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# Effect of Yogic Practices and Detraining on Muscular Endurance of Inter-Collegiate Women Cricket Players

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**Abstract**

*The objective of the study was to determine the Yogic practices and detraining effects on Inter-Collegiate Women Cricket Players. To achieve the purpose, forty Inter-Collegiate Women Cricket Players from various colleges were selected at random. Their age ranged between 18 and 25. The selected subjects were divided in two equal groups of 20 each, namely Yogic practices group (YPG) and control group (CG), experimental group carried out 8 weeks of Yogic practices five days a week followed by 40 days of detraining, whereas control group (CG) maintained their routine activities and no special training was given. Muscular endurance by sit-ups was measured at base line and immediately after training and also during detraining period. The data collected from the two groups prior to and post experimentation were statistically analyzed by analysis of covariance (ANCOVA) the data on post experimentation and detraining period (four cessation) of both groups were analyzed by two way (2 × 5) factorial ANOVA with last factor repeated measures, though yogic exercises improves Muscular endurance (4.81%) but the effect long lasts not more than 30 days of detraining.*

**Keywords:** Muscular endurance, Asanas, Detraining, Cessations, Factorial ANOVA.



## Introduction

Yoga is viewed as a bodily, rational, and saintly regulation that confers a resonance body and a sound mind (Mohan, 2002). Asana are the posture to tune the body it enhance all the physical and health related components directly and in directly to the higher extent. Two of the physical aims in yoga are breathing techniques and posture, postural aim is to establish the proper rhythm in the neuromuscular tonic impulses and improve the general muscle tone. Yogic exercises and techniques have significant, direct effects on the physical, psychological, and on the regeneration of the strength and endurance in simultaneous manner. Yogasana can be used as supplemental exercises for strength and endurance. One common claim is that yoga helps clear the mind and this may have an effect on the ability to attend to relevant stimuli and recall information subsequently (Heriza, 2004). Yogic exercises practiced properly strengthen the muscle fibers and nerves and there by improves physiological functioning of all the systems, postural maintenance stimulates all core muscles in the body, with that the endurance of the functioning muscles also develops. Development in muscle strength and endurance improve the general motor fitness components that forms the base of performance factors, hence strength and endurance related components may gain certain effect if regularly used by sports performers.

Sports are one of the best ways of recreation, people all around the globe indulge in different types of sports. All the sporting tournaments are ritually watched by sporting fans. Whether it is basketball, soccer, motor sports, rugby or swimming, spectators never seem to have enough of it. Cricket is game which has provided good recreation for millions of people. The internet is flooded with websites which provide lot of information on this game. Cricket is a team game, which has evolved over the years to become one of the more respectable sports in the world. Cricket has made its way into many countries of the world, and become a sport with national importance in some of them.

Cricket is one of the best and favorite games for everyone, from children to their grandparents. It has been the most entertaining game since long years back. Cricket can be played both socially and competitively, by males and females of all ages. While competitive Cricket is mostly played on a pitch on an oval field, Cricket just for fun can be played in backyards, parks, streets or on the beach. For millions of Cricket fans it's their world, their home. It's been played in England since the 16th century and became popular worldwide. It undergone major developments in the 18th century and hence became the national game in England. The game is played on a large oval shaped field, equipped with bat, ball and gloves. Each team consists of 11 players, competing each other in one or two innings depending on the time span decided for the game.

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At the moment, many people the world over love it hence, making it grows in popularity. There are different levels of the sport. There is the professional and the infant division. The professionals have developed in the level of skill as compared to amateurs and would go on to play at the club level. There is also a scholastic level of play. Some changes have occurred over time that has resulted to the inclusion of some techniques which were not there before. We will also notice that some rules have been crafted that makes the game be played under similar rules the world over. One body is mandated to monitor international developments in this great sport.

