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1. Effect of selected yogic practices on physiological variables among University men students 1  
Dr. P.V. Shelvam, Dr. Jit Singh, Mr. Baldev Singh
2. Effect of Vigorous Petrissage Massage and Tapotement Massage Manipulation Techniques on Hip Flexibility among Engineering College Men Soccer Players 5  
Dr. I. John Parthiban
3. Effect of physical activity on selected physiological variables among school girls 10  
Dr .P. V. Shelvam\*, Dr. Jit Singh \*\*,Mr Ajmer Singh\*\*\*
4. Isolated and combined effects of anaerobic and aerobic training on muscular endurance performance of collegiate men boxers 15  
Dr.K.Sundar
5. Effects of two different modes of aerobic dance on breath holding time of University men players 21  
S. Muthukannan, Dr. K. Angamuthu, Dr. I. John Parthibhan
6. Examine the predominance of motor ability among women volleyball players 26  
Dr .Sunny V Zacharia , Dr P. V. Shelvam
7. Effect of high intensity interval training (HIIT) on agility of male Basketball players 33  
N.Bala Sundari, Dr.A.Pushparajan
8. Effect of specific exercise programme on agility and muscular endurance among volleyball players  
Dr .P.V.Shelvam, Dr.Amajit Singh Sidhu, Mr. Balwinder Kumar

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*February 2013*

9. Comparative effect of aerobic training of two different frequencies and free hand exercise on selected physical fitness variables of Anna University men volleyball players

K.Manimaran, Dr.K.Angamuthu, Dr.I.John Parthiban

10. Effects of aqua aerobics and floor aerobics on selected psychological variables among college men students

Dr .P.V.Shelvam, Dr.Amarjit Singh Sidhu, Mr Rajwinder Singh

## Effect of selected yogic practices on physiological variables among University men students

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### Abstract

**The purpose of the study was to find out the effect of physical activity on selected physiological variables among university men students. To achieve this purpose of the study, thirty men students were selected as subjects who were from the department of physical education, Punjabi University, Patiala. The selected subjects were aged between 18 to 25 years. They were divided into two equal groups of fifteen each, Group I underwent yogic exercise programme and Group II acted as control that did not participate in any special training apart from their regular curricular activities. The subjects were tested on selected criterion variables such as vital capacity and breath holding time prior to any immediately after the training period. The selected criterion variables such as vital capacity measuring by wet spirometer and breath holding time were measuring by using the stop watch. The analysis of covariance (ANCOVA) was used to find out the significant differences if any, between the experimental group and control group on selected criterion variables separately. In all the cases, 0.05 level of confidence was fixed to test the significance, which was considered as an appropriate. The result of the present study has revealed that there was a significant difference among the experimental and control group on vital capacity and breath holding time.**

**Key words: Yoga, Physiological Variable**

### Introduction

Yoga exercises and techniques derived from yoga indirectly affect technical and tactical preparation. Yoga exercises and techniques also have significant, direct effects on

the physical, psychological, theoretical preparation and on the regeneration of the strength process. Yoga asanas can be used for warm-up, cool-down, regeneration, compensation of muscle dysbalances, synthesis of mind and body, activation or deactivation of the body and as supplemental exercises(1).

Siddha Samadhi Yoga is recognized as a most important technology for mankind for an effective elimination of mental problems and restoration of peace and happiness. It is a state of The deriving force that moves blood through the circulatory system Systolic pressure is obtained when blood is ejected in to the arteries' diastolic pressure is obtained when the blood drains from the arteries high blood pressure is a trait as opposed to a specific disease and represents a quantitative rather than a qualitative from the norm 'Any definition of hypertension is therefore arbitrary'(2). Yoga helps to decrease the pain in lower and upper extremities. It involves stretching and strengthening the different parts of the spine, the backbone of our structure and the whole body becomes agile. It promotes the health of the endocrine glands which is associated with nervous system and maintains the overall functional efficiency of the different systems of the body (3). There is a need to have yoga better recognized by the health care community as a complement to conventional medical care. Over the last 10 years, a growing number of research studies have shown that the practice of Hatha Yoga can improve strength and flexibility, and may help control such physiological variables as blood pressure, respiration and heart rate, and metabolic rate to improve overall exercise capacity. This review presents a summary of medically substantiated information about the health benefits of yoga for healthy people and for people compromised by musculoskeletal and cardiopulmonary disease (4). Exponents of yoga believes that other exercise systems only have a physical beneficial effect on the body whereas yogasanas result in the development of the physical, mental, spiritual well-being, physical exercise performed vigorously are helpful in develop in muscles and flexibility in healthy people. In view of the fact that the heart, lungs and respiratory system have to work much harder in other forms of physical exercises, exponents of yoga believe that this is an unnecessary release of vital energy. According to them asanas are different from physical exercise, since they are performed slowly with relaxation and concentration. This results in the nervous system, endocrine system, muscular system and the internal organs being benefited (5). The term exercise is often applied to asanas but asanas should never be confused with an exercise. The word exercise gives us an idea of quick and forceful movements of the body or its parts and repeated action which leads to exertion, tension and

fatigue. Asanas, on the other hand are practiced slowly and steadily which bring about physical and mental relaxation (6).

## **Methodology**

The purpose of the study was to find out the effect of physical activity on selected physiological variables among university men students. To achieve this purpose of the study, thirty men students were selected as subjects who were from the department of physical education, Punjabi University, Patiala. The selected subjects were aged between 18 to 25 years. They were divided into two equal groups of fifteen each, Group I underwent yogic exercise programme and Group II acted as control that did not participate in any special training apart from their regular curricular activities. The experimental group underwent the training programme for three days per week for eight weeks. Among the psychological variables such as vital capacity was measuring by wet spirometer and breath holding time measuring by using stop watch. The data were collected at prior and immediately after the training programme for each criterion variables. Analysis of covariance (ANCOVA) was applied for analyze the data. In all the cases, 0.05 level was used to test this significance (7).

## **Results-Findings**

The mean and standard deviation scores of pretest, posttest and adjusted posttest of vital capacity and breath holding time on yogic exercise and control group are given in table.

## **Discussion and Conclusions**

The findings of the study showed that there was no significant difference between the pretest of vital capacity and breath holding time.

The findings of the study showed that there was a significant difference between the posttest and adjusted posttest of vital capacity and breath holding time.

The results of the study have shown there was a significant difference among yogic exercise group and control group on vital capacity and breath holding time reference to the past studies on selected physiological variables such as vital capacity and breath holding time in accordance with Arambula(8), Bhargava, Gogate and Mascarenhas(9) and Birkel and Edgren(10).

