European Journal of Physical Education and Sport Science ANALYSIS OF THE EVOLUTION OF SOME HEMATOLOGICAL PARAMETERS DURING THE FIRST PREPARATORY PERIOD ON YOUNG ALGERIAN SOCCER PLA…

Article · September 2017

DOI: 10.5281/zenodo.887967

CITATION
1

READS
40

3 authors:

Aouir Saddam
université of mostaghanem
1 PUBLICATION **1** CITATION
SEE PROFILE

Bengoua Ali
Mostaganem University
36 PUBLICATIONS **27** CITATIONS
SEE PROFILE

Houar Abdelatif
Université de Ghardaia
7 PUBLICATIONS **11** CITATIONS
SEE PROFILE

European Journal of Physical Education and Sport Science
ISSN: 2501 - 1235
ISSN-L: 2501 - 1235
Available on-line at: www.oapub.org/edu

doi: 10.5281/zenodo.887967 Volume 3 | Issue 10 | 2017

ANALYSIS OF THE EVOLUTION OF SOME HEMATOLOGICAL PARAMETERS DURING THE FIRST PREPARATORY PERIOD ON YOUNG ALGERIAN SOCCER PLAYERS (U17)

Aouir Saddam[1i],
Bengoua Ali[2],
Houar Abdelatif[3]
[1]OPAPS Laboratory of the IEPS,
Abdelhamid Ibn Badis University; Mostaganem, Algeria
Department of Hematology at CHU Saadna Abdenour Sétif
[2]OPAPS Laboratory of the IEPS,
Pr., Abdelhamid Ibn Badis University; Mostaganem, Algeria
Faculty of Human and Social Sciences University of Ghardaïa,
[3]Dr., OPAPS Laboratory of the IEPS,
University Abdelhamid Ibn Badis; Mostaganem, Algeria

Abstract:
Aim of the study: The main goal of our work was to study and analyse the effect of the first preparatory period in soccer, concerning the different hematological components for young Algerian soccer players, and also to establish recommendations for this population of athletes concerning the medical support and its influence on their performances and the customization of training sessions. **Methods:** 23 soccer players, those athletes are qualified and well-trained players. They are in good health and belong to a team of professional soccer players in first division (Es/Sétif). They followed a reshaping program for 14 weeks, at least 6 hours a week. All the tests have all been recorded on a special device (at the CHU Saadna Abdenour of Sétif) at the beginning of the season and at the end of the first period of physical training and reshaping session. The subjects had been informed of the study protocol and signed a consent form and all the procedures of the study had been approved in terms of ethics. **Results:** We observed a significant improvement in terms of statistics on the experimental group.

[i] Correspondence: email saddaouir@yahoo.fr, bengoua67@yahoo.fr, houar.abdelatif@univ-ghardaia.dz

Keywords: hematological parameter, first preparatory period, young Algerian soccer players (U17)

1. Introduction

The practice of high-level sports requires a continuous training. The repeated, intense physical effort the body is submitted to during the training sessions and over the years can lead to metabolic changes. The practice of high-level sports is indeed marked by the repeated, intense training sessions followed by short periods of recovery, which lead to a raise in the spending of energy. This raise favors the activation of new metabolic channels, and thus variation in hormonal numbers and other biochemical parameters. (Galbo H., 2001, pp. 49-57)

As a consequence, permanent medical and personal follow-up is required to maintain, preserve or improve the sportsmen's health in order to play in optimal health conditions. The physiological, biomechanical, biological, psychological and nutritional support contributes to optimizing the athletes' efficiency and detecting potential health problems in advance. It requires the intervention of a multidisciplinary team able to help the trainer optimize the training sessions. (Mennetrey N., 2000)

Thus, the biological tests occupy an important position in this medical sports support. In France, for instance, the sportsmen's biological follow-up care was set up in 1999 as a part of the protection of the sportsmen politics and prevention of doping (Audran M. et al, 2006). In Algeria, the biological follow-up of sportsmen is uncommon, almost nonexistent. Hence the purpose of our work which aims at measuring the hematological assessment of a group of professional soccer players of U17 category; Soccer is the most widely practiced sports in the world, with its 150 federations and its 30 million players registered in clubs, plus the non-registered ones in Africa, South America and Europe.

