

EFFECT OF PHYSICAL EXERCISES ON SELECTED PHYSIOLOGICAL VARIABLES AMONG COLLEGE MEN SPORTSMEN.

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ABSTRACT

The aim of this study was to find out the effect of physical exercises on selected physiological variables among college men sportsmen. To facilitate the study fifty four male sportsmen from different colleges in Andhra Pradesh were randomly selected as subjects and their age was between 18 and 22 years. They were assigned into three groups of eighteen in each group. The group one served as aerobic training group and group two as anaerobic training group and the third one as control group. Pre tests were conducted for all the subjects on selected physiological variables such as resting pulse rate and respiratory rate. The experimental groups participated in their respective physical exercises for a period of eight weeks. The post tests were conducted on the above said dependent variables after the experimental period. The results of the study showed that resting pulse rate and respiratory rate were significantly altered by both aerobic exercises and anaerobic exercises compared to control group. Comparisons between treatment groups showed that anaerobic exercises was significantly better than aerobic exercises group in beneficially altering resting pulse rate and there is no significant difference between treatment groups on respiratory rate. It was concluded that physical exercises can beneficially alter physiological variables of college men sportsmen.

Key words:- Physical Exercises, Physiological Variables.

INTRODUCTION

“Fitness is a key to enjoy life. Exercise is an important of a total fitness programme. Modern living has taken all the exercise out of our lives and so in order to get fit and have to put it back again, regular exercise is necessary to develop and maintain an optional level of health, performance and appearance. It makes feel good, both physically and mentally. It gives

psychological lift and strengthens a sense of accomplishment. Looking young is a reflection of good health. Regular physical exercise enhance the function of the joints; increase the sense of physical well-being and promotes a sense of feeling good; increases physical working capacity by increasing cardiorespiratory fitness, muscle strength and endurance and decreases the risk of serious diseases that could lead to early disability and death.”(Ajmeer Singh, et.al. (2005)

Ukoho (1988) express that “exercise has shown to improve health prospects in various ways. It helps to reduce body fat and overall weight and reduce blood pressure. Exercise ensures better digestion, respiration and efficient blood circulation. Proper exercise programme can reduce the probability of injuries among older people as well as back injuries among certain occupational group.” “Exercise tolerance is increased, risk factors are controlled and even progression and regression of coronary artery disease can be influenced by training and diet. Psychological effects include lessened depression and reduced anxiety. Regular physical activity is important for maintenance of health and may lead to a better quality of life. Training has to be followed not less than two to three hours per week in at least three sessions at an intensity corresponding to 60 to 85% of maximum heart rate achieved in a symptom limited maximum exercise test. Cardiac patients at high risk should exercise at lower intensities. Exercise occupies a leading role in keeping persons fit. It will be quite difficult to adjust one’s life in term of stress, diet sleep and so on without proper exercise. Exercise means using and tuning the body. Exercise builds and maintains physical fitness.” (H.U.Niederhauser, 1996)

Every individual must know the need of physical exercise. In other words one must have fundamental knowledge of Anatomy and Physiology. This fundamental knowledge enables a person to understand physical fitness. “Physical fitness is the capacity of a person to function steadily and smoothly when a situation arises. Further, physical exercises makes one mentally sharpen, physically comfortable and ease with his body and better able to cope with the demands that everyday life makes upon him. Increased physical fitness not only improves health but improves performance at work. Hundreds of American companies have back this idea financially by employing full time directors of fitness for their work. Thus, physical exercise help a man to possess a high degree of physical conditions. In school there is compulsory activities programme for all girls and boys so it would be interesting to find out which of the components have better physical fitness, which in turn would improve physiological levels.” (Niederhauser, 1996)

Neil Armstrong, and Alison M McManus (2011) documented that “performance in sport takes place within a matrix of bio-cultural characteristics but boys' success in elite youth sport is underpinned by a range of age-and maturity-related physical and physiological variables which act in a sport-specific manner to influence performance. And found individual differences are most pronounced at 12-15 years when participation in elite youth sport is at its peak. Many boys fulfil their potential, gain and great pleasure from elite youth sport and become elite adult sportsmen. María Carrasco-Poyatos et.al. (2020) determined changes in the performance of high-level athletes after following an heart rate variability (HRV)-guided or a traditional training period and differences in the athletes' performance after following both training protocols and expected that this HRV-guided training protocol will improve functional performance in the high-level athletes, achieving better results than a traditional training method, and thus providing a good strategy for coaches of high-level athletes.” Otocka K.A. et.al. (2010) “elucidated the single bout of maximal exercise on plasma antioxidant status and paraoxonase activity among young sportsmen and concluded that participation of plasma (PON1) is a co-factor of the first line of antioxidant defense during maximal exercise. Its activity is associated with body composition and not the physical fitness of the subjects.” V Bunc, et.al. (1986) determined “noninvasively in a laboratory on the treadmill the anaerobic threshold (AT) (ventilatory threshold) and mechanical efficiency (ME) of running in adult male long-distance runners. It was found significant differences only in long-distance runners where the greatest difference in racing performance (about 15%) is also found a close similarity in responses to submaximal work intensities in adults and young sportsmen.”

