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EFFECT OF DYNAMIC WALKING WITH LOAD, STATIC WALKING WITH LOAD ON MUSCULAR STRENGTH AND FLEXIBILITY OF ADOLESCENT BOYS

Mr.S.Yoganandan[1]Dr.V.Perumal[2]

1. Mr.s.Yoganandan, PhD part time research scholar, Department of Physical Education, KarpagamUniversity, Coimbatore.
2. Dr.V.Perumal, Professor, Department of Physical Education, Karpagam University, Coimbatore.

Abstract

The purpose of this study was to determine the effect of two types of activities of dynamic walking with load, Static walking with load on muscular strength and flexibility of adolescent boys. Forty five (N=45) were selected from Bangalore urban schools at random. The selected subjects were ranged between 14 and 17 years. The selected subjects were randomly divided into three equal groups consisting of fifteen subjects in each group. Static walking with Load Group was assigned as Experimental Group – I (SWLG), Dynamic Walking with Load Group was assigned as Experimental group II (DWLG), and group-III without any intention was assigned as Control Group (CG).The following variable namely muscular strength and flexibility was selected as criterion variable. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to fund out the significant difference, if any among the groups. Whenever they obtained "F" ratio was found to be significant, the Scheffe's test was applied as post hoc test to find out the paired mean difference, if any. The 0.5 level of confidence was fixed to test the level of significance which was considered as an appropriate. It was concluded that static walking with load group, dynamic walking with load group, significantly improved the muscular strength and flexibility after the training.

Introduction

Walking provides a wide range of benefits, some of which are more obvious than others. It is the most often indicated physical activity modality to increase population physical activity levels aiming to improve health-related conditions. Most people walk every day but it is often overlooked as an exercise activity. Walking is one of the easiest, and cheapest, ways to improve fitness. It is a light cardiovascular exercise, which means it improves the condition of one heart and lungs. It is also a weight bearing activity, meaning that it will help to improve bone density. Walking works the muscles of lower body while being low impact, which means it, does not put stress on joints. Walking can be done anywhere, try walking up and down hills for a moderate form of exercise. He could also try power walking, which is fast walking that uses more energy than running at the same pace. Walking is one of the easiest and least expensive ways to stay physically fit. It's also a versatile form of exercise that can be done indoors (many malls and public buildings offer walking routes) or outdoors, and one can tailor the intensity of exercise

based upon individual abilities and goals. Whether like to begin walking for exercise or if already established in the habit, these tips can help get the most from workout. It is one of the least expensive and most broadly accessible forms of physical activity. It is rarely associated with physical injury and can easily be adopted by people of all ages, including those who have never participated in physical activity. Studies have shown that walking has higher levels of adherence than other forms of physical activity, possibly because it is convenient and overcomes many of the commonly perceived barriers to physical activity: lack of time, lack of fitness or lack of skill. Walking is currently the most popular form of physical activity in the world, with studies from the United Kingdom and United States demonstrating that the prevalence of walking is two to three times higher than those of the next most frequently reported activities. Walking is another way to develop cardio respiratory fitness. It is enjoyable, requires no equipment, and causes few injuries. However, unless walking is done for a long time at the correct intensity, it will not produce any significant CR conditioning. Sedentary soldiers with a low degree of fitness should begin slowly with 12 minutes of walking at a comfortable pace. The heart rate should be monitored to determine the intensity. The soldier should walk at least four times a week and add two minutes each week to every workout until the duration reaches 45 to 60 minutes per workout. He can increase the intensity by adding hills or stairs. As the walker's fitness increases, he should walk 45 to 60 minutes at a faster pace. A simple way to increase walking speed is to carry the arms the same way as in running. With this technique the soldier has a shorter arm swing and takes steps at a faster rate. Swinging the arms faster to increase the pace is a modified form of race walking (power walking) which allows for more upper body work. This method may also be used during speed marches. After about three months, even the most unfit soldiers should reach a level of conditioning that lets them move into a running program.

