

The Control of Vital Parameters and Their Importance in Soccer Players of the Women's National A in Albania

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Abstract

Vital parameters or otherwise vital signs are the measurements of the most basic functions of the body. They are the main pillars with which we determine the general physical condition of the athletes. It is important to first review vital signs assessment. Monitoring vital signs in athletes, during training, is highly important in order to avoid overtraining and to be careful at the same time in monitoring their health condition. The data for this study was collected during the preparatory training phase of the Women's National A in Montenegro in February 2021. Part of this study were 20 female athletes according to different age groups who were subjected to the measurement of vital parameters. The measurements were performed before the beginning and after the end of the exercise in order to understand which it would be specifically these values, also referring to their current physical and health condition. From the obtained data it was evident that the pulse is the vital parameter which changes as a result of the overload received during the training process performed by the athletes in relation to other parameters. In three of the athletes, a fluctuation of the values at the level of the respiratory apparatus was observed, which was related to their previous state of health. The measurement of vital parameters during exercise is a good indicator to assess general well being physical and health of the athlete. Also, the importance of measuring these parameters before, during and after the sports activity is essential to avoid various problems that can even lead to fatality for the athlete.

Keywords: Vital parameters, prevention, athletes, measurements, health

1. Introduction

Vital parameters or otherwise vital signs are the measurements of the most basic functions of the body. They are the main pillars with which we determine the general physical condition of the athletes. It is important to first review vital signs assessment. [1] Heart rate (HR), blood pressure (BP), respirations, skin and body temperature assessment, and pupil assessment are considered the five basic vital signs, in many areas, pulse oximetry is added to this list as a sixth vital sign. [2]

Monitoring vital signs in athletes, during training, is highly important in order to avoid overtraining and to be careful at the same time in monitoring their health condition. In order to detect overtraining, the training load of each athlete needs to be monitored and individualized. Training load is the product of training volume times the training intensity, where training volume usually refers to the duration of training and training intensity refers to how hard someone is training and how this preparation at a high level of performance can affect their physical and health condition. Exercise causes a series of immediate responses from the body as it tries to adapt to sudden changes in its state of balance. When these increases come imposed on a regular basis training, the body responds by settling on new basic conditions that make it capable of more effective performance [8]. The intensity of training can be objectively measured via vital signs and specialized indexes, such as heart rate, oxygen consumption, weight lifted, power output, blood lactate concentration, and hormonal levels [3,4]. Another noninvasive measure of training load, often used, is maximal oxygen consumption (VO₂max). More specifically, studied the effect of normal and overload interval training at VO₂ max on aerobic parameters and overtraining markers such as subjective ratings of fatigue and muscle soreness [5]. There is general agreement in modern medicine on the fundamental importance of regular physical and sporting activity in individuals of all ages, including children, for maintaining the efficiency of the organism and for the primary and secondary prevention of cardiovascular pathologies. The achievement of a slower and more regular heart pulse, a physiological cardiac hypertrophy that ensures a circulatory system adequate to the effort, the control of arterial tension values. The positive effect includes a favorable action on the parameters: carbohydrates (diabetes mellitus) lipid (higher HDL cholesterol, lower LDL, triglyceridemia within the limits) on the control of body weight, obesity, osteoporosis and in all pathologies linked to a sedentary lifestyle. Some clinicians may also be less familiar with pulse oximetry. Pulse oximetry provides a measure of the percentage of oxygen within the blood, obtained through use of an electronic finger sensor. Under normal conditions, the pulse oximetry reading will generally be between 96% and 100%, with patients exhibiting a reading of 90% usually requiring treatment. [6] However, it is important to note, that the pulse oximetry reading obtained should be correlated closely with the athletes signs and symptoms, and treatment should not be based on the oximetry reading alone. [7] In this context, the main goal is the classification of possible symptoms during their exercise by means of these vital parameters, which in some cases may also refer to an overfatigue or collapse as a result of an increased exercise load. The main causes of sudden non-cardiovascular death include hyperthermia, rhabdomyolysis and asthma. [9] Non-cardiovascular causes of sudden death are very real risks facing today's athletes. [10] Fortunately, these conditions they are often recognized by their clinical manifestations and symptoms, by the physician thus avoiding potentially life-threatening situations. The four main vital signs routinely checked by healthcare providers include body temperature, pulse rate, breathing rate (respiration), blood pressure, along with some other specific examinations based on

the medical analysis protocol of each athlete. As well as the normal values of the vital parameters are shown in table.1 as follow.

Common causes of collapse during activity

- Non-serious causes:
- Exhaustion
- Dehydration
- Lowering of blood pressure when standing
- Muscle cramps
- Serious causes
- Low blood sodium level (hyponatremia)
- Heat stroke
- Low blood sugar level (hypoglycemia)
- Low body temperature (hypothermia)
- Cardiac arrest
- Other clinical situations such as stroke, cerebral haemorrhage and diabetic coma.