The theoretical foundations based on previous researches proved that attempts were made to find out the effect of physical exercises in different forms among different groups of people and proved that there were further scope for research to find out the effect of physical exercises, that is, aerobic or anaerobic nature of exercises contributed better for altering selected physiological variables, namely, resting pulse rate and respiratory rate of college men sportsmen.

METHODOLOGY

To facilitate the study fifty four male sportsmen different colleges in Andhra Pradesh were randomly selected as subjects and their age was between 18 and 22 years. They were assigned into three groups of eighteen in each group. The group one served as aerobic training

group and group two as anaerobic training group and the third one as control group. Pre tests were conducted for all the subjects on selected physiological variables such as resting pulse rate and respiratory rate. The experimental groups participated in their respective physical exercises for a period of eight weeks. The post tests were conducted on the above said dependent variables after the experimental period. The difference between the initial and post experimental periods were considered as the effect of respective physical exercises on college men sportsmen. To test statistical significance of the mean difference ANCOVA was employed.

RESULTS

Tab I: EFFECT OF PHYSICAL EXERCISES, NAMELY, AEROBIC AND ANAEROBIC ON PHYSIOLOGICAL VARIABLES OF MEN COLLEGE SPORTSMEN

	AEROBIC EXERCISES	ANAEROBIC EXERCISES	CONTROL	SOURCE OF VARIANCE	SUM OF SQUARES	DF	MEAN SQUARES	OBTAINED F
EFFECTS PHYSICAL EXERCISES ON RESTING PULSE RATE								
Pre Test Mean	73.39	73.50	74.89	Between	27.1	2	13.56	0.82
				Within	843.7	51	16.54	
Post Test Mean	71.00	69.83	73.39	Between	252.3	2	126.13	8.10*
				Within	794.3	51	15.57	
Adjusted Post Test Mean	71.51	70.24	73.97	Between	125.6	2	62.78	41.22*
				Within	76.2	50	1.52	
Mean Diff	-2.39	-3.67	-1.50					
EFFECTS OF PHYSICAL EXERCISES ON RESPIRATORY RATE								
Pre Test Mean	32.72	32.83	34.56	Between	53.6	2	26.80	1.48
				Within	923.9	51	18.12	
Post Test Mean	29.22	27.39	32.72	Between	499.0	2	249.50	18.72*
				Within	679.8	51	13.33	
Adjusted Post	29.69	27.79	33.69	Between	310.6	2	155.30	

Test Mean				Within	327.7	50	6.55	23.70*
Mean Diff	-3.50	-5.44	-1.83					

Table F-ratio at 0.05 level of confidence for 2 and 51 (df) =3.16, 2 and 50(df) =3.16 .

The ANCOVA results presented in Table I proved that the there existed significant differences due to physical exercises, aerobic and anaerobic, on resting pulse rate and respiratory rate as the obtained F values 41.22 and 23.70 were significant. Since significant F values were obtained the data were further subjected to statistical treatment using Scheffe’s confidence interval test and the paired adjusted mean comparisons are presented in Table II.

Tab II: Scheffee’s Confidence Interval Test Results

MEANS				Required C I
Aerobic Exercises	Anaerobic Exercises	Control	Mean Difference	
ADJUSTED MEAN COMPARISONS ON RESTING PULSE RATE				
70.24	71.51		-1.27*	1.03
70.24		73.97	-3.72*	1.03
	71.51	73.97	-2.45*	1.03
ADJUSTED MEAN COMPARISONS ON RESPIRATORY RATE				
27.79	29.69		-1.90	2.15
27.79		33.69	-5.90*	2.15
	29.69	33.69	-4.00*	2.15

*Significant

DISCUSSIONS

“Performance in sport takes place within a matrix of bio-cultural characteristics but boys' success in elite youth sport is underpinned by a range of age-and maturity-related physical and physiological variables which act in a sport-specific manner to influence performance. Marked increases in muscle strength and muscle power are expressed during adolescence. The muscle enzyme profile needed to promote the anaerobic generation of energy is enhanced as children move through adolescence into young adulthood. Aerobic fitness benefits from age and/or maturation-related increases in stroke volume, haemoglobin concentration, and muscle mass.” (Neil Armstrong, and Alison M McManus (2011).

How far, physical exercises in the form of aerobic exercises and anaerobic exercises contributed for altering physiological variables, resting pulse rate and respiratory rate of college men sportsmen was the interest of this research. The findings of this study proved that resting pulse rate was significantly altered by both aerobic exercises and anaerobic exercises compared to control group. Comparisons between treatment groups showed that anaerobic exercises was significantly better than aerobic exercises group in beneficially altering resting pulse rate. The results on respiratory rate proved that aerobic exercises and anaerobic exercises contributed for altering respiratory rate of college men sportsmen comparing to control group. The comparisons between treatment groups showed that there was no significant difference.

Thus, the findings of this study proved that physical exercises can significantly alter selected physiological variables of college men sportsmen and the findings of this study were in agreement with the previous findings cited.

CONCLUSIONS

It was concluded that physical exercises can beneficially alter physiological variables of college men sportsmen.

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