

The Effect of Taking Schisandra as Part of Aerobic Exercise in Improving Vo₂max and Hemoglobin in Blood in Long-Distance Swimmers

Assist. Prof. Dr. Hussein Mnaty Sachit⁽¹⁾, Radhwan Qasim Abdulameer⁽²⁾

⁽¹⁾ Faculty of Physical Education and Sports Sciences/ University of Kerbala, Iraq.

⁽²⁾ Master. Student. Faculty of Physical Education and Sports Sciences/ University of Kerbala, Iraq.

husein80husein@yahoo.com, rdwanqasmbdalamyrsalhwza@gmail.com

Abstract

The purpose of this paper is to identify the effect of taking Schisandra in aerobic exercise on Vo₂max and hemoglobin of long-distance swimmers. The researcher used: the experimental method in the style of equal groups (first and second experimental) in solving the research problem. As for the research community: it is represented by the national team swimmers, who are (11) swimmers. The researcher determined the number of weekly training units as three training units on days (Sunday-Tuesday-Thursday). With a total of (24) training units, with a number of repetitions (1-5) times and a rest period (45 seconds-180 seconds) between the groups, where the time of the exercises in one training unit was (50-65) minutes, and the intensity used ranged between (60-80) %, and the exercises prepared by the researcher (aerobic exercises) were applied to the members of the research sample, which numbered (11) swimmers for the period from (24/4/2021 to 20/6/2022) and for a period of two months, with three training units per week, and the researcher concluded Taking Schisandra as part of aerobic exercise had a positive effect in improving Vo₂max and hemoglobin in long-distance swimmers.

Introduction:

Sports training is one of the basic sciences in the sports field, which is in essence subject to the laws of human sciences such as educational psychology and natural sciences such as mechanics, anatomy, physiology and other sciences, as the physiological aspect of training occupies a large space in the thinking of sports training scientists. And scientific interest in studying physical and physiological efficiency has reached its peak in recent years, as different sciences such as medicine, psychology, sociology and computers have been touched on every small and big thing in the work of functional devices as they are the guides that are used to know the levels of fitness and skill of the athlete, and the efficiency of the respiratory and circulatory system plays an important role in securing and filling the body's need of blood and oxygen during the exercise of long activities. Swimming is one of the first popular games in the world as it is a simple and easy game, but it has a unique feature that is the possibility of it by humans from childhood to old age, as well as the nature of the medium in which it is practiced and in which the elements of nature intervene as a main obstacle to the exercise of this activity such as gravity, water density and resistance. Swimming for long distances is one of the sports that use aerobic exercise, as it is physical exercise that requires the body to burn blood glucose with the help of oxygen. Oxygen, so these exercises help to increase endurance and develop the functional indicators of swimmers. Medicinal plants are considered non-traditional crops, as they are used at the beginning of the twenty-first century, as they entered the interests of the World Health Organization (WHO),

and despite the great development in the fields of chemistry and pharmacology, it is necessary to return to nature and treat natural plants, as the interests of the medical community increased. The athlete and those interested in health with medicinal plants and return to nature because these plants help to revitalize the human body and return it to its natural state in record time and improve its general level. Plants and their importance to the athlete, and there are many plants, and each plant has a number of features and benefits for the trainee, and these plants are schizandra, which is considered one of the important plants for athletes in general and for swimmers in particular, as it significantly improves athletic performance and many serious studies have highlighted Schizandra benefits on athletic results, especially for high-level athletes, so any swimmer should have a healthy diet and get plenty of rest, relaxation and sleep, whether during exercise or when in sports competitions, and all of this must be done under the direct supervision of the coach in developing some functional abilities and bio-kinetic capabilities. Therefore, most specialists in sports training turned to medicinal herbs because they help the trainee to get rid of many of the problems that accompany him during and after training and improve his sports performance in various activities and events. During the foregoing, the importance of the study lies in improving Vo₂max and hemoglobin for long-distance swimmers by preparing special exercises according to the aerobic energy system and eating Schizandra herb, which positively affects the functional variables of the swimmer, which improves Vo₂max and hemoglobin in his body and brings it to the best levels.

Research problem:

Swimming is one of the sports that requires high effort and therefore the athlete must be functionally and physically integrated to be able to reach high achievement.

