The European Proceedings of
Social & Behavioural Sciences
EpSBS

ISSN: 2357-1330

https://doi.org/10.15405/epsbs.2019.05.7

icSEP 2019
3rd International Conference on Sport, Education & Psychology

MANAGING THE STUDENTS' EFFORT FOLLOWING THE APPLICATION OF THE CIRCUIT-FEMALE SOCCER

Ungureanu-Dobre Aurora (a)*, Daian Glicheria (b), Albina Constantin (b), Albina Alina (b), Brabiescu Calinescu Luminita (b)
*Corresponding author

(a) University of Craiova, Brestei Street, No. 391, Craiova, Romania, aurora2009_tefs@yahoo.com
(b) University of Craiova, Brestei Street, No. 391, Craiova, Romania

Abstract

During the preparatory period, before starting the training of the athletes, it would be necessary to understand their effort capacity in order to adequately conduct the effort, all this in view to ensure a superior functional capacity of their body by obtaining optimal values of the somatic and functional indices. Following the circuit application by components of the representative football team of the University of Craiova (ages between 20-24 years) and the recording of their heart rate, it is mandatory to redirect the effort for the adaptation of the body to effort. The Circuit - a methodical device which develops strength in resistance condition, contributing to the development of cardio-respiratory function. Following the interpretation of the heart rate values which were recorded after each station, after twice applying a circuit of seven stations with different duration and also different intensity, it was necessary to redirect the effort by eliminating one station and also increasing the gap between the two circuits from 3 to 4 minutes, due to the high heart rate. The heart rate values recorded in the initial test (February 2017) assessed new effort management measures, also the heart rate values which were subsequently recorded from the final test (March 2017), confirmed the hypothesis we formulated and a good adaptation to the students body's effort.

Keywords: Heart rate, dynamic, stations, volume, power.

https://doi.org/10.15405/epsbs.2019.05.7
Corresponding Author: Ungureanu-Dobre Aurora
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

1. Introduction

Physical training is a component of training and it represents the level of physical fitness development, consistent with the nature of the effort.

The development of the deficient motor qualities of an athlete is insufficient, resulting in consequences that lead to the formation of restrictively-trained athletes lacking efficiency when tackling diverse strategies and tactics (Cosma, Orţănescua, & Cosma, 2014).

In the training of the football game, physical training has different weights during the training periods, depending on the age and the value of the athletes, by the load of the competition calendar.

In general, however, it is subordinated to training and to the game, having a greater weight in the following situations: during the transition period, when nonspecific efforts and passive rest are planned for the players; in the preparatory phase; in situations where the team is in poor sports form; when certain players are in rehabilitation after accidents; in lightning competitions: tournaments, qualifiers, cups.

Also, the technical performance may be limited by physical characteristics as well as physical fitness, and performance characteristics (Smith, Roberts, & Watson, 1992).

In addition to all the variables pursued in the specific training, we also mention the importance of motivation formation during school competitions (Rus, Radu, & Vanvu, 2016), a motivation that needs to be developed and maintained in the later stages of training in our programs. As a football team has many characters, it's important to know the players' motivation contained in our proposed paragraphs.

In case of a study about the relationships between the goal orientations of the students sporting as team sport and individualistically and the level of their basic psychologic needs, (Tekin et al., 2012), found significance relationship between the task and ego orientations and self determination and competence and level of relationships of the students sporting as team sport. According to those results, the success level of the students sporting as team sport about their competence and self determination decides that they contribute positively the evaluations regarding how good the individual's daytime will be.

From Acar, Akandere, and Bastug (2013) experiment, has been observed that the football exercise program influenced chlidren posibilities of problem-solving skills. So, the students become more effective in problem solving which means that problem solving skills were improved by football practice. Also, Kun and Toth (2012) study results encourage to affirm that 10-year-old children are able to use formal thinking in football area. So, the experts who deal with selection and talent identification in football must be aware that this would be of great importance.