**Table**  
**Mean standard deviation and 'f' ratio of yogic exercise and control group on vital capacity and breath holding time**

Variables	Yogic Exercise		Control		'f' ratio	
	Mean	S D	Mean	S D		
Vital Capacity	Pretest	1796.67	184.52	1825.33	172.59	2.69
	Posttest	2134.00	137.82	1890.33	169.29	6.19*
	Adjusted posttest	2104.19		1842.14		11.62*
Breath Holding Time	Pretest	27.47	4.65	27.45	4.86	0.01
	Posttest	39.17	6.68	27.90	4.39	66.19*
	Adjusted posttest	39.25		27.92		151.77*

## Reference

Rishi Prabhakar, Introduction to Siddha Samathi Yoga. Everything in Yours,(Pune: Rishi Samaskrutha Vidhya Kendra, 1994), 23.

A.J. Kennedy, Fitness: A Way of Life (New Delhi: Tata Mcgraw Hill Publishing Company Ltd, 1988) 159.

M.M. Gore, Anatomy and Physiology for Yogic Practices (Bombay: B.M. Gore Publishers, 1991) 73.

David H. Clarke and H. Harrison Clarke, Advanced Statistics, (New Jersey: Prentice Hall Inc., 1988), 31-38.

R. Bhargava, M.G. Gogate and J.F. Mascarenhas, "Autonomic Responses to Breath Holding and its Variations following Pranayama", Indian Journal of Physiology and Pharmacology, 1988 Oct-Dec, 32 (4): 257-64.

D.A. Birkel and L. Edgren, "Hatha Yoga: Improved Vital Capacity of College Students", Alternative Therapies in Health and Medicine, 2000 Nov., 6 (6): 55-56.



## **Effect of Vigorous Petrissage Massage and Tapotement Massage Manipulation Techniques on Hip Flexibility among Engineering College Men Soccer Players**

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### **Abstract**

**The purpose of the study was to find out the effect of Vigorous Petrissage Massage and Tapotement Massage Manipulation Techniques on Hip Flexibility among Engineering College Men Soccer Players. For this purpose Forty five (N=45) men Soccer players studying various Engineering Colleges around Salem District in Tamilnadu were selected as subjects during the academic year 2012-2013. They were randomly divided into three groups of fifteen each, Group I underwent Vigorous petrissage Massage, Group II underwent Tapotement massage and Group III acted as Control. The massage manipulation technique was given for twelve weeks duration. Among various flexibility technique only hip flexibility was selected as a dependent variable, and it was assessed through sit and reach test. The data obtained from the experimental groups and control groups before and after the experimental period were statistically analyzed with Analysis of covariance (ANCOVA). Whenever the 'F' ratio for adjusted post test means was found to be significant, the Scheffe's test was applied as post-hoc test to determine the paired mean differences. The level of confidence was fixed at .05 level for all the cases. Hip Flexibility showed significant difference among the groups, further the results suggested that Vigorous petrissage and Tapotement forms of massage were increase hip flexibility.**

**Key words: Massage, Petrissage, Tapotement, Hip Flexibility.**

### **Introduction**

Massage is the manipulating of superficial and deeper layers of muscle and connective tissue using various techniques, to enhance function, aid in the healing process, decrease

muscle reflex activity, inhibits motor-neuron excitability and promote relaxation and well-being (Weerapong et al, 2005).

Petrissage massage movements with applied pressure which are deep and compress the underlying muscles. Kneading, wringing, skin rolling and pick-up-and-squeeze are the petrissage movements. They are all performed with the padded palmar surface of the hand, the surface of the finger and also the thumbs (Symons, 1904).

Tapotement is a specific technique used in Swedish massage. It is a rhythmic percussion, most frequently administered with the edge of the hand, a cupped hand or the tips of the fingers. There are five types of tapotement including Beating (closed fist lightly hitting area), Slapping (use of fingers to gently slap), Hacking (use the edge of hand on pinky finger side), Tapping (use just fingertips) and Cupping (make your hand look like a cup and gently tap area). It is primarily used to "wake up" the nervous system and also as a stimulating stroke and can release lymphatic build up in the back and gently tap the shoulder of the client. Tapotement is a more stimulating movement in which the fingers, sides or palms of the hands produce light tapping or gentle slapping movements.

## **Methodology**

For this purpose Forty five (N=45) men Soccer players studying various Engineering Colleges around Salem, Tamilnadu were selected as subjects during the academic year 2012-2013. They were randomly divided into three groups of fifteen each, Group I underwent Vigorous petrissage Massage, Group II underwent Tapotement massage and Group III acted as Control. The massage manipulation technique was given for twelve weeks duration. Among various flexibility technique only hip flexibility was selected as a dependent variable, and it was assessed through sit and reach test.

## **Results and Discussion**

The data collected from the control group and massage group prior and after experimentation on selected variables were statistically examined by analysis of covariance (ANCOVA) was used to determine differences, if any among the adjusted post test means on selected criterion variables separately. Scheffe's test was applied as post-hoc test to determine the paired mean differences. The level of confidence was fixed at .05 level for all the cases.

**Table – I**  
**Analysis of Covariance for Vigorous Petrissage, Tapotement**  
**Massage Groups and Control Group on Hip Flexibility**

Adjusted Post-test Means			Source of Variance	Sum of Squares	Df	Mean Squares	'F' Ratio
Vigorous Petrissage Group -(I)	Tapotement Group - (II)	Control Group - (III)					
23.13	21.20	17.87	Between	227.81	2	113.91	102.89*
			With in	45.39	41	1.11	

\* Significant at .05 level of confidence (Hip flexibility Scores in Centimeters)  
 (The Table value required for Significance at .05 level with df 2 and 41 is 3.23)

Table I shows that the adjusted post test mean value of hip flexibility for Vigorous Petrissage group, Tapotement group and Control group are 23.13, 21.20 and 17.87 respectively. The obtained F-ratio of 102.89 for the adjusted post test mean is more than the table value of 3.23 for df 2 and 41 required for significance at .05 level of confidence.

The results of the study indicate that there are significant differences among the adjusted post test means of Vigorous Petrissage group, Tapotement group and Control group on the development of hip flexibility.

To determine which of the paired means had a significant difference, Scheffe's test was applied as Post hoc test and the results are presented in Table II.