Through the observation of the researcher and his being a swimmer and interested in swimming, and through the interviews conducted by the researcher with the coach of the Iraqi national team, he found that most long-distance swimmers suffer from a clear decline at the end of the race, specifically in the last part of the race distance. This was explained by the lack of Sports nutrition and their lack of the functional ability that qualifies them to complete the race in the best way, and the researcher's belief in scientific research as the best way to solve problems, the researcher fought to solve this problem by preparing exercises by eating Schizandra to improve some functional indicators and achievement time for long-distance swimmers.

Research objective:

- Identify the effect of taking Schisandra on Vo₂max and hemoglobin of long-distance

Research hypotheses:

There is a positive effect of taking Schizandra on Vo₂max and hemoglobin in long-distance swimmers.

Research fields:

- Human field: The Iraqi national team's long-distance swimmers for the 1500m freestyle event for the 2021-2022 season
- Time field: (14/12/2021) to (20/9/2022)
- Spatial field: Al-Shaab Olympic Swimming Pool – Baghdad.

Research methodology and field procedures:**Research Methodology:**

The experimental method was used by designing equal groups (first and second experimental) with pre- and post-tests in order to suit the nature of the research problem.

Community and sample research:

The research community was determined by the Iraqi national team swimmers for the effectiveness of long distances (1500 m) for the season (2021-2022 AD), and their number was (11) swimmers (the category of applicants). Two experiments, the first and second, with (5) swimmers for the first experimental group and (5) a swimmer for the second experimental group and one swimmer was excluded due to injury.

Homogeneity and equivalence of the research sample:

In order for the researcher's work to go in the right direction and to confirm the objectivity of the work, the researcher found homogeneity and parity between the two research groups in terms of basic variables, functional indicators and achievement for long-distance swimmers (height, mass, chronological age, training age, Vo2max, heart rate, hemoglobin in blood, as well as completion time). In addition, by using the appropriate statistical treatments for that in order to know the reality of the differences between the two research groups, as shown in Tables (1) and (2)

Table (1) shows the homogeneity of the research sample

No.	Variables	Measuring unit	Mean	Leven test		Type sig
				value calculated	Sig	
1	Length	Cm	175.311	6.165	0.038	Non sig
2	Mass	Kg	71.421	0.496	0,501	Non sig
3	Chronological age	Year	23.911	0.554	0.478	Non sig
4	Training age	Year	11.769	0.889	0.393	Non sig

Table (1) shows that the value of (sig) for all variables is greater than (0.05), which confirms that there are no differences between the two groups, and this confirms the homogeneity in the variables investigated.

Table (2) shows the equivalence between the two research groups

Variables	Measuring unit	First experimental group		Second experimental group		T value calculated	Level Sig	Type Sig
		Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation			
VO2 Max	ml/kg/min	39.000	0.707	38.400	0.894	1.177	0.273	Non sig
Hemoglobin percentage	gram%	11.800	0.836	11.200	0.836	1.134	0.290	Non sig

Through Table (2), it becomes clear to us that the value of the test significance level (sig) is greater than the value of the significance level (0.05), which confirms the randomness of the differences between the two groups and the equivalence of the research sample.

Description of the method of measuring the studied variables

Functional Variables

First: the variable (Vo2max), and this variable was measured using the device (Fitmetpro).

Second: the variable (hemoglobin in the blood) and this variable was measured using the (Hemo Cue) device.

Description of the tests and measurements used in the research

Measurement of the maximum oxygen consumption (Vo2 Max)

Fitmate Pro and method to use it to measure Vo2max

Equipment and tools used in the test:

- The device system (Fitmate Pro).
- A stationary bike (life fitness) device with a capacity of (9700) American (orbital hand and leg) mechanical with a screen to monitor the speed and install the resistance of each tester.
- Dry sanitary paper to clean breathing masks.
- Disinfectant solution to sterilize breathing masks.
- A personal electronic scale with a unit of measurement (kg) and its parts.
- An iron tape to measure the length in a unit of measurement (cm) and its parts.

