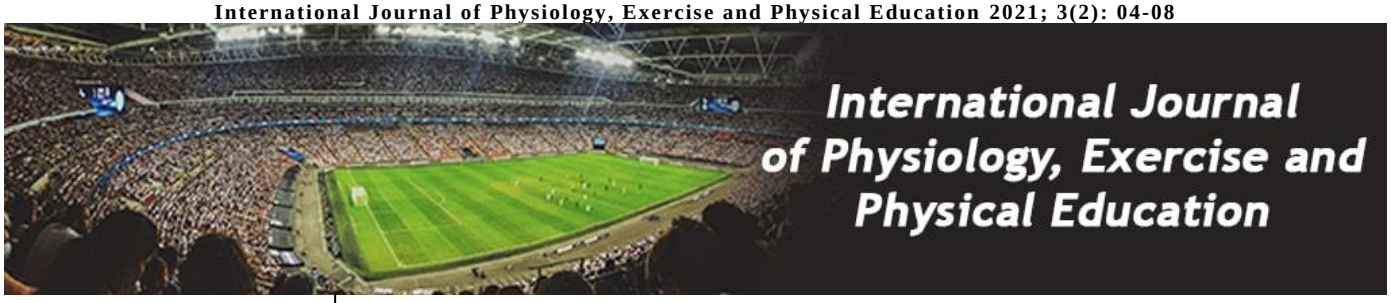

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Effect of pre-season training on selected physical fitness variables of high school volley ball boys

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Abstract
The purpose of the study was to investigate the effects of pre-season training on selected physical fitness variables in high school volleyball boys. Thirty high school volley ball players were randomly selected from Government Higher Secondary School, Kizhakkanchery, Palakkad district and their age ranged between 11 to 13 years. Physical fitness components were measured by the following tests. Speed, Muscular Strength, Endurance, Agility, Leg Explosive Power. For this study pre-test – post-test randomized group design, which consists of control group (n=15) and experimental group Preseason training (n=15) were used. The data was collect through the pre-test (before training) and post-test after Six weeks of preseason training. To find out the effect of pre-session training on selected physical fitness variables before and after training analysis of covariance was used in the study. The level of significance was set at 0.05 level of confidence. Based on the analyzes of the study the pre-session training group showed significance improvement on speed (64.62), muscular strength (102.79), endurance (5.13), agility (77.87), leg explosive power (36.58), of high school volley ball players than the control group. It can be concluded that the pre-season training programme has influenced the physical fitness components of speed, muscular strength, endurance, agility and leg explosive power.

Keywords: Pre-season training, muscular strength, leg explosive power

Introduction
In modern times, sports have evolved into highly competitive fields, requiring a systematic approach encompassing various disciplines like physiology, biomechanics, sports training and psychology. Achieving top-level performance, especially in events like the Olympics, necessitates talent identification, scientific training methods and a focus on psychological and physiological aspects. Volleyball, for instance, demands explosive power and quickness with training emphasizing agility, endurance and jumping ability. Success in many athletic skills, particularly vertical jumping, relies on explosive power, which can be developed through targeted training strategies. Regular assessments help identify deficiencies and tailor training programs for optimal performance.

Pre-season training
Pre-season training, crucial for sports preparation, focuses on perfecting skills, enhancing fundamentals and achieving peak physical fitness. It aims to strengthen muscles, improve endurance and reach optimal conditioning. Thomas Reily emphasizes its importance for enhancing aerobic power and endurance. Bowers and Fox recommend 4 to 5 training sessions per week for endurance sports like volleyball. Periodization, a vital aspect of high-performance training, involves systematically planning the training cycle to achieve top form during the main competition. The preparatory period comprises three phases:

- Increasing load-taking ability, goal-oriented improvement
- Direct preparation for competition,
- Ensuring athletes are at their best during the competitive season.

Statement of the problem
The purpose of the study was to find out the effects of pre-season training on selected physical fitness variables of high school volley ball boys.

Methodology

This chapter outlines the methodology used in the study, covering subject selection, variable selection, data and test reliability, instrument reliability, subject orientation, test administration and statistical techniques employed.

Selection of subjects

The study included 30 high school volleyball players aged 11 to 13, randomly selected from Government Higher Secondary School, Kizhakkanchery, Palakkad district.

Selection of variables

Keeping the feasibility criterion in mind, the researcher selected the following variable for the present study:

1. Independent variables - Preseason training
2. Dependent variables: Speed, Muscular Strength, Endurance, Agility and Leg Explosive Power.

