Research Paper

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Effect of Aerobic & Anaerobic Exercise on Basel Metabolic Rate

Physical Education

KEYWORDS : Aerobic, Anaerobic, Resting Metabolic Rate, Basel Metabolic Rate.

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ABSTRACT

The purpose of the study was to investigate the effect of aerobic & anaerobic exercise on Basel Metabolic Rate. For this study, 40 Male & 20 Female students from B.P.E. group were randomly selected as subjects from LNUPE, Gwalior. The subjects were divided into two groups i.e. one Experimental group and another Control group. For conducting this experiment, the Experimental group was administered with Aerobic & Anaerobic exercise and Control group was not given any kind of training. The quantitative measurement of each subject was taken with the help of standard equipment, before and after the treatment period of two hour. Data was analyzed by use of 't' test. Significant effect was found in aerobic and anaerobic exercise on Resting Metabolic Rate in male and female both.

Introduction:

Lack of activity destroys the good condition of every human being, while moment and methodical physical exercise save it and preserve it. Psychic tensions, anxieties, Obesity, B.P. etc., in sedentary people have now swelled (grew larger) to enormous proportions. Exercise or physical activities help in handling all this by increasing B.M.R. The research findings could remove several mis-conceptions about Exercise and removed the mystical cover over it. Many people do not perform any exercise and are unaware of this fact. Proper Exercise profoundly improves our B.M.R. The exercise is intimately connected with our State of Health and improper Basel Metabolic Rate will often reflect various disturbances of body and mind. The combination of aerobic and anaerobic exercise had significant effect on the Basel Metabolic rate. Basel metabolic Rate is one of the indicator for Person's calories expenditure level which increases through various exercises. Hence, it is more dependent on individual's gender, diet & Physical Fitness attained in long term rather than the exercise efficiency.

Basel Metabolic Rate (BMR) is the number of calories the body burns at rest to maintain normal body functions. *It is the amount of calories per day the body burns, regardless of exercise.* It varies according to age, weight, height, gender, diet and exercise habit and can be responsible for burning up to 70% of the total calories burn. Calories are burned by bodily processes such as respiration & circulation, the pumping of blood around the body and maintenance of body temperature. Obviously the body will burn more calories on top of those burned due to Basal Metabolic Rate (BMR).

Methodology:

The subjects were 40 Male & 20 Female student of L.N.I.P.E., Gwalior those who come from different regions of India. The procedure for selection of the subjects was based on random sampling technique; the average age of the subjects was 20 year ranging between 18 to 22 years. All the subjects were divided into two groups (30 each) 20 male & 10 Female i.e. one Experimental group and one Control group.

In order to test the hypothesis of the study, the criterion variables selected for the study was on the basis of assessment of aerobic and anaerobic exercise programme for Basel metabolic rate by using a standard equipment called Tanata body composition analyzer (BC-420 MA). B.M.R. was recorded with the help of Body Composition Analyzer in state of rest. The subject was asked to lie down for 45 minutes with the arms extended in sides (Shavasan). Then the researcher took the heart rate by gently pressing the tip of the first three fingers over the radial artery on the wrist and counted the total number of Heart beats in fifteen second & multiplied by four for finding heart rate per minute. After measured their Resting Basel metabolic rate by Tanata body composition analyzer (BC-420 MA), then the subject was exposed for bigger muscle exercise for 15 minutes running on treadmill in different intensity, Pushups, Squat, Sit ups, Back hyper extension, Shoulder Press, Calf raises, Biceps curl, & proper cooling down with Breathing Exercise (after the fullest possible inhalation the subject exhaled slowly and steadily) during the test. Immediately after the completion of all exercise subject was asked to take rest for next one and half hour in sitting position. After that again the subject was asked to lie down in supine-line position till the heart rate comes before the test. Then the tester recorded his Basel metabolic rate again as a post test by carefully watching the movement of the subject. The Subject belonging to control group did not perform any kind of experimental training but they perform their normal relaxing routine. For experimental group duration training session was for an hour and timing were in the evening from 4:15 pm to 5:15 pm.

Results and Discussion:

In order to study the effect of exercise on Basel Metabolic Rate, the 't' test applied at 0.05 level of significance.

Relationship of pre-test & post-test on Basel Metabolic Rate.

The findings of the study are presented in the following Table 1.

Table No. I

MALE					
Variables	Means Pre-Post		MD	SE	't'
Experimental Group	5.7	6.77	1.07	0.23	6.77*
Control Group	4.6	4.9	0.03	0.13	.53

Significant at 0.05 levels

It is evident from Table-I, that there was a significant difference on pre-test and post-test means of male experimental group as the obtained 't' value 6.77 was greater then the tabulated value 2.26 at 0.05 level of significant with 19 degree of freedom. In case of Control group, no significant effect was evident as the obtained 't' value .53 was less than the table value 2.26.

Table No. II

FEMALE

Experimental Pre-Post		4.0	2.45	.77	5.2*
Control Group		6.4	3.92	0.24	.24

* Significant at 0.05 level

It is evident from table II that there was a significant difference on pre-test and post-test means of male experimental group as the obtained 't' value 5.2 was greater then the tabulated value (2.262) at 0.05 level of significant with 9 degree of freedom. In case of Control group no significant effect was evident as the obtained 't' value .24 was less than the table value (2.262).

The above table I and II reveals that aerobic & anaerobic exercise effective in male and female both for increasing Basal Metabolic Rate in experimental group.

Discussion:

Any exercise can significantly improves the capacity of Basel Metabolic rate in case of male and female. It is more dependent on muscle mass which is more in male so males have greater Metabolic rate in compared to females. Exercises are voluntary movements based on the muscles contraction and as males have more muscle mass, therefore they have higher Metabolic rate than females at rest and while doing any work. Hence, one session of aerobic and anaerobic exercise can start improving Basel Metabolic Rate.

This may be due to the reason that exercise increases the body temperature and by increasing $1^{o}C$ temperature of body, the 14% metabolic rate increases. Therefore proposed hypothesis states that BMR has been accepted to make significant effects on aerobic and anaerobic exercise.

Conclusion:

1. Aerobic and anaerobic exercise significantly improves the capacity of Basel Metabolic rate in case of male.
2. Aerobic and anaerobic exercise significantly improves the capacity of Basel Metabolic rate in case of female.

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