International Journal of Physical Education, Sports and Health 2024; 11(3): 177-182

P-ISSN: 2394-1685
E-ISSN: 2394-1693
Impact Factor (RJIF): 5.38
IJPESH 2024; 11(3): 177-182

https://www.kheljournal.com
Received: 02-04-2024
Accepted: 07-05-2024

Akshay Jyani
Department of Physical Education, Guru Kashi University, Talwandi Sabo, Punjab, India

Dr. Ravi Kumar
Professor, Department of Physical Education, Guru Kashi University, Talwandi Sabo, Punjab, India

Gurdeep Singh Dhaliwal
Assistant Professor, Department of Physical Education, Guru Kashi University, Talwandi Sabo, Punjab, India

Corresponding Author:
Akshay Jyani
Department of Physical Education, Guru Kashi University, Talwandi Sabo, Punjab, India

Effects of six weeks endurance exercise performance on selected physiological variables among individuals

Akshay Jyani, Dr. Ravi Kumar and Gurdeep Singh Dhaliwal

Abstract
The Present study was conducted on 20 males (10 control group and 10 experimental group) endurance exercise training of males from Guru Kashi University. The age of the males was ranged from 20 to 25 years of age groups. The training protocol lasted for six weeks. In order to find out the effect of six weeks physiology endurance training exercises on selected physiological variables among athletes, experiment statistics i.e. mean and standard deviation were calculated. Paired t-test was applied with the help of. To find out the effect of endurance exercises on an athlete performance. Subsequently preferred physiological variables like BMI, Blood Pressure, Heart rate were selected as variables, Data on the selected physiological variables was collected on day prior of the beginning of training and one day after the completion of training. After the collection data, to know the effect of six weeks endurance exercises program on physiological profile of male athletes, paired t-test was employed on mean and standard deviation vale of pre and post-test with the help of SPSS was used. The level of significance was set at 0.05.

Keywords: Mean, physiology, endurance, six weeks

Introduction
Several sports require an adequate levels of strength and endurance to perform at optimum level in competitive events. However, successfully combining endurance and strength training represents the highest complexity in exercise prescription (Coffey and Hawley, 2017) [9]. It has often been) speculated that concurrent training does not generate the same adaptations as single-mode exercise [1]. Even so, the possible mechanisms whereby concurrent training of both fitness components can attenuate strength and endurance adaptations remain unclear (Leveritt *et al*., 1999) [1].

In endurance sports, it has traditionally been thought that cardiovascular capacity is the main limiting factor in sports performance (Bassett and Howley, 2000) [2]. Therefore, maximum oxygen consumption (VO_2max) and anaerobic threshold (AnT) have been considered the best indicators to predict athletes' performance (Krayitz and Dalleck, 2002) [3]. Nevertheless, in reality, endurance athletes with similar VO_2max may perform differently in sports competitions. Hence, VO_2max could not be the best indicator to predict their racing performance. Nowadays, running economy (RE) and the evaluations that imply assessing the muscular power exerted or the speed reached by an athlete during the VO_2max are considered better sports performance indicators (Saunders *et al*., 2004 and Beattie *et al*., 2014) [4, 5]. In this way, specific scientific evidence indicates that combining endurance and strength training generates additional benefits in terms of athletic performance improvement and injury prevention (Gabler *et al*., 2018) [6]. These improvements could be related to the following mechanisms (Gabler *et al*., 2018; Flores-Zamora *et al*., 2017 and Blagrove *et al*., 2018) [6, 7, 8].

Physiology
From Ancient Greek 'nature, origin is the scientific study of functions and mechanisms in a living system. As a deliberate of biology, physiology concentrate on how organisms, organ systems, individual organs, cells, and biomolecules carry out the chemical and body functions in a living system. According to the classes of organisms, the field can be divided into medical

physiology, animal physiology, plant physiology, cell physiology, and modified physiology.

Central to physiological functioning are biophysical and biochemical processes, homeostatic control mechanisms, and transmission between cells. Anatomical state is the condition of normal function. In contrast, pathological state refers to abnormal conditions, including human diseases.

Endurance (also related to sufferance, resilience, constitution, fortitude, and hardiness) is the capability of an organism to exert itself and remain energetic for a long period of time, as well as its capacity to resist, withstand, recover from and have immunity to trauma, wounds or fatigue.