Flexibility

Sports involve short intensive movements about the joints within a small part of the full range of motion. In this game a player who has a restricted range of motion will probably realize a decrease in performance capabilities. Thus good flexibility is essential for a successful physical performance and is important in prevention of injury to the musculotendinous unit, and they will generally insist that stretching exercises can be included as part of the warm-up before engaging in strenuous activity (Prentice, 1993).Flexibility depends on the activities in which he desires to participate. Most activities require more than normal (or average). From research and practical experience, it can be concluded that a normal amount of flexibility throughout the body is desirable in all athletic performances and some activities demand large degrees of flexibility in specific body regions. By seriously analyzing the task to be accomplished, the coach or athlete can determine which body regions need additional flexibility to achieve maximum performance; a limb must be able to move through a non-restricted range of motion (Shellock and Prentice, 1985). Always good flexibility is associated with good sporting performance in all activities where maximal amplitude of movement is required to achieve the best technical effects. Similarly, a limited range of movement can reduce work efficiency in all types of physical activities (Scott, 1999).

Muscular Strength

Strength is the ability of the individual to exert force against an object. It is the ability to overcome resistance or to act against resistance. Muscle strength is what happens when the nervous system communicates a message to the muscle fibres to contract so as to produce force. Often the force produced by a muscle contraction is against resistance. Strength should not be considered as a product of only muscular contractions. It is in fact a product of voluntary muscular contractions caused by the neuromuscular system. The abdominal strength is very much useful in the field of sports and games. When an individual possess a high degree of abdominal strength, he will be able to perform any type of activity such as running, jumping and throwing. The abdominal strength helps to maintain the body postures, thereby involving in many activities in the field of sports and games. Lifting a load or moving an inanimate or animate object essentially depends on the abdominal muscular strength.

Methodology

The purpose of this study was to determine the effect of two types of activities of Dynamic walking with load, Static walking with load on muscular strength and flexibility of adolescent boys. Forty five (N=45) were selected from Bangalore urban schools at random. The selected subjects were ranged between 14 and 17 years. The selected subjects were randomly divided into three equal groups consisting of fifteen subjects in each group. Static walking with Load Group was assigned as Experimental Group – I (SWLG), Dynamic Walking with Load Group was assigned as Experimental group II (DWLG), and group-III without any intention was assigned as Control Group (CG).The following variable namely muscular strength and flexibility was selected as criterion variable. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to fund out the significant difference, if any among the groups. Whenever they obtained "F" ratio was found to be significant, the Scheffe's test was applied as post hoc test to find out the paired mean difference, if any. The 0.5 level of confidence was fixed to test the level of significance which was considered as an appropriate.

Results

Table - I

ANALYSIS OF COVARIANCE ON MUSCULAR STRENGTH OF STATIC WALKING WITH LOAD TRAINING AND DYNAMIC WALKING WITH LOAD TRAINING AND CONTROL GROUP

	Static walking with load training Group	Dynamic walking with load training Group	Control Group	SOV	Sum of Square	df	Mean Square	'F' ratio

Pre- test Mean	6.64	6.63	6.67	**B:**	0.187	2	0.094	0.96
S.D.	0.33459	0.29199	0.30849	**W:**	4.093	42	0.097	
Post-test Mean	6.43	6.66	6.63	**B:**	1.449	2	0.724	7.894*
S.D.	0.29896	0.32499	0.27812	**W:**	3.854	42	0.092	
Adjusted Post-test Mean	6.47	6.70	6.75	**B:**	0.666	2	0.333	17.651*
				W:	0.773	41	0.019	

* Significant at .05 level of confidence.

(The table value required for significance at .05 level of confidence with df 2 and 42 was 3.22, and 2 and 41 was 3.23).

