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COMPARATIVE EFFECT OF SELECTED YOGIC, IRON YOGIC AND CORE YOGIC PRACTICES ON VITAL CAPACITY STRENGTH AND FLEXIBILITY AMONG INTERCOLLEGIATE MEN HOCKEY PLAYERS.

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ABSTRACT
The purpose of the study was to investigate the comparative effect of selected yogic, core yogic and iron yogic practices on physical and physiological parameters like Vital capacity, Strength and Flexibility of intercollegiate level men hockey players. Forty men hockey players studying in different colleges in Thiruvananthapuram District, Kerala were selected randomly as subjects. Their age ranged from 17 to 21 years. They were randomly divided into four groups. Group 1 underwent yogic practices and group 11 underwent core power yoga practice, group 111 underwent iron yoga practices and group IV acted as control group. Each group consists of 10 subjects each. The training schedule was for a period of 24 weeks. the criterion variables selected for the study were strength, flexibility and vital capacity. The data collected for the pre, mid and post-test were statistically analyzed by using one way repeated measure(ANOVA) and also to find out the significance of difference between different pair mean, the analysis of co variance(ANCOVA),'F' value was found significant at 0.05 level. The results of the study revels that all the criterion variables had significant improvement in all the three experimental groups when compared to control group.
Keywords: Power yoga, Iron yoga, Flexibility, Strength, Vital capacity

INTRODUCTION
Hockey is a popular sport played in more than 132 countries. Now days, the game field hockey is being played around the word in many type of surfaces namely grass and artificial surfaces. The game includes short bursts of speed with rest pauses or slow movements in between for a period of four quarters of 15 minutes with an interval of 2 minutes between quarter 1 and 2 and between quarter 3 and 4 and a half-time interval of 5 minutes between quarter 2 and 3. In the game of Hockey, the players have to be very alert and active during the play. The player has to perform number of zigzag movements and straight runs with high speed, in accordance with the requirements of the game. Performance at optimum requires high level of physical and physiological characteristics. The role of higher level of physical fitness is phenomenal in modern hockey through the introduction of synthetic surface. Less conditioned players often experience quick setting fatigue and exhaustion. The players, coaches and conditioning experts now a day's realized that for higher performance in hockey in artificial surfaces requires specific physical fitness qualities, especially strength, flexibility and vital capacity etc. In sports, the word 'training' is generally understood to be a synonym of doing physical exercise in a systematic and scientific way to improve performance. In a narrow sense, training is doing physical exercise for the improvement of performance (Hardayal Singh). Yoga makes people stronger, healthier and more cheerful. Some investigation proved that yogic practices will strengthen all organs and improve all physical and physiological functions of the body(Sudan and Agnes). Core power yoga is one of the multi-disciplinary and more vigorous dynamic and energetic form of yogic exercise widely used by the conditioning experts that strengthens the body mind and spirits. It physically and mentally challenges the practitioner and connects to an inner power. Core yoga helps heal, detoxify and rouse the body and mind. Iron yoga is a combination of two popular forms of exercise namely yogic practices and core power yoga. Mainly iron yoga incorporates many basic type of movements such as isolation and compound movements. It improves lean body mass and build strength in the upper body(Srinivasan). Vital capacity is the maximum amount of air a person can expel from the lungs after a maximum inhalation. Strength is the ability of a muscle or muscle group to exert maximal force against resistance. Flexibility is the capacity of a joint or muscle to move through its full range of motion.