Procedures and performance specifications:

Before starting the test, the test performer cleans the VO₂max respirator with disinfectant solution, connects the parts of the Fitmate pro system together, installs a pulse belt on the tester's chest, and installs the pulse signal receiver (Bluetooth) in the Fitmate pro, after inserting the The information of the tester in the device, which includes the name, date of birth, gender, height, weight, and the choice of the type of test to be performed, which is (VO₂max) because the system contains several tests, And then fixing the breathing mask tightly with its belts and making sure that breathing air does not leak from the mask, then the tester climbs on a stationary bike device with leg and hand propulsion (orbit), and the laboratory works gradually with increasing speed, as the test-taker begins by instructing The device controls the increase in the speed of work on the device by gradual speed by order and monitors it starting from (2.5) to (7) km / h, and thus it differs from the treadmill device by determining the speed and by involving the muscles of the body working during the performance, and the device (Fitmate Pro) contains a small screen in it A square graph showing the pulse and maximum oxygen consumption (VO₂max) with their respective ratios, as they are monitored by the resident.

Conditions:

- The tester must be in the normal state before the test begins, and his maximum pulse must be known from the well-known equation (220-age in years) in order to gradually and stabilize the pregnancy.
- Attention should be paid to increasing the gradient of the load by controlling the speed, and monitoring the tester when reaching the state of exhaustion of effort or at the request of the tester not to be able to continue
- It accepts the readings of the (Fitmate Pro) when the tester reaches (85%) or more of the maximum pulse.

Registration:

The Fitmate Pro device gives a comprehensive reading tape for measurements of the maximum oxygen consumption (VO₂max) in milliliters / kg / min, and compares it with the objective standard issued by the device to know the rate of improvement of the individual.

Measurement of hemoglobin in the blood:

Hemoglobin was measured in the blood through the Hemo Cue device, by sitting on the chair and cleaning the fingers of his hand with a sterile cloth, and then the swimmer's (pinky) finger is pricked in order for the blood to come out to touch the (kit) of the device and within seconds he will The device to give the result and then record it in a form prepared for this purpose.

Identifying the doses of Schizandra:

The doses of Schizandra plant used in the research were determined for the period from 23/1/ 2022 to 15/2/ 2022, where the researcher conducted a reference survey of studies, research and scientific references that dealt with the use of Schizandra(Quchan Lee. 2008) (Bucci LR. 1993)With the aim of identifying the permissible and effective doses in the human body in general and in athletes in particular, the following was shown:

- The active substances are in the fruits of the plant and not in the roots like other medicinal plants.
- The effective doses of Schizandra are between 1.5 to 15 grams per day.
- It is preferable to be taken in the form of capsules in equal doses to ensure that the amount taken by the player is known.
- The effective doses for adults aged (25-35) years should range between (60-180) grams for a period limited between (8-12) weeks as a maximum.
- It is preferable that the doses of Schizandra be taken every (8) hours, three times a day.
- It is preferable to take Schizandra before eating to increase the speed of absorption of nutrients and to benefit from them more.

On this basis, doses of the Schizandra plant were used in the form of capsules at a dose of (500) mg by 3 capsules per day, which is equivalent to (1500) mg per day. It is within the permissible limits, the following table illustrates this.

Table(3) shows the doses of Schizandra plant used in the research

Subject	capsule size	Dosage per day	total dose of the program (10) weeks	Total program dose (gm)
Schizandra (capsule)	500mg	1500mg (capsule 3)	1500 ×day 60= 90000 mg	90g

Exploratory experience:

In order to build tagged tests for some functional and physical abilities and to identify the mechanism of their work and organization in the best way and in a scientific way to measure what they were developed for, as well as identify the mechanism of work of the rest of the measurements and standardized tests for the rest of the variables in the research, his exploratory experiment was applied on Wednesday 13/4/2022 On a sample of (3) swimmers from outside the research sample, with the help of the assistant work team, in order to identify the following purposes:

- The safety of the devices and tools placed.
- Jump start for swimmers from the beginning of the test to the end.
- The method of recording the degree and time of each test and according to the unit of measurement.
- The time taken for the tests and the normal sequence of their implementation.
- Recognizing the maximum intensity of swimmers in partial distances of 1500m swimming

Pre-tests:

Sports training experts point out that the tests are “one of the important means of evaluating the level reached by the athlete.” (Al-Mandalawi and et al., 1989) The researcher, with the help of the assistant work team, conducted the pre-test after all the conditions were available to conduct it

for the period from 17-18/4/2022 corresponding to the two days (Sunday). And Monday) at nine o'clock in the morning in the closed Olympic swimming pool, which included the testing of functional variables and the completion of 1500m free swimming, as follows:

On the first day, the researcher conducted the research tests as follows:

- The percentage of hemoglobin in the blood
- Measuring the maximum oxygen consumption (Vo2 Max)

Main experience:

The researcher reviewed the scientific references and previous theoretical studies that dealt with the training curricula and with the help of the research supervisor, the researcher prepared aerobic exercises in proportion to long-distance swimming. (3) Concerning the development of some functional indicators and the achievement of long-distance swimmers, while the second experimental group applied only aerobic exercises without taking doses of the schizandra plant. The exercises included (24) training units and the implementation of the exercises took (8) weeks and by (3) training units In one week, the main experiment was conducted for the period from 4/24/2022, and the researcher took into account the following when applying the exercises:

- The duration of the exercises (8) weeks was within the special preparation periods
- The training days were (Sunday - Tuesday - Thursday).
- The intensity used in the exercises ranged (60% - 80%) of the maximum endurance of the player.
- The duration of the exercises ranged from (45-60 minutes) in the main part of the training unit, which ranged in time from (90-120 minutes).
- The researcher used the method of interval training (low and high intensity).

The researcher took into account the principle of diversity in the training and exercises that were used, and most of the exercises differed from each other to raise the morale of the swimmer and ensure that he did not feel bored by repeating or repeating some exercises, as well as by diversifying the places and method of work in the exercise.

Post-tests:

The researcher conducted the post-tests on the research sample on Monday and Tuesday (25-26/6/2022) and at two o'clock in the afternoon, taking into account the provision of the same conditions and conditions that were in the tribal tests as much as possible, and in the same sequence in which the tribal test was conducted, and the results were recorded in special forms It was prepared in advance according to the conditions and specifications specified for each test, as the achievement was measured based on the time accomplished by individuals and the research sample in the Olympic Swimming Clubs Championship in Iraq, which was held in the closed Olympic swimming pool.

Statistical methods: The search data was processed through the Statistical Package for the Social Sciences (SPSS).

Results and discussion:

The presentation, analysis and discussion of the results, which the researcher reached through conducting tests and tribal measurements, applying exercises prepared by the researcher, and conducting tests and post- measurements of the sample search.

Presentation, analysis and discussion of the results for the two research groups

Presentation and analysis of the results of the pre and post-measurements tests for the first experimental group.

Table (4) shows the arithmetic mean, standard deviation, the calculated (t) value, the significance level of the sig test, and the significance of the differences for the first experimental group in the pre and post-test

Variables	Measuring unit	Pre-test		Post-test		T value calculated	Level Sig	Type Sig
		Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation			
VO2 Max	ml/kg/min	39.000	0.707	42.400	1.140	-8.500-	0.001	Sig
Hemoglobin percentage	gram%	11.800	0.836	13.600	0.547	-9.000-	0.001	Sig

Significance level (0.05) and sample size (5).

Table (4) shows the arithmetic mean, standard deviation, t-value calculated for the samples, the significance level of the sig-test, and the significance of the differences for the first experimental group in the pre- and post-test, where the arithmetic mean of (Vo2Max) in the pre-measurement was (39,000) and the arithmetic mean in the post-measurement (42.400) and the calculated t-value (--8.500) and the (sig) value (0.001) is less than (0.05), which confirms the existence of significant differences in favor of the post- measurement.

The results showed that the arithmetic mean of hemoglobin in the pre-measurement was (11.800), the arithmetic mean of the post-measurement was (13.600) for the first experimental group and the calculated t-value (--9.000) and that the value of (sig) (0.001) was less than (0.05), which confirms the presence of Significant differences in favor of post- measurement.

Presentation and analysis of the results of the tribal and post- measurements tests for the second experimental group.

Table (5) shows the arithmetic mean, standard deviation, the calculated (t) value, the significance level of the sig test and the significance of the differences for the second experimental group in the pre and post-test

Variables	Measuring unit	Pre-test		Post-test		T value calculated	Level Sig	Type Sig
		Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation			

VO2 Max	ml/kg/min	38.400	0.894	40.400	0.547	-4.472-	0.011	Sig
Hemoglobin percentage	gram%	11.200	0.836	12.200	0.836	-3.138-	0.023	Sig

Significance level (0.005) and sample size (5).

