Effects of Aerobic Training on Resting Heart Rate among College Students

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ABSTRACT

There is an established link between aerobic training and resting heart rate. Reduced resting heart rate is an indication of fitness of an athlete because the athlete heart can meet the energy demand of the body with small number of beats. The purpose of the study was to investigate the effects of aerobic training on resting heart rate. The study was experimental in nature. The population of the study comprised of (male) non-athlete's students (18 to 22 years) of Government Post Graduate College Karak, Khyber Pakhtunkhwa (KP), Pakistan. The sample (n-50) of the study was determined through Physical Activity Readiness Questionnaire (PAR-Q). Before formation of two groups (Experimental and Control), the resting heart rate of each subject was taken by digital heart rate monitor. They were randomly divided into two equal groups of 25 each on the basis of their resting heart rate. The experimental group underwent aerobic training for eight weeks. There were four training sessions per week and each session comprised of 30 minutes. The subjects were offered aerobic exercises at moderate intensity (50% to 70% of the Maximum Heart Rate (MHR). The control group was allowed to participate in their daily routine life activities. After eight weeks aerobic training, the post test was conducted of both groups. The data were analyzed with the help of SPSS version 20 and used paired sample t test and

independent sample t test as a statistical tool for a variable (resting heart rate) in order to determine the difference in means at <0.05 level. The mean values of pre-test and pos- test of each group were compared. The results of the study showed that there was significant decrease in resting heart rate of subjects of the experimental group, while there was no significant decrease in resting heart rate of subjects of the control group. In light of the findings of the study, it is concluded that aerobic exercises play important role in the reduction of resting heart rate. These qualities pave way to show good performance in endurance sports related activities among athletes.

Key words: aerobic training, resting heart rate, college students

Introduction

Various factors are given due importance in the field of sports for achieving and showing maximum performance. Fitness is one of the important factors that cannot be denied by any coach and trainer. Different methods and procedures are opted to determine the fitness of an individual. One may also come to know about the fitness level of an individual through resting heart rate (RHR). An athlete who has low number of resting heart rate is the sign of fitness of that very athlete (Wadiat Aman & Bashir, 2020). The main reason behind the minimum number of beat of heart during the rest time is that the heart pumps more blood into the body per stroke because of strong cardiac muscles and hence the demand of required energy is fulfilled. Such kind of heart that fulfills the energy demand of muscles with minimum beats because of enhanced stroke volume is known as 'athlete heart'. (D'Andrea et al., 2018).

The physicians measure the RHR to identify/detect the various kind of cardiovascular diseases. The trainers and coaches may also come to know by RHR about their trainee aerobic fitness level. After getting the data of RHR of trainees, the coaches and trainers can specify the training zones for them which assist in to check the risks of over training (Pereira *et al.,* 2019). Over training causes the weakness of immune system and rise the peril of injuries. (Yamada, 2020).

The number of beats made by the heart in specific unit of time is called heart rate (HR) irrespective of any condition. Commonly it is shown as quantity of beats per minute (bpm) (Chevance *et al.,* 2022). There are certain conditions that are paid due consideration while quantifying the RHR. He/she may be at rest condition and awake. His/her RHR may be measured when she/she is not freshly exerted (Nanchen, 2018). The normal/average RHR of the

adults is 60 to 100 bpm. Those people who are not active and are of middle-aged have about to 100 bpm (RHR). The athletes who have been trained and conditioned have lower RHR. Their RHR is below than 60 bpm. The HR is found higher among women than men because of difference in structure in their heart. The difference is about 3 to 7 bpm (Sobieraj, Siński & Lewandowski, 2021).

There are so many methods/procedures that are opted to quantify the RHR. Mostly the method is opted to quantify the RHR is pulse. The pulse method is very simple method. One may easily quantify the RHR with pulse where an artery is found near to the surface of the body. Commonly, the artery that is found inside the wrist is practiced to measure the RHR (Kumar & Krishnamoorthi, 2021). It is essential to keep a counter device in order to sum the heart bpm while opting to pulse method. Timer, electrocardiograph (ECG) and Heart Rate Monitor are some of the counting devices that are used to quantify bpm of heart (Lee, 2018).