As every game Cricket has certain rules which need to be followed. There are various matches held all over the world throughout the year. Various events like IPL's, twenty20, world cups are driving people crazy. Most of the public is busy scheduling their meetings, appointments, important tasks according to the scheduled Cricket matches. The game is the inseparable part of our lives. It's the most refreshing game ever. The introduction of the twenty20 format has generated a lot of viewership for this game around the globe. The game has become faster and shorter in this format, there are also new rules which have been applied to this form of the game. One-day and tests have been the popular forms of the game.

**Health Benefits of Playing Cricket**

Although there is some standing around, to play Cricket they need to be fit and strong, and have good hand–eye coordination and ball-handling skills. Cricket involves sprinting between wickets and running to stop balls, as well as bowling and throwing. Health benefits of playing Cricket include:

- Endurance and stamina
- Balance and coordination
- Physical fitness
- Improving hand–eye coordination.

Detraining refers to the bodily effect experienced when one takes an extended break from regular training. More than two weeks of abstinence from physical training can often cause a reduction in peak fitness level. Activity may need to Postponed for several weeks or months, and the effects of the system may be noticed fairly quickly. Sportsmen's take an extended period of rest to purposefully allow their bodies to detrain. While they may initially lose their current fitness level, the period of rest will allow the muscles time to heal and regenerate. Here the system is trained and detrained with yogic exercise to analyze the levels of muscular endurance.

**Methodology**

To achieve the purpose, 40 intercollegiate women cricket players age ranged from 19 to 25 years were randomly selected, they were divided into two equal groups 20 each, dependent variable muscular endurance was measured by sit ups test. The data was collected prior to and immediately after the eight weeks training and also during the detraining once in ten days for forty days. In yogic exercises programme selected Asanas and Pranayama techniques were used, programme lasted for a session in the morning between 6.30 to 7.30 a.m. for six days in a week (Monday to Saturday).for a period of eight weeks followed by detraining period, on the other side the control group was left only with their routine unchanged daily schedule in the period. Collected data from the two groups prior and post experimentation were statistically analyzed to find out significance difference if any, using analysis of co variance(ANCOVA).The significant f value of adjusted post test explains the effect of the experimental manipulation. The two groups post test and detraining (four cessations) were analyzed by two way (2 × 5) factorial ANOVA with repeated measures on the last factor, when the interaction of the two factor is found significant, simple effect test was used as follow up test. Two groups and five different stages of tests were compared, whenever the F ratio of simple effect test was significant, Scheffe's test was applied as post hoc test to determine the paired means differences; statistical significance was fixed at .05 level.

**Results**

**Table I.** Analysis of Co Variance on Muscular Endurance of Yogic practices Group and Control Group

| Test | Yogic practices group | Control group | Source of variance | df | Sum of square | Mean Square | F-ratio |
|---|---|---|---|---|---|---|---|
| **Pre-test** | 35.30 | 34.50 | Between | 1 | 6.40 | 6.40 | 0.591 |
| | | | Within | 38 | 411.20 | 10.82 | |
| **Post-test** | 37 | 34.75 | Between | 1 | 50.62 | 50.62 | 6.780* |
| | | | Within | 38 | 283.75 | 7.46 | |
| **Adjusted Post test** | 36.76 | 34.98 | Between | 1 | 31 | 31 | 8.289* |
| | | | Within | 37 | 138.37 | 3.74 | |

* Significant at .05 level for (df 1,38) 4.1 (df 1,37) 4.11

Table-I shows that 8 weeks of yogic exercises improves Muscular endurance of the subjects significantly, since the obtained F value of adjusted post test means exceeds the required table value. The data collected from two groups during post test and cessations have been analyzed by two way (2 × 5) factorial ANOVA with repeated measures on the last factor and presented in the following table-II.

