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Effect of modified infantry training and theraband training on physiological variables among women volleyball players

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Abstract
The study aimed to find out the Effect of Modified Infantry Training and Theraband Training on Physiological Variables among Women Volleyball Players The study is formulated as a truly random group design with pre-test and post-test measures among 90 female college-level volleyball players aged 17-21 from various colleges in and around Tirupati. Participants were randomly assigned to three groups: Experimental Group I underwent Modified Infantry Training, Experimental Group II underwent Theraband Training group, and Control Group III did not receive any specific training. physiological, variables assessed included vital capacity and recovery heart rate. Initial testing was conducted before a 12-week training period, followed by final testing after the training. Differences between pre-test and post-test scores were analysed using ANCOVA and Scheffie's post hoc test at a significance level of 0.05. It was concluded from the result of the study that there was a significant improvement ($p \leq 0.05$) due to Modified Infantry Training, Theraband Training on Vital Capacity and RHR as compared to control group.

Keywords: Modified infantry training, theraband training, vital capacity, RHR

Introduction

Sports training is a fundamental preparation for enhanced performance through physical exercise. It is grounded in scientific principles aimed at education and performance enhancement. Sports activities involve motor movements and actions, with their success largely depending on the correctness of execution. The techniques of training and improvements in tactical efficiency are crucial in the training process. Theraband training involves using resistance bands for exercises aimed at strengthening and toning muscles, building mass, and increasing endurance. This type of training is versatile and can be incorporated into various fitness routines, from physical training programs for athletes to rehabilitation programs. Modified Infantry Training (MIT) is a rigorous and specialized program designed to prepare recruits to become disciplined, physically resilient, and proficient infantry soldiers. Rooted in the foundational principles of military service, MIT not only imparts essential survival skills but also instils a profound sense of teamwork, discipline, and readiness for combat scenarios. Aspiring soldiers undergo intensive training across multiple phases, each meticulously crafted to push the boundaries of physical endurance and mental fortitude.

Materials and methods

The study is formulated as a truly random group design with pre-test and post-test measures among 90 female college-level volleyball players aged 17-21 from various colleges in and around Tirupati. Participants were randomly assigned to three groups: Experimental Group I underwent Modified Infantry Training, Experimental Group II underwent Theraband Training group, and Control Group III did not receive any specific training. physiological, variables assessed included vital capacity and recovery heart rate. Initial testing was conducted before a 12-week training period, followed by final testing after the training. Differences between pre-test and post-test scores were analysed using ANCOVA and Scheffie's post hoc test at a significance level of 0.05.

Results on vital capacity

The raw score was collected before and after the experimental period on the Vital Capacity of the Modified Infantry Training group and Theraband Training group and Control group. The results of the analysis of covariance on Vital Capacity of the prelim test, Post-test and Adjusted test scores of Modified Infantry Training group and Theraband Training group and control group were presented in table 1.

Table 1: Analysis of covariance on vital capacit of experimental groups and control group

Test	Modified Infantry Training	Theraband Training group	Control group	SOV	SS	df	MS	F-Ratio
prelim test Mean	2640	2659	2668	Between	12260.00	2	6130.00	0.10
				Within	5319950.00	87	61148.85	
Post test Mean	3013	3083	2651	Between	3230975.56	2	1615487.8	32.04*
				Within	4386603.33	87	50420.73	
Adjusted Post Test Mean	3025	3080	2641	Between	3436039.04	2	1718019.52	139.19*
				Within	1061523.52	86	12343.30	

* significant at.05 level of confidence Table value of df (2 & 87) at.05 level=3.10

The prelim test scores of the Modified Infantry Training group and Theraband Training group and Control group on Vital Capacity were 2640, 2659 and 2668 respectively. The post test scores of Modified Infantry Training group and Theraband Training group and Control group on Vital Capacity were 3013, 3083 and 2651 respectively. The order adjusted mean scores of Modified Infantry Training group and Theraband Training group and Control group on Vital Capacity were 3025, 3080 and 2641 respectively.

The obtained F value on prelim test score 0.10 was lesser than the required table F value of 3.10 to be significant at 0.05 level. This result proved that there was no significant difference between the two experimental and control groups indication that the process of randomization of the groups was perfect while assigning the subjects to groups. The post test scores analysis proved that were significant differences between the two experimental groups and control group, the obtained F value 32.04 * was greater than the required F value of 3.10. This proved that the differences between the post test means of the subjects were significant.

Taking into consideration the prelim and posttest scores among the groups, adjusted mean scores were calculated and statistical treatment. The obtained F value of 139.19***** was greater than the means due to the experimental training on Vital Capacity .

Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe's post hoc test. The results were presented in Table-2

Table 2: The scheffe's Test for the difference between Modified Infantry Training group and Theraband Training group and Control group Adjusted post-test paired means on Vital Capacity

Modified Infantry Training group	Theraband Training group	Control Group	Mean Diff	Confidence Interval
3025.72	3080.70		54.98	71.43
3025.72		2641.25	384.47*	71.43
	3080.70	2641.25	439.45*	71.43

The required confidence interval for the post hoc analysis of ordered adjusted means was 71.43 Pairwise mean comparisons over the required confidence interval were significant at 0.05 level.

(MD: 54.98) Modified Infantry Training Group Vs Theraband Training group

(MD: 348.47*) Modified Infantry Training Group Group Vs Control Group

(MD: 439.45*) Theraband Training Group Group Vs Control Group

Results on Resting Heart Rate

The raw score was collected before and after the experimental period on the Resting Heart Rate of the Modified Infantry Training group and Theraband Training group and Control group. The results of the analysis of covariance on Resting Heart Rate of the prelim test, Post-test and Adjusted test scores of Modified Infantry Training group and Theraband Training group and control group were presented in table 3

Table 3: Analysis of Covariance on Resting Heart Rate of Experimental groups and Control group

Test	Modified Infantry Training	Theraband Training group	Control group	SOV	SS	df	MS	F-Ratio
prelim test Mean	74.30	73.90	73.83	Between	3.82	2	1.91	0.48
				Within	343.17	87	3.94	
Post test Mean	71.60	70.77	74.13	Between	184.47	2	92.23	18.07*
				Within	444.03	87	5.10	
Adjusted Post Test Mean	71.40	70.84	74.26	Between	200.72	2	100.36	31.03*
				Within	278.18	86	3.23	

* Significant at.05 level of confidence Table value of df (2 & 87) at.05 level=3.10

The prelim test scores of the Modified Infantry Training group Theraband Training group and Control group on Resting Heart Rate were 74.30, 73.90 and 73.83 respectively. The post test scores of Modified Infantry Training group and Theraband Training group and Control group on Resting Heart Rate were 71.60, 70.77 and 74.13 respectively. The order adjusted mean scores of the Modified Infantry Training group and Theraband Training group and Control group on Resting Heart Rate were 71.40, 70.84 and 74.26 respectively.

The obtained F value on prelim test score 0.48 was lesser than the required table F value of 3.10 to be significant at 0.05 level. This result proved that there was no significant difference between the two experimental and control groups indication that the process of randomization of the groups was perfect while assigning the subjects to groups. The post test scores analysis proved that were significant differences between the two experimental groups and control group, the obtained F value 18.07* was greater than the required F value of 3.10. This proved that the differences between the post test means of the subjects were significant.

Taking into consideration the prelim and post-test scores among the groups, adjusted mean scores were calculated and statistical treatment. The obtained F value of 31.03***** was greater than the means due to the experimental training on Resting Heart Rate .

Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe's post hoc test. The results were presented in Table-4

Table 4: The scheffe's Test for the difference between Modified Infantry Training group and Theraband Training group and Control group Adjusted post-test paired means on Resting Heart Rate

Modified Infantry Training group	Theraband Training group	Control Group	Mean Diff	Confidence Interval
71.40	70.84		0.56	1.16
71.40		74.26	2.86*	1.16
	70.84	74.26	3.41*	1.16

The required confidence interval for the post hoc analysis of ordered adjusted means was 1.16 Pairwise mean comparisons over the required confidence interval were significant at 0.05 level.

(MD: 0.56) Modified Infantry Training Group Vs Theraband Training group

(MD: 2.86*) Modified Infantry Training Group Group Vs Control Group

(MD: 3.41*) Theraband Training Group Group Vs Control Group

Conclusions

The Physiological variable such as vital capacity showed significant improvement after twelve weeks of Modified Infantry Training group and Theraband Training among college level Volleyball players when compared to the control group and there was no significant difference among experimental groups. The result clearly indicates that the Theraband training was better than the Modified Infantry Training in terms of improving the Vital Capacity of Volleyball players. It was concluded that the Modified Infantry Training group and Theraband Training group influenced Physiological variable, Resting Heart Rate and the differences were significant at 0.05 levels. The post hoc analysis proved that the Modified Infantry Training group and Theraband Training significantly altered the Resting Heart Rate of the college-level athletes compared to the control group and there were no significant differences among treatment groups. The result indicates that the Theraband training was better than the Modified Infantry Training terms of improving the Resting Heart Rate of Volleyball Players.

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