Since its creation, the demands for the practice of soccer have gone up considerably. The constraints that stem from the practice of that discipline are multifactorial: tactical, technical, athletic, physiological and psychological. The evolution the features of competitive soccer playing led to reconsidering, sometimes radically, some aspects of the training sessions and the players' overall training program.

Today, professional soccer teams pay more and more attention to the physical training and the athletic dimension of the sports. According to (Wilmore J. H. and Costill D. L., 1998, p. 108), many leaders have understood that the absence of physical training, for a soccer team, can be detrimental at the end of games. But the physiological

adaptations that operate through the training of a professional soccer player are divided into central adaptations, that is to say oxygen transport system (heart, lungs and blood) and the peripheral muscular adaptations. That is what allows for an efficient long-term training in terms of energy and muscles throughout the duration of a match (Ancian J., 2008).

The results from the study by (Rahnama et al, 2009) have shown that right before a soccer game, the amount of triglycerides is highly significant compared to the amount measured at the end of it; but is there a link between training (physical training in particular) and the different hematological parameters?

2. Tools and methods

2.1 Regarding ethics

This was a non-invasive study with no particular risk. All the consenting subjects have been informed of the aims of the study beforehand. The subjects have been reassured that their privacy and anonymity would be respected and every subject of this study has been informed of the purpose, the protocol and the potential risks of the study and signed a charter of consent (parent's approval).

2.2 Subjects and samples

The population we studied is composed of 23 soccer players from the U17 –under seventeen- category. This sampling was taken at random for all the soccer players consenting to take part in the study. Those who were absent for a blood test phase, those who were on drugs, those who smoked, those who were injured or sick have not been included in the study. The population is rather homogeneous in terms of physical activity and training. Those athletes are considered well-trained subjects, in good health, and they belong to an Algerian professional soccer team of first division (Es/ Sétif). All the players participated in the study. They were all aged (16 ± 0,8 years) in keeping with the F.I.F.A rules; We proceeded to the tests (including blood tests) at the beginning of the 2016-2017 sports season and at the end of the first period of physical preparation and reshaping, that is to say in the form of test-retest (total duration : 14 weeks).

2.3 Methods

2.3.1 Periods of testing

The study lasted 14 weeks (from August to December 2016). The gathering of data was divided into two stages, since the general physical training of 14 weeks, made up of a 2-

hour training session per day and friendly matches; all the players of the study were measured and received blood tests. CBC (Complete Blood Count) was performed by the same examiners and in the same conditions for everyone. 5ml of venous blood was taken from the left elbow pit, using a special tube. The hematological parameters were immediately determined on a device in a private laboratory and a few samples were examined at the CHU Saadna Abdenour in Sétif.

3. Results

Table 1: Results of the hematological analyses on young Algerian soccer players

Paired Samples Statistics					
		Mean	**N**	**Std. Deviation**	**Std. Error Mean**
Pair 1	White blood cells (leukocyte) milles/mm3 pre-test	6,6594	18	1,17470	,27688
	White blood cells (leukocyte) milles/mm3 post-test	6,5956	18	1,12255	,26459
Pair 2	Red blood cells (erythrocytes) pre-test	4,7556	18	,35447	,08355
	Red blood cells (erythrocytes) post-test	4,8389	18	,28487	,06714
Pair 3	hemoglobin (dl) pre-test	13,8244	18	1,00197	,23617
	hemoglobin (g/dl) post-test	14,0228	18	1,01278	,23871
Pair 4	Hematocrit % pre-test	42,0667	18	4,15706	,97983
	Hematocrit % post-test	42,4683	18	4,15150	,97852
Pair 5	Plateletspre-test	279111,1111	18	56064,97165	13214,64055
	Plateletspost-test	290055,5556	18	57746,37470	13610,95105