Criterion measures

S. no	Variables	Test	Measuring units
1	Speed	50 mts Dash	In seconds
2	Muscular Strength	Bent knee Sit ups	Number of counts per minute
3	Endurance	12 mins run & walk	Meters
4	Agility	Shuttle Run (4 x 10 yards)	In seconds
5	Leg Explosive Power	Vertical jump	In centimeters

Experimental Design

To achieve the purpose of the study involved 30 high school volleyball players aged 11 to 13 from government higher secondary school, kizhakkanchery, palakkad district. The subjects were randomly divided into an experimental (Preseason Training) group and control group. Initial assessments of physical fitness variables were conducted as pre-tests. The experimental group underwent a six-week preseason training program, including interval, resistance, circuit, agility and plyometric for five days a week. The control group did not receive any specific training.

Statistical technique

Analysis of covariance (ANCOVA) used to assess the difference in selected physical fitness variables between the two groups before and after training. The significance level chosen for the study was 0.05.

Results of treatment effect

Table 1: Analysis of Covariance on Speed (50 mts) of Pre-session and Control Groups

	Experimental group	Control group	Source of variance	Sum of square	df	Mean square	'F' ratio
Pretest mean	8.77	8.33	B	0.03	1	0.02	0.68
			W	1.10	28	0.03	
Posttest mean	7.91	8.58	B	3.40	1	3.40	64.62*
			W	1.47	28	0.05	
Adjusted mean	17.48	40.68	B	0.26	1	0.25	8.22*
			W	0.85	27	0.03	

* Significant at 0.05 level

The tabulated 'F ratio for df I to 28 and 1 & 27 are 4.20 and 4.2l respectively

The pre-test mean for the experimental group was 8.77 and for the control group, it was 8.83 with a non-significant F ratio of 0.68 for the speed variable. The post-test means were 7.91 for the experimental group and 8.58 for the control group, with a highly significant F ratio of 64.62. Adjusted post-means were 17.48 (experimental) and 40.68 (control), with a significant F ratio of 8.22. This suggests a significant improvement in speed (50 mts run) after six weeks of training.

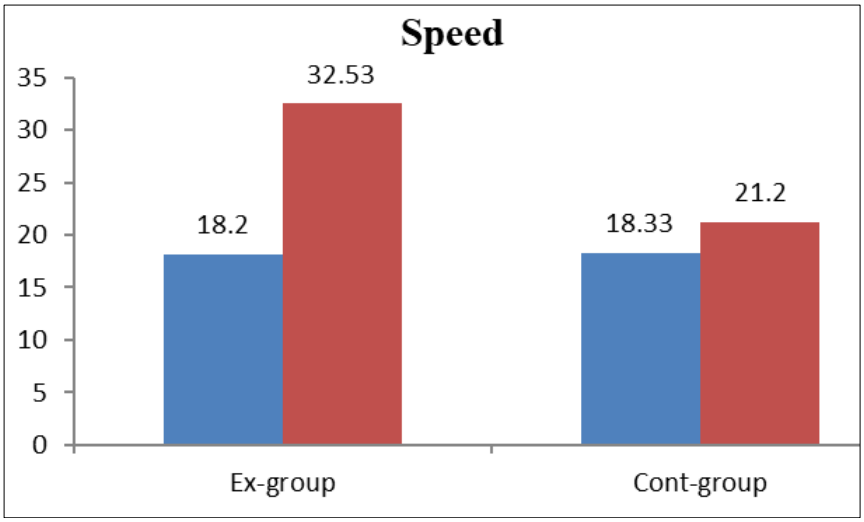

Fig 1: Graphical representation of mean values of pre-test and post-test of experimental and control groups in relation to Speed

Table 2: Analysis of Covariance on muscular strength (sit-ups) of Experimental and Control Groups

	Experimental group	Control group	Source of variance	Sum of square	df	Mean square	'F' ratio
Pretest mean	15.67	16.07	B	1.20	1	1.20	0.87
			W	38.27	28	1.37	
Posttest mean	23.67	18.87	B	172.80	1	172.80	102.79 *
			W	47.07	28	1.68	
Adjusted mean	23.84	18.69	B	192.58	1	192.86	292.57 *
			W	17.79	27	0.66	

* Significant at 0.05 level of confidence

The pre-test mean for the experimental group was 15.67 and for the control group it was 16.07, with a non-significant F ratio of 0.87. The post-test means were 23.67 for the experimental group and 18.87 for the control group, with a highly significant F ratio of 102.79. Adjusted post-means were 23.84 (experimental) and 183.69 (control) with a significantly higher F ratio of 292.57. This suggests a significant improvement in muscular endurance after the training period.