Table (5) shows the arithmetic mean, standard deviation, the t-value calculated for the samples, the significance level of the sig test, and the significance of the differences for the first experimental group in the pre- and post-test, where the arithmetic mean of (Vo2Max) in the pre-measurement was (38.400) and the arithmetic mean in the post-measurement (40.400) and the calculated t-value (-4.472) and the (sig) value (0.011) is less than (0.05), which confirms the existence of significant differences in favor of the post-measurement.

The results showed that the arithmetic mean values of hemoglobin in the pre-measurement (11.200) and the arithmetic mean of the post-measurement (12.200) for the first experimental group and the calculated t-value (-3.138) and that the (sig) value (0.023) is less than (0.05), which confirms the presence of Significant differences in favor of post- measurement.

Discussion of the post-tests of the research variables for the two groups (the first experimental and the second experimental)

Table(6)shows the arithmetic mean, standard deviation, the calculated t-value and its statistical significance for the post- measurements of the Vo2Max variables and the percentage of hemoglobin in the blood for the first and second experimental groups.

Variables	Measuring unit	First experimental group		Second experimental group		T value calculated	Level Sig	Type Sig
		Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation			
VO2 Max	ml/kg/min	42.400	1.140	40.400	0.547	3.536	0.008	Sig
Hemoglobin percentage	gram%	13.600	0.547	12.200	0.836	3.130	0.014	Sig

Significance level (0.005) and sample size (10)

Table (6) shows the statistical indicators of the results of the post- measurements of the variable (Vo2Max) for the two groups, where the results showed that the arithmetic mean value of (Vo2Max) in the post- measurement of the first experimental group (42.400) and the arithmetic mean of (Vo2Max) for the second experimental group (40.400) and the value of t The calculated (3.536) and the (sig) value was (0.008), which is greater than (0.05), which indicates the existence of significant differences in favor of the first experimental group.

While the results for the post- measurements (of hemoglobin in the blood) showed that the arithmetic mean values (13.600) for the first experimental group and the arithmetic mean of the

second experimental group (12.200), and the calculated t-value (3.130) and the (sig) value was (0.014), which is greater than (0.05), which indicates There are significant differences in favor of the first experimental group.

Discussing the results of the post-tests for the research variables and for the first experimental and second experimental groups.

First: Discussing the results of the maximum oxygen consumption (Vo2Max):

Table (6) shows the results of the post-tests for the two experimental groups (first-second) and the results showed that there are significant differences between the two groups in favor of the first experimental group. Which was applied to the research sample and led to an increase in the burden on both the circulatory system and the respiratory system

This was confirmed by that the exercises that are performed according to the aerobic energy system work to develop and increase the efficiency of the circulatory and respiratory systems and increase the energy houses within the muscle fibers, which is reflected in the ability of the muscles to consume oxygen from the blood and work to burn many calories, and according to what The American College of Sports Medicine (ACSM) stated that cardio exercises not only burn more calories, but also work on faster developments in the heart and blood vessels through high-intensity exercises with short rest periods.(Jamal SabriFaraj Al-Abdullah.2019)

And Andrew indicates that schizandra is very useful for athletes because it contains many active substances such as vitamin A, B12, which improve the work of organizations by increasing the activity of metabolic enzymes and generating energy, which increases the effectiveness of functional organs and the ability of muscles to function and delaying the onset of fatigue, and it helps to regulate blood circulation and stimulate the heart muscle, as it works to make the heart beat regularly and increases its efficiency during physical exertion (Tomy.2011).

Discussion Hemoglobin percentage:

Through the presentation and analysis of the results of tests and post- measurements for the two experimental groups in Table (6), where there were significant differences between the first experimental group and the second experimental group in favor of the first experimental group in the functional variables, including the percentage of hemoglobin variable in the blood.The researcher attributes the reason for the development in the first experimental group from the second experimental group to the intake of Schizandra within the aerobic exercises prepared by the researcher, which helped to adapt and develop the ability of the circulatory system in general and the percentage of hemoglobin in the blood, which is one of the basic components of this device and which has a major role in the transport of oxygen With high efficiency, from the lung to all the tissues of the body, and in the sport of swimming for long distances, the success of the swimmer depends on the efficiency of his circulatory system in addition to the efficiency of some other devices, given the importance of this device, which lies in achieving the optimal gas exchange inside and outside the swimmer's body as well as It transports oxygen and amino acids to working muscle cells" When exercising or aerobic exercise, the percentage of hemoglobin increases through the body's production of a greater amount of hemoglobin to meet the increased demand for oxygen throughout the body" (Novakovic, and Milivoj.2008)

This is what is indicated that "sports training leads to changes in the blood as a result of regular practice of sports training for a specific period of time, and these changes include an increase in blood volume and hemoglobin" (Abdel-Fattah. 2003).

