



RESEARCH ARTICLE

EFFECT OF PHYSICAL TRAINING ON SELECTED STRENGTH PARAMETERS OF DEXTEROUS

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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 said to be left-handed (dextralists). The purpose of the study was to find out the effect of physical training on selected strength parameters of dexterous. For the propose 40 right hand dominance men students from department of engineering and technology, Annamalai University, Chidambaram, Tamilnadu, India were selected as subjects at random and their age range between 18-21 years, the selected subjects were divided in to two equal groups of twenty subjects each namely physical training (n=20) and control (n=20). The physical training group underwent training on strength for fifteen weeks, four days per week and sixty minutes per day including warming up and cooling down exercises. The maximum strength (handgrip strength on left and right hand) and explosive strength (throw for distance on left and right hand) 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 percentage 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 selected strength variables (maximum strength and explosive strength) compared to control group. The difference between right and left hand on grip strength is insignificant.

Key words: Physical Training, Maximum Strength, Explosive Strength, Dexterous.

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INTRODUCTION

The adaptive response by the physiological system of the body to physical training, including the neuromuscular system are directly related to the training stimulus. The physical training involves prolonged muscular work increases physical capacity such as strength, endurance, flexibility, co-ordination and so on. The abilities which 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 strength. 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, 1987). 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

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Table 1. ANCOVA for selected strength variables between physical training group and control group

VARIABLES	DEXTEROUS	Adjusted Post Test Mean		sov	Sum of Squares	df	Mean Squares	'F' Ratio
		Physical Training Group	Control Group					
MAXIMUM STRENGTH	RH	7.11	5.96	B	13.29	1	13.29	39.60*
				W	12.42	37	0.34	
	LH	5.60	4.70	B	7.97	1	7.97	46.69*
				W	6.31	37	0.17	
EXPLOSIVE STRENGTH	RH	55.28	50.75	B	185.58	1	185.58	97.50*
				W	70.42	37	1.90	
	LH	37.86	26.91	B	1165.76	1	1165.76	169.07*
				W	255.12	37	6.90	

(RH – Right hand, LH – Left hand, SOV – Source of Variance, B –Between, W – With-in, df – Degree of Freedom)

* Significant at .05 level of confidence. (The table values 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

VARIABLES	DEXTEROUS	Mean	SD	't' Value	Improvement In %
MAXIMUM STRENGTH	RH	0.94	0.78	1.54	12.38%
	LH	0.65	0.33		11.50%
EXPLOSIVE STRENGTH	RH	4.17	1.75	6.88*	27.69%
	LH	10.08	3.42		7.32%

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

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. Strength is inherent capacity to manifest energy.

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

MATERIALS AND METHODS

For the propose of the study 40 right hand dominance men students from department of engineering and technology, Annamalai University, Chidambaram, Tamilnadu, India were

selected as subjects at random and their aged between 18-21 years, were divided in to two groups of twenty subjects each namely physical training group (n=20) and control group (n=20). The physical training group underwent training on Bouncing the basketball (right and Left hand alternatively), Wall Catching the ball (right and Left hand alternatively), Ball juggling (right to left hand), Ball juggling (left to right hand), Pec dec (right and Left hand simultaneously) and Arm pullover (right and Left hand alternatively) as physical training, for fifteen weeks, four days per week and sixty minutes per day 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 were collected from the two groups on hand grip strength and throw the ball for distance of left and right hand was statistically

examined by employing ANCOVA to find out the significant difference. Further, independent 't' was calculated to find out the difference between left and right hand and the percentage was also calculated to find out the level of improvement on dexterous. Level of confidence was fixed at 0.05.

RESULT

The Table I shows that there was significant difference between the adjusted posttest means of physical training group and control group on right 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 (%). 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 physical training. 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.

DISCUSSION

The findings confirm that physical training has a significant impact on strength. The following findings of different researches were in conformity with this study. (Lucy Hodges, Jo Adams 2007), investigated the differences in grip strength and dexterity of the dominant and non-dominant hands. Between-group comparisons found that left-handed individuals were significantly more dexterous with their non-dominant hand compared with the right-handed group. (Incel *et al.*, 2002), Conducted a study on Grip strength, an effect of hand dominance. This study documented significantly more grip strength in dominant hands than in non-dominant hands for right-handed people. Similarly, the results of right-handed subjects indicated significantly greater grip strength in the dominant hand in both flexed and extended elbow positions. The left-handed subjects exhibited no such difference in either elbow position. (Crosby and

Wehbe, 1994). speed-strength as the "ability to quickly execute an unloaded movement or a movement against a 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, if the time available for force development is short, Rate of force development is more important than maximal strength. The excessive maximum strength training can impair speed-strength (Verkhoshansky, 1986). Men and women were compared on dexterous on writing and throwing performance. The result confirms 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).

Conclusion

It was concluded that the physical training improves strength (Maximum and explosive strength) of dexterous (Hands). Hence, the dominant hand shows better improvement on maximum and explosive strength. Hence, nondominant has also improves strength when compared to base level.

Implication

The result of the study gave an idea about the physical training on dexterity. If an individual having better dexterity, they can able to do any sort of work with both hands simultaneously without having any tired. The finding of the study helpful to the coaches and physical educationist to enhance the dexterity of players who involved in the various sports activities. The physical training on dexterity was helpful to the players to use there both dominant and nondominant hands effectively. Being ambidextrous (using both hands) in sports activity is especially helpful during the competition.

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