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METHODOLOGY

Purpose of the study was to analyse the comparative effect of selected yogic, iron yogic and core yogic practices on vital capacity, strength and flexibility of intercollegiate level men hockey players. To achieve the purpose of the study forty (40) inter collegiate level men hockey players studying in different colleges in Trivandrum district, Kerala were selected randomly as subjects. The age of the subjects ranged from 17 to 21 years. They were randomly divided into four groups. Group 1 underwent yogic practices such as:- Surya namaskar, Savasana, Dhanurasana, Pachimottanasana, Bhujangasana, Chakrasana, Halasana, Salabhasana, Sarvangasana, Matsyasana; Group 11 underwent core power yoga such as:- Surya namaskar, Virabhadrasana, Bakasana, Wall yoga, Dashama, Sivanda Prasarita, Padottasana, salamba sarvangasana, Dhanurasana, Ardha Chandrasana and Halasana. Group 111 underwent iron yoga practices such as:- Suryanamaskar, Dhanurasana, Pachimottanasana, Bhujangasansa, Chakrasana, Halasana, Salabhasana, Sarvangasana, Matsyasana by using weight. Either dumbbells/ weights bags tired over the various parts of the body and Group IV acted as control group. Each group consists of (n=10) subjects each. The experimental groups were subjected to the yogic practices in the morning (90 minute) and circuit training and iron yogic practices (90 minutes) in the evening for alternative days for a period of 24 weeks except on Sundays. The data were collected two days prior to the beginning of the training schedule (pre-test); during the middle of the training schedule '12 weeks' (mid -test) and two days after the training schedule(post-test). The criterion variables selected for the study are vital capacity, strength and flexibility; and were assessed by the following standardized test items such as: bent knee sit ups, sit and teach test and digital spirometer –test to assess vital capacity respectively.

ANALYSIS OF THE DATA AND RESULTS OF THE STUDY

The data pertaining to the criterion variables selected for the study were examined by using one way repeated measure(ANOVA) for finding the significance difference within the group(pre, mid and post-test); in order to find significance difference between the groups(yogic practices, core power yoga practices, iron yogic practices and control groups) are presented in the following tables.

TABLE 1
ONE WAY REPEATED MEASURE ANOVA ON VITAL CAPACITY OF EXPERIMENTAL AND CONTROL GROUPS

Group	Source of Variance	Sum of Square	d.f	Mean squires	F-ratio
Yogic practice	Test (Between)	257631.67	2	128815.83	82.73
	Error	59168.00	38	1557.05	
Core yogic practice	Test (Between)	24461.67	2	12230.83	38.50
	Error	12071.67	38	317.68	
Iron yoga practice	Test (Between)	411495.00	2	205747.50	108.63
	Error	71971.67	38	1893.99	
Control group	Test (Between)	186.67	2	93.33	0.05
	Error	65413.33	38	1721.40	

Significant at 0.05 level of significance.

Table 1 reveals the analysed data on resting heart rate within the group. The obtained F-ratio values are 82.73, 38.50 & 108.63 of yoga practice, core power yoga and iron yoga group respectively. The table value required for significance at 0.05 level of significance with 2 and 38 were 3.55. Based on F-ratio value iron yoga group training proves to be the most significant and core power yoga was the least significant among the three experimental group.

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TABLE -2
ANALYSIS OF COVARIANCE OF EXPERIMENTAL AND CONTROL GROUPS ON VITAL CAPACITY

Adjusted Post-test Mean				Source of Variance	Sum of Squires	d.f	Mean squires	F-ratio
Yogic	Core Power	Iron Yoga	Control Group					
4805.74	4880.03	4910.85	4766.38	Between	526192.2	3	175397.42	50.18
				Error	262140.5	75	3495.21	

Significant at 0.05 level of significance.

Table 2 reveals that all the three experimental groups had shown significant improvement in vital capacity among the group. The obtained ANCOVA (F-ratio) values 50.18 shows that the entire experimental groups are significant among themselves and is higher than the table value
2.92 of 3 and 75.