Table – I shows that the adjusted post-test mean values of static walking with load training, dynamic walking with load training and control groups were 6.47, 6.70 and 6.75 respectively. The obtained 'F' ratio value of 17.651 for adjusted post-test scores of static walking with load training, dynamic walking with load training and control groups was higher than the required table value of 3.22 for significance with df 2 and 41 at 0.05 level of confidence.The above statistical analysis indicates that there was a significant improvement on muscular strength after the training. Further, to determine which of the paired means had a significant difference, the Scheffe's test was applied. The result of the test is presented in Table - I (a).

Table – I (a)
SCHEFFE *S* TEST FOR THE DIFFERENCE BETWEEN THE ADJUSTED POST-TEST MEANS OF MUSCULAR STRENGTH

Adjusted Post-test Means				
Static walking with load training Group	**Dynamic walking with load training Group**	**Control group**	**Mean Difference**	**Confidence interval at .05 level**
6.47		6.75	0.28*	0.1279271
6.47	6.70		0.23*	
	6.70	6.75	0.25*	

*Significant at 0.05 level of Confidence

Table – I (a) shows that the adjusted post-test mean difference on muscular strength between Static walking with load training group and control group, Static walking with

load training group and Dynamic walking with load training, and Dynamic walking with load training group and control group were 0.28, 0.23 and 0.25, which were significant at 0.05 level of confidence.

Table - II

ANALYSIS OF COVARIANCE ON FLEXIBILITY OF STATIC WALKING WITH LOAD TRAINING AND DYNAMIC WALKING WITH LOAD TRAINING AND CONTROL GROUP

	Static walking with load training Group	Dynamic walking with load training Group	Control Group	SOV	Sum of Square	df	Mean Square	'F' ratio
Pre- test Mean	13.60	13.87	14.07	**B:**	1.644	2	0.822	0.093
S.D.	2.995	3.114	2.789	**W:**	370.267	42	8.816	
Post-test Mean	11.80	11.33	14.47	**B:**	85.733	2	42.867	4.821*
S.D.	2.624	3.331	2.949	**W:**	373.467	42	8.892	
Adjusted Post-test Mean	12.038	11.312	14.251	**B:**	70.169	2	35.084	61.345*
				W:	23.449	41	0.572	

* Significant at .05 level of confidence.

(The table value required for significance at .05 level of confidence with df 2 and 42 was 3.22, and 2 and 41 was 3.23).Table – II shows that the adjusted post-test mean values of static walking with load training, dynamic walking with load training and control groups were 12.03, 11.31 and 14.25 respectively. The obtained 'F' ratio value of 61.34 for adjusted post-test scores of static walking with load training, dynamic walking with load training and control groups was higher than the required table value of 3.22 for significance with df 2 and 41 at 0.05 level of confidence. The above statistical analysis indicates that there was a significant improvement on flexibility after the training. Further, to determine which of the paired means had a significant difference, the Scheffe's test was applied. The result of the test is presented in Table - II (a).

Table –II (a)
SCHEFFĚ *S* TEST FOR THE DIFFERENCE BETWEEN THE ADJUSTED POST-TEST MEANS OF FLEXIBILITY

Adjusted Post-test Means				
Static walking with load training Group	**Dynamic walking with load training Group**	**Control group**	**Mean Difference**	**Confidence interval at .05 level**
13.038		14.251	1.213*	0.701914
13.038	11.312		0.274	
	11.312	14.251	2.939*	

*Significant at .05 level of Confidence

Table – II (a) shows that the adjusted post-test mean difference on flexibility between Static walking with load training group and control group, Static walking with load training group and Dynamic walking with load training, and Dynamic walking with load training group and control group were 1.21, 0.27 and 2.93, respectively. Static walking with load training group and control group, and dynamic walking with load training group and control group which were significant at 0.05 level of confidence.

Conclusion

It was concluded that static walking with load group, dynamic walking with load group, significantly improved the muscular strength and flexibility after the training.It was concluded that there was a significant difference between the training groups namely Static walking with Load Group, Dynamic Walking with Load Group, on improving the muscular strength.It was concluded that there was no significant difference between static walking with load training group and dynamic walking with load training group on improving the flexibility.

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