There are certain aspects that need due attention while calculating the RHR. The best time for measuring the RHR is the morning before getting fatigued. The subject should be in the sitting position on the chair. The duration of estimation of RHR is from 15 second to 1 minute. Thirty second is a reliable estimation of RHR. The heart beats are totaled for thirty seconds and calculated number is multiplied by two to attain bpm (Penggalih, Sofro, Oktarini & Ningrum, 2021). The room temperature should be normal and comfortable. The stated procedure should be adopted for three consecutive days. At the end, the three days' bpm are added and the derived figure is divided by three in order to get the normal RHR per minute of a subject (Palatini *et al.*, 2006).

There are so many factors which have due role to affect RHR, increased in age affect RHR. In the same manner, heredity and health status have also due role in affecting RHR. The other some aspects which affect RHR are the fitness level, use of medicine, addiction to smoking, exertion and temperature of air. In addition to the mentioned reasons psychological problems, deficiency of oxygen and disease of anemia also affect RHR (Bonatto *et al.*, 2006).

Regular performance of physical activities has due role in decreasing the RHR. The actual difference between the aerobic activities and anaerobic activities is the consumption of oxygen. The word aerobic means "with oxygen" and anaerobic means "absence of oxygen" (Wilmore & Knuttgen, 2003). Aerobic activities are done with the intensity of 50% to 85% of MHR while anaerobic activities are performed at the intensity rate of more than 85% of the MHR. Further,

the Aerobic activity is divided into moderate and vigorous. The former intensity range is 50% to 70% of the MHR, while for the latter; it is 71% to 85% of the MHR (Sebastian, Reeder & Williams, 2015).

Enough amount of oxygen is available in the mitochondria of the cell for glycolysis process so the essential energy is delivered to the working muscles without lactic acid. Because of glycolysis process, energy is made in the shape of adenosine triphosphate (ATP) (Perry, Heigenhauser, Bonen, & Spriet, 2008). Nutrients from which we get energy in the shape of adenosine triphosphate (ATP) are carbohydrates, proteins and fats. Among the stated nutrients which are the foundation of energy, carbohydrates supply fastest energy to the larger muscles at work because its digestion takes place swiftly. The digestion of carbohydrates starts from mouth. This is the main reason behind that aerobic activity persists for extended period of time (Alghannam, Ghaith & Alhussain, 2021).

The aerobic exercises are also known as cardiovascular exercises because the mentioned exercises boost the capacity of lungs and heart. It is crystal clear that both heart and lungs play key role while performing aerobic exertion (Ainsworth *et al.,* 2011). With the performance of aerobic exercises, the cardiac muscles are improved that results in the advancement of stroke volume and cardiac output. In the meanwhile, the capacity of lungs is also augmented that paves the way to provide te oxygen to each cell of the body efficiently and effectively. The advantage of enhancement in the capacity of cardiac and lungs capacity result in to carry on an activity for lengthy time and recover himself/herself rapidly after the termination of session. It also lessens the resting heart rate and heart delivers the oxygenated blood to the muscles with least beats and it shows that an athlete is aerobically fit (Azad, Gharakhanlou, Niknam, & Ghanbari, 2011).

The nature of the aerobic activity may be determined on the basis of intensity. Here intensity means the heart bpm (Su, 2022). The lower and upper intensity of the aerobic activity is 50 % to 85 % of the MHR respectively. The MHR is the highest bpm which can be achieved during full physical exertion. The way of its calculation is to deduct the age of an individual from two hundred and twenty (220- Age). For example, the MHR of a person of 40 years' age will be 180 (220-40=180) (Tanaka, Monahan, & Seals, 2001). Swimming, dancing, climbing the stairs, running, basketball,brisk walking, cycling and hockey are some of the activities that come under the category of aerobic activities (Garber *et al.,* 2011).

Further, the principles of training have also due role while designing/performing aerobic exercises. The principles will not only contribute in accomplishment of intended/optimal outcomes but also to diminish the perils of injuries. Those key principles/points of training are duration, progression, frequency, mode, intensity and variation (Kerse, Elley, Robinson, & Arroll, 2005).