TABLE 3
ONE WAY REPEATED MEASURE ANOVA ON STRENGTH OF EXPERIMENTAL AND CONTROL GROUPS

Group	**Source of Variance**	**Sum of squires**	**d.f**	**Mean squires**	**F-ratio**
Yogic Practice	Test (Between)	10.07	2	5.03	6.85
	Error	27.93	38	0.74	
Core Yogic Practice	Test (Between)	63.22	2	31.61	52.72
	Error	22.78	38	0.60	
Iron Yoga Practice	Test (Between)	234.02	2	117.01	90.16
	Error	49.32	38	1.30	
Control Group	Test (Between)	0.52	2	0.26	0.21
	Error	47.48	38	1.25	

Significant at 0.05 level of significance.

Table 3 reveals the analysed data on strength within the group. The obtained F- ratio values are 6.85, 52.72 & 90. 16 of yogic practices, core power yoga and iron yoga group respectively. The table value required for significance at 0.05 level of significance with 2 and 38 were 3.55. based on F-ratio value iron yoga group training proves to be the most significant and yogic practices group were the least significant among the three experimental groups.

TABLE 4
ANALYSIS OF COVARIANCE OF EXPERIMENTAL AND CONTROL GROUPS ON STRENGTH

Adjusted Post-test Mean				**Source of Variance**	**Sum of Squires**	**d.f**	**Mean squires**	**F-ratio**
Yogic	**Core Power**	**Iron Yoga**	**Control Group**					
26.26	27.35	28.95	25.42	Between	279.53	3	93.18	34.98
				Error	199.77	75	2.66	

Significant at 0.05 level of significance.

Table 4 reveals that all the three experimental groups had shown significant improvement in strength among the groups. The obtained ANCOVA (F –ratio) value 34.98 shows that the entire experimental groups are significant amongst them and is higher than the table value 2.92 of 3 and 7.

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TABLE 5
ONE WAY REPEATED MEASURE ANOVA ON FLEXIBILITY OF EXPERIMENTAL AND CONTROL GROUPS

Group	Source of Variance	Sum of squires	d.f	Mean Square	F-ratio
Yogic practice	Test (Between)	85.31	2	42.66	69.90
	Error	23.19	38	0.61	
Core yogic practice	Test (Between)	158.15	2	79.08	105.37
	Error	28.52	38	0.75	
Iron yoga practice	Test (Between)	25.93	2	12.96	25.83
	Error	19.07	38	0.50	
Control group	Test (Between)	5.25	2	2.63	0.94
	Error	105.75	38	2.78	

Significant at 0.05 level of significance.

Table 5 reveals the analysed data on flexibility within the group. The obtained F-ratio values are 69.90; 105.37 & 25.83 of yogic practices, core power yoga and iron yoga group respectively. The table value required for significance at 0.05 level of significance with 2 and 38 were 3.55. based on F- ratio value core power yoga group training proves to be the most significant and iron yoga was the least significant among the three experimental groups.

TABLE 6
ANALYSIS OF COVARIANCE OF EXPERIMENTAL OND CONTROL GROUPS ON FLEXIBILITY

Adjusted Post-test Mean				Source of Variance	Sum of Squires	d.f	Mean Squires	F-ratio
Yogic	Core Power	Iron Yoga	Control Group					
36.98	37.73	35.93	35.02	**Between**	166.11	3	55.37	20.93
				Error	198.43	75	2.65	

Significant at 0.05 level of significance.

Table 6 reveals that all the three experimental groups had shown significant improvement in flexibility among the groups. The obtained ANCOVA (F-ratio) values 20.93 shows that the entire experimental groups are significant among themselves and is higher than the table value2.92 of 3 and 75.

CONCLUSION

The following conclusions are drawn based on the findings of the study:-

- Vital capacity, strength and flexibility of intercollegiate level men hockey players are improved significantly as a result of 24 week yogic practices, core power yoga and iron yoga practice.
- Iron yoga is most effective in improving strength of inter collegiate level men hockey players followed by core power yoga and yogic practices.
- Core power yoga is most effective in improving flexibility of inter collegiate level men hockey players followed by yogic practices and iron yoga.
- Iron yoga is most effective in improving vital capacity of intercollegiate level men hockey players followed by yogic practices and core power yoga.

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