Vital Sign	Normal Value
Body Temperature	36.1 to 37.9
Pulse	60 – 100 beats/minute
Respiration/Breathing	12 – 18 breaths per minute
Blood Pressure	90/60 to 120/80

Table 1

2. Methodology

The data for this study was collected during the preparatory training phase of the Women's National A in Montenegro in February 2021. Part of this study were 20 female athletes according to different age groups who were subjected to the measurement of vital parameters such as pulse, SPO₂, temperature, arterial pressure during an exercise session. To perform these measurements were used, a pulse oximeter, thermometer, and a device for measuring arterial pressure. The measurements were performed before the beginning and after the end of the exercise in order to understand which it would be specifically these values, also referring to their current physical and health condition. All this by first referring you to a general anamnesis which helped to clearly understand the entire physical and health status of each of them, before the measurement in such a way that the obtained reference values of the vital parameters were correct, excluding errors possible. In this way,

each of the girls was asked separately about their physical condition, which refers to any possible damage during the exercise of their sports activity, or any possible current or past pathology that could affect in their performance during intensive training.

3. Results

From the obtained data it was evident that the pulse is the vital parameter which changes as a result of the overload received during the training process performed by the athletes in relation to other parameters. In three of the athletes, a fluctuation of the values at the level of the respiratory apparatus was observed, which was related to their previous state of health. As for the body temperature values, only one of the girls showed a slight increase that was accompanied by fatigue and what did not allow the continuation of physical activity at the moment it started and the increase in exercise load. Arterial pressure also showed no changes for any of the athletes, referring to its normal values. These measurements were performed during four training sessions on two different days to understand if any possible changes in these parameters would appear. These values before and after training are all referenced in table.2 below.

Age	Body Temperature Before/After	SPO2 Before/After	Pulse Before/After	Blood Pressure Before/After
25 years old	36.3 / 36.4	98 / 97	82 / 124	120/80 mmHg;110/75 mmHg
25	36.5 / 36.5	98 / 96	80 / 125	130/80 mmHg;115/70mm Hg
29	36.2 / 36.3	97 / 98	76 / 120	100/65 mm Hg;105/65mm Hg
25	36.1 / 36.4	96 / 99	74 / 118	110/80 mm Hg;95/60 mm Hg
26	36.1 / 36.2	96 / 98	78 / 121	120/70 mmHg;110/65 mm Hg
27	36.4 / 36.4	97 / 98	68 / 118	130/75mm Hg;120/70 mm Hg
25	36.6 / 36.5	97 / 98	70 / 122	125/80mm Hg;115/80 mm Hg
20	36.3 / 36.4	96 / 97	72 / 130	100/60 mm Hg;95/60mm Hg
23	36.2 / 36.2	98 / 97	80 / 126	120/70mm Hg;110/65 mm Hg
25	36.5 / 36.5	98 / 96	82 / 131	110/70mm Hg;100/60 mm Hg

27	36.7 / 37.5	97 / 96	74 / 120	130/80mm Hg;125/80 mm Hg
19	36.2 / 36.3	97 / 96	76 / 122	115/80mm Hg;115/75 mm Hg
21	36.4 / 36.2	96 / 98	81 / 125	120/75mm Hg;110/75 mm Hg
21	36.3 / 36.4	98 / 98	68 / 128	120/70mm Hg;120/65 mm Hg
18	36.5 / 36.4	98 / 97	70 / 130	100/65mm Hg;96/60 mm Hg
19	36.1 / 36.2	96 / 97	80 / 125	125/80mm Hg;120/80 mm Hg
18	36.3 / 36.3	98 / 97	82 / 128	110/70mm Hg;110/75 mm Hg
20	36.4 / 36.5	97 / 98	76 / 124	130/75mm Hg;125/75 mm Hg
17	36.5 / 36.5	96 / 99	78 / 132	100/65mm Hg;110/65 mm Hg
19	36.2 / 36.4	97 / 99	75 / 125	115/70mm Hg;110/70 mm Hg

Table .2

4. Discussion

It is also worth discussing the fact that for each athlete, all medical examinations must be carried out in detail before the start of each competition to rule out the possibility of any possible pathology which could turn out to be dangerous if not detected in time. Also the medical staff as well as the athletic trainer of the team are the central component of the sports medicine team, ensuring that athletes experiencing injuries or acute illnesses receive appropriate evaluation, management, and referral as needed. It is not necessary for the medical staff to derive the precise diagnosis of an athlete's condition; however, it is critical for the medical staff to be able to recognize the need for immediate referral to a hospital's for a more specialized treatment as well as for the realization of the relevant more detailed examinations.

5. Conclusion

In conclusion, the measurement of vital parameters during exercise is a good indicator to assess general well being physical and health of the athlete. Also, the importance of measuring these parameters before, during and after the sports activity is essential to avoid various problems that can even lead to fatality for the athlete. From all the data and results of the table above, we see that football, the change in the values of the vital parameters comes as a result of the physical activity and the overload that occurs during the training session, and to improve in this way the physical performance. The changes of these values are at a normal level both for

the type of sports activity and for the age of the athletes, and do not pose a risk to the athlete's life.

6. Recommendations

Based on these data, the role of the doctor in the team should always be taken into account to prevent various pathological situations from the mildest to the most dangerous situations. This should be possible through teamwork between the doctor, the physiotherapist and the athletic trainer in order to achieve maximum results in training and in different competitions by the athletes, avoiding in this way any possible damage.

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