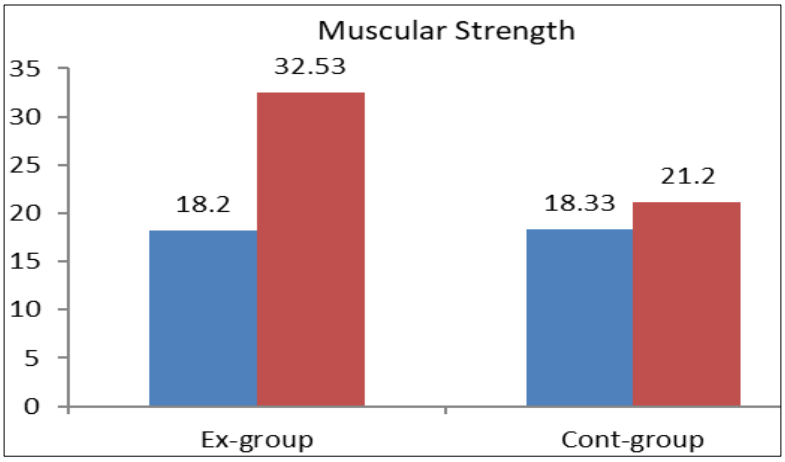

Fig 2: Graphical representation of mean values of pretest and posttest of experimental and control groups in relation to muscular strength

Table 3: Analysis of Covariance on endurance (12 minutes run and walk test) of Experimental and Control Groups

	Experimental group	Control group	Source of variance	Sum of square	df	Mean square	'F' ratio
Pretest mean	2744.66	2742.00	B	53.333	1	53.333	0.001
			W	2020613.333	28	72164.762	
Posttest mean	2852.66	2618.66	B	410670.000	1	410670.000	5.13 *
			W	2239066.667	28	79966.667	
Adjusted mean	2852.29	2619.03	B	408084.253	1	408084.253	5.28 *
			W	2085660.634	27	77246.690	

* Significant at 0.05 level of confidence

The pre-test mean for the experimental group was 2744.66 and for the control group it was 2742.00, with a non-significant F ratio of 0.001. The post-test means were 2852.66 for the experimental group and 2618.66 for the control group, with a significant F ratio of 5.136. Adjusted post-means were 2852.29 (experimental) and 2619.03 (control) with a non-significant F ratio of 5.283. The study suggests a significant improvement in endurance after the training period.

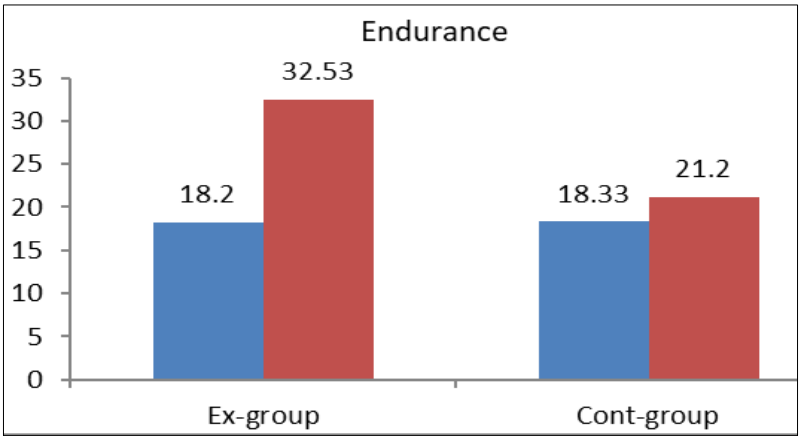

Fig 3: Graphical representation of mean values of pre-test and post-test of experimental and control groups in relation to endurance

Table 4: Analysis of Covariance on Agility: Shuttle Run (4 x 10 mts) of Experimental and Control Groups

	Experimental group	Control group	Source of variance	Sum of square	df	Mean square	'F' ratio
Pretest mean	11.91	11.97	B	0.02	1	0.02	0.38
			W	1.55	28	0.05	
Posttest mean	10.89	11.55	B	3.27	1	3.26	77.87 *
			W	1.17	28	0.04	
Adjusted mean	10.90	11.53	B	2.87	1	2.87	193.38 *
			W	0.40	27	0.15	

* Significant at 0.05 level of confidence

The pre-test mean for the experimental group was 11.91 and for the control group it was 11.97, with a non-significant F ratio of 0.38. The post-test means were 10.89 for the experimental group and 11.55 for the control group, with a highly significant F ratio of 77.87. Adjusted post-means were 10.91 (experimental) and 11.53 (control) with a significantly higher F ratio of 193.38. This suggests a significant improvement in agility after the training period.