Starting with 2017, the Romanian Football Federation (2018) has completed a study dedicated to juvenile football training - "Methodology of Child and Junior Preparation", a framework document to set guidelines, to present the direction in which FRF considers that we must advance our children's and junior football.

The content of this paper outlines the four components of the vision:

A. An environment conducive for the players' training

B. Practicing a modern football

C. Focus on preparing for play

D. Adaptation to the age stage

https://doi.org/10.15405/epsbs.2019.05.7
Corresponding Author: Ungureanu-Dobre Aurora
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

The document is part of a complex project that aims to restructure the coach training department (currently the Federal Coach School), to train and re-train coaches working in junior clubs in the country and to standardize the training model and play from the FRF Centers of Excellence and from the National Juniors (FRF, 2017).

2. Problem Statement

As regards the heart rate in effort, during different periods of training and also especially at different ages, sex and sports, there are not many concrete dates in this field.

"Adolescence runs between 14/15 and 18/19 years. The central point is the search for one's own identity but also the ability to think abstract. The young adult age - between 20-40 years … Intellectual skills gain new dimensions and are especially used in professional life" (Psihologia dezvoltării, n.d.).

Because of the age peculiarities of the investigated subjects, we considered that they are able to record their own heart rate by classical method and correctly assess the degree of fatigue generated by the intensity of the circuitry exercises to contribute, in addition to concrete values (pulse) to subsequent changes in intensity, in the sense of increase or decrease, if necessary.

Research into physical education lessons at 12-year-old students has shown that at this age, students do not properly assess their fatigue after the effort and do not reflect the recorded heart rate (CF) at certain times lessons, they underestimate the intensity of the effort (Gidu, Ene-Voiculescu, Straton, & Hritac, 2012).

3. Research Questions

Following the circuit application by practicing soccer students and the recording of their heart rate, it is mandatory to redirect the effort for the adaptation of the body to effort.

4. Purpose of the Study

During the preparatory period, before starting the training of the athletes, it would be necessary to understand their effort capacity in order to adequately conduct the effort, all this in view to ensure a superior functional capacity of their body by obtaining optimal values of the somatic and functional indices.

5. Research Methods

5.1. The Methodical Process - The Circuit

The circuit encompasses exercises that address the development of force in various regions, its use presenting many advantages, among which we mention the most suggestive:

- valuable time in training is earned, because they work in short and high-intensity meetings;

- it is a good means of individual training, because it is possible to make an individual dosage expressed by ½ of the maximum possibilities + growth rate, depending on the needs and possibilities of the players;

- the players' interest in individual physical training develops;

https://doi.org/10.15405/epsbs.2019.05.7
Corresponding Author: Ungureanu-Dobre Aurora
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

-it must be understood in combination with the other methods, because it alone can not solve the complex tasks of the global training.

In performance physical education, a workbook is required to record the pulse values and self-control, on the basis of which individual progress can be made permanently reporting on individual progress achieved.

Bănăţan (1972) considered that "a large number of specialists ... use for measuring force in the arms, special devices (dynamometer, graduated extensions), which provide a high degree of precision and can determine the absolute force in kg" (p. 270).

We have chosen the technical process - the circuit for the development of the general force, but there have been researches that applied the proprioceptive training for the development of the lower limb force in the practicing soccer sport, where, besides progress, the number of injuries decreased, which determines us in the future to experience this proprioceptive workout (Gidu, 2016).

There is a general agreement in the physical education and coaching communities on the importance of warm-up (WU) prior to any physical performance. Nevertheless, the value of WU remains controversial among researchers and it's recommended that practitioners should experiment with different WU routines and adjust them on an individual basis (Dunsky & Ben-Sira, 2016).

Into the experiment of great importance was warm-up, before aplication of the circuit, using dynamic streching.

A study that aimed to examine the effects of static, dynamic, combined (static and dynamic) and no stretching on the static and dynamic balance of female football players during warm-ups, came to the conclusion that, dynamic stretching resulted improved static and dynamic balance performance. Therefore, warm-up tasks incorporating dynamic stretching may be beneficial for athletes (Amiri-Khorasani & Gulick, 2015).

