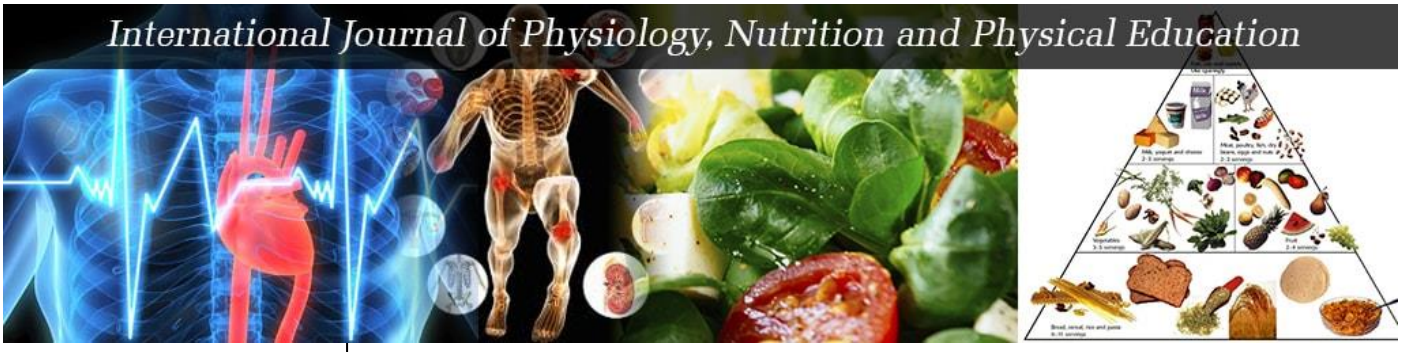

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Effect of mountaineering training on arm and shoulder strength among moderate altitude inhabitants

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Abstract
The aim of this study was to determine the effect of mountaineering Training Program on physical fitness components such as arm and shoulder strength of moderate altitude inhabitents. For the purpose of the study fifty male students were selected as subject form the Jawahar Institute of mountaineering and winter sports Phalgam, Anantanag (J&K). The age of the students which serve as subject was ranged between 18 - 26 years, which was confirmed from institute record. The subjects were divided into two equal groups, Group A- Experimental (N =25) and Group- B as Control Group (N=25). All the selected subjects were informed about the aim and method of the study. The experimental group was given special training for twelve week. The control group was not given any training rather than their daily work routines. The obtained data from the experimental and control group before and after the experimental period were statistically analyzed with dependent "t"-test and analysis of covariance (ANOVA). The level of significance was set at 0.05 levels. The result of the study showed that the 12 weeks training program had significant improvement on selected physical fitness components such as arm and shoulder strength.

Keywords: Mountaineering training, arm and shoulder strength, moderate altitude inhabitants

Introduction
In today's world where concrete buildings and stress are increasing day by day, individuals have started to create extra time for alternative sports and opt for spending more time in nature. They prefer land sports to enable them to spend more time in nature. As can be followed in social media and mass media, nature walks, rock climbing, camping and climbing are among the most preferred nature sports. Mountaineering is becoming more and more popular and interest towards mountain climbing is increasing. Researchers have different definitions for mountain climbing. Mountaineering is one of the nature sports, which are both a recreational sport and a competition sport (Draper and Jones, 2008) [1] Mountain climbing provides strong experiences for undertaking personal initiatives (Canalejo and Draper, 2011) [2]. The researchers proposed a mountain medicine support model composed of climbers. This proposal shows that climbers are now active in more areas which attribute a particular importance to the current study. Sport rock climbing is used in many different areas and is utilized as a promising physiotherapy service for patients with various orthopedic and neurological problems. Results of another study identified positive outcomes for rock climbing in psychological and physiological areas. (Hansen and Parker, 2009) [3] Mountaineering was recognized for many years as a recreational activity or entertainment that links in its peculiar way the sport with the beauty of nature. As a form of spending leisure time, the definition of climbing is located between the amateur or professional sport, recreation and qualified tourism. However, direct rivalry and the standards unifying conditions of climbing competition refer to the modern definition of a professional sport (Lewis and Cauthorn, 2000) [5].

Materials and Methods
The purpose of the present study was to investigate the effect of mountaineering training on selected physical fitness variable among Moderate altitude inhabitants. To full fill the aim of the study fifty male students of Jawahar Institute of mountaineering and winter sports Phalgam, Anantanag Kashmir (J&K) were selected which serves subjects.