**Table - II**  
**The Scheffe's Test for the Differences between the Adjusted Post Test Paired Means on Hip flexibility**

Adjusted Post-test Means			Mean Difference	Confidence Interval
Vigorous Petrissage Group - (I)	Tapotement Group - (II)	Control Group - (III)		
23.13	21.20		1.93*	0.98
23.13		17.87	5.26*	0.98
	21.20	17.87	3.33*	0.98

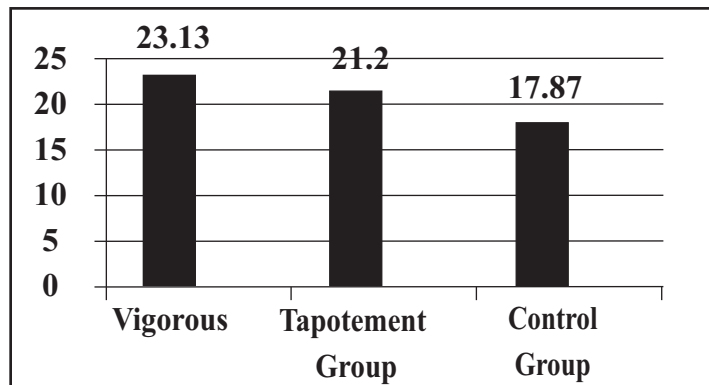
Table II shows that the adjusted post test mean difference on Vigorous Petrissage group and Tapotement group, Vigorous Petrissage group and Control group, Tapotement group and Control group are 1.93, 5.56 and 3.33 respectively. The values are greater than the confidence interval value 0.98, which shows significant differences at .05 level of confidence.

It may be concluded from the results of the study that there is a significant difference in Flexibility between the adjusted post test means of Vigorous Petrissage group and Tapotement group, Vigorous Petrissage group and Control group, Tapotement group and Control group. However, the improvement in hip flexibility was significantly higher for Vigorous Petrissage than Tapotement group and Control group.

It may be concluded that the Vigorous Petrissage group is better than Tapotement group and Control group in increasing hip flexibility.

The adjusted post test mean values of Vigorous Petrissage group, Tapotement group and Control group on hip flexibility are graphically represented in the Figure I.

**Figure-I**  
**The adjusted post test mean values of Vigorous Petrissage group, Tapotement group and Control group on Hip flexibility**



### **Conclusion**

From the analysis of the data, the following conclusions were drawn.

- v The Experimental group had registered significant improvement on the selected criterion variables namely hip flexibility.
- v It may be concluded that Vigorous Petrissage group is better than Tapotement Group and Control Group in increasing hip flexibility.

### **Bibliography**

Eccles, Arthur Symons (1904). The Practice of massage. W. Wood. pp. 17.

Weerapong, Pornratshanee; Hume, Kolt (2005). "The Mechanisms of Massage and Effects on Performance, Muscle Recovery and Injury Prevention". Sports Medicine 35 (3): 235-256.

## **Effect of physical activity on selected physiological variables among school girls**

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- \*\*\* Ph.D Research Scholar, Department of Physical Education, Jodhpur National University.

### **Abstract**

**The purpose of the study was to find out the effect of physical activity on selected physiological variables among school girls. To achieve this purpose of the study, thirty girls were selected from Govt. Sr. Sec. School, Patran, Patiala, Punjab, India, were randomly selected as subjects and their age ranged from 14 to 17 years. They were divided into two equal groups of fifteen each, Group I underwent physical activity programme and Group II acted as control that did not participate in any special training apart from their regular curricular activities. The subjects were tested on selected criterion variables such as breath holding time and respiratory rate prior to any immediately after the training period. The selected criterion variables such as breath holding time were measuring by using stopwatch and respiratory rate was measured by using expirograph respectively. The analysis of covariance (ANCOVA) was used to find out the significant differences if any, between the experimental group and control group on selected criterion variables separately. In all the cases, 0.05 level of confidence was fixed to test the significance, which was considered as an appropriate. The result of the present study has revealed that there was a significant difference among the experimental and control group on breath holding time and respiratory rate.**

**Key words: Physical activity, physiological variable**

## **Introduction**

Physical exercise is any bodily activity that enhances or maintains physical fitness and overall health and wellness. It is performed for various reasons including strengthening muscles and the cardiovascular system, athletic skills, weight loss or maintenance, as well as for the purpose of enjoyment.

Frequent and regular physical exercise boosts the immune system, and helps prevent the "diseases of affluence" such as heart disease, cardiovascular disease, Type 2 diabetes and obesity. It also improves mental health, helps prevent depression, helps to promote or maintain positive self esteem, and can even augment an individual's sex appeal or body image, which is also found to be linked with higher levels of self esteem. Childhood obesity is a growing global concern and physical exercise may help decrease some of the effects of childhood and adult obesity. Health care providers often call exercise the "miracle" or "wonder" drug alluding to the wide variety of proven benefits that it provides (1). Increase in the volume and intensity of leisure-time physical activity is associated with increase in physical fitness in adults. Exercise recommendations to improve and maintain cardio respiratory fitness suggest exercise that uses large muscle groups, is performed three to five times a week, at intensity of 60–90% of maximum heart rate and for 20–60 minutes at a time. These latest fitness recommendations also include guidelines for enhancing muscular fitness and flexibility (2). Positive effects on lifestyle behaviors and physical health status measures, ongoing physical activity promotion in schools is recommended at this time (3). Specific exercises or activities can be used to predict adoption and maintenance of physical activity (4). Schools are a suitable setting for the promotion of healthy lifestyles although more work, particularly focused on dietary change, is needed in a variety of schools and social settings (5). The evidence was graded for each health outcome using established criteria based on the quantity and quality of studies and strength of effect. The volume, intensity, and type of physical activity were considered. Physical activity was associated with numerous health benefits. The dose-response relations observed in observational studies indicate that the more physical activity, the greater the health benefit (6).

## **Methodology**

The purpose of the study was to find out the effect of physical activity on selected physical fitness variables among school girls. To achieve this purpose of the study, thirty girls were selected from Govt. Sr. Sec. School, Patran, Patiala, Punjab, India, were randomly selected as subjects and their age ranged from 14 to 17 years. They were divided into two equal groups of fifteen each, Group I underwent physical activity programme and Group II acted as control that did not participate in any special training apart from their regular curricular activities. The experimental group underwent the training programme for three days per week for eight weeks. Among the physical fitness variables, the following variables such as breath holding time were measuring by using stopwatch and respiratory rate was measured by using expirograph were selected as criterion variables. The data were collected at prior and immediately after the training programme for each criterion variables. Analysis of covariance (ANCOVA) was applied for analyze the data. In all the cases, 0.05 level was used to test this significance (7).

## **Results**

### **Findings**

The mean and standard deviation scores of pretest, posttest and adjusted posttest of breath holding time and respiratory rate on physical activity and control group are given in table.