The results of the two groups in the variable (hemoglobin in the blood), the deposition of red blood cells in the blood, showed a significant difference between the post-tests and in favor of the second experimental group. The researcher believes that this relative improvement is the result of taking doses of schizandra on a regular basis, as well as because this plant contains substances that help purify and increase red blood cells in the blood. for the nerves and the heart” (al-Mawla. 1990 , and Khalifa. 2000)

The researcher attributes the reason for this to the effectiveness of the Schizandra plant, as it contains terpene hydroxide, mercin and semen. All these substances made this plant used to increase the deposition of red blood cells in the blood and increase the body’s effectiveness in resisting sweating.

This was confirmed “The fruits of the Schizandra plant strengthen the nerves and memory, increase the hemoglobin level in the blood, combat profuse sweating and treat tremors in the body, as well as in the case of liver congestion.” (Gomaa. 1988)

Conclusions and Recommendations:

Conclusions:

- Aerobic exercise with Schizandra improved Vo₂max and hemoglobinpercentage for long-distance swimmers.

Recommendations:

- Necessity of using aerobic exercises while taking the Schizandra plant for different age groups, whether they are young, young or advanced, and with distances other than the studied distances, and observing the rates of their development
- Necessity of eating the Schizandra plant according to the scientific bases studied by the fitness of swimmers

References:

1. Abu El-Ala Ahmed Abdel-Fattah. 2003. The Physiology of Sports Training, Dar Al-Fikr Al-Arabi, Cairo, pp. 33.
2. Andrew Pengelly Tomy. 2011. Shezandra plant, Appalachian Center for Ethno Botanical Studies, Miami,
3. Bashar Khalifa. 2000. Medicinal Plants and Herbs, Volume 2 (Cairo, Arab House for Publishing and Distribution). p.132
4. Bucci LR. 1993. Dietary substances not required in human metabolism. In. Nutrients as cryogenic aids for sports and exercise. Boca Raton, FL: Press.p371
5. Hassan Fahmy Gomaa. 1988. Medicinal, aromatic and poisonous plants in the Arab world, (The League of Arab States, The Arab Organization for Agricultural Development, Khartoum)
6. Jamal Sabri, Faraj Al-Abdullah. 2019. Encyclopedia of Al-Matulla and Endurance (Training - Physiology - Achievement) Part 1, Edition 1, Amman, Dar Safaa for Publishing and Distribution. pp. 98-99.
7. Qasim Al-Mandalawi and et al,. 1989. Tests, Measurement and Evaluation in Physical Education, Mosul, Higher Education Press, Mosul, p. 11.
8. Quchan Lee. 2008. Panax Quinquefolium, Peking Union Medical College, Beijing , China ,p133
9. Raad al-Mawla. 1990. Health and treatment in nature and herbs, (Alexandria, the Arab

Center for Publishing) pg. 77

10. Violeta, Zorica, Novakovic, and Milivoj. 2008. Determination of parameters of iron status in evaluation of anemia in elite young Serbian water polo players, Serbian Journal of Sports Sciences, vol: 2(3)p: 91-99.

Appendix (1)

A model for the training units applied to the two research groups

Day and date: Sunday 4/24/2022

Intensity of the training unit: (60 - 80%)

The time of the exercises: (45-65) minutes from the main part, which is (85-90) minutes

Training Unit Objective: (VO2 Max – Hemoglobin Percentage)

Day	Exercises	Intensity	Performance time	Repetition	Rest		Total exercise time
	swimming				pulse	Time	
Sunday	500 meters	%70	5 minutes	5	120-110	45 sec	28 minutes
	750 meters	% 80	8 minutes	3	120-110	90 sec	27 minutes
	1000 meters	%70	10 minute	1	120-110	—	10 minute