Endurance is the ability of an organism to exert itself and remain sporty for a long period of time, as well as its ability to resist, withstand, recover from and have immunity to trauma, wounds or fatigue. It is usually used in aerobic or anaerobic exercise.

Objectives of the study

The main objectives of the study was To evaluate the effect of six weeks' endurance training effect on blood pressure of male athlete, To examine the effect of six weeks' endurance training increasing heart rate and breathing of male athlete and To assess the effect of six weeks' endurance training on increased fat consumption are known to increase fat burning measure by BMI during exercise of male athlete.

Methodology

Design of the study

The design of my study is on pre and post experiment test.

Selections of subject

The study was conducted on 20 male (10 control group and 10 experimental group) endurance exercise training of males from GKU. The age of the males was ranged from 20 to 25 years of age groups. Tests were selected by me and purposive team.

Selection of variable

In consulate with the experts in the field, minutely gleaning through the literature available and considering the feasibility criteria in mind, particularly the accessibility of tool. The following components of physiological variables were selected for the present study.

1. Body Mass Index
2. Heart rate.
3. Blood pressure.

a. Systolic Blood pressure
b. Diastolic Blood pressure

Criterion measures

For the purpose of the current study, the measurements of selected variables done by medical test equipment. The names of tests and their standardized units were given in the Table 1.

Table 1: Shows Description of selected Equipment and Measurement units

Variables	Test analyzer	Unit of measurements
Diastolic blood pressure	Sphygmomanometer	mmHg
Systolic blood pressure	Sphygmomanometer	mmHg
Body Mass Index	Smart weigh body fat digital scale machine, stadio-meter	Kg/m2
Heart rate	Sphygmomanometer or stethoscope	Bpm

Endurance exercises

1. Running.
2. Sprints.
3. Bent knee sit-ups.
4. Long pace running repetition.
5. Weight training (normal &heavy weight).
6. Crunches.
7. Squats (Body and Heavy weight).
8. A.B.C exercise.

3.5 Collection of data

Ten male athletes from GKU were selected as subjects in this study. The necessary data was collected through the administration of standardized instruments for the measurements of chosen variables. The tests were taken in the morning and evening time as it was convenient to the athlete.

3.6 Methods and Procedure

Diastolic and Systolic Blood Pressure

Objective: To measure the diastolic and systolic blood pressure of an athlete.

Equipment: Sphygmomanometer, Stethoscope, Stopwatch, Pen, Copy.

Procedure: For calculate blood pressure the subject was sit calmed. Then a stretchable cuff was placed about the arm in such a situation that enlarge compressed the brachial artery. Examiner put the earpieces of the stethoscope in the ears. Adequate pressure was impelled into the cuff to close the artery. Air pressure was then out by started the thumb valve. When the pressure in the cuff is equivalent to the pressure on the artery, the artery allow to leave and the blood activates to reoccurrence to the part of the artery that was closed. As the blood move to the artery, pulse sounds can be perceived over a stethoscope discovered over the brachial pulse point. The sound remain for a time although the cuff is flattened slowly, finally becoming beside limit to receive. The cuff related via tubing to a manometer, which displays the amount of pressure the artery, when the first pulse sounds are heard, the scanning on the sphygmomanometer measures the systolic blood pressure. The last sound heard is the diastolic blood pressure.

Scoring: Blood pressure was documented in the units of millimeters of mercury (mmHg).

Body mass index

Objective: To measure the body fat of a player.

Equipment: Stadiometer, weight machine, copy and pen.

Procedure: With the metric system, the formula for BMI is weight in kilograms divided by the height in meter square. The higher the score usually indicating higher level body fat. Generally, a BMI between 20 and 25 is considered normal weight for height, and outside these worth is either underweight or overweight. The rating scale is the same for males and females. See the table of BMI Norms founded on the World Health Organization BMI categorization system.

Scoring: Body fat was documented in the units of kilogram per meter square (Kg/m^2).

Heart rate
Objective: To measure the pulse beat per minute of an athlete.

Equipment: Stethoscope, Stopwatch, Pen, Copy.

Procedure: To measure heart rate using a stethoscope, put a tips of the stethoscope in your ear and place the diaphragm of the stethoscope on the patient chest. Listen for the heart sounds and count the numbers of heart beat for 1 minute. Multiply this number by the to get the number of beats per minute. A stethoscope can be used to hear to sound make inside the body, especially those made by the heart and lungs. Adult men and women absorb approximately 4.7 litres of blood per day. A pulse will also be differentiate at rest and immediately after an exercise. When students are exercising, they are expect their heart rate to rise. Students will obtain a better understanding of how the heart beats as a result of the activity.