5.2. The classic method of recording heart rate

This method consisted of applying two fingers on the carotid or brachial artery by each individual athlete and recording the number of beatings of the heart for 10 seconds, multiplying the result by 6 to find the heart rate / minute. The pulse was recorded after each station and the break between the two circuits.

6. Findings

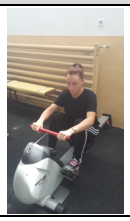
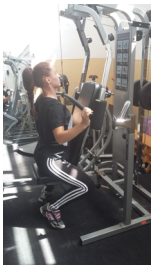
Following the interpretation of the heart rate values that emerged after the initial testing (Table 02), it was necessary to redirect the effort in terms of volume and intensity.

In this way has been eliminated the "Push-to-Machine" exercise at the last station (station 7), because the same muscle groups were also targeted at Station 3 and the break between circuits increased and after the second circuit from 3 to 4 minutes as the frequency of the subjects did not fall within the normal resting range, exceeding them.

In the final test the values of the cardiac frequency of the subjects on the 6 station circuit were recorded (table 03).

https://doi.org/10.15405/epsbs.2019.05.7
Corresponding Author: Ungureanu-Dobre Aurora
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

Table 01. Description and presentation of exercises in circuit stations at final test

Stations	ACTION SITES	Initial position	Execution / Movement
1	Stand on the paddle - back, triceps, quadriceps, and feser From the seating: raked on the paddle, load 10.		
2	Flexions of the trunk lying on the bench - the abdominal muscles. From behind the back of the chair, the body is inspired and the trunk rises to 45 degrees and then returns to the initial position with exhalation.		
3	Fluttering on the Peck Deck - Big pectoral, biceps From the back of the appliance, resting on the backrest and the feet on the ground and the arms on the arms of the appliance, an inspiration is made, then pushing the arms of the device until they come parallel to the chest. At the end of the movement, the pectorals remain in an isometric contraction expiring. It returns to the initial position by a slow and controlled movement. The exercise must be performed by making a full motion at maximum amplitude. Load 10 kg.		
4	Feet flexion on the device - femoral biceps From the facial bed on the bench, with the legs under the mobile portion of the device at the ankles, the back, and hands gripped by the handle. The legs must be in almost complete extension, They work with a load of 20 kg. The knees are inspired and whipped completely by trying to touch the buttocks with the heels. It expires towards the end of the movement. A few moments are retained in the posterior thigh muscles of the thigh. Do not lift the body off the device (does not arc the back) and contract the abdominal muscles during the exercise. It slowly returns to the initial position by extension of the legs.		
5	Helmetter traction - forearm flexing, dorsal large, trapezium, brachial biceps, pectoral Facing the appliance with the thighs under the footrests. The curved bent bar is slammed into the prone position. Draw the cord attached to the cable to the chest, pointing the elbows as far as the back (15 kg load). It expires towards the end of the movement. He does not bend his back during execution. There is a contraction for a few moments. It releases slowly with inspiration		
6	EXTENSION OF THE APPLIANCES - Quadriceps From the device, the legs are placed under the horizontal horizontal bar with a load of 25 kg. This movable bar must be placed at the front of the ankles. He grabs the sides of the bank with his hands. It inspires and expands, with a controlled movement, without hesitation, the feet to the maximum, without lifting the buttocks from the device. Keep the quadriceps in shrinkage for a few moments and slowly return, with exhale, to the initial position.		

https://doi.org/10.15405/epsbs.2019.05.7
Corresponding Author: Ungureanu-Dobre Aurora
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

This newly established circuit (table 01) was applied for one month (four weeks) as follows:

- twice a week for two weeks during the general physical training period in addition to the other technical-tactical training;
- once a week for two weeks during the specific training period, in addition to the other technical-tactical training;

Elimination of a station was due to the high heart rate values recorded in most subjects and the break between the circuits and the second end, from 3 to 4 minutes, increased.