'F'ratio test computed in regards to the breath holding time and respiratory rate on physical activity and control group in the pretest, posttest and adjusted post test are also presented in table.



**Table 1**  
**Mean standard deviation and 'f' ratio of physical activity and control group on breath holding time and respiratory**

Variables		Physical Activity Mean	Control			'F' ratio
			S D	Mean	S D	
Breath Holding Time	Pretest	27.47	4.65	27.45	4.86	0.01
	Posttest	39.17	6.68	27.90	4.39	66.19*
	Adjusted posttest	39.25		27.92		151.77*
Respiratory Rate	Pretest	28.20	1.70	28.07	1.58	0.07
	Posttest	21.80	1.36	28.00	1.75	18.46*
	Adjusted posttest	21.76		28.04		38.45*

## Discussion and Conclusions

The findings of the study showed that there was no significant difference between the pretest of breath holding time and respiratory rate.

The findings of the study showed that there was a significant difference between the posttest and adjusted posttest of breath holding time and respiratory rate.

The results of the study have shown there was a significant difference among physical activity training group and control group on breath holding time and respiratory rate.

## Reference

Wesley D Dudgeon, et al., "Review: Physiological and Psychological Effects of Exercise Interventions in HIV Disease", AIDS Patient Care and STDs, Vol 18, No 2, 2004.

R K Dishman, J F Sallis and D R Orenstein, "The Determinants of Physical activity and Exercise", Public Health Rep., 1985 Mar–Apr: 100 (2) 158-71.

Trish Gorely, et al., “Effect of a School based Intervention to Promote Healthy Lifestyle in 7-11 Year Old Children”, *International Journal of Behavioral Nutrition and Physical Activity*, 2009, 6:5 1479\*85.

Ian Janssen and Allana G Le Blanc, “Systematic Review of the Health Benefits of Physical Activity and Fitness in school – Aged Children and Youth”, *Int. J. Behav. Nutr. Phys. Act.*, 2010; 7:40.

David H. Clarke and H. Harrison Clarke, *Advanced Statistics*, (New Jersey: Prentice Hall Inc., 1988), 31-38.

## **Isolated and combined effects of anaerobic and aerobic training on muscular endurance performance of collegiate men boxers**

**Dr.K.Sundar\***

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### **Abstract**

**The purpose of the study was isolated and combined effects of anaerobic and aerobic training on muscular endurance performances of collegiate men boxers. The selected subjects 80 men boxers. The subject age was 18-25 years all the subjects were randomly divided into four groups and each group consisted of 20 subjects. Group-I underwent isolated aerobic exercises, Group-II was isolated anaerobic exercises, Group-III was combination of aerobic and anaerobic exercises and group-IV act as control group was not given any special treatment. The experimental period was for 12 weeks. Pre-test and post test were taken before and after the training programme. The selected physical variables were muscular endurance. During the intervention phase, a modified training program was offered by a well-trained boxing instructor to the experimental group under the supervision of the researcher at a college in India. All participants were encouraged to continue their standard physical activities and routine procedures. The intervention phase 12 weeks and included morning 45 minutes and evening 45 minutes boxing classes for alternative days in a week. To find out the significant effects of aerobic and anaerobic training on selected physical variable. The ANCOVA statistical technique was used to find the mean difference between the groups on physical variables. The results of the study revealed a significant group  $\times$  test interaction ( $p < 0.05$ ). Follow-up analyses indicated that while no group differences in physical variables existed between the four groups of the pre-test. In post test all the experimental groups were found to have significantly ( $p < 0.05$ ) better performance on the physical variables than the control group. The findings of the present study suggest that combined effects of anaerobic and aerobic training improved the physical variables in collegiate boxers.**

**Key words: Isolated, anaerobic training, muscular endurance performances, men boxers**

## **Introduction**

Sports are integral part of the system of education. Training is a system of process in which boxer improve their fitness to meet the demands of their sport. Training uses both general and event specific exercises to develop a boxer for their sport. Aerobic means "with oxygen", and refers to the use of oxygen in the body's metabolic or energy-generating process. The major benefits of aerobic trainings are stronger and more efficiently operating heart and lungs. This aerobic energy a boxer to breathe quickly and more deeply to perform longer duration. Anaerobic energy is produced without the use of oxygen. The anaerobic energy system can provide great amounts of energy but this system fatigues quickly. People participating in speed or power events are very familiar with this form of energy production. Anaerobic training is used by boxer to build the punch power and boxing ability.

## **Methodology**

To achieve the purpose of the present study, 80 men boxers were selected from Tamil Nadu colleges, who had participated in the inter-collegiate level tournaments. They were selected at random as subjects. All the subjects were residents of Tamil Nadu state and they had a similar academic work and regular activities in accordance with the requirements of their college curriculum. The selected subjects were of age group ranged from 18 to 25 years. The subjects were randomly divided into four groups and each group consisted of 20 subjects. Group-I underwent aerobic training, Group-II underwent anaerobic training, Group-III underwent combined aerobic and anaerobic training and group IV as control group. The study was conducted 12 weeks training schedule. Muscular endurance was selected as a dependent variable and it was tested through the subject performs as many sit ups in one minute as possible. Pre test-post test-random group-research design was followed in this study.

To find out the significant effects of aerobic and anaerobic training on selected muscular endurance, analysis of covariance (ANCOVA) was computed (Clarke and Clarke, 1972) for the data collected aerobic, anaerobic, combined and control groups during pretest and posttest separately for each variable. Further to state, since four groups were involved, whenever the F ratio was significant, Scheffe's post hoc test was used determine which of the paired mean differed significance 0.05 was fixed.

## Results on Muscular Endurance

The statistical analysis comparing the initial and final means of muscular strength due to isolated and combined effect of anaerobic and aerobic training on selected physical fitness variable namely, muscular endurance among college boxers is presented in Table I.

**Table I**  
**Computation of analysis of covariance of muscular endurance**

	Aero bic	Anae- robic	Com bined	Control	Source of Variance	Sum of Squares	df	Mean Squares	Obtained F
<b>Pre Test Mean</b>	35.50	34.30	35.85	35.0	Between	27.50	3	9.17	
					Within	326.70	76	4.30	2.13
<b>Post Test Mean</b>	45.10	43.90	45.05	34.8	Between	1498.50	3	499.50	
					Within	322.30	76	4.24	117.78*
<b>Adjusted Post Test Mean</b>	44.90	44.37	44.66	34.9	Between	1432.91	3	477.64	
					Within	220.35	75	2.94	162.57*
<b>Mean Diff</b>	9.60	9.60	9.20	0.20					

Table F-ratio at 0.05 level of confidence for 3 and 76 (df) =2.73, 3 and 75(df) =2.73 \*Significant

As shown in Table X, obtained F ratio of 2.13 on pre test means of the groups is not significant at 0.05 level. This shows that there is no significant difference among the means of the groups at the initial stage and the random assignment of the groups is successful.