Scoring: Heart rate was documented in the unit of beat per minute (bpm).

Analysis and Interpretation of results
In this chapter the analysis of data, finding and the discussion of findings have been defined. The main purpose of the study was to examine the effect of six week of endurance exercises training program on physiological variables among male athletes. The data was collected on male athletes. After collection of appropriate data, paired t-test was applied on the mean value of all the measurements of physiological variables. This chapter is devoted to analysis and interpretation of the results for reaching at definite conclusion.

4.1 Finding
Physiological variables
1. Weight

Table 2: Shows mean, standard deviation and 't' Value of pre and post-test of weight

Group Name	Mean	Standard Deviation	T - Value
Pre-Control Group	81.80	14.88	0.2144
Post-Control Group	80.40	14.32	
Pre-Experiment Group	85.920	12.211	0.8047
Post-Experiment Group	81.940	9.774	

The table 2 reveals that the mean and standard deviation values of weight level in pre-control, post-control, pre-experiment, post-experiment groups are 81.80+14.88, 80.40+14.32, 85.920+12.211 and 91.940+9.774 respectively. It also shows that in case of experiment group, calculated t-value is 0.8047 which shows that there a is a significant effect of six weeks endurance exercises training program on weight variable of male athlete.

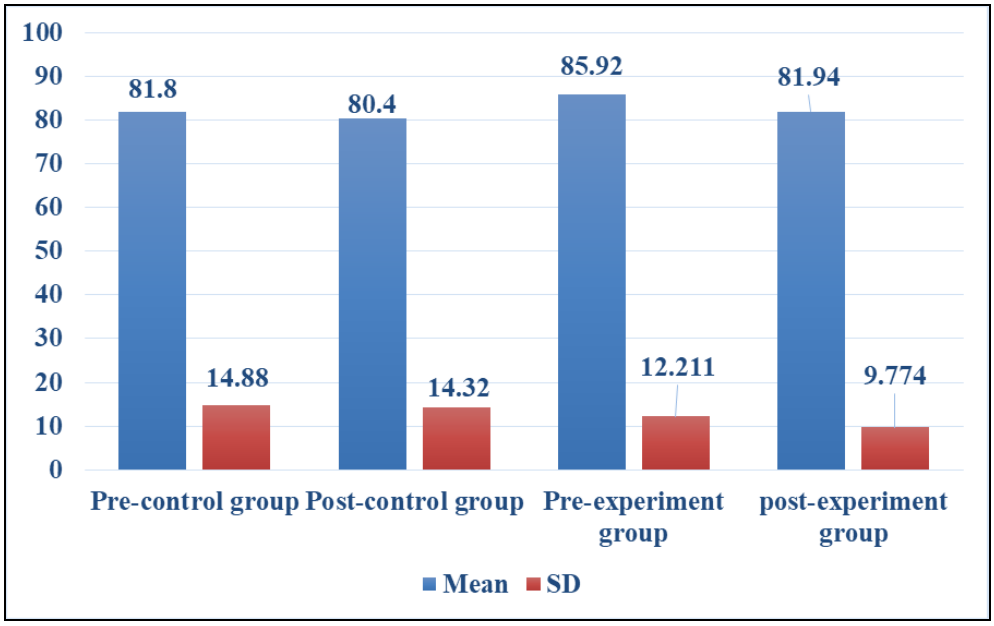

Fig 1: Depicts mean, standard deviation and 't' value of pre and post-test of weight

2. Body Mass Index

Table 3: Shows mean, standard deviation and 't' value of pre and post-test of body mass index

Group Name	Mean	Standard Deviation	T-Value
Pre-Control Group	30.750	5.944	0.0760
Post-Control Group	30.550	5.818	
Pre-Experiment Group	28.710	3.019	1.0119
Post-Experiment Group	27.410	2.718	

The table 3 reveals that the mean standard deviation values of body mass index level in pre-control, post-control, pre-experiment and post- experiment groups are 30.750+5.994, 30.550+5.818, 28.710+3.019 and 27.410+2.718 respectively. It also shows that in case of experiment group, calculated t-value is 1.0119 which shows that there is a significant effect of six week endurance exercise training on body mass index variables of male athletes.