In addition to the above-mentioned principles of training, warm up must be the part of training session. It is carried out prior the commencement of training exercises. Proper warm up has many benefits. It alerts an athlete physically and mentally for the upcoming hard task. The temperature of the muscles is increased. The increased temperature of the muscles augments the capacity of contraction and relaxation of the muscles. The potentials of strength and speed are also developed. It also supplements the temperature of the whole body (Burnley, Doust, & Jones, 2005). All the mentioned qualities like physical and mental alertness, enhanced temperature of the muscles, improved capacity of the contraction and relaxation of the muscles, development in the strength and speed and improved muscles' temperature of the core body not only assist in to minimize the perils of injuries but also to accomplish the anticipated outcomes (Wu, 2021).

The blood vessels are also expanding with the warp up. After the expansion of blood vessels, additional blood is supplied to the exerted muscles without resistance. Because of the specified quality the heart performs appropriately because there is no extra pressure on it. For well performance, the heat dissipation mechanism which is linked to the heat loss from the body needs to be stimulated. Warm up triggers the heat dissipation mechanism. It helps an athlete to sidestep the hazard of early overheating in an activity. The temperature of blood also rises with the warm up. Thus the blood swiftly supplies oxygen and nutrients to the exerted muscles that results in the enhancement of the quality of endurance that is necessary for showing better performance in the endurance oriented activity. Warm up also boosts the quality of flexibility because of development of range of movement. An athlete turns out to execute a task/activity adeptly (Hajoglou *et al.,* 2005).

Six to twenty minutes of warm is considered the best duration. Warm up should be of general and sports/activity specific. The main objective of the general warm up is to increase the Heart rate and breathing. Sports/activity specific warm up should be followed by general warm up. In sports/activity specific warm up, a player warms up those organs of the body that are frequently

used in the activity. For example, after the general warm up by the football player, he/she may opts to light jogging and kicks with ball (Mohr, Krustrup, Nybo, Nielsen, & Bangsbo, 2004). Likewise, warm down has own importance after the termination of activity. The prime objective of the warm down is to boost recovery and carry the body back to the level as it was before the activity. So many paybacks are attributed to warm down. The chances of muscles soreness are minimized (Cheung, Hume, & Maxwell, 2003). During activity, waste products like lactic acid and hydroxyproline are produced that affect the muscles capability and is considered one of the main causes of fatigue. warm down minimizes the hazards of pooling of blood in the legs. So, the sufficient quantity of oxygenated blood is delivered to the brain. Thus, it lessens the risks of complications of nausea, dizziness and sense of exhaustion (Bijur, Silver, & Gallagher, 2001). One of the advantages of warm down is to diminish the Delayed Onset Muscle Soreness (DOMS). DOMS is developed after 8 to 24 hours of exertion. The DOMS sources muscles pain as well as of swelling and stiffness of muscles. Warm down assists in to the maximum level to overcome the mentioned problem (Evans, Knight, Draper, & Parcell, 2002). It also helps in elimination of those enzymes that harm muscles and causes fatigue. Stretching exercises should be the essential part of warm down because such sort of exercises boosts the flexibility that results in relaxation of muscles (Fradkin, Gabbe, & Cameron, 2006).

Significance of the study

To find out the fitness level of a player or to indicate the presence of disease or stress, the role of RHR is much significant. Generally, a player who has lower RHR has highly efficient cardiovascular system. This kind of heart in the field of sports is called “Athlete Heart”. Athlete heart refers to the heart which supplies the needed oxygenated blood to the working muscles with minimum heart-beats. In the area of sports, we can easily determine the endurance level of an athlete through RHR. Regular participation in planned aerobic activities helps in improving the function of heart. This study will help in to determine the effects of eight weeks aerobic training on resting heart rate of the age group 18 to 22 years old. The research will also help in guidance of the sports coaches and trainers in designing the aerobic programs for beginners to match their cardiovascular capacity and improve their aerobic fitness level.

Objectives of the Study

The main objectives of the study were as under:

1. To investigate the effects of eight-week aerobic training on the resting heart rate of college students (non-athletes) age ranging from 18 to 22 years.
2. To find out the average resting heart rate of college students (non-athletes) age ranging from 18 to 22 years.

Hypotheses

Following were the hypotheses of the study:

1. Aerobic training improves the resting heart rate among college students (non-athletes) age ranging from 18 to 22 years.
2. The average resting heart rate of the college students (non-athletes) is between 70 bpm to 80 bpm age ranging from 18 to 22 years.