The obtained F ratio on post test means is 117.78, which is significant at 0.05 level, and the obtained F value is greater than the required F value of 2.73 to be significant at 0.05 level. Taking into consideration the pre test means and post test means, adjusted post test means are determined and analysis of covariance is done and the obtained F value 162.57 is greater than the required value of 2.73 and hence it is accepted. This shows that there are significant differences among the adjusted means on the college boxers.

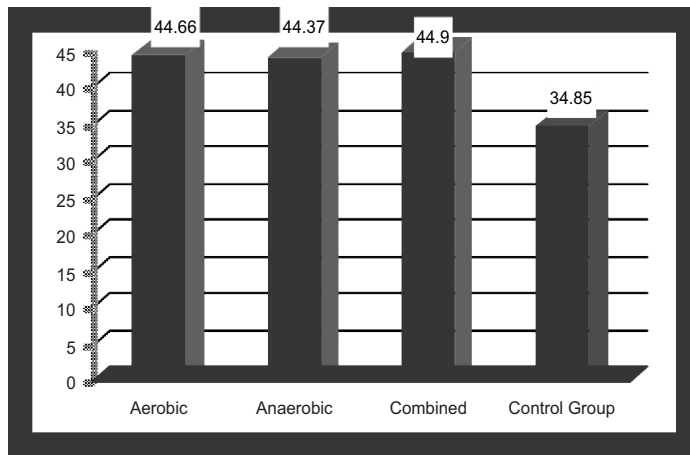
Since significant improvements were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval Test. The results are presented in Table II.

**Table II**  
**Scheffe's confidence interval test scores on muscular endurance**

Aerobic	Anaerobic	Combined	Control Group	Mean Diff	C.I
44.37	44.90		0.53	1.55	
44.66		44.90		0.25	1.55
	44.90	34.86	10.04*	1.55	
44.66	44.37			0.28	1.55
44.37		34.86	9.51*	1.55	
44.66			34.86	9.80*	1.55

The post hoc analysis of obtained ordered adjusted means prove that there is significant difference between (1) aerobic and control groups (2) anaerobic and control groups and (3) combined and control groups. It is found that there is no significant difference between (1) anaerobic and aerobic groups (2) aerobic and combined groups (3) anaerobic and combined training. The ordered adjusted means are presented through bar diagram for better understanding of the results of this study in Figure I.

**Figure I**  
**Bar diagram on ordered adjusted means of muscular endurance**



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**Discussions on Findings**

As shown in Table X, the obtained F value on the scores of pre test means 2.13 is less than the required F value, which proves that the random assignment of the subjects is successful and their scores in muscular strength before the training were equal and there were no significant differences. Taking into consideration the pre test means and post test means, adjusted post test means are determined and analysis of covariance is done and the obtained F value 162.57 is greater than the required value of 2.73 and hence it is accepted. This shows that the interventional programmes significantly improved muscular strength of the college boxers.

The post hoc analysis of obtained ordered adjusted means proves that there are significant differences between (1) anaerobic group and control groups (2) combined group and control groups and (3) aerobic group and control groups. Comparing between the experimental groups, it is found that there are no significant differences between (1) anaerobic group and aerobic group (2) combined group and anaerobic group and (3) combined group and aerobic group. Thus it is proved that the aerobic training, anaerobic training and combined training failed to significantly improve muscular strength of the college boxers as there is no significant difference among them.

Boxers' always tend to improve their muscular strength and keep their muscular strength in optimum level through a number of strength training protocols. In effect an athlete prefers boxing only after attaining a level of muscular strength. The aerobic trainings, anaerobic trainings and combined trainings in this research are aimed at improving muscular strength, and these training sessions on the muscular strength, as assessed through sit ups did not show any significant improvement on the boxers, as they already attained substantial level of muscular endurance.

In this study, the control group was not prohibited from their routine trainings and the experimental groups were given specific trainings, namely, aerobic, anaerobic and combined in addition to their routine trainings. Since all the four groups were involved in their routine training protocol, which consists of specific strength trainings, the effect of experimental treatment, namely, aerobic, anaerobic and combined trainings became minimal comparing to control group, and hence, there were no significant differences.

Maiorana A, et.al. (2001) investigated the effect of 8 wk of exercise training on functional capacity, muscular strength, body composition, and vascular function by using a randomized, crossover protocol. Maiorana AJ, et.al. (1997) also examined the effects of 10 weeks of training on muscular strength and found moderate intensity circuit training is safe and can improve muscular strength among sedentary men. The findings of this research suggest that there is no significant improvement in muscular strength of boxers due to aerobic and anaerobic trainings and are not in agreement with the findings of Maiorana A, et.al. (2001) and Maiorana AJ, et.al. (1997).

### **Conclusions**

- v It is concluded that isolated and combined effect of aerobic and anaerobic training significantly improve muscular endurance of the college boxers.
  
- v The comparing among the treatment groups, the combined aerobic and anaerobic training would be better than isolated groups, aerobic and anaerobic training on muscular endurance of collegiate men boxers.

### **References**

David H. Clarke and H. Harrison Clarke, (1970) *Advanced Processes in Physical Education Recreation and Health*, Englewood Cliffs, N.J. Prentice Hall., Inc.

Thoms R. baechole, *Essentials of strength training and conditioning*, Chamairgn ilinois: human kinetics publishers (1994) 131



## Effects of two different modes of aerobic dance on breath holding time of University men players

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### ABSTRACT

**Aim of the study was to find out the Effects of Two Different Modes of Aerobic Dance on Breath Holding Time of University Men Players. . The study was conducted on forty five (N=45) men players studying KSR College of Engineering and Technology, Tiruchengode, Tamilnadu, India were selected as subjects. The selected players were assigned in to three groups of fifteen each (n=15), Group I underwent Aerobic Dance with hand held weights, Group II underwent Aerobic Dance without hand held weights, and Group III acted as control. Breath Holding Time was selected as dependent variable. Breath Holding Time was assessed by abdomen touch method. All the subjects were tested on selected dependent variables prior to and immediately after the training periods. The data collected data from the three groups prior to and immediately after the training programme on the selected criterion variables were statistically analyzed with Analysis of Covariance (ANCOVA). Whenever the 'F' ratio for adjusted post test means was found to be significant, Scheffe's post hoc test was followed to determine which of the paired mean differences was significant. In all the cases .05 level of confidence was fixed to test the hypotheses. Breath Holding Time showed significant difference among the groups. Aerobic dance with hand held weight group showed better performance than Aerobic dance without hand held weight group and Control group.**

**Key words: Aerobic dance with hand held weight, Aerobic dance without hand held weight, Breath Holding Time**

### Introduction

Training is good for the development of the cardiovascular system. "It enables athletes to recover from tough workouts and helps to develop the capacity to increase repetitions". (Singh 1991).