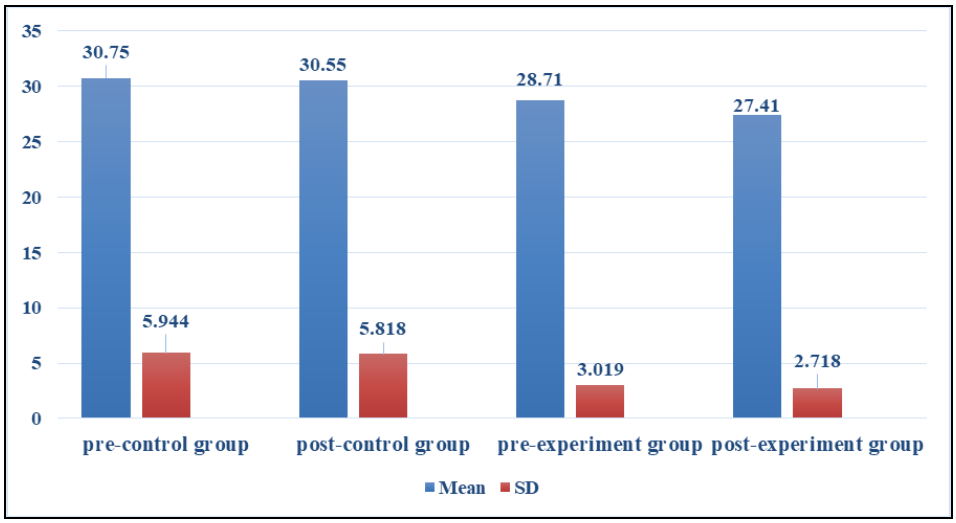

Fig 2: Depicts mean, standard deviation of pre and post-test of body mass index

3. Systolic Blood Pressure

Table 4: Shows mean, standard deviation and 't' value of pre and post-test of systolic blood pressure

Group Name	Mean	Standard Deviation	T- Value
Pre-Control Group	124.20	10.37	0.1708
Post-Control Group	123.40	10.57	
Pre-Experiment Group	116.60	15.28	0.4524
Post-Experiment Group	118.80	1.69	

The table 4 reveals that the mean, standard deviation values of systolic blood pressure level in pre-control, post-control, pre-experiment and post-experiment groups are 124.20+10.37, 123.40+10.57, 116.60+15.28 and 118.80+1.69 respectively. It also shows that in case of experiment group, calculated t-value is 0.4524 which shows there is a significant effect of six weeks endurance exercise training on systolic blood pressure variable of male athletes.

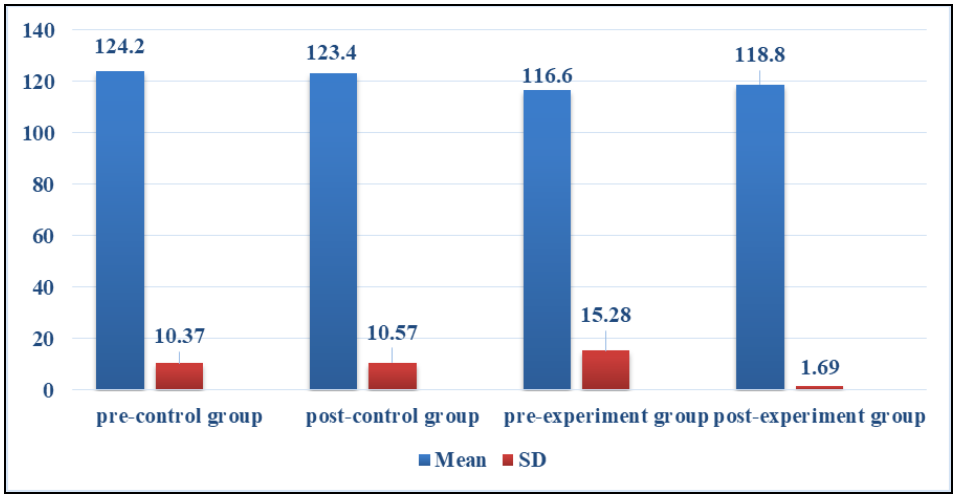

Fig 3: Depicts mean, standard deviation of pre and post-test of systolic blood pressure

4. Diastolic Blood Pressure

Table 5: Shows mean, standard deviation and 't' value of pre and post-test of diastolic blood pressure.