Methods and materials

Research methodology is that process which is adopted by the researcher in order to reach certain solution of the specific problem under taken for the conduction of the study. Research methodology consists of several steps which the researcher follows during the course of research (Bowman, Wyman, & Peters, 2002). The research was experimental and quantitative in nature. The following methodology was adopted to point out the effects of eight weeks aerobic training on resting heart rate among college students (non-athletes) age ranging from 18 to 22 years.

Population

Population is the aggregate of all the subjects, objects or members that are directly related to the problem under taken. In experimental research, it refers to the subjects which the researcher selects for the study in connection with collection of the necessary data (Banerjee, *et al.*, 2007). The population for this study comprised of all the (male) students of government Post Graduate College Karak kp, Pakistan. The range of the age was 18 to 22 years.

Exclusion Criteria

For the stated purpose, Physical Activity Readiness-Questionnaire was used and the questionnaire carried all the relevant queries with the reference to the desired characteristics. The students who did not live in hostel were not the part of population. Students with acute or chronic respiratory illness, past or present smoking history, having any type of physical deformity, systemic illness and on chronic medication were also not made as part of population. In addition

to that, those students who had already been taking part in aerobic or anaerobic activities were not included in the population of the study.

Sample of the study

The physical activity readiness questionnaire was distributed among 132 hostel students. The questionnaire was collected from the students and which only 75 studenys were fit for the study. A sample of fifty subjects (n-50) was selected randomly.

Pre-test of the subjects

The RHR of each subject was calculated, after Ten minutes lying, by digital heart rate monitor for thirty seconds in the morning. The number of heart beats was noted for thirty seconds. The derived figure was multiplied by two in order to get the bpm value. The stated procedure was followed for three consecutive days. Next the three days RHR of each subject was added and divided by three in order to know the average RHR. The average RHR of each subject was recorded separately.

On the basis of average RHR, the targeted heart zone of each subject was calculated by applying the Dr. Karovenin method. According to the Dr. Karovenin method, the age of each subject was subtracted from two hundred and twenty-two (220). Next the RHR was subtracted from the derived figure and then multiplied by the moderate intensity of an aerobic activity (50%-70%). In the last, RHR was added to the calculated figure. The formula was; [(220-age-RHR) x intensity of the activity + RHR].

Formation of Sample into Two Groups

Before formation of 50 subjects into two equally groups, the subjects were listed in ascending order on the basis of their RHR. The subjects were divided into two groups through the process of randomization. The odd numbers formed experimental group and the even numbers formed control group each of 25 subjects.

Control Group

The control group consisted of 25 who were allowed to continue their daily routine life activities. No treatment was given to the control group.

Treatment of Experimental Group

The aerobic training schedule for experimental group was initiated and continued for the period of 8 weeks. The aerobic exercises jogging, stepping up and down and brisk walk were the part of training. There were 04 sessions per week (Monday, Wednesday, Friday and Saturday) each of

30 minutes excluding the time of warm up and cooling down. The intensity of exercises was 50% to 70% of the MHR computed on the basis of Dr. Karovenin formula.

Instrumentation

For the collection of data, various kinds of instruments are used. For this study, the researcher employed suitable and standardized instruments. In order to achieve the valid results, digital heart rate monitors were used for taking the RHR of the subjects and also the intensity of the activity in order to ensure accuracy and avoid possible variances. A stop watch was used for measuring the time of activities.

Analyses of the data

The study was designed to assess the effects of aerobic training on Resting Heart Rate among college students (non-athletes) age between 18 to 22 years. The study focused on one independent variable, namely aerobic training and one dependent variable that is resting heart rate. The collected data were statistically analyzed to investigate the effects of intervention.

Table 1. Description of the sample

Group	N	Min age	Max age	Mean age	Std. Deviation
Experimental Group	25	18 years	22 years	20.84 year	0.9433
Control Group	25	18 years	22 years	20.72 year	1.1372

The above table indicates that the minimum and maximum age of each subject of both groups is 18 to 22 years respectively. Likewise, the mean age of control group is 20.72 years, while of the experimental group, it is 20.84 years.

