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Impact of ladder training on physical and physiological variables among badminton players with disability

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Abstract
Objective: The motive of this study was to investigate impact of ladder training on physical and physiological variables among badminton players with disability.
Study Design: Experimental research.
Background: The fact-finding on the impact of ladder training on badminton players with male Hearing impairment disability only. The studies on the impact of ladder training on physical and physiological variables are speed, agility, systolic and diastolic blood pressure.
Method and Measures: To investigate the study, twenty male Hearing impairment players were randomly selected from Coimbatore district and their age ranged between 18 and 21 years. The subjects were randomly assigned to two equal groups (n=10) namely experimental group and control group. Experimental group underwent ladder training for a period of twelve weeks and control group who did not participate in any special training other than the regular routine. The physical and physiological variables such as speed, agility, systolic and diastolic blood pressure were selected as dependent variables. Pre and post-test random group design was used for this study. The dependent 't' test was applied to determine the difference between the means of two groups. To find out whether there was any significant difference between the experimental and control groups. To test the level of significant of difference between the means 0.05 level of confidence was fixed.
Results: The result of the study shows that, there was a significant improvement takes place on physical and physiological variables of badminton players due to the effect of twelve weeks ladder training and also concluded that, there was a significant difference exists between experimental and control group.

Keywords: Ladder training, physical and physiological variables

Introduction
A ladder workout is a method of strength and sports training where you perform one or more exercises with an ascending and descending repetition pattern. Ladders are muscular endurance and conditioning workouts designed to help you increase your overall training volumes while maintaining proper form and technique. Michele (M. Howard-2019) [12], whether you are a professional athlete or a novice athlete, agility ladder training is the perfect form of cross training because they help improve your speed, agility and agility. Speed: your ability to move in one direction as fast as possible Agility: your coordination ability is your ability to accelerate, slow down and change direction.

Methods and Measurement
Subject: The purpose of the study was to find out the impact of ladder training on physical and physiological variables among badminton players with disability. To achieve the purpose of the study twenty male deaf and dumb badminton players were randomly selected from Coimbatore district and their age ranged between 18 and 21 years. The subjects were randomly assigned to two equal groups (n=10) namely experimental group and control group. Experimental group underwent ladder training for a period of twelve weeks and control group who did not participate in any special training other than the regular routine. The physical and physiological variables such as speed, agility, systolic and diastolic blood pressure were selected as dependent variables. Pre and post-test random group design was used for this study. The dependent 't' test was applied to determine the difference between the means of two groups. To find out whether there was any significant difference between the experimental and control group.

To test the level of significant of difference between the means 0.05 level of confidence was fixed.

variables and physiological variables where chosen as the criterion measures to this study for testing.

Criterion Measures: It is evaluate physical fitness

Table 1: Criterion Measures

S. No	Criterion variables	Test items	Unit of measurements
Physical Fitness Variables			
1	Speed	50m dash	In seconds
2	Agility	4x10m shuttle run	In seconds
Physiological variables			
1	Systolic Blood Pressure	Sphygmomanometer	Millimetre of mercury (mmHg)
2	Diastolic Blood Pressure	Sphygmomanometer	Millimetre of mercury (mmHg)

Statistical Methods: The collected data before and after training period of twelve weeks on the above said variables due to the effect of ladder training was statistically analysed with 't' test to find out the significant improvement between pre and post-test. In all cases the criterion for statistical significance was set at 0.05 level of confidence. (p<0.05).

Table 2: The t-ratio for badminton players with disability on speed and agility

Variable	Groups	Pre mean	Post mean	Std deviation	Std error	t
Speed	Experimental	8.43	8.1	0.12	0.39	8.4*
	Control	8.58	8.49	0.18	0.59	1.53
Agility	Experimental	10.59	10.44	0.52	0.16	9.0*
	Control	10.49	10.53	0.60	0.19	2.13

(Significance at 0.05 level of confidence for df of 10 is 2.14) Mean standard deviation and t-value were calculated for each outcomes measure can be found in Table-3 result shows that the pre-test mean values of experimental group and control group (8.43, 8.58) and (10.59, 10.49) respectively and the post test mean values are(8.1, 8.49)and (10.44, 10.53) respectively. The obtained dependent t-test value on speed (t=8.4) and agility (t=9.0) of experimental group respectively. The table value required for significant difference with degrees of freedom 10 at 0.05 level of confidence is 2.14. The obtained 't' test value of experimental group was greater than the table value. The results clearly indicated that the speed and agility of the experimental group improved due to effect of ladder training on badminton players with disability.