Group Name	Mean	Standard Deviation	T-Value
Pre-Control Group	80.20	13.27	0.1136
Post-Control Group	80.70	4.19	
Pre -Experiment Group	79.10	9.35	0.1328
Post-Experiment Group	78.70	1.83	

The table 5 reveals that the mean, standard deviation values of diastolic blood pressure level in pre-control, post control, pre-experiment and post-experiment groups are 80.20+13.27, 80.70+4.19, 79.10+9.35 and 78.70+1.83 respectively. It also shows that in case of experiment group, calculated t-value is 0.1328 which shows that there is a significant effect of six week endurance exercise training on diastolic blood pressure variables of males athletes.

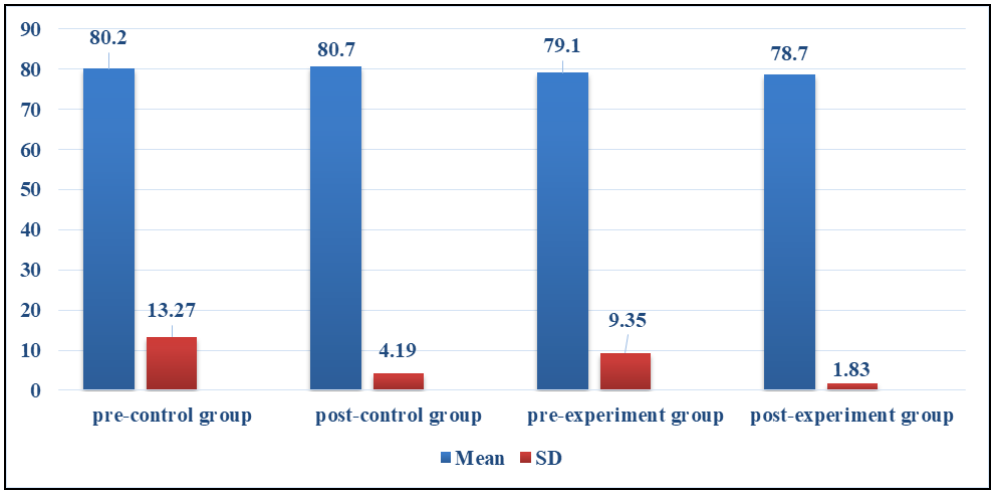

Fig 4: Depicts mean, standard deviation of pre and post-test of diastolic blood pressure

5. Heart Rate

Table 6: Shows mean, standard deviation and 't' value of pre and post-test of heart rate

Group Name	Mean	Standard Deviation	T-Value
Pre-Control Group	88.30	6.88	0.4632
Post-Control Group	89.70	6.63	
Pre -Experiment Group	84.00	4.85	5.1414
Post-Experiment Group	69.90	7.19	

The table 6 reveals that the mean and standard deviation value of heart rate level in pre-control, post-control, pre-experiment and post experiment groups are 88.30+6.88, 89.70+6.63, 84+4.85 and 69.90+7.19 respectively. It also shows that in case of experiment group, calculated t-5.144 which shows that there is a significant effect of endurance exercise training on male athletes.

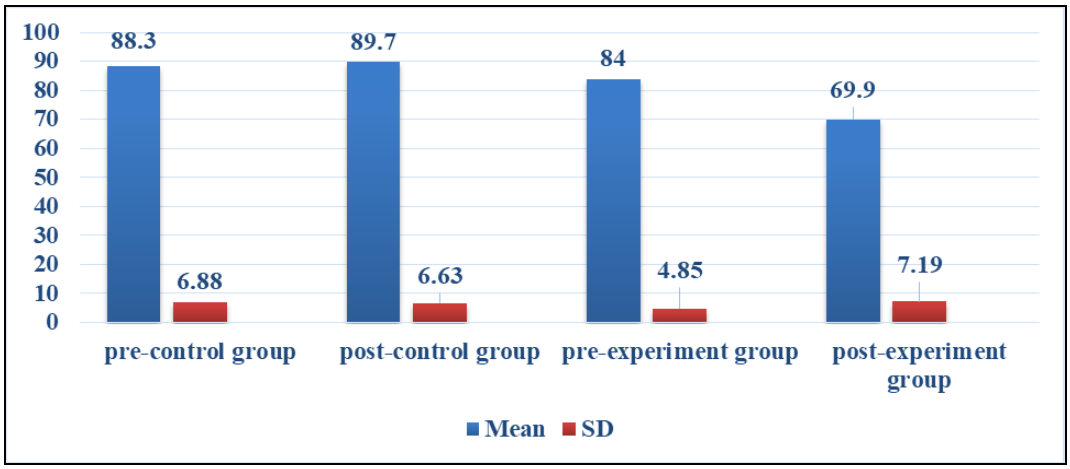

Fig 5: Depicts mean, standard deviation and 't' value of pre and post-test of heart rate