**Table II.** Two Factor ANOVA on Muscular Endurance of groups at Five different stages of tests

| Source of Variance | Sum of Squares | DF | Mean squares | F-ratio |
|---|---|---|---|---|
| Factor A (Groups) | 123.24 | 1 | 123.24 | 5.19* |
| Groups Error | 902.23 | 38 | 23.74 | |
| Factor B (Tests) | 11 | 4 | 2.75 | 2.50* |
| Factor AB Interaction (Groups & tests) | 18.38 | 4 | 4.59 | 4.18* |
| Error | 167.02 | 152 | 1.09 | |

Table-II shows that significant difference exists among groups and tests (interaction) on the variable. Since the interaction effect is significant simple effect test was used as follow up test and they are presented in the following table-III.

**Table IV.** Simple Effect Scores of Groups and Five Different stages of tests

| Source of Variance | Sum of Squares | DF | Mean Squares | F - ratio |
|---|---|---|---|---|
| Groups at Post test | 50.62 | 1 | 50.62 | 46.44* |
| Groups at First Cessation | 48.4 | 1 | 48.4 | 44.40* |
| Groups at Second Cessation | 25.60 | 1 | 25.60 | 23.48* |
| Groups at Third Cessation | 12.10 | 1 | 12.10 | 11.10* |
| Groups at Fourth Cessation | 4.90 | 1 | 4.90 | 4.49* |
| Tests and Experimental group | 27.64 | 4 | 6.91 | 6.33* |
| Tests and Control group | 1.74 | 4 | 0.435 | 0.399 |
| Error | 167.02 | 152 | 1.09 | |

* Significant at .05 level for (df 1,152) 3.9 (df 4,152) 2.43

It was found that significant difference exists between groups during post test, I, II, III, IV Cessations periods. It was found that significant difference exists among tests in experimental group on Muscular endurance, since the obtained values was higher than the required value. However no significant difference exists between tests in control group. Since the value was significant Scheffe' F test was applied and presented in table-IV.

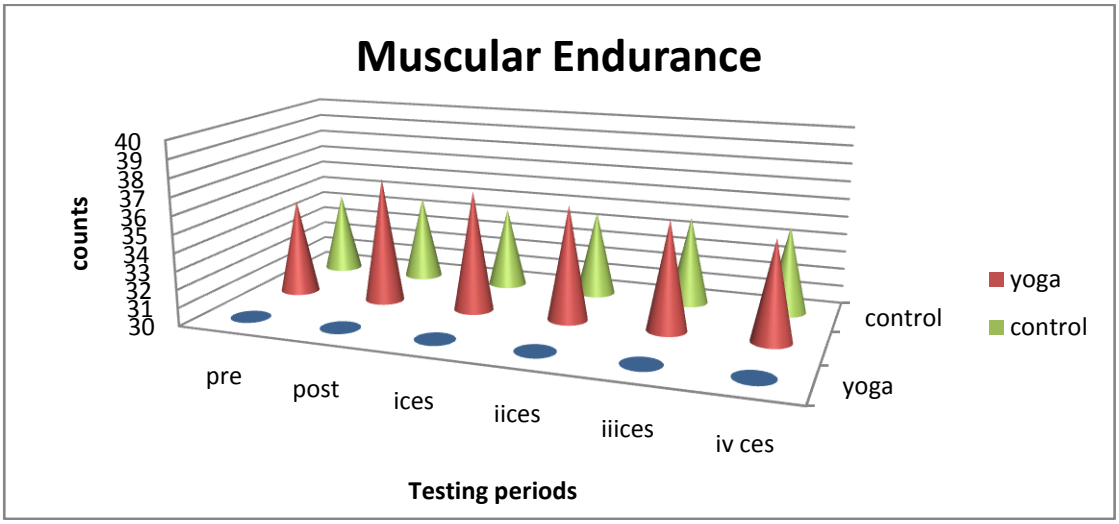
**Table IV.** Scheffe's test for the differences among paired mean differences of Yogic Practices Group with different tests on Muscular Endurance