Table 3: The t-ratio for badminton players with disability on systolic blood pressure and diastolic blood pressure

Variables	Group	Test	Mean	SD	SEM	t-ratio
Systolic Blood pressure	Experimental Group	Pre test	125.26	2.43	0.62	6.78*
		Post test	121.00			
	Control Group	Pre test	125.25	2.16	0.55	.83
		Post test	124.80			
Diastolic Blood pressure	Experimental Group	Pre test	84.60	1.80	0.46	9.87*
		Post test	80.00			
	Control Group	Pre test	84.93	2.66	0.68	0.67
		Post test	84.46			

(Significance at 0.05 level of confidence for df of 10 is 2.14) Mean standard deviation and t-value were calculated for each outcomes measure can be found in Table-IV result shows that the pre-test mean values of experimental group and control group (125.26, 125.25) and (84.60, 84.93) respectively and the post-test mean values are(121, 124.80)and (80, 84.46) respectively. The obtained dependent t-test value on systolic blood pressure (t=6.7) and diastolic blood pressure (t=9.87) of experimental group respectively. The table value required for significant difference with degrees of freedom 10 at 0.05 level of confidence is 2.14. The obtained 't' test value of experimental group was greater than the table value. The results clearly indicated that the speed and agility of the experimental group improved due to effect of ladder training on badminton players with disability.

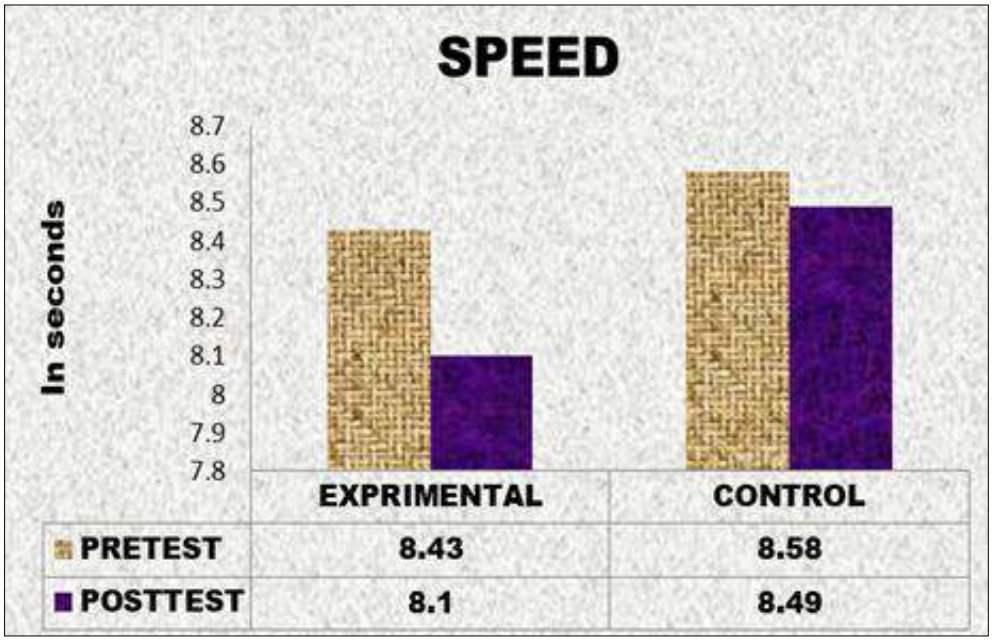

Fig 1: Bar diagram shows the mean values of speed on players with disability

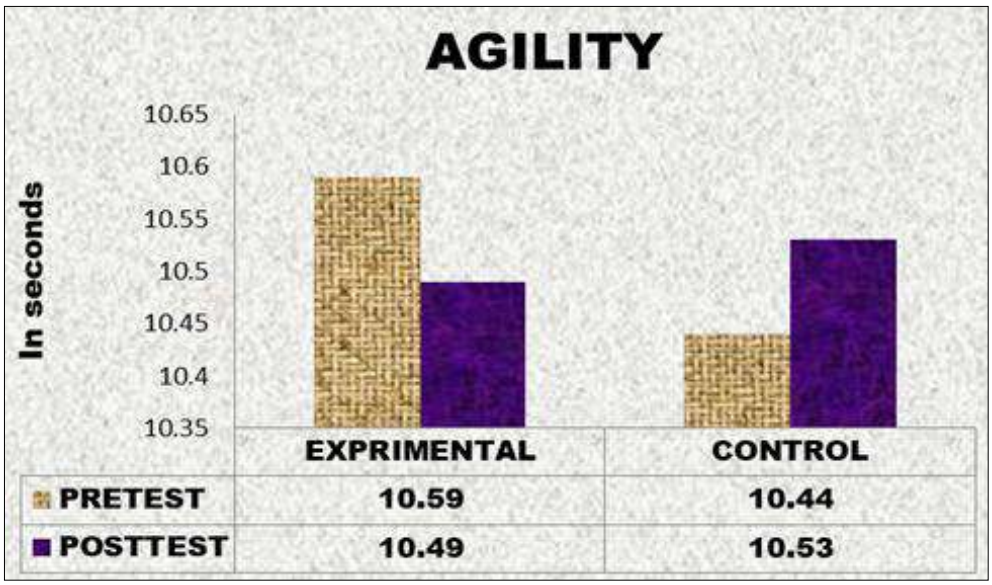

Fig 2: Bar diagram shows the mean values of agility between on badminton players with disability

