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EFECT OF DYNAMIC WALKING WITH LOAD, STATIC WALKING WITH LOAD AND WALKING WITHOUT LOAD TRAINING ON MUSCULAR ENDURANCE AND CARDIO RESPIRATORY ENDURANCE OF ADOLESCENT BOYS

Mr.S.Yoganandan and Dr.V.Perumal

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

ABSTRACT

The purpose of this study was to determine the effect of three types of activities of dynamic walking with load, Static walking with load and walking without load training on muscular endurance and cardio respiratory endurance of adolescent boys. Sixty subjects (N=60) 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 four 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), Walking without Load Group (WWLG) was assigned as Experimental Group –III and group-IV without any intention was assigned as Control Group (CG).The following variable namely muscular endurance and cardio respiratory endurance 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, walking without load group significantly improved the muscular endurance and cardio respiratory endurance after the training.

Key Words: walking, muscular endurance and cardio respiratory endurance.

Introduction

Walking programs are a most common form of exercise advocated by exercise professionals due to the simplicity of the exercise, low participation cost, and numerous health benefits. Most healthy adults tend to naturally select a walking pace of approximately 2.8 mph (Willis, Ganley, & Herman, 2005). Willis and colleagues have found that the preferred walking speed might also be due to changes in fuel utilization. In most adults, fat is the primary fuel source at speeds equal to and below 2.8 mph, which serves as a metabolic walking threshold speed (Willis et al., 2005). Above this speed, carbohydrate oxidation (breakdown) abruptly

increases resulting in an increased perception of effort, due to carbohydrates being a limited fuel source as compared to fat. As a result, preferred walking speed appears to be naturally selected due to the most economical fuel conditions in the muscle, in which fat oxidation is the primary fuel source. A person's natural walking speed is habitually determined by the central nervous system's valuation of the most economical walking gait for optimal fat fuel utilization (Willis et al, 2005).The American College of Sports Medicine (ACSM, 2014) recommends that most adults accumulate 30-60 minutes/day of moderate intensity exercise on at least 5 days/week; or vigorous intensity exercise 20-60 minutes/day on at least 3 days/week (or a combination of both).Scientifically, walking at an intensity of 3-6 METS (metabolic equivalent; a physiological measure expressing the energy cost of physical activities) is considered moderate intensity exercise. Fortunately, Marshall et al., 2009 determined that walking at a pace of &Mac179; 100 steps/minute has been shown to equate to moderate intensity exercise as recommended by ACSM. At a rate of 100 steps/minute, current recommendations for moderate intensity physical activity would equate to walking at least 3000 steps in 30 minutes on at least 5 days/week. This can easily be tracked with any pedometer or pedometer 'app' (application) on a mobile device. A walker could also 'accumulate' three daily walks of 1000 steps in 10 minutes on 5 days each week.Murtagh and associates (2002) examined 82 recreational walkers at a self-selected brisk walking pace. The average walking speed for the participants was approximately 3.5 mph, with subjects able to accurately meet moderate-intensity exercise levels by self-selecting their pace. Weighted vests are a type of exercise equipment that is gaining attention from exercise professionals and fitness enthusiasts. Weighted vests (typically 5% to 20% of a person's body weight) can be used in many different types of workouts and most vests are adjustable to add more or less weight as needed. Additionally, weighted vests are worn over the shoulders making them a more natural addition to an exerciser's center of gravity.

Methodology

The purpose of this study was to determine the effect of three types of activities of Dynamic walking with load, Static walking with load and walking without load training on muscular endurance and cardio respiratory endurance of adolescent boys. Sixty subjects (N=60) 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 four 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), Walking without Load Group (WWLG) was assigned as Experimental Group –III and group-IV without any intention was assigned as Control Group (CG).The following variable namely muscular endurance and cardio respiratory endurance 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
Computation of Analysis of Covariance on muscular endurance and cardio respiratory endurance

Variables	Test	SWLG	DWLG	WWLG	CG	Sum of variance	Sum of squares	Df	Mean square	F
Muscular endurance	Pre test	23.53	23.72	23.07	23.53	B	5.73	3	1.91	2.01
						W	53.60	56	0.95	
	Post test	29.80	35.13	24.87	23.13	B	1311.13	3	437.04	224.12*
						W	109.60	56	1.95	
	Adjusted post test	29.63	34.79	25.10	23.42	B	1060.37	3	353.46	280.51*
						W	69.66	55	1.26	
Cardio respiratory endurance	Pre test	2056.67	2037.33	2010.00	2062.60	B	25271.38	3	8423.79	0.73
						W	648332.27	56	11577.36	
	Post test	2180.00	2260.00	2373.33	2042.93	B	868843.47	3	289614.49	16.62*
						W	975860.27	56	17426.08	
	Adjusted post test	2171.55	2262.43	2391.13	2031.15	B	999042.71	3	333014.24	23.76*
						W	770763.60	55	14013.88	

(The table values required for significance at .05 level of confidence for 3 and 56and 3 and 55 are 2.776 and 2.78 respectively).

The table I shows the adjusted post-test means Static walking with Load Group, Dynamic Walking with Load Group, Walking without Load Group and control groups on muscular endurance are 29.63, 34.79, 25.10 and 23.42 respectively. The obtained “F” ratio of 280.51 for adjusted post-test means is greater than the table value of 2.78 for df 3 and 55 required for significance at .05 level of confidence on muscular endurance and cardio respiratory endurance are 2171.55, 2262.43, 2391.13 and 2031.15 respectively. The obtained “F” ratio of 23.76 for adjusted post-test means is greater than the table value of 2.78 for df 3 and 55 required for significance at .05 level of confidence on cardio respiratory endurance.

Table - II
Scheffe'S Paired Mean Test Scores on Arm Strength and Cardio respiratory endurance

Variables	SWLG	DWLG	WWLG	CG	MD	CI
Muscular endurance	34.79	29.63	-	-	5.16*	1.19
	34.79	-	25.10	-	9.69*	
	34.79	-	-	23.42	11.37*	
	-	29.63	25.10	-	4.53*	
	-	29.63	-	23.42	6.21*	
	-	-	25.10	23.42	1.68*	
Cardio respiratory endurance	2171.55	2262.43			90.87	124.67
	2171.55		2391.13		219.58*	
	2171.55			2031.15	140.40*	
		2262.43	2391.13		128.71*	
	-	2262.43		2031.15	231.28*	
			2391.13	2031.15	359.98*	

* Significant at .05 level of confidence.

The table-II showed that there was a significant difference between static walking with load training group and dynamic walking with load training group. Static walking with load training group and dynamic walking with load training group had significant improvement on muscular endurance then walking without load training group, and all the three training groups had significant improvement then the control group and there was no significant difference between static walking with load training group and dynamic walking with load training group. Static walking with load training group and dynamic walking with load training group had significant improvement on Cardio respiratory endurance then walking without load training group, and all the three training groups had significant improvement then the control group.

Conclusion

It was concluded that static walking with load group, dynamic walking with load group, walking without load group significantly improved the muscular endurance and cardio respiratory endurance 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, Walking without Load Group on improving the muscular endurance.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 cardio respiratory endurance.

Reference

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