THE TRAINING'S OPTIMIZATION OF THE FOOTBALL PLAYER'S EXPLOSIVE FORCE BY MEANS OF THE DATA PROVIDED BY THE STUDY OF THE ENERGETIC PARAMETERS

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Abstract
The achievement of high performance in football as well as in other sports is conditioned by both the speed and the explosive force. The results obtained while evaluating sportsmen depend on their main qualities. The assessment of the results is a general one and can be very useful to the trainers for the future orientation of the training.The scientific planning of the training has to use objective methods and means of highlighting the motric qualities, means of control and means of evaluating the results. These methods are useful for the management of the training process as well as for its individualization.The specialist literature provides data about the research and control equipments. The research studies the values of the energetic parameters i.e. the unitary power (PU) on both legs, the unitary power on the right leg (Pud) and on the left leg (Pus), the maximal power on both legs, the maximal power on the right leg and on the left leg, the average height of the jumps (Hzbor), the repetition speed (Srep) and the force-speed relation (F-S).The study took place complying with the ethics and having the subjects' agreement.
Key words*: identification, adaptation, planning, method*

INTRODUCTION

High performance in individual or team sports is conditioned by the sportsman's speed, power and resistance. The body's adaptation to the requirements of a certain sport represents the main goal of the training. The tests and their results gives control over the efficiency of the training techniques and methods, but it does not provide any clues about the quality of the adaptation and of the future planning of the training.

The specialists of the domain under focus analyze the muscular power of the sportsmen. Johnson and Bahamonde look upon power through the force platform of the students of both sexes. The prediction of power i.e. the maximum height of the jump and the maximum power is analyzed by means of multiple regressions.

Rata and his fellow partners study the co-relation between the achieved maximum power and the possible maximum power during the double leg jumps and single leg jumps of the members of the women's volleyball team, division A. The MGM15 jumping carpet is used.

Muresan A. tackles the co-relation between the unitary power and the body weight index, height, weight, the maximum jump, the repetition speed of the volleyball players in the junior, and students championships, division B and division A.

SUBJECT AND METHOD

The testing of sportsmen by means of the "MGM15" jumping carpet gives us the necessary data to ground the individualization of the speed and explosive force training. The tests that were made consisted in the registration and electronic processing of the time when the subjects touch the ground and of the time when they are floating; the test consisted in 15 consecutive double leg jumps and single leg jumps.

The subjects are the members of Steaua Dunarii Football Club Galatz, a football club that gave players to the football teams playing in both divisions.

Our research concentrated on the analysis of the data referring to the average unitary power (PU), the maximum unitary power, and the average height of the jumps, the repetition speed and the relation force-speed.

The data interpretation is based on the table with the level of performances; the table is provided by one of the inventors of the jumping carpet named "the modified Miron Georgescu carpet".

THE DEVELOPMENT OF THE RESEARCH

The research lasted a year, from May 2013 till May 2014, under the auspices of the Research Centre for Human Performance from the Faculty of Physical Education and Sports, the "Lower Danube" University of Galatz.

The sportsmen's group had a special training once a day, five days a week according to the annual training plan.
In order to make this research, we and the sportsmen's trainers agreed to introduce two training programs into the annual training plan; each program lasted ten weeks and it repeated three days a week after the sportsmen warmed up for the training.
The sportsmen were initially tested by using the MGM15 platform and the test was repeated after each ten weeks training program.
The training programs that were used are shown in table 1.

Table 1. Training programs

Week	Plyometric training (A2)		Sprint training (A1)
1	40cm 5x10	Jumps over the fence	10mx3x3
2	40cm 7x10	Jumps over the fence	10mx4x3
3	40cm 10x10	Jumps over the fence	20mx3x3
4	60cm 5x10	Jumps over the fence	20mx4x3
5	60cm 7x10	Jumps over the fence	30mx3x3
6	60cm 10x10	Jumps over the fence	30mx4x3
7	40cm 4x10	Depth jumps	40mx3x3
8	40cm 4x10	Depth jumps	40mx4x3
9	40cm 4x10	Depth jumps	50mx3x3
10	40cm 4x10	Depth jumps	50mx4x3

RESULTS AND DISCUSIONS

The results of the energetic parameters registered during testing are presented according to table 2:

Table 2. Energetic parameters

Parameters/ Testing	Average unitary power			Maximum achieved power			Average flying height			RS	F-S
	Pub	Pur	Pul	Pmb	Pmr	Pml	Hb	Hr	Hl		
Initial testing	4.6	2.99	2.79	5.05	3.16	3.08	0.39	0.24	0.23	0.36	-1.89
Intermediary testing	4.94	3.61	3.32	5.28	4.14	3.62	0.42	0.27	0.26	0.26	-1.20
Final testing	5.67	3.89	3.67	6.83	4.24	4.23	0.46	0.31	0.30	0.19	-1.05

Legend:
- Pub – the average unitary power on both legs
- Pur - the average unitary power on the right leg
- Pul - the average unitary power on the left leg
- Pmb – the maximum power achieved on both legs
- Pmr - the maximum power achieved on the right leg
- Pml - the maximum power achieved on the left leg
- Hb – the average flying height on both legs
- Hr – the average flying height on the right leg
- Hl – the average flying height on the left leg
- RS- repetition sped

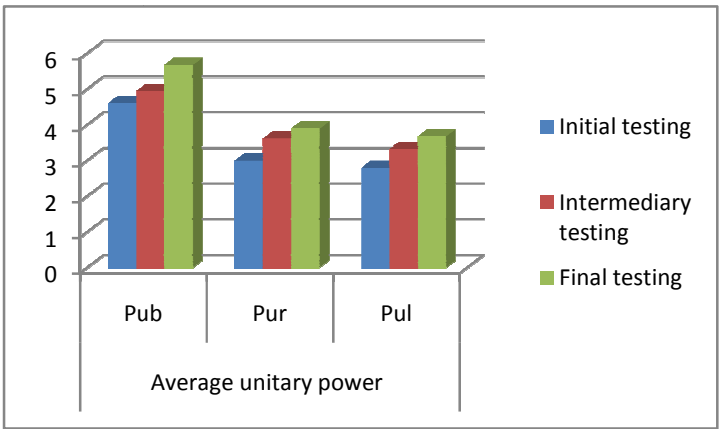

Fig.1 –The representation of the average unitary power

Fig. 1 shows that at the initial testing the average unitary power on both legs of the sportsmen is 4.6 which shows that the group has an average level of training. The same thing can be noticed when analyzing the values obtained for the average unitary power on the right and on the left leg. After covering the (A1) training period, the sportsmen were given an intermediary testing; this testing shows an improvement of the results, Pua reaching values of 4.94. these results place the sportsmen into the good-average area of development for the double leg jumps as well as the single leg jumps. We must mention that the (A1) training program appeals to the speed's development; the decision of starting the program with the speed's development was made after the initial testing that showed an unbalanced training i.e. too much force and little speed. The final testing registers values of 5.67 for the average unitary power; these show that the sportsmen reached values that place them into the very-good are of development.

In point of the efficiency of the suggested training programs we can state that these programs were well chosen and well applied, as shown by the results we obtained.

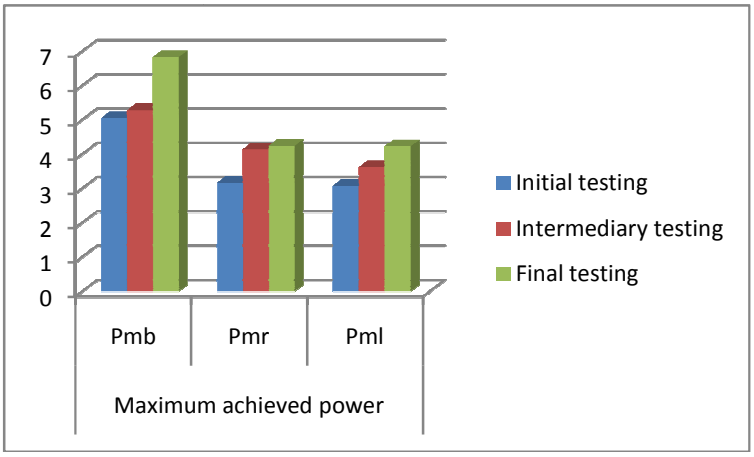

Fig.2- the representation of the achieved maximum power

Fig. 2 shows the evolution of the maximum power developed on both legs and on one leg. As in the case of the average power, we can observe a positive evolution of the parameter as a result of fulfilling each training program; the (A2) training program had the biggest efficiency due to the use of plyometric exercises.