It was precisely in this context that the effort was directed to the development of the general force in the subjects subjected to research, the elimination of a station and the increase of the breaks between the circuits and the end of the second. The rest of the conditions are maintained.

-the first circuit was applied for 45 seconds of tinplate work in each station, 3/4 and 45 seconds between stations, the heart rate values of the subjets at the initial and final testing can be found in table 02 and table 03;

-the second circuit - working time of 30 seconds tempo 4/4, at each station and pause for 30 seconds between stations, the heart rate values of the subjets at the initial and final testing can be found in in table 04 and table 05).

6.1. The heart rate values of athletes at initial and final testing on both circuits

Table 02. Heart rate values (beats / minute) of subjects at each station at Circuit 1 (45 "/ 45", tempo 3/4) at initial testing

Stations	D. N.	P.R.	N. D.	B. M.	A. A.	R. C	B. A.	R. A.	R. R.	O.D.
S1	100	90	90	80	108	120	100	100	110	100
S2	120	90	80	90	80	80	90	130	80	80
S3	130	80	180	90	80	150	90	140	130	150
S4	120	80	140	100	110	100	120	120	100	130
S5	110	120	160	110	120	100	110	120	100	130
S6	100	80	90	120	140	110	120	100	110	90
S7	110	100	100	140	130	100	140	110	100	120
Pause 3'	90	80	86	90	100	80	100	80	80	100

Table 03. Heart rate values of subjects at each station at Circuit 1 (45 "/ 45", tempo 3/4) at final testing

Stations	D.N.	P.R.	N. D.	B. M.	A. A.	R. C	B. A.	R. A.	R. R.	O.D.
S1	90	90	90	90	100	100	100	100	90	110
S2	90	90	90	80	90	90	90	100	100	120
S3	90	100	80	80	80	110	70	100	90	110
S4	80	90	80	90	100	120	80	100	100	120
S5	90	90	90	90	100	100	80	100	100	120
S6	100	100	100	100	120	110	90	100	120	110
Pause 4 '	**80**	**80**	**80**	**70**	**96**	**76**	**70**	**80**	**96**	**90**

https://doi.org/10.15405/epsbs.2019.05.7
Corresponding Author: Ungureanu-Dobre Aurora
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

Table 04. Heart rate values of subjects at each station at Circuit 2 (30 "/ 30", tempo 4/4) at initial testing

Stations	D. N.	P.R.	N. D.	B. M.	A. A.	R. C	B. A.	R. A.	R. R.	O.D.
S1	100	100	100	100	100	100	100	120	100	120
S2	130	90	80	110	110	110	120	130	100	80
S3	100	90	90	90	120	100	90	120	100	100
S4	110	100	110	90	130	110	90	110	120	120
S5	120	110	110	120	130	120	120	130	120	100
S6	120	90	120	100	140	130	120	120	130	120
S7	120	120	120	130	150	130	130	120	120	140
Pause 3 '	100	100	92	80	120	100	90	90	100	120

Table 05. Heart rate values of subjects at each station at Circuit 2 (30 "/ 30", tempo 4/4) at final test

Stations	D. N.	P.R.	N. D.	B. M.	A. A.	R. C	B. A.	R. A.	R. R.	O.D.
S1	100	100	110	100	110	90	110	110	100	90
S2	100	100	100	90	90	110	90	110	90	100
S3	90	100	90	80	90	100	90	120	100	100
S4	100	120	90	90	90	110	90	120	120	100
S5	100	100	100	90	120	100	100	110	120	100
S6	100	100	100	100	100	100	100	90	100	100
Pause 4 '	70	70	70	76	76	80	80	70	76	80