Table 2. Description of minimum and maximum resting heart rate of pre-test and post-test of the experimental group

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Pre-test of RHR of the Experimental Group	25	71 bpm	83 bpm	76.60 bpm	2.6925
Post-test of RHR of the Experimental group	25	69 bpm	80 bpm	74.28 bpm	2.5086

The table indicates that the minimum pre-test RHR of experimental group is 71 bpm while of the post test, it is 69 bpm. Similarly, the maximum pre-test of resting heart rate is 83 bpm, while of the post test, it is 80 bpm. The mean value of pre-test of resting heart rate is 76.60 bpm, while of the pos-test, it is 74.28 bpm.

Table 3. Difference of Pre-test and Post-test of RHR of the Experimental Group.

Variable	Group	N	Mean	diff	Sig (2-tailed)
Resting Heart Rate	Pre-test of Experimental Group	25	76.60 bpm	2.32 bpm	0.000
	Post-test of Experimental Group	25	74.28 bpm		

($P \leq 0.05$)

The above table shows that the pre-test mean value of RHR of the experimental group is 76.60 bpm, while the post-test mean value is 74.28 bpm. This shows that the RHR of experimental group has been decreased due to the treatment of aerobic training which appears to be very effective. The Sig (2-Tailed) value is 0.000 which is less than $P < 0.05$; it reflects that there is significant effect of aerobic training on resting heart rate among college students (non-athletes) of 18 to 22 years. Therefore, the H_0 hypothesis is rejected and H_1hypothesis is accepted

Table 4. Description of Pre and Post Test's RHR of the Control group.

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Pre Test's RHR of Control Group	25	72 bpm	83 bpm	76.76 bpm	2.4879
Post Test's RHR of Control Group	25	72 bpm	83 bpm	76.52 bpm	2.3295

Table indicates that the minimum pretest resting heart rate of control group is 72 bpm while of the post test, it is 72 bpm. Similarly, the maximum pre-test's resting heart rate is 83 bpm, while of the post test, it is also 83 bpm. The pretest mean value of resting heart rate is 76.76 bpm, while of the post test, it is 76.52 bpm.

Table 5. Difference between the Pre-test and Post-test of RHR of the Control Group.

Variable	Group	N	Mean	Diff	Sig (2-tailed)
Resting Heart Rate	Pre-test of Control Group	25	76.76 bpm	0.24 bpm	.083
	Post-test of Control Group	25	76.52 bpml		

($P \leq 0.05$)

The table reflects that the pre-test mean value of resting heart rate of the control group is 76.76 bpm while the post-test mean value is 76.52 bpm. The difference between the two mean values is

very low (0.24 bpm). The control group served a baseline to compare the effects of aerobic training on experimental group. The control group continued their normal daily routine life activities. The improvement i.e. decreased of resting heart rate as indicated by post-test of control group is not significant.

The 2-Tailed value (.083) is greater than P>0.05 which indicates that there is no significant effect of daily routine life activities on resting heart rate. Hence the H_1hypothesis is rejected and H_0 hypothesis is accepted

Table 6. Description of post-test RHR of both Experimental and Control Group.

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Post Test's RHR of Experimental group	25	69 bpm	80 bpm	74.28 bpml	2.5086
Post Test's RHR of Control Group	25	72 bpm	82 bpm	76.52 bpm	2.3295

Table indicates that the minimum post-test's resting heart rate of experimental group is 69 bpm while the maximum is 80 bpm. The minimum and maximum post -test's resting heart rate of control group is 72 bpm and 82 bpm respectively. Similarly, the post-test mean value of resting heart rate of the experimental group is 74.28 bpm, while of the control group, it is 76.52 bpm.

Table 7. Comparison of post-tests of RHR of Experimental and Control Group.

Variable	Group	N	Mean	Diff	Sig (2-tailed)
Resting Heart Rate	Post-test of Experimental Group	25	74.28 bpm	2.24 bpm	0.000
	Post-test of Control Group	25	76.52 bpm		

(P≤ 0.05)

The above table shows the post-test mean values of RHR of the experimental group and control group which are 74.28 bpm and 76.52 bpm respectively. This result shows that there is significant effect of aerobic training on RHR. The 2- tailed value is less than P<0.05, therefore the H_0 hypothesis is rejected and H_1 hypothesis is accepted.

