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Influence of interval training and yogic practices on vital capacity among women Kho Kho players

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Abstract
The study investigated the impact of interval training and yogic practices on vital capacity among female college-level Kho Kho players. This investigation included 90 female Kho Kho players aged 18–21 from various colleges in and around Tirupati. Participants were randomly assigned to three groups: Experimental Group I underwent interval training, Experimental Group II engaged in yogic practices, and Control Group III received no specific training. Vital capacity, the key physiological variable, was measured using a spirometer. Pre-test measurements were taken before the 12-week training period, and post-test measurements were collected afterward. Data were analyzed using ANCOVA, with Scheffé's post hoc test applied at a significance level of 0.05. The results revealed significant improvements in vital capacity for both experimental groups compared to the control group, with no significant difference observed between the two experimental groups. However, yogic practices were found to be more effective than interval training in enhancing the vital capacity of the Kho Kho players.

Keywords: Interval training, yogic practices, Kho Kho players

Introduction
Kho Kho is a traditional Indian sport that requires agility, speed, endurance, and strategic thinking. Like many team sports, it involves intense bursts of activity, requiring players to have optimal cardiovascular and respiratory fitness to perform well. Vital capacity, which refers to the maximum amount of air a person can expel from the lungs after maximum inhalation, is a key factor in determining an athlete's respiratory efficiency. Enhancing vital capacity can significantly improve a player's endurance, recovery time, and overall performance on the field. Training methods that target the respiratory system can provide significant benefits to Kho Kho players. Two such methods, interval training and yogic practices, have gained prominence for their ability to enhance lung function and vital capacity. Interval training, characterized by alternating periods of high and low-intensity activity, has been widely recognized for improving aerobic and anaerobic capacity, making it a valuable tool for increasing stamina in athletes. On the other hand, yogic practices, particularly pranayama (breathing exercises), focus on controlled breathing techniques that improve respiratory health and lung efficiency. This study seeks to explore the combined effects of interval training and yogic practices on the vital capacity of women Kho Kho players. Given the sport's demanding physical nature, it is essential to investigate training methodologies that can optimize respiratory function, enabling players to maintain high performance during prolonged periods of play. Women athletes, in particular, may benefit from such training programs, as they face unique physiological challenges that influence their respiratory function. By examining the impact of these complementary training methods, the study aims to contribute valuable insights into developing more effective fitness regimes for female Kho Kho players, enhancing their competitive edge in the sport.

Materials and Methods
The study followed a true random group design with pre-test and post-test measures conducted among 90 female college-level Kho Kho players, aged 18–21, from various colleges in and around Tirupati. Participants were randomly divided into three groups: Experimental Group I participated in Interval Training, Experimental Group II participated in Yogic Practices, and Control Group III did not receive any specific training. The physiological variable, vital capacity, was measured using a spirometer. Initial testing took place before the 12-week training period, and final testing was conducted afterward. The differences between pre-test and post-test scores were analyzed using ANCOVA, with Scheffé's post hoc test applied at a significance level of 0.05.

Results on Vital Capacity
The raw scores for vital capacity were collected before and after the experimental period for the Interval Training group, Yogic Practices group, and Control group. The results of the analysis of covariance (ANCOVA) on the preliminary test, post-test, and adjusted test scores for vital capacity across these groups are presented in Table 1.

Table 1: Analysis of Covariance on Vital Capacity of Experimental groups and Control group

Test	Interval Training	Yogic Practices 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 preliminary test scores for vital capacity in the Interval Training group, Yogic Practices group, and Control group were 2640, 2659, and 2668, respectively. After the intervention, the post-test scores for these groups were 3013, 3083, and 2651, respectively. The order-adjusted mean scores for the Interval Training group, Yogic Practices group, and Control group were 3025, 3080, and 2641, respectively.

The obtained F-value for the preliminary test score was 0.10, which was lower than the required table F-value of 3.10 for significance at the 0.05 level. This indicates that there was no significant difference between the two experimental groups and the control group at the start of the study, confirming that the randomization process was effective in assigning subjects to groups. In contrast, the analysis of post-test scores revealed significant differences between the two experimental groups and the control group. The obtained F-value of 32.04* was greater than the required F-value of 3.10, indicating that the differences in post-test means between the groups were statistically significant. Considering both the preliminary and post-test scores, adjusted mean scores were calculated, and further statistical analysis was performed. The resulting F-value of 139.19* was significantly higher, demonstrating the impact of 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 Interval Training group and Yogic Practices group and Control group Adjusted post-test paired means on Vital Capacity

Interval Training group	Yogic Practices 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 the adjusted ordered means was 71.43. Pairwise mean comparisons within this confidence interval were significant at the 0.05 level.

- (MD: 54.98) Interval Training Group vs. Yogic Practices Group
- (MD: 348.47*) Interval Training Group vs. Control Group
- (MD: 439.45*) Yogic Practices Group vs. Control Group

Conclusions

The Physiological variable such as vital capacity showed significant improvement after twelve weeks of Interval Training group and Yogic Practices among college level women Kho Kho Players when compared to the control group and there was no significant difference among experimental groups. The result clearly indicates that the Yogic Practices was better than the Interval Training in terms of improving the Vital Capacity of Kho Kho Players

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