6.2. Interpretation of heart rate values compared to initial and final testing of D.N. (model)

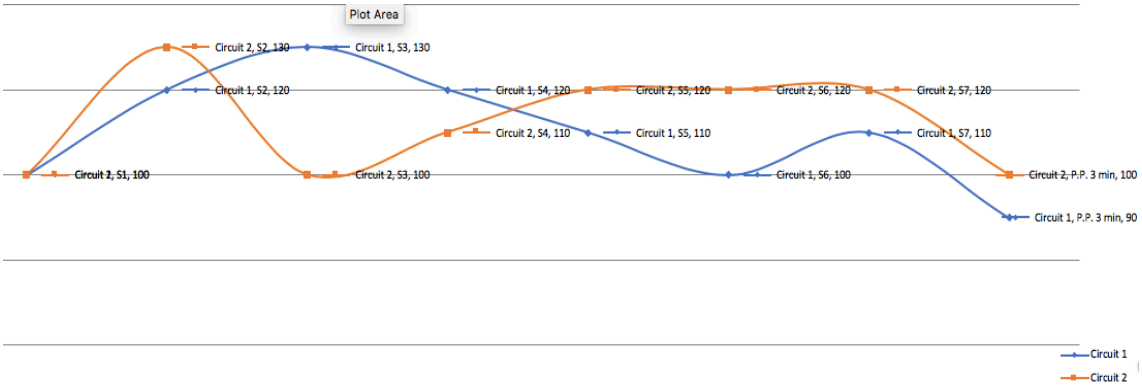


Figure 01. Cardiac Frequency Chart, D.N., Initial Testing, Circuit 1 and 2

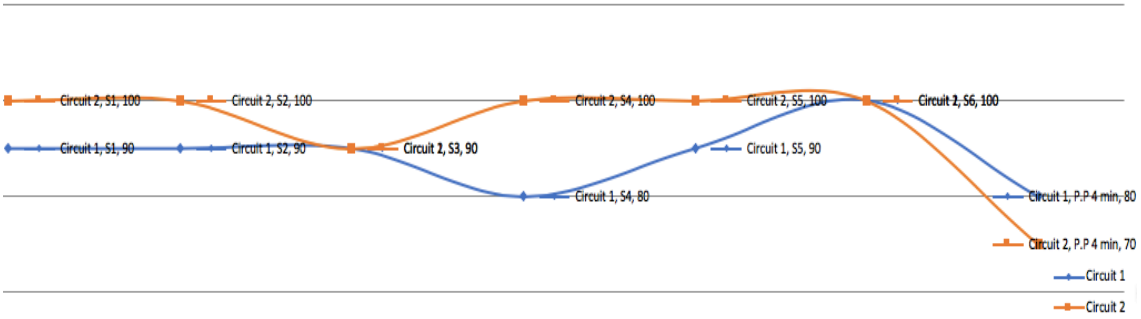


Figure 02. Cardiac Frequency Chart, D. N, Final Test, Circuit 1 and 2

https://doi.org/10.15405/epsbs.2019.05.7
Corresponding Author: Ungureanu-Dobre Aurora
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

D.N. who is the captain of the team and was legitimate at that time at the "Navobi" Iasi football team being constantly training, has had low heart rate values at the circuit stations exercises that show a good adaptation of the body to effort (Figure 1 and Figure 2). We mention that, for this year, D. N. remained in training with our university team, with the Club Team taking part only in certain matches.

7. Conclusion

7.1. Partial conclusions

In the initial testing we had 7 stations, but due to the high heart rate values of the subjects that could be due to the lack of adaptation to the effort, we decided to remove a station and continue to apply the experiment with 6 stations and increase the gap between the circuits at 3 minutes to 4 minutes.

In all the students in the research, at the final test, from one station to another, heart rate values are close to both Circuit 1 (table 04), where the duration of a station was 45 seconds and the interval between stations of 45 seconds, tempo 3 / 4 and circuit 2 (table 05), which started after a 4-minute break, but with a 30-second station stop and a 30-second break between the stations, tempo 4/4.

It is noted that with regard to initial testing (table 04), where heart rate values were elevated, after the double application of the circuit (80-120 beats / minute), in final testing (table 05), the final heart rate values approached normal heart rate values at rest (60-80 beats / minute). This remedy can be attributed to our contribution in driving the effort, by increasing the break between the circuits and the second circuit from 3 to 4 minutes, following the findings from the initial testing.