“Training improves the functioning of the circulatory, respiratory and the muscular systems, while practice is largely aimed at improving the control of muscular activity by the nervous systems”. (Kenneth, J. 1976)

Aerobic exercise is the type of moderate-intensity physical activity that one can sustain for more than just a few minutes with the objective of improving their cardiorespiratory fitness and your health. "Aerobic" means "in the presence of, or with, oxygen."

Anaerobic, on the other hand, means "the absence of, or without, oxygen." Anaerobic exercise is performed at an intensity that causes to get out of breath quickly and can be sustained for only a few moments. Weight lifting and sprinting are examples of anaerobic exercise.

Aerobic exercise is any extended activity that makes ones breathe hard while using the large muscle groups at a regular, even pace. Aerobic activities help make human heart stronger and more efficient. During the early part of exercise, body uses stored carbohydrate and circulating fatty acids (the building blocks of fat molecules) for energy.

## **Methodology**

To purpose of this study was to effects of two different modes of aerobic dance on selected bio- motor components of University men players. The study was conducted on forty five (N=45) men players studying KSR College of Engineering and Technology, Tiruchengode, Tamilnadu, India were selected as subjects. The selected players were assigned in to three groups of fifteen each(n=15), Group I underwent Aerobic Dance with hand held weights, Group II underwent Aerobic Dance without hand held weights, and Group III acted as control. Breath Holding Time was selected as dependent variable. . Breath Holding Time was assessed by abdomen touch method. The training period was limited to 12 weeks duration. All the subjects were tested on selected dependent variables prior to and immediately after the training periods.

## **Results and Discussion**

The data collected data from the three groups prior to and immediately after the training programme on the selected criterion variables were statistically analyzed with

Analysis of Covariance (ANCOVA). Whenever the 'F' ratio for adjusted post test means was found to be significant, Scheffe's post hoc test was followed to determine which of the paired mean differences was significant. In all the cases .05 level of confidence was fixed to test the hypotheses.

The Analysis of covariance (ANCOVA) on Breath Holding Time of Aerobic Dance with hand held weights, Aerobic Dance without hand held weights and control group have been analyzed and presented in Table -I.

**Table – I**

**Analysis of covariance between aerobic dance with hand held weights, aerobic dance without hand held weights and control group on breath holding time**

Certain Variables	Adjusted Post test Means			Source of Variance	Sum of Squares	df	Mean Squares	'F' Ratio
	Aerobic Dance with Hand Held Weights Group-(I)	Aerobic Dance without Hand Held Weights Group-(I)	Control Group (III)					
Breath Holding Time	33.61	31.72	29.13	Between	202.03	2	101.02	177.64*
				With in	31.84	56	0.57	

\*Significant at .05 level of confidence.

(The table value required for significance at .05 level with df 2 and 56 is 3.16)

Table I shows that the adjusted post test mean values of Breath holding time for Aerobic Dance with hand held weights group, Aerobic Dance with hand held weights group and Control group are 33.61, 31.72 and 29.13 respectively. The obtained F-ratio is 177.64 is more than the table value 3.23 for df 2 and 41 required for significance at .05 level of confidence.

The results of the study indicate that there is a significant difference exists among the adjusted post test means of experimental groups showing the increase in Breath holding time.

To determine which of the paired means had a significant differences, Scheffe's test was applied as Post hoc test and the results are presented in Table II.

**Table - II**  
**The scheffe's test for the differences between the adjusted post tests paired means on dependent variables**

Certain Variables	Adjusted Post test Means			Mean Difference	Confidence Interval
	Aerobic Dance with Hand Held Weights Group (I)	Aerobic Dance without Hand Held Weights Group-(I)	Control Group (III)		
Breath Holding Time	33.61	31.72		1.89*	0.60
	33.61		29.13	4.48*	0.60
		31.72	29.13	2.59*	0.60

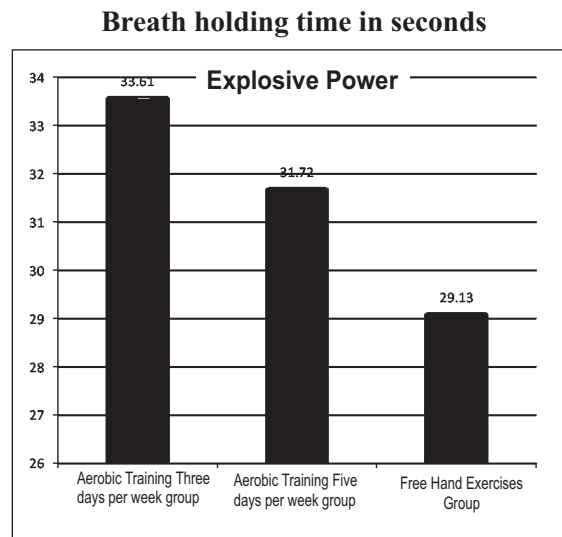
\* Significant at.05 level of confidence

Table II shows that the adjusted post test mean for differences on Breath holding time between Aerobic dance with hand held weights group and Aerobic dance without hand held weights group, Aerobic dance with hand held weights group and Control group, Aerobic Dance without hand held weights groups and Control groups were 1.89, 4.48 and 2.59. The values are greater than the confidence interval 0.60, which shows significant differences at .05 level of confidence.

The adjusted post test means values of Aerobic dance with hand held weights group, Aerobic dance without hand held weights group and Control group on Breath holding time was graphically represented in the figure I.

**Figure I**

**Adjusted post test means values of aerobic dance with hand held weights group, aerobidance without hand held weights group and control group on breath holding time**



### Conclusion

From the analysis of the data, the following conclusions were drawn.

- ❖ The Experimental groups had registered significant improvement on the selected criterion variables namely Breath holding time.
- ❖ It may be concluded that the aerobic dance with hand held weight group is better than aerobic dance without hand held weight group and Control group in improving Breath holding time.

### References

Blessing D.L, Wilson G.D, Puckett JR, Ford HT(1987),The physiologic effects of eight weeks of aerobic dance with and without hand-held weights, Am J Sports Med. Sep-Oct; 15(5): 508-10.