The fifty male students were divided in two equal groups named as Group - A, experimental group which is in number twenty five and other Group- B is named as control group which is also consists twenty five subjects. The simple random sampling was applied to select the subjects for the study. The age of the students was between 18 to 26 years.

Result and discussion

The analysis of covariance on the obtained scores in pre, post and adjusted post test of the control group, experimental groups (mountaineering training) for physical fitness variable namely arm and shoulder strength have been presented in the table No.1

Table 1: Analysis of covariance for the pre, post and adjusted post test mean values of mountaineering training on experimental group with control group on arm and shoulder strength

	Training Group	Control Group	So V	SS	*df*	MS	"F" Ratio
Pre-test Mean	11.04	10.92	BG	0.18	1	0.18	0.12
SD (±)	1.42	0.95	WG	70.80	48	1.7	
Posttest Mean	14.28	11.08	BG	128.00	1	128.00	91.86*
SD (±)	1.45	0.81	WG	66.88	48	1.39	
Adjusted Posttest Mean	14.22	11.13	BG	119.44	1	119.44	438.71*
			WG	12.79	47	0.29	

*Significant at 0.05 level of confidence.
(The table values required for significance at 0.05 level of confidence for 1 & 48 are 4.00 respectively)

The table - 1 show that the pre-test mean values on arm and shoulder strength of mountaineering training group (MTG), and control group (CG) are 11.04, and 10.92 respectively. The obtained 'F' ratio 0.12 for pre-test scores was less than the table value 4.00 at df (1, 48) that indicates there is no significant difference on systolic blood pressure between groups. The post-test mean values on arm and shoulder strength of mountaineering training group (MTG), and control group (CG) are 14.28 and 11.08 respectively. The obtained 'F' ratio 91.86 for post-test scores was greater than the table value 4.00 for df 1 and 48 required for significance at 0.05 level of confidence on arm and shoulder strength. The adjusted post-test means of mountaineering training group (MTG) and control group (CG) are 14.22 and 11.13 respectively. The obtained 'F' ratio of 438.71 for adjusted post-test means was greater than the table value of 4.00 for df 1 and 48 required for significance at 0.05 level of confidence on systolic blood pressure. The results of the study indicated that there was a significant difference among the adjusted post-test means of mountaineering training group (MTG) and control group (CG) on arm and shoulder strength. Fig: 1

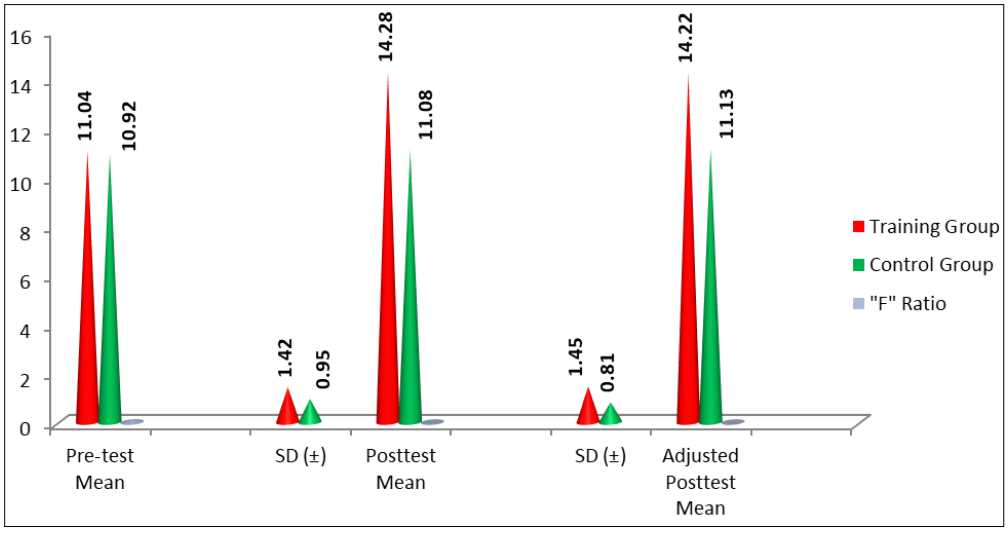

Fig: 1: Graphical Analysis of Covariance for the Pre, Post and Adjusted Post Test Mean Values of Mountaineering Training on Experimental Group with Control Group on Arm and Shoulder Strength