Through this experiment, it has been shown that the application of the circuit during these periods contributes to the development of the general force.

7.2. Final Conclusion

The heart rate values recorded in the initial testing (table 02) forced new effort measures in the circuit application card twice, with different duration and intensity, and heart rate values from the final testing (table 05) confirmed our formulated hypothesis and also a good fit to exercise of the body of the investigated subjects (the components of the representative football team of the University of Craiova).

References

Acar, K., Akandere, M., & Bastug, G. (2013). A Study of Problem Solving Skills and Non-Functional Attitudes of Children Who Get Training for Football. *Turkish Journal of Sport and Exercise*, *15*(3), 69-74.

Amiri-Khorasani, M., & Gulick, D. T. (2015). Acute effects of different stretching methods on static and dynamic balance in female football players. *International Journal of Therapy and Rehabilitation, 22*(2), 68-73. https://doi.org/10.12968/ijtr.2015.22.2.68

Bănățan, O. (1972). *Pregătirea Fizică a studenților*. Craiova: Editura Stadion.

Cosma, A., Orţănescua, D., & Cosma, G. (2014). The Role of Gymnastics Elements in Training Junior Volleyball Players. *Procedia - Social and Behavioral Sciences*, *117*, 427-430. https://doi.org/10.1016/j.sbspro.2014.02.239

Dunsky, A., & Ben-Sira, D. (2016). Do different warm-up protocols affect isometric explosive muscular contraction. *Isokinetics and Exercise Science, 24*(1), 51-58. https://doi.org/10.3233/IES-150600

Gidu, D. V. (2016). Influence of proprioceptive training on the strenght of the lower limb in women soccer players. *"Mircea cel Batran" Naval Academy Scientific Bulletin*, *19*(1), 405-407. https://doi.org/10.21279/1454-864X-16-I1-068

Gidu, D. V., Ene-Voiculescu, C., Straton, A., & Hritac, F. (2012). Subjective assessment of fatigue in 12 years old children. *Ovidius University Annals, Series Physical Education and Sport/Science, Movement and Health, 12*(2), 249-252. Retrieved from https://www.analefefs.ro/anale-fefs/2012/issue-2/pe-autori/24.pdf.

Kun, I., & Toth, L. (2012). Measurement of Cognitive Ability and Thinking Level of 10- and 13- year-Old Football Players with Football-Specific Tasks. *Biomedical Human Kinetics Journal*, *4*, 49-53. https://doi.org/10.2478/v10101-012-0009-x

Psihologia dezvoltării. (n.d.). *In Wikipedia*. Retrieved January 3, 2019, from https://www.wikizero.com/ro/Psihologia_dezvolt%C4%83rii#Adolescen%C8%9Ba%20accesat%203.01.2017,%20ora%2018.25

Romanian Football Federation. (2018). *Metodologia Pregătirii Copiilor și Juniorilor* [PowerPoint slides]. Retrieved from https://www.frf.ro/publicatii/metodologia-pregatirii-copiilor-si-juniorilor/

Rus, C. M., Radu, L. E., & Vanvu, G. I. (2016). Motivation for Participating to Sports Competitions in School. *Revista de Cercetare si Interventie Sociala*, *52*, 195-203.

Smith, D. J., Roberts, D., & Watson, B. (1992). Physical, physiological and performance differences between Canadian national team and Universiade volleyball players, *Journal of Sports Sciences, 10*(2), 132-138. https://doi.org/10.1080/02640419208729915

Tekin, M., Yildiz, M., Sahan, H., Devecioglu, S., Gullu, M., & Ulucan, B. (2012). Surveying the Relationships between the Goal Orientations of the Students Sporting as Team Sport and Individualistically and the Level of Their Basic Psychologic Needs at the School of Physical Education and Sports. *Procedia - Social and Behavioral Sciences*, *46*, 267–272. https://doi.org/10.1016/j.sbspro.2012.05.104