level of improvement on dexterous. Level of confidence was fixed at 0.05.

IV RESULT

The table 1 shows that there was significant difference between the adjusted posttest means of physical training group and control group on right hand and left hand maximum and explosive strength. To find out the improvement on dexterous level, independent "t" ratio was calculated with the magnitude of distance percentage. The result of the "t" shows, insignificant difference between right hand and left hand on maximum strength. However explosive strength shows significant difference between right hand and left hand due to selected model physical education curriculum. The magnitude of distance was higher for right hand when compared to left hand on both maximum and explosive strength. Hence it was concluded that the selected physical training improves the dexterous level.

V DISCUSSION

The findings confirm that model physical education curriculum which includes the part A (Physical Exercises) Part B (Yogic Asana) Part C (The Recreational Part) epically the physical exercises and yogic part has made a significant effect on strength. All these parts have a good impact on the neuromuscular system of the body which helps in the improvement of dexterous among school pre-adolescent school boys. The following findings of different researchers were in conformity with this study.

Lucky Hodges, Jo Adams, 2007 investigated difference in grip strength and dexterity of the dominant and non-dominant hands. Between groups comparison found that left hand individuals were more dexterous with their non-dominant hand compared with right handed group (Crosby and Wehbe, 1994). 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 (Verkhoshansky, 1986). (Zatsiorsky, 1995), the ability to produce maximal force and the ability to achieve great velocity in the same motion are different motor abilities. The rate of force development is much more important, than maximal strength. The excessive maximum strength training can impair speed-strength (verkhoshansky, 1986). 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 (Gilbert An, Wysocki, 1996).

VI CONCLUSION

It was concluded that the model physical education curriculum which includes a set of exercises programs helps in improving the strength both maximum and explosive strength of dexterous hands. Hence the dominant hand shows better improvement on maximum and explosive strength. The non-dominant hand has also improves strength when compared to base level.

VII IMPLICATION

The results of the study give an idea about the physical training through curriculum on dexterity. 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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