Original Article

ISSN: 2349 - 4891

International
Journal of Recent Research and Applied Studies
(Multidisciplinary Open Access e-journal)

Combination of Sand Dune Running and Stair Climbing Exercises on Selected Motor Fitness Parameters among Elite Handball Players

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Received 26th October 2014, Accepted 27th December 2014

Abstract

The purpose of the study was to find out the effect of combination of sand dune running and stair climbing exercises on selected motor fitness parameters such as cardio respiratory endurance and muscular endurance among elite handball players. To achieve this purpose thirty male handball players were selected as subjects, their aged between 18 to 25 years, they were studying different faculties of Annamalai University, Tamilnadu. The selected subjects were divided into two equal groups of fifteen subjects each, namely combination of sand dune running and stair climbing exercises group and control group. The sand dune running and stair climbing exercises group trained for three alternative days in a week for twelve weeks. Training group after a warm up for 5 minutes underwent Sand dune running six weeks after that next six weeks climbing stairs having 18 steps with vertical height of 3 meters with variation of slow, medium, high, medium and slow speed walk and sprints alternatively and finished each session with cool down exercises. Cardio respiratory endurance and muscular endurance were selected as criterion variables and they were tested by using cooper's 12 minutes run/walk test and Bent knee sit ups respectively. ANCOVA was used to find out the significant different if any between the groups. The results of the study showed that there was a significant improvement on selected motor fitness parameters such as cardio respiratory endurance and muscular endurance due to twelve weeks of combination of sand dune running and stair climbing exercises among elite handball players.

Keywords: Sand dune Running, Stair Climbing, Motor Fitness, Cardio Respiratory Endurance, Muscular Endurance.

Introduction

Sports pervade society to such an extent that it has been described by many as a microcosm of society. A training individual is in a better state of physical fitness than the individual who follows a sedentary, and inactive life. Sand dune running and Stair climbing exercises convergent and at the same time provides aerobic conditioning strength and endurance. Sand dune running and Stair climbing is beneficial for cross-training. This activity can be combined with running, swimming, cycling and rowing for excellent results, it doesn't require any expensive or specific equipment and can be carried out at any time of the day. Stair climbing improves bone density and studies have also proved that good cholesterol levels rise if it is incorporated in daily exercise regimen. Physical Fitness provides capacity for doing all types of activities. Currently there is wide interest to identify the most effective methods of training for strength and endurance development and this is of special significance for physical education programmes in schools and colleges. Training is usually defined as systematic process of repetitive, progressive exercise or work involving the learning process and acclimatization. From the foregoing it may be that the aim of stair climbing is to raise the special conditions: techniques, tactics and physical condition as well as the spiritual attributes indispensable in effectively participating in handball games to the highest possible level.

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Methodology

The purpose of the study was to find out the effect of combination of sand dune running and stair climbing exercises on selected motor fitness parameters such as cardio respiratory endurance and muscular endurance among elite handball players. To achieve this purpose thirty male handball players were selected as subjects, their aged between 18 to 25 years, they were studying different faculties of Annamalai University, Tamilnadu. The selected subjects were divided into two equal groups of fifteen subjects each, namely combination of sand dune running and stair climbing exercises group and control group. The sand dune running and stair climbing exercises group trained for three alternative days in a week for twelve weeks. Training group after a warm up for 5 minutes underwent Sand dune running six weeks after that next six weeks climbing stairs having 18 steps with vertical height of 3

meters with variation of slow, medium, high, medium and slow speed walk and sprints alternatively and finished each session with cool down exercises. Cardio respiratory endurance and muscular endurance were selected as criterion variables and they were tested by using cooper's 12 minutes run/walk test and Bent knee sit ups respectively. The selected criterion variables were assessed using standard tests and procedures, before and alter training regimen. Cardio respiratory endurance and muscular endurance were tested be pre (pre) and after (post) the training program for both experimental and control group by using cooper's 12 minutes run/walk test and Bent knees sit ups respectively. Analysis of covariance (ANCOVA) was used as to determine the significant difference. If any, existing between pretest and posttest data on selected variables separately.

Results

The descriptive analysis of data collected on selected motor fitness components before and after twelve weeks of combination of sand dune running and stair climbing programme is presented in Table-I.

Table I. ANCOVA of selected variables of handball players

Variables	Test		Experimental Group	Control Group	Source of Variance	SS	df	Mean Square	'F' Ratio
Cardio respiratory Endurance	Pre test	Mean S.D	2475 151.20	2458 104.5	Between Within	0.03745 2.017	1 28	0.03745 0.07202	0.520
	Post test	Mean S.D	2572 92.64	2515 61.84	Between Within	1.391 2.821	1 28	1.391 0.101	13.807
	Adjusted Post test	Mean	2576	2492	Between Within	87631.4 43862.1	1 27	87631.4 1624.5	53.94*
Muscular Endurance	Pre test	Mean S.D	27.63 1.64	27.40 2.09	Between Within	48.133 391.33	1 28	48.133 13.976	3.44
	Post test	Mean S.D	31.75 1.25	27.08 1.25	Between Within	307.2 386.67	1 28	307.2 13.81	22.25
	Adjusted Post test	Mean	31.75	27.11	Between Within	157.21 44.31	1 27	157.21 1.64	95.79*

(The table value required for significant at .05 level with df 1 and 28; and 1 and 27 are 4.20 and 4.215 respectively).

The result of the study indicates that the experimental group had significantly improved the selected dependent variables namely cardio respiratory endurance and muscular endurance however, control group did not show any improvement on the selected variables as it was not involved in any of the specific training means. It is inferred from the results of the present study that all the dependent variables were significantly improved due to the influence combination of sand dune running and stair climbing programme.

Discussion

In the present study, a significant increase was predicted on motor fitness in the combination of sand dune running and stair climbing exercises group. Such an improvement is consistent with previous exercise training literature and may appear unexceptional. However, it is noteworthy that this improvement in cardio respiratory fitness was associated with relatively low volumes of exercise. (Pollock et al., 1998). Sand dune running and also Stair climbing training of approximately 6 minutes per day resulted in a similar improvement in maximum oxygen conception as walking for 45 min per day (llmarinen et al., 1979). Colin A. G. Boreham et al 2000, investigated that Daily Stair-Climbing Exercise in Previously Sedentary Young Women, for this purpose. Twenty-two healthy female volunteers were randomly assigned to control or stair-climbing groups. Stair climbers then underwent a 7-week stair-climbing program, progressing from one ascent per day in week 1 to six ascents per day in weeks 6 and 7, using a public access staircase (199 steps). Relative to the insignificant changes in the control group, the stair-climbing group displayed a rise in HDL cholesterol concentration ($P < 0.05$) and a reduced total: HDL ratio ($P < 0$ 01) over the course of the program. A short-term stair-climbing program can confer considerable cardiovascular health benefits on previously sedentary young women, lending credence to the potential public health benefits of this form of exercise.

Conclusion

1. It was concluded that the Combination of Sand dune running and Stair Climbing Exercises programme has resulted in significant improvement on selected criterion variables such as cardio respiratory endurance and muscular endurance as compared to control group.
2. The result showed that there were significant differences among experimental group and control group due to twelve weeks of combination of sand dune running and stair climbing exercises.

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