Doherty Kenneth J, (1976), Modern Track and Field, Englewood Cliffs, New Jersey: Prentice Hall Inc.P. 87.

Singh Hardayal, (1991), Science of Sports Training, New Delhi: D.V.S. Publications, P.130.

## **Examine the predominance of motor ability among women volleyball players**

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### **Abstract**

**The purpose of the study is to find out the predominance of performance variables of women volleyball players. To achieve this purpose 30 girls from ST.George College, Pala were selected as subjects for this study. The dependent variables the present study was performance of female volleyball players. The independent variables chosen for the study is presented speed, agility, leg strength, leg endurance, leg explosive power, hip flexibility and cardiovascular endurance. For the dependent and independent variables, the describe statistics was worked out. Stepwise multiple regressions were computed to explore the predominance of independent variables of volleyball players. Further with a view to analysis the difference among the volleyball players of various division in their dependent and independent variables. One way analysis of variance was worked out separately for each variable. Whenever the “F” ratio is significant, to know which of the paired mean differ significantly, shuffles test was applied. The levels were used to analysis the data. It is concluded that the almost all the performance variables of volleyball players are having significant relationship with their playing ability. The performance of chosen independent variable of volleyball players are cardiovascular endurance and some of the volleyball players differ significantly in their Hip flexibility.**

**Key words: Predominance motor ability, volleyball**

### **Introduction**

Today physical education and sports are considered as disciplines because they develop international understanding and universal brotherhood. Sport is also one of the factors developing national characters participation in sports competition provides an opportunity for different section and different nations to complete against each other is a

healthy manner. A country which can win more medals is an international competition gain prestige among the countries. Sports are an institution alienated competitive activity that involves vigorous physical exertion and relatively complex physical skills. In sports individual participation is motivated by the combination of both intrinsic and extrinsic factors. Participation in sports is a better utilization of leisure time for the modern civilization which binds more free time due to increasing atomization. Participation in sports is essential to avoid the psychological stresses of modern day living and work condition. The ability of a player in a team game depends largely on various factors such as anthropometric measurements, psychological factors and motor fitness. Volleyball players move with great speed over a limited space. It is one of the most vigorous games and requires a great variety of athletic traits. Movements are basic to function of all living beings. It is the base to by most of his abilities and achievement. Neuro muscular co-ordination is the speed and accuracy with which the system acts with correct muscular response to produce desired movements. Anthropometric is an objective measurement of structure of various part of the body. The measurement includes height, weight, length, girth, skin fold and so on.

### **Purpose**

The purpose of the study was to explore the predominance of performance variables of women volleyball players.

### **Hypothesis**

It was hypothesized that among the chosen independent variables, few variables would influence the volleyball playing ability.

### **Methods**

#### **Selection of subjects**

Thirty girls from ST.George College, Pala were selected as subjects, divided into two experimental and one control group. The subjects are regularly practicing and participating in various tournaments. Their age ranged between 18 and 22 years. All the subjects were healthy and normal. The required data was collected at the department of physical education, St. George College, Pala.

### **Criterion measures**

- Speed was measured in seconds of 50 meters dash.
- Agility was measured in seconds of SEMO agility test.
- Leg strength was measured by half squad weight lifting.
- Leg endurance was measured by half squad jump.
- Leg explosive power was measured by vertical jump.
- Hip & back flexibility was measured by sit and reach test.
- Cardiovascular efficiency was measured by harvard step test.
- Volleyball playing performance assessed by three experts.

### **Statistical Techniques**

The data collected from the volleyball players were treated statistically for the dependent and independent variables, the descriptive statistics was worked out stepwise multiple regression was computed to explore the predominance of independent variables of volleyball players. Further with a view to analyze the difference among the volleyball players in their dependent and independent variables, one way analysis of variance was worked out separately for each variable. Whenever the “F” ratio is significant, to know which of the paired mean differ significantly, Schaffer's test was applied. The level of significance was fixed as 0.05 standard statistical packages were used to analysis the data.

### **Results and Discussion**

#### **Descriptive Analysis**

The mean and standard deviation of dependent and independent variables of volleyball players is given in table I.



**Table I**  
**Mean and standard deviation of dependent and independent variables of volleyball players**

	<b>Independent Variables Vs playing ability</b>	<b>Mean</b>	<b>S.D</b>
1	Speed	28.45	1.85
2	Agility	18.32	1.15
3	Leg strength	62.25	4.18
4	Leg endurance	49.26	3.86
5	Leg explosive power	35.8	3.52
6	Hip and Back Flexibility	6.58	1.25
7	Cardio vascular efficiency	118.82	4.28

### Correlation Analysis

The correlation coefficient between playing ability and independent variables of volleyball players is given in table II.

**Table –II**  
**Correlation coefficient between playing ability and independent variables of volleyball players**

	<b>Independent variables Vs playing ability</b>	<b>Correlation coefficient</b>	<b>Level of Sig.</b>
1	Speed	0.608	0.01
2	Agility	0.401	0.05
3	Leg strength	0.736	0.01
4	Leg endurance	0.684	0.01
5	Leg explosive power	0.610	0.01
6	Hip and Back Flexibility	0.481	0.01
7	Cardio vascular efficiency	0.781	0.01

The correlation coefficient among the variables is presented in table III.

	<b>Speed</b>	<b>Agility</b>	<b>Leg st.</b>	<b>Leg end.</b>	<b>Leg exp.</b>	<b>Hip flex Cardio vascu</b>
1						
2	0.586*					
3	-0.612*	-0.796*				
4	-0.745*	-0.845*	0.795*			
5	-0.654*	-0.893*	0.894*	0.895*		
6	-0.862*	-0.783*	0.692*	0.796*	0.894*	
7	0.720*	0.768*	-0.866*	-0.792*	-0.685*	-0.787*

The table value required for significant at 0.05 and 0.01 level for 28 df is 0.361 and 0.403 respectively.

### **Stepwise Multiple regression Analysis**

The stepwise multiple regression was computed to explore the predominance of independent variable of volleyball players. The analysis of variance for the influence of independent variable on playing ability is given in table IV.

**Table-IV**  
**Analysis of variance for the influence of independent variables on playing ability of Volleyball Players**

	Sum of Squares	D	Mean squares	F
Regression	674.28	1	674.28	
Residual	62.54	39	1.6	421.43

It is clear that the obtained “F” value 421.43 is significant 0.01 levels. It reverts that all the independent variables are collectively influencing the playing ability of volleyball players. As the “F” ratio is significant, multiple regressions are computed. The stepwise regression between playing ability and independent variables is given in table V.