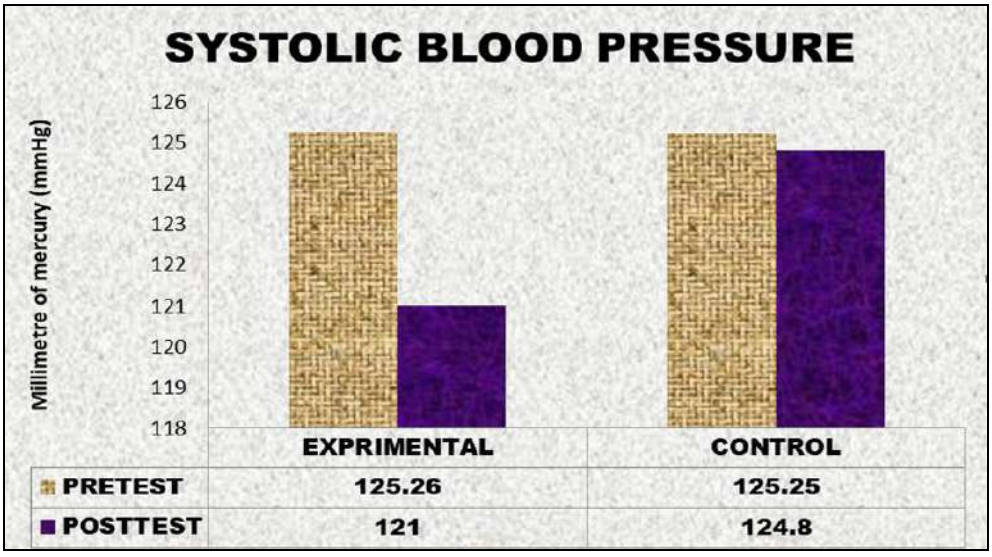

Fig 3: Bar diagram shows the mean values of systolic blood pressure on badminton players with disability

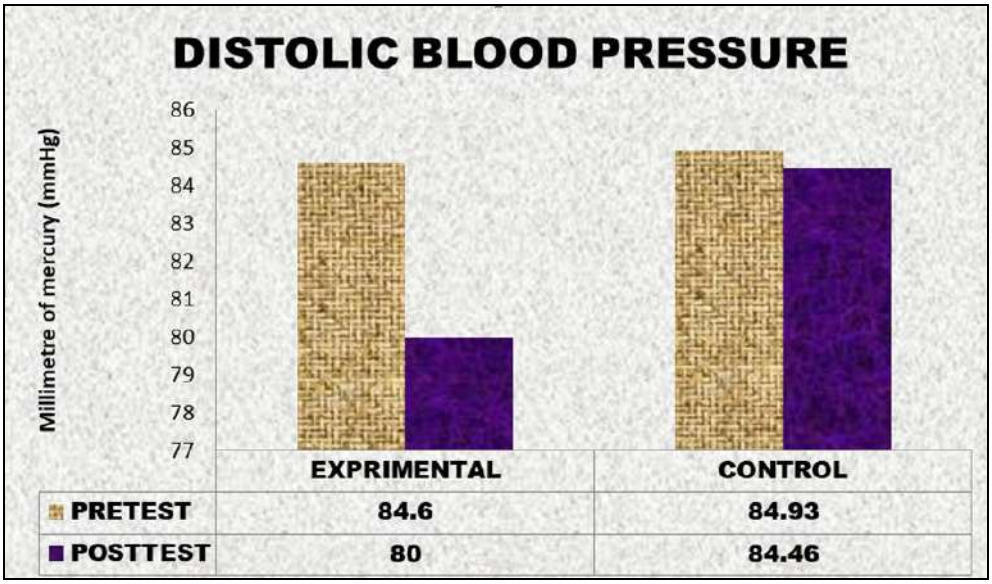

Fig 4: Bar diagram shows the mean values of diostolic blood pressure on badminton players with disability

Discussion

- Based on the results the study it was concluded that the ladder drill and SAQ training were significantly improved the speed and agility among sports clubs badminton players. C Ramesh (2015) [1]. The result of the present study showed the effect of ladder training on physical fitness variable of badminton players and there was a difference between experimental group and control group. The findings of the present study are in line with investigator referred in this study. Speed and agility is developed due to the ladder training after 12 week training period.
- Based on the finding of the results concluded that there were positive effect on haemoglobin, Systolic blood pressure, Diastolic blood pressure and Pulse rate the subject of various departments. Santoshi R (2015) [13]. The result of the present study showed the effect of ladder training on physiological variable of badminton players and there was a difference between experimental group and control group. The findings of the present study are in line with investigator referred in this study, systolic blood pressure and diastolic blood pressure is developed due to the ladder training after 12 week training period.

Conclusion

The result of presents study concludes that ladder training improves physical and physiological variables such as, speed, agility and systolic blood pressure, diastolic blood pressure. Ladder training may be suitable exercise program to the badminton players with disability.

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