Discussion of the finding

The present study was planned to examine the effect of six weeks endurance exercises training program on physiological variables among selected individual males. A total twenty (N=30) male athlete between age group of 20-25 years from one district in Punjab (Patiala) was selected as subjects.

Based on the statistical analysis of data, following finding was drawn by the researcher:

1. Weight

The result of the study says that there was a significant effect of six weeks endurance exercise program on weight variable in male athletes, there was a decrease in subject of experiment group.

2. Body Mass Index

The results of the study told that there was a significant effect of six weeks endurance exercise program on body mass index variable in male athletes, there was a decrease in subject of experiment group.

3. Systolic blood pressure

The results of the study says that there was a significant effect of six week endurance exercise program on systolic blood pressure in male athletes, there was a decrease in subject of experiment group.

4. Diastolic blood pressure

The result of the study tells that there was a significant of six weeks endurance exercise program on diastolic blood

pressure in male athletes, there was a decrease in subject of experiment group.

5. Heart rate

The result of the study tells that there was a significant of six weeks endurance exercise program on heart rate in male athletes, there was a decrease in subject of experiment group.

4.3 Testing of Hypothesis

Based on the result of the study, the hypothesized purpose for the study were accepted or rejected as follows**:**

$H_0$1: It was hypothesized that there will be significant effect of six weeks endurance exercise training increasing fat burning measure by the BMI of male athletes. This hypothesis has been accepted.

H_o2: It was hypothesized that there will be significant effect of six weeks endurance exercise training on blood pressure. Now systolic and diastolic blood pressure is in normal range after training. It hypothesis has been accepted.

H_o3: It was hypothesized that there will be significant effect of six weeks endurance exercise training on heart rate. It hypothesis has been accepted.

Conclusion

On the basis of findings of present study, the following conclusion were drawn.

1. The result of the study shown that there has a significant effect of endurance exercise training on male athletes on their BMI variable.
2. The result of the study shown that there has a significant effect of endurance exercise training on male athletes on their Systolic Blood Pressure variable.
3. The result of the study shown that there has a significant effect of endurance exercise training on male athletes on their Diastolic Blood Pressure variable.
4. The result of the study shown that there has a significant effect of endurance exercise training on male athletes on their Heart Rate variable.

References

1. Leveritt M, Abernethy PJ, Barry BK, Logan PA. Concurrent strength and endurance training. A review. Sports Med. 1999;28:413–427.
2. Bassett DR Jr, Howley ET. Limiting factors for maximum oxygen uptake and determinants of endurance performance. Med Sci Sports Exerc. 2000;32:70–84.
3. Kravitz L, Dalleck LC. Physiological factors limiting endurance exercise capacity. IDEA Health Fit Source. 2002;20:40–49.
4. Saunders PU, Pyne DB, Telford RD, Hawley JA. Factors affecting running economy in trained distance runners. Sports Med. 2004;34:465-485.
5. Beattie K, Kenny IC, Lyons M, Carson BP. The effect of strength training on performance in endurance athletes. Sports Med. 2014;44:845-865.
6. Gäbler M, Prieske O, Hortobágyi T, Granacher U. The Effects of Concurrent Strength and Endurance Training on Physical Fitness and Athletic Performance in Youth: A Systematic Review and Meta-Analysis. Front Physiol. 2018;9:1057.
7. Flores-Zamora AC, Rodríguez M, Rodríguez-Blanco Y. Physiological adaptations to concurrent strength and endurance training. Review. Olimpia. 2017;14:119-129.
8. Blagrove RC, Howe LP, Emily JC, Spence A, Howatson G, Pedlar CR, Hayes PR. Effects of Strength Training on Postpubertal Adolescent Distance Runners. Med Sci. Sports Exerc. 2018;50:1224-1232.
9. Coffey VG, Hawley JA. Concurrent exercise training: Do opposites distract? J Physiol. 2017;595:2883-2896.