**Table V**  
**Stepwise multiple regression between playing ability and independent variables of volleyball players**

Multiple R	R square	Adjusted R Square	Standard Error
0.954	0.916	0.915	1.167

**Table VI**  
**Variables in the equation for volleyball players**

Variables	B	SEB	Beta	T
Cardiovascular Endurance	.048	.024	.0283	2.062
Leg Strength	-.629	.283	-.474	2.22
Leg Endurance	-.096	.0386	-.45	-2.52
Leg Explosive Power	-.729	-.399	-.226	-1.828
Speed	-.722	4.34	-1.62	-3.966
Constant	56.22	8.764	-	6.52

Table reveals that among the chosen five independent variables are very much influencing the volleyball playing ability. From R<sup>2</sup> value it is clear that 91.6% of players are mainly due to those five variables. The variables in the equation are presented in table VI.

From the stepwise multiple regression (formal selection procedure) analysis it is clear that the predominance of chosen independent variables of volleyball players are cardiovascular endurance, leg strength, leg explosive power and speed.

### Conclusions

- Almost all the performance variables of volleyball players are having significant relationship with their playing ability.

- The performance of chosen independent variable of volleyball players are cardiovascular endurance.
- Some of the volleyball players differ significantly in their Hip flexibility.

### **Discussion on hypothesis**

It is hypothesized that the selected performance variables (independent variables) few variables alone would influence the volleyball playing ability (dependent variable). It was found that the predominance of chosen independent variables of volleyball players are cardio vascular endurance, leg strength, leg endurance, leg explosive power and speed. Hence the hypothesis is accepted.

### **References**

Cowell, C.C. Hand Book of Physical Education, (New Delhi: Friends Publication, 1994) 6.

Hardayal Singh, Science of Sports Training (New Delhi: D.V.S Publications, 1991) 58.

Jackson Allen W. and Baken, Alice A. "The Relationship of the Sit and Reach Test to Criterion Measures to Hamstring and Back flexibility in Young Females" Research Quarterly for Exercise and Sport, 57:3 (November 1986) 183.

Clarke, H. Harrison and Clarke, David H. Research Process in Physical Education, Recreation and Health, (New Jersey: Prentice Hall Inc., 1970), 260.

## **Effect of high intensity interval training (HIIT) on agility of male Basketball players**

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### **Abstract**

**The purpose of the study was to analyze the effect of High Intensity Interval Training (HIIT) on Agility of Male Basketball Players”. To achieve the purpose of the study 30 male Basketball players from Park group of Institutions, Coimbatore, Tamilnadu, India were randomly selected as subject and their age group was 18 to 23 years. They were divided in to two equal groups. The group 1 considered as experimental group who underwent the High Intensity Interval Training (HIIT) for three days for eight weeks and Group II considered as control group and they did not undergo any special training apart from their regular activities. All the subjects of the two groups were tested on agility test. The results revealed that the High Intensity Interval Training group produced significant improvement than the control group.**

**Keyword: Basketball, Agility, High Intensity Interval Training, Players**

### **Introduction**

High Intensity Interval Training (HIIT) is a form of fitness training in which a pair or group of various workouts are grouped together to form a circuit in which you engage in each individual exercise within the circuit once before going through for a second, third, fourth or as many times as you need to. The very labels of HIIT suggest that this form of training is characterized by a high intensity pace, with little to no breaks in between each exercise with in the circuit. HIIT is a great way to not only knock out a work out session in a very time efficient manner but to also ensure that, because of the fast pace in which you are moving

through workout that your heart rate is elevated through out the duration. This will help you burn fat in addition to working out more quickly.

### **Methodology**

To achieve the purpose of these study 30 male Basketball players were selected randomly from park group of Institutions, Coimbatore, Tamil Nadu, India. They were divided in to two equal groups namely High Intensity Interval Training (HIIT) group and Control group. Group I under went High Intensity Interval Training (HIIT) and Group II was considering as control group and they did not undergo any special training apart from their regular activities. After assigning the subjects in various groups, T- test was conducted to asses the agility and score was recorded in seconds and this was considered as pre-test. After the pre-test the High Intensity Interval Training (HIIT) group was under went the training for 08 weeks. After the 08 weeks post-test was conducted for both groups and score was recorded in seconds.

### **Statistic Technique**

To find out the difference between the two groups t-test was used.

**Table - 1**  
**Showing the Pre-test mean difference between the Control Group and High Intensity Interval Training (HIIT) Group in Agility (seconds)**

#### Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	VAR00001	12.9373	15	.5319	.1373
	VAR00002	12.7453	15	.3525	9.100E-02

Paired Samples Test

		Paired Differences				t	df	Sig. (2 tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	VAR00001 - VAR00002	.1920	.5474	.1413	-.1111	.4951	<b>1.358</b>	14	.196

**Table - 2**

**Showing the Post-test mean difference between the Control Group and High Intensity Interval Training (HIIT) Group in Agility (seconds)**

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Contr	12.8767	15	.4880	.1260
	Exper	12.4433	15	.3831	9.891E-02

Paired Samples Test

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation Difference	Std. Error Mean	95% Confidence Interval of the				
					Lower	Upper			
Pair 1	Contr - Exper	.4333	.4806	.1241	.1672	.6995	<b>3.492</b>	14	.004

Table I shows that the pretest means on agility for the control group and High Intensity Interval Training (HIIT) group were 12.93 and 12.74 respectively. The obtained t ratio was 1.35. Since the obtained t ratio was lesser than the table value of 1.96, it was insignificant at 0.05 level of confidence.

Table II shows that the pretest means on agility for the control group and High Intensity Interval Training (HIIT) group were 12.87 and 12.44 respectively. The obtained t ratio was 3.49. Since the obtained t ratio was greater than the table value of 0.004, it was Significant at 0.05 level of confidence and hypothesis was accepted.

### **Discussion and Conclusion**

Based on the analysis and result of the study the following conclusions were drawn.

This study confirmed that the High Intensity Interval Training (HIIT) was enhance the agility of the Male Basketball players when compared to the control group.

### **References**

Delextrat A, Cohen D (2008) Physiological testing of basketball players: toward a standard evaluation of anaerobic fitness. *J Strength Cond Res.* 2008 Jul; 22 (4):1066-72.]

Delextrat A, Cohen D(2009) Strength, power, speed, and agility of women basketball players according to playing position. *J Strength Cond Res.* Oct;23 (7):1974-81.

Ziv G, Lidor R (2009) Physical attributes, physiological characteristics, on-court performances and nutritional strategies of female and male basketball players. *Sports Med.* 2009;39 (7):547-68.

Hardayal Singh (1991) "Science of Sports Training", New Delhi: D.V.S. Publications, P.156.