The analysis of dependent "t"-test on the data obtained for arm and shoulder strength of the pre-test and post-test means of Mountaineering training and control groups have been analyzed and presented in table 2

Table 2: The summary of mean and dependent "t" test for the pre and post tests on arm and shoulder strength of mountaineering training group and control groups

	Training Group		Control Group	
	Mean	SD (±)	Mean	SD (±)
Pre-test	11.04	1.42	10.92	0.95
Post-test	14.28	1.45	11.08	0.81
"t" value	30.98		1.44	

*Significant at 0.05 level of confidence. Arm and shoulder strength in numbers.
(Table value required for significance at 0.05 level for "t" test with df 24 is 1.71).

The table 2 shows that the mean difference values between mountaineering training group and control group are 30.98 and 1.44 respectively. When the control group (CG) compared with experimental groups, the mean differences were 30.98 and 1.44 which were significant at 0.05 level of confidence. Hence, there was significant difference between control group (CG) and experimental groups in arm and shoulder strength among moderate altitude inhabitants. The results of the study showed that there were a significant difference between mountaineering training group (MTG) and control group (CG), the training produced the similar effects on arm and shoulder strength. The pre, post and adjusted post test means values of mountaineering training group (MTG) and control group (CG) on arm and shoulder strength are graphically represented in the Figure – 2

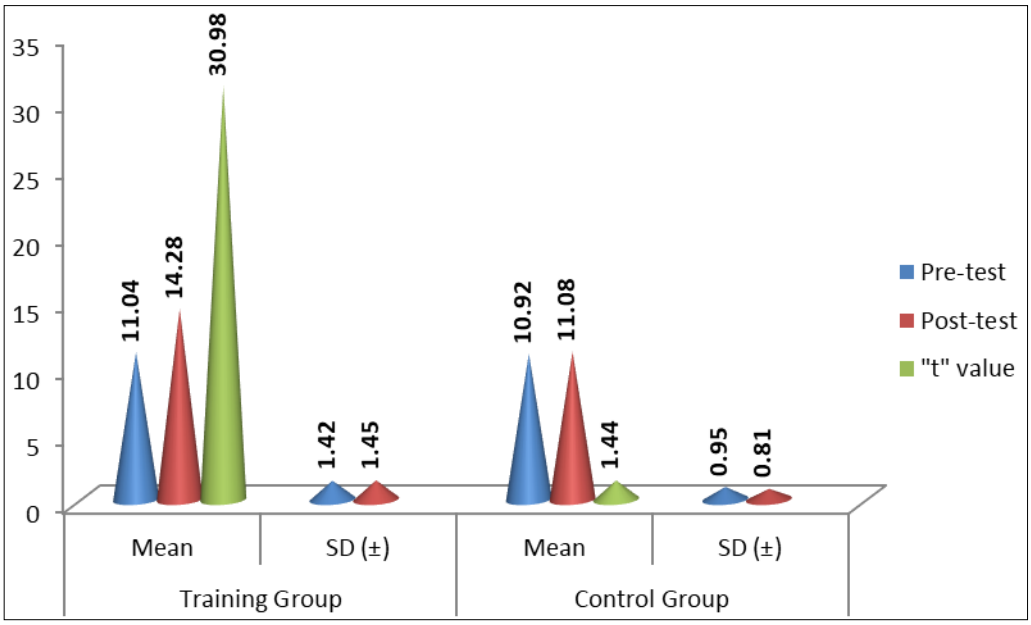

Fig 2: Graphical summary of mean and dependent "t" test for the pre and post tests on arm and shoulder strength of mountaineering training group and control groups

Discussion on findings

The result of the study revealed that the training group has significant improvement in physical fitness variable among moderate altitude inhabitants after the organized mountaineering training program. The physical fitness variables showed significant improvement as the planned training program shows the significant effect. Hence mountaineering training program of twelve weeks was satisfactory for physical fitness variables.

Conclusion

It was concluded that the mountaineering training program is one of the best training method for improving physical fitness variable like arm and shoulder strength for moderate altitude inhabitants because there was a significant difference among mountaineering training group and control group in arm and shoulder strength So mountaineering training is effective for improving physical fitness variables like arm and shoulder strength.

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