Paired Samples Test					
		Paired Differences			
		95% Confidence Interval of the Difference			
		Upper	**t**	**df**	**Sig. (2-tailed)**
Pair 1	White blood cells (leukocyte) milles/mm3 pre-test White blood cells (leukocyte) milles/mm3 post-test	,58253	,260	17	,798
Pair 2	Red blood cells (erythrocytes) pre-test Red blood cells (erythrocytes) post-test	,06011	-1,226	17	,237
Pair 3	hemoglobin (dl) pre-test hemoglobin (g/dl) post-test	-,01865	-2,329	17	,032
Pair 4	Hematocrit % pre-test Hematocrit % post-test	,07854	-1,765	17	,096
Pair 5	Plateletspre-test Plateletspost-test	-3423,02773	-3,070	17	,007

The table reports the results of the biochemical tests; there is a relative, statistically significant increase at p <0.05, at the hemoglobin level of (g/dl) (14,02±0 ,23 VS 13,82±0 ,23). For the Platelets (290055,55± 13610,95 VS 279111,11±13214,64).

4. Comments

The statistics have shown a relative increase at p<0,05, at a hemoglobin level of 14,02± 0,23 VS 13,82± 0,23) (g/dl). Thus, the hemoglobin level (14,2±0,23 g/dl) is considered higher than the one found on soccer players of third division (12,84 ± 0,37 g/dl) during the same period of the season (Gouthon et al, 2007) and similar to a professional Algerian soccer team of first division (CABatna) (44,8±0,6) (Khaled G. et al, 2015); Even the difference in biological maturation between the two age groups and the level of potential training, those variations show how the human organism adapts to effort. Relative increase, statistically significant at p<0.05 at the platelet level of 290055,55± 13610,95 VS 279111,11±13214,64)

Hematocrit levels relatively constant (42,0667% ± 0,97 VS 42,46 % ± 0,97) between 34,6 and 52,6% found on Italian professional soccer players (Macovati L. and al, 2003, pp. 570-581) of first division (CABatna)(44,8±0,6) (Khaled G. and al, 2015). On the contrary, our results are superior to 42,3 ± 2,74 %, found on French professional soccer players of first division (Burn J. F. et al, 2006, pp. 319-350).

5. Conclusion

It is difficult to find precise statistics on the work carried out by sports physicians within an office, within a club, within a federation in the medical data. That is why we exposed this preliminary study to demonstrate the tolerance to training from a hematological point of view, which still belongs to the sector of physiological research

Bibliography

1. Ancian J. (2008). Football: une préparation physique programmée. Paris: Amphora.
2. Audran M., Guezennec C. Y., Hermine O. (2006). Paramètres hématologiques, quelle interprétation? Table ronde du CNOSF.
3. Burn J. F., Dumortier M., Fédou C., et Mercier J. (2006). Position de consensus: apport des examens biologiques dans le diagnostic de surentrainement. Sci Sports.

4. David L. Costill, Jack H. Wilmore et W. Larry Kenney, Physiologie du sport et de l'exercice 4 e édition, De Boeck ; 2009.
5. Galbo H. (2001). Influence of aging and exercise on endocrine function (Vol. 11). Int JSport Nutr Exer Metab.
6. Macovati L., Pascutto C. et Cazzola M. (2003). Hematologic passport for athletes competing in endurance sports: a feasibility study. Hematologica.
7. Mennetrey N. (2000). Suivi biologique longitudinal. Besançon, U.F.R.S.T.A.P.S : Université de France.
8. Wilmore J. H. et Costill D. L. (1998). Physiologie du sport et de l'exercice physique. Belgique: DeBoeck.
9. Weineck, J. (1996). Biologie du sport. Paris: Vigot.
10. Van Praagh, E. (2007). Physiologie du sport Enfant et adolescent. Bruxelles : De Boeck Université.