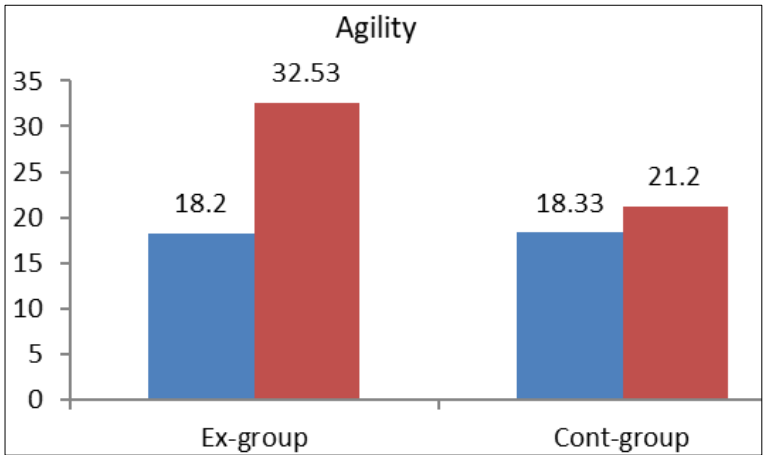

Fig 4: Graphical representation of mean values of pre-test and post-test of experimental and control groups in relation to agility

Table 5: Analysis of Covariance on Leg Explosive Power of Experimental and Control Group

	Experimental group	Control group	Source of variance	Sum of square	df	Mean square	'F' ratio
Pretest mean	52.40	51.13	B	12.03	1	12.03	0.32
			W	1045.33	28	37.33	
Posttest mean	62.73	50.80	B	1068.03	1	1068.03	36.58 *
			W	817.33	28	29.19	
Adjusted mean	62.44	51.08	B	956.48	1	956.48	42.93 *
			W	601.49	27	22.27	

* Significant at 0.05 level.

The pre-test mean for the experimental group was 52.40 and for the control group it was 51.13, with a non-significant F ratio of 0.322. The post-test means were 62.73 for the experimental group and 50.80 for the control group, with a highly significant F ratio of 36.588. Adjusted post-means were 62.44 (experimental) and 51.08 (control) with a significantly lower F ratio of 42.93. This suggests a significant improvement in leg explosive power after the training period.

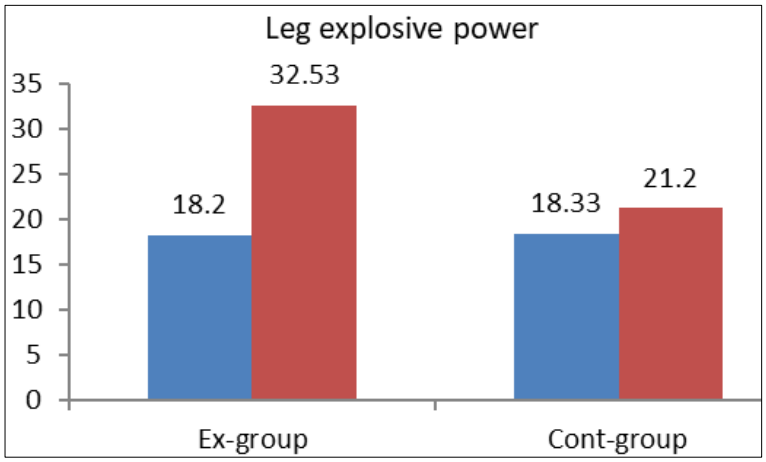

Fig 5: Graphical representation of mean values of pre-test and post-test of experimental and control groups in relation to leg explosive power

Results of the study

The analysis indicates that the pre-season training group exhibited significant improvements in various aspects, including speed (64.62), muscular strength (102.79), endurance (5.13), agility (77.87), leg explosive power (36.58) compared to the control group among higher secondary school volleyball players.

Discussion on findings

The study aimed to assess the impact of pre-season training on physical fitness variables among high school volleyball boys. The results indicate significant improvements in the selected variables following a 6-week pre-season training program. A comparison with the control group showed that the criterion variables for physical fitness demonstrated significant enhancements. Therefore the formulated hypotheses regarding these variables were accepted.

Conclusion

Based on the statistical analysis the result of the study within the limitations, the following conclusions are drawn.

The pre-season training programme has influenced the physical fitness components of speed, muscular strength, endurance, agility and leg explosive power. The control group did not show any significant different in this study.

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