Average RHR of college students (non-athletes) age group 18 to 22 years

Variable	Group	N	Mean	Std. Deviation	Average RHR
Resting Heart Rate	Pre-test of Experimental Group	25	76.60 bpm	2.6925	76.68 bpm
	Pre-test of Control Group	25	76.76 bpm	2.4879	

The above table indicates the mean values of pre-test resting heart rate of experimental and control group which is 76.60 bpm and 76.76 bpm respectively. Thus, by the calculation of RHR of both groups, the average RHR of age group 18 to 22 years is 76.68 bpm. Therefore, the H_0 hypothesis is rejected and H_1 hypothesis is accepted because the average resting heart rate is between 70 to 80 bpm.

FINDINGS OF THE STUDY

Based on data analyses, the major findings of the study have been summarized as under:

In experimental group, The Pre and Post Test mean values of RHR (before treatment) were 76.60 bpm and (after treatment) 74.28 bpm respectively. Pre and Post Test mean difference of RHR was 2.32 bpm of the experimental group which indicated that there was significant effect of aerobic training on RHR. In control group, the Pre and Post Test mean values of RHR were 76.76 bpm and 76.52 bpm respectively. In control group, the difference between the pre & post-test mean values of RHR was .24 bpm which showed that there was no significant effect of daily routine life activities on RHR. The Pre-test mean values of RHR of the Control and Experimental Group were 76.76 bpm and 76.60 bpm respectively. After the Pre-test calculation of RHR of both the groups, the mean value ofRHR of all the subjects was 76.68 bpm.

Discussion

The study was conducted in order to investigate the effects of eight weeks aerobic training on RHR among college students. The population of study were the students of Government Post Graduate College Karak, Khyber Pakhtunkhwa (Pakistan). PAR-Q was used as criteria for sample selection of fifty subjects. The data was analyzed with the help of SPSS version 20 and used paired sample t test and independent sample t test for determining the significance between the mean values of RHR. The data revealed negative effects (Decreased in RHR). The same kind of study has also been conducted by Basha and Kishore (2014) which endorse the findings of this study. The findings of this study also enjoy the support of Anandhan (2014) who conducted a

study “effect of aerobic training on vo2 max and resting heart rate in overweight men”. The study had several limitations with reference to its prompt conduct. First, the subjects were found inexperienced in performing the aerobic exercises. Secondly; such experimental studies have not been conducted in the local environment which may limit the generalization of the results.

CONCLUSION

On the basis of findings, it was concluded that aerobic training improves the RHR among college students (non-athletes) age ranging between 18 to 22 years. The calculation of RHR of a person plays important role, in addition to diagnosing the diseases or stress, even in sports activities. It is useful to determine the fitness level of a player which can assist the coaches or trainers to design the training program for athletes of known RHR. An athlete who has comparatively low RHR is considered to be more fit because of the increased stroke volume and cardiac output through which an athlete can achieve the desired goal with minimum efforts.

In this study, the pre-test mean value of RHR (before treatment) was 76.60 bpm, where as in control group, the pre-test mean value of RHR was 76.76 bpm. The intensity of training fluctuated between 50% to 70% of MHR computed through Kerovenin method, [(220-age-RHR) x percentage of the intensity – RHR]. The control group was allowed to take part in their daily routine life activities. After eight weeks’ treatment to the experimental group, the data were analyzed. In experimental group the pos-test mean value of RHR was 74.28 bpm. In control group, the pos- test mean value of RHR was 76.52 bpm. According to the above stated facts, the study concluded that Aerobic training improves the RHR which is essential for a player to show good performance in endurance related sports activities. With the stated quality, a person can perform an activity with fewer efforts and more efficiently without exerting and having too much fatigued.

Recommendations

On the bases of findings and conclusion of the study, the following recommendations are being proposed. As the results show that aerobic training improves the RHR therefore, it is recommended that awareness should be created among the people about the importance of aerobic exercises so that they may take part in aerobic exercises for improving their physical efficiency. The basic duty of physical education teachers is to prepare the students for various sports activities. Therefore, it is recommended for physical education teachers to motivate and promote aerobic exercises among students in their institutions. It was noted during the study,

most of the students were not aware of the benefits of aerobic exercises, therefore it is suggested that aerobics training program should be made part of the curriculum at school and college levels.The study reveals that the coaches and trainers need to plan their programs in the light of aerobic exercises protocol suggested in the study. The study reflected that the lack of awareness and poor participation of the youth in aerobic exercises is due to lack of appropriate facilities. The researcher recommends that provision of facilities for the aerobic activities may be ensured at gross root levels.

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