| Post test | First Cessation | Second Cessation | Third Cessation | Fourth Cessation | Mean Difference | F - ratio |
|---|---|---|---|---|---|---|
| 37 | 36.7 | | | | 0.3 | 0.825 |
| 37 | | 36.35 | | | 0.65 | 3.876 |
| 37 | | | 36 | | 1 | 9.17 |
| 37 | | | | 35.5 | 1.5 | 20.64* |
| | 36.7 | 36.35 | | | 0.35 | 1.12 |
| | 36.7 | | 36 | | 0.7 | 4.49 |
| | 36.7 | | | 35.5 | 1.2 | 13.21* |
| | | 36.35 | 36 | | 0.35 | 1.12 |
| | | 36.35 | | 35.5 | 0.85 | 6.62 |
| | | | 36 | 35.5 | 0.5 | 2.29 |

The F value required to be significant at .05 level is (k – 1) (F .05 ) 9.72

Scheffe post hoc test has the greatest power and is the most conservation with respect to Type 1 error: this method loads to the smallest number of significance differences. The difference between two means would be significant if it exceed Scheffe F. In order to be significant, 'F' must be equal to (k – 1) (F .05 or F .01). Thus, the necessary 'F' ratios for the difference between paired adjusted mean (k-1) would be computed and compared for significance.

**Figure I.** The graph shows the mean values of muscular endurance




It was found that no significant decrease in muscular endurance during post and first cessation, post and second cessation, post and third cessation, first and second cessation, first and third cessation, second and third, second and fourth and third and fourth cessations of yogic practices group. However significant decrease in muscular endurance was found during post and fourth cessation, first and fourth cessations periods.

**Conclusion**

From the result it was concluded that muscular endurance can be improved by yogic practices for about eight weeks, further it was concluded that muscular endurance level can be maintained for thirty days during the detraining period, there after these effect starts declining towards the base line. Hence it is suggested that sportswomen's who were in much need of muscular endurance by yogic practices should not undergo detraining for not more than thirty days in a row. Thus the muscular endurance effects long lasts not more than thirty days, this can be maintained for prolong period by undergoing limited amount of the same practices during the detraining periods also.

**References**

1. Aladar Kogler, Yoga for Every Athlete, ( Jaico Publishing House, Mumbai2003), p.2
2. Sale D in Komi PV, (1992) Strength & Power in Sport, Blackwell Scientific pp249-265
3. T. Jeff Chandler, et.al (2007)"Conditioning for strength and human performance"
4. Singh R. *Kundalinin Yoga for Strength, Success, and Spirit. New York, NY: White Lion Press;* 1994
5. Ray U.S., K.S. Hegde, W. Selvamurthy (1986) Improvement in muscular efficiency as related to a standard task after yogic exercises in middle - aged men. Indian J.Medic. Res., 83: 343-348.
6. Madan Mohan, Thombre DP. Effects of yoga training on reaction time, respiratory endurance and muscle strength. 1992 Indian J. Physiol Pharmacol, 36(4): 229-233.
7. Avadhany ST. Effect of yoga training and detraining on respiratory muscle strength in pre-pubertal children: A randomized trial. Int J Yoga 2014;7:41-7
8. Balasubramanian B, Pansare MS. Effect of yoga on aerobic and anaerobic power of muscles. *Indian J Physiol Pharmacol.* 1991;35(4):281–282.
9. I G Fatouros, et.al (2005) Strength training and detraining effects on muscular strength, anaerobic power, and mobility of inactive older men are intensity dependent Br J Sports Med 2005;39:776-780 doi:10.1136/bjsm.2005.019117
10. R. S. Staron et.al (1991) Strength and skeletal muscle adaptations in heavy-resistance-trained women after detraining and retraining Journal of Applied Physiology Published 1 February 1991Vol. 70no. 631-640

11. J Gerontol A Detraining and Retraining in Older Adults Following Long-Term Muscle Power or Muscle Strength Specific Training Biol Sci Med Sci 2008; 63:7 751-758