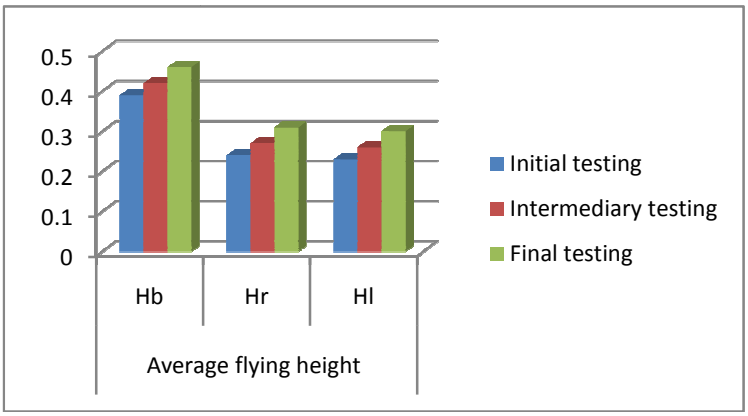

Fig. 3 –the representation of the average flying height

Fig. 3 show a 7 cm improvement of the average flying height for both the double leg jumps and the single leg ones. The efficiency of the plyometric exercises was better too, the sportsmen obtaining better performances.

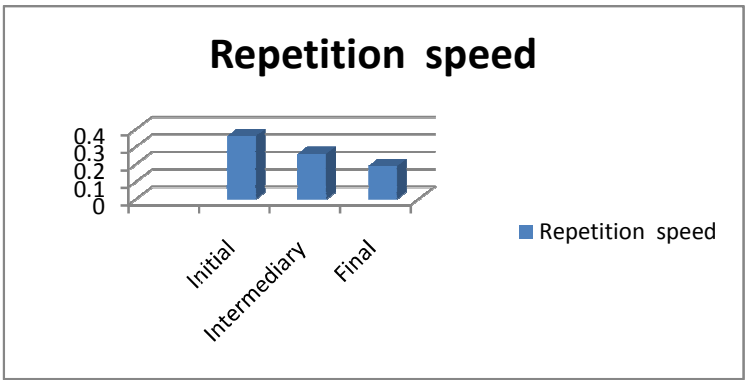

Fig. 4 –repetition speed (time on the ground)

Fig. 4 present the evolution of the group's repetition speed. At the initial testing, this speed had very weak values (0.36s), the group having very big shortcomings when the development of the speed indices is concerned. When analyzing the intermediary testing, a considerable improvement of the parameter can be observed but the result still keeps the group in the low results area i.e. an average of 0.26s. The final testing places the group into the average area of speed results i.e. 0.19s.

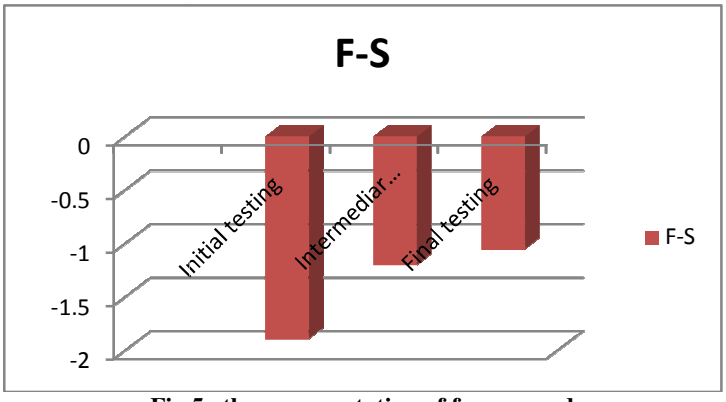

Fig.5 –the representation of force-speed

Fig. 5 shows the evolution of the force-speed ratio. At the initial testing a lack of balance can be observed that favors the working force; this lack of balance made us choose the first training program which partially managed to equilibrate the F-V ratio of the group. The final testing proves that the group

was perfectly balanced; the registered values show that the suggested training programs fulfilled their goal.

CONCLUSIONS

Taking into consideration the research, the observations during the training and the competitions, the study of the specialist literature, it was a useful experience that led to the following:

The managing of the training must be scientifically done in order to be able to avoid a lack of balance in the sportsmen's training. When the lack of balance appears, it must be rectified, and the correction can be done only if it is traced. Any untraced lack of balance can provoke major gaps in the training, gaps that can be difficult to rectify.

The selection process must be stricter; in our case, although our sportsmen have good motricity we did not emphasize the motric quality of speed during the selection process. This motric quality has low values and the future improvements are minimum taking into consideration the fact that speed is a motric quality which is highly influenced by the hereditary factor. In the trainers' opinