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Effects of Resistance Training on Leg-Strength and Back Strength in 18-25 Years Women

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Abstract:
In the contest of human life there is essentiality of being good. Being good not only means to feel good but also to look good and live well. Now a day's physical education spreads the wide network in the worldwide. It mainly having two faces they are science and arts. The resistance training is one of the scientific training method in physical education and sports sciences. In this study the researcher has carried on experiments to investigate the effects of resistance training on leg strength and back strength variables before, during and after resistance training. The researcher has taken 50 subjects, and they are divided into two group one is experimental and anther one is control group. The experimental training phase of twelve weeks, the subjects were given resistance training programme trice a week. The exercise are Shoulder Press, Bent-Knee Sit-Ups, Half Squat, Over head press and Dead lift. The collected data's were analyzed by using SPSS software version 2.0. The result of the study shows that there were significant differences obtained on selected Motor fitness components such as Leg Strength and Back Strength variables of Resistance Training on women in the age group of 18 to 25 years.

Keywords: Resistance training, Leg Strength, Back Strength

Introduction

In the contest of human life there is essentiality of being good. Being good not only means to feel good but also to look good and live well. Physical education provides an opportunity to fulfil the needs to lead a healthy life. In the present scenario physical education is spreading a wide network in the worldwide. It mainly has two faces namely science and arts. It includes the study of physical anthropometry, exercise physiology, anatomy and other allied sciences and it is also called 'sports science'. However the researches which are taken place in this field enhance the value of physical education by investigating new methods and activities. The resistance training is one of the scientific training methods in physical education and sports sciences. Resistance training is a form of physical exercise, specializing in the use of resistance to cheer up muscular contraction which develops the muscular strength, muscle size, anaerobic endurance. Resistance training is an important part of staying fit and healthy, especially for women. In this study the researcher has carried on experiments to investigate the effects of resistance training on leg strength and back strength variables before, during and after resistance training.

Statement of the problem

The purpose of the study is to determine the effects of resistance training on leg strength and back strength in 18-25 years women.

Objective of the study

- To study the effects of resistance training on leg strength in 18-25 years women
- To study the effects of resistance training on back strength in 18-25 years women

Review of related literature

Chidambara Raja et al.(2009) compared the effect of resistance and endurance trainings on leg strength and cardio-respiratory endurance. The training period for this study was three days in a week for twelve weeks. The forty five female subjects were selected from the Department of Physical Education and Sports Sciences, Annamalai University players representing in various games and sports in the age group of 18 – 25 years. They were divided into three equal groups, each group consist of fifteen subjects, in which group – I underwent resistance training, group – II underwent endurance training and group – III acted as control group who did not participate in any special training and underwent their regular relevant training sessions. Prior to and after the training period the subjects were tested for leg strength and cardio-respiratory endurance. Leg strength was assessed by using dynamometer and cardio-respiratory endurance was assessed by administering Cooper's 12 minutes run/walk test. The result reveals that the resistance training group has significantly improved the leg strength but not in cardio-respiratory endurance and endurance training group has significantly improved their cardio-respiratory endurance and also in leg strength after twelve weeks of training when compared with the control group. Furthermore, there was a significant difference has occurred between the training groups on leg strength in support of resistance training.

Edelstein (1965) determine the changes in strength, girth and adipose tissue of upper arm resulting from daily and alternative day progressive weight training. The result shows that the strength and girth of the exercised arm increased in both group and the adipose tissue decreased, but the final mean difference were not significant.

Singh Gopal Pratap (2008) studied the effects of resistance training on selected anthropometric, motor fitness and physiological variables of middle aged people. Fifty subjects were selected for the study, 25 men and 25 women subjects in the age group of 35 to 45 years. The resistance exercise were given in three days per week for the period of twelve weeks. the results shows that, the significance differences were found in Vital Capacity, Maximum Breath Holding Capacity, Maximum Expiratory Pressure, Pulse Rate, Fat Mass, Lean body weight, Hip girth, Thigh girth, Calf girth, Leg strength, Back strength, Grip strength and One mile walk in both men and women. The significance differences were found in Systolic Blood Pressure, Body Weight, Forearm girth, Waist girth only in men. And significance difference found in Chest girth, Chest expansion girth in only in women.

Research Methodology

By glancing the literature and consultation with professional experts, the following measures were applied to collect the data with valid instruments and appropriate measures. The leg and back dynamometer instrument is used to measure leg strength and back strength. It was measured only one times. The research data was collected by administrating the test for the chosen variables before training, after third week, sixth week, ninth week and 12th week of the training period.

Analysis and Interpretation of Data

The collected data has been tabulated and analysed with the help of statistical methods by using Mean,

Standard Deviation, paired 't' test (Pre-test and 12th week) and analysis of variance (ANOVA) from Scheffe Post Hoc test. The level of significance was set at 0.05 levels.

Table -4.12: Mean and Standard Deviation of Experimental Group and Control Group on Leg Strength performance on women in the age group of 18 to 25 years.

Components	Test-Period	Experimental Group		Control Group	
		Mean	S.D	Mean	S.D
Leg Strength (Kg)	Pre- Test	41.60	10.42	42.92	8.20
	3 weeks	43.56	10.54	42.92	8.20
	6 weeks	46.20	10.60	42.96	8.11
	9 weeks	49.64	10.51	43.00	8.24
	12^{th} week	53.48	10.32	43.04	8.24
Back Strength (Kg)	Pre- Test	48.44	13.89	46.16	8.04
	3 weeks	50.36	14.10	46.16	8.04
	6 weeks	53.28	14.16	46.20	8.01
	9 weeks	56.48	13.98	46.24	7.94
	12^{th} week	59.76	13.83	46.24	7.94

The Table-4.12 shows that Mean and Standard Deviation of Experimental Group and Control Group on selected Motor Fitness Components.

The mean and standard deviation of Leg Strength (Kg) in Experimental Group: Pre-Test: 41.60 +10.42, 3rd week- 43.56 +10.54, 6th week-46.20 +10.60, 9th week- 49.64+ 10.51, 12th week-53.48+ 10.32. in Control group: Pre- Test- 42.92 + 8.20, 3rd week-42.92 + 8.20, 6th week-42.96+ 8.11, 9th week-43.00+ 8.24, 12th week- 43.04+ 8.24.

The mean and standard deviation of Back Strength (Kg) in Experimental Group: Pre-Test- 48.44 + 13.89, 3rd week- 50 36 + 14.10, 6th week- 53.28 + 14.16, 9th week- 56.48+13.98, 12th week- 59.76+13.83. in control Group: Pre-Test- 46.16+8.04, 3rd week- 46.16+ 8.04, 6th week- 46.20+ 8.01, 9th week- 46.24 + 7.94, 12th week- 46.24+7.94.

The above table reveals that, improvements were seen in Leg Strength and Back Strength after 3rd week, 6th week, 9th week and 12th week in Experimental Group in 18 to 25 years women as compared to control group.

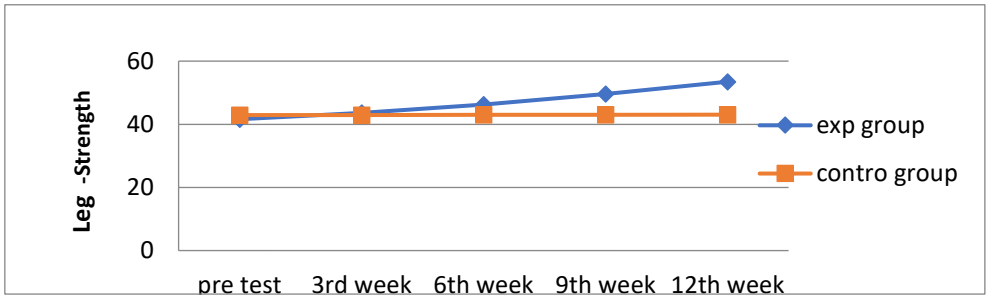
Table- 4.13: Comparison of T-Ratio of Experimental Group and Control Group on Leg Strength Performance in the age group of 18 to 25 years women.

Components	Groups	Pre-Test	12^{th} week	Mean Difference	S.E.M	T -Ratio
Leg Strength (Kg)	Experimental Group	41.60	53.48	-11.88	0.444	-26.714*
	Control Group	42.92	43.04	-.120	.0879	-1.365

*Significant difference at 0.05 level of significance. Tab't' (Df.24) = 2.064

The above table shows, the comparison of 't'-ratio of experimental group and control group on Leg strength performance. In experimental groups, pre-test mean was 41.60Kg and 12th week mean was 53.48Kg, the mean difference is -11.88 and t ratio is -26.714. In control group pre-test mean is 42.92 Kg and 12th week mean is 43.04kg, the mean difference is 0.879 and t value -1.365 is less than table value 2.064, it is insignificant in control group. The result shows that tabulated 't'-value in experimental group -26.714 is greater than table value 2.064 at 0.05 level of significance, hence significance differences was found in the effects of Resistance Training on Leg strength performance on women in the age group of 18 to 25 years

FIGURE -4.13(a): Graphical representation of comparative means of Leg Strength performance in the age group of 18 to 25 years women.



(Graph X-Axis -Test Period, Y- axis -Leg Strength, 1 Unit =10 kg)

In the figure 4.13(a) shows that Resistance Training found significance differences on Leg Strength performance in 3rd week, 6th week, 9th week and 12th week of training. The mean leg strength in pre-test was (41.60 kg), 3rd week (43.56 kg), 6th week (46.20 kg), 9th week (49.64kg), 12th week (53.48kg). It shows that progressive improvement in leg strength. In control group leg strength in pre-test and 3rd week mean was (42.92kg), 6th week (42.96kg), 9th week (43.00kg) 12th week mean was (43.04 kg) no significance differences found in the control group.

Table- 4.14: Comparison of T-Ratio of Experimental Group and Control Group on Back Strength Performance in the age group of 18 to 25 years women.

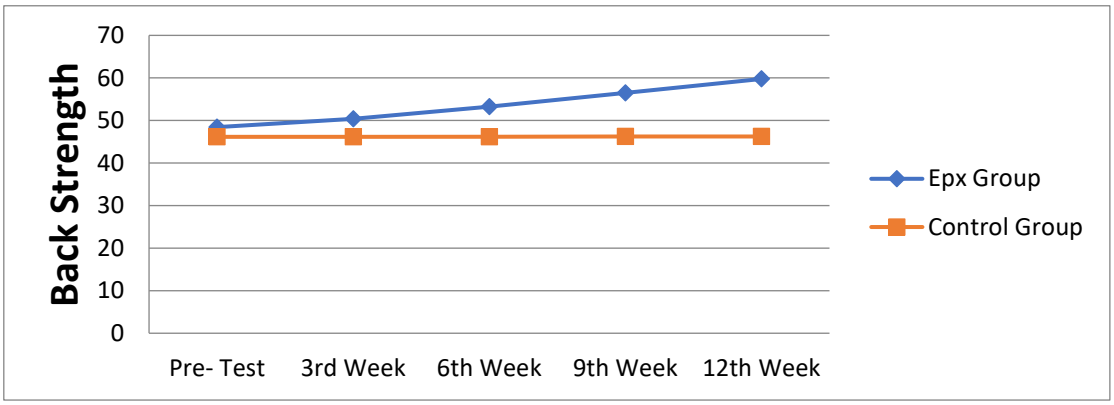
Components	Groups	Pre-Test	12^{th} week	Mean Difference	S E M	T- Ratio
Back Strength(Kg)	Experimental Group	48.44	59.76	-11.32	0.453	-24,957*
	Control Group	46.16	46.24	-.080	0.055	-1.445

*Significant difference at 0.05 level of significance. Tab't' (Df.24) = 2.064

The above table shows, the comparison of 't' ratio of experimental group and control group on Back Strength performance. In experimental groups, pre-test mean was 48.44Kg, and 12th week mean was 59.76Kg, the mean difference is -11.32 and 't' ratio is -24.957. In control group pre test mean is 46.16 Kg and 12th week mean is 46.24kg, the mean difference is -0.080 and t value -1.445 is less than table value 2.064, hence insignificant in control group. The result shows that tabulated-'t' value in experimental group -26.714 is greater than table value 2.064 at 0.05 level of significance, hence significance differences was

found in the effects of Resistance Training on Leg strength performance on women in the age group of 18 to 25 years.

FIGURE -4.14(a): Graphical representation of Comparative means of Back Strength performance in the age group of 18 to 25 years women.



(Graph X-Axis Test Period, Y- axis, Back Strength 1 Unit =10kg)

In the figure 4.14(a), shows mean Back Strength of experimental group in pre-test is 48.44 Kg, 3rd week-50.36 Kg, 6th week-53.28 Kg, 9th week-56.48 Kg and 12th week - 59.76 kg. Whereas the mean Grip Strength of control group in pre test is 46.16 kg, 3rd week-46.16 kg, 6th week-46.20kg, 9th week-46.24 kg, and 12th week -46.24 kg. The graph reveals that the significance differences were found in experimental group. No significance difference found in control group.

Results and Discussions

The result of the study shows that there were significant differences obtained on selected Motor fitness components such as Leg Strength and Back Strength variables of Resistance Training on women in the age group of 18 to 25 years. In the experimental and control groups shows that, the resistance training predominantly improves leg strength and back strength. The significance differences were found in leg strength and back strength at 0.05 level of significance. In control group shows no significance differences in relation to leg strength and back strength at 0.05 level of significance. The strength is the most important components for women for doing their work in day to day life. Twelve weeks of resistance training helps to improve Leg strength in Women, this study gives evidence of past research by Chidambara Raja et al. (2009). Resistance training develops Back Strength after 12 weeks of training in experimental group Davis (2008).

Conclusion

In this chapter summarizes in brief description of the purpose of the study on the effects of resistance training on Leg strength and back strength variables in relation to 18 to 25 years of women. Another important purpose of this study was to comparison of training effects on experimental group and control group on different training durations.

On the basis of the analysis of data as well as in the view of observation, along with objective and within the limitation of the present study the following conclusions were drawn. The resistance training is provided the strong plinth for women in relation to motor fitness components, related to muscular strength

like leg strength and back strength. It found that resistance training is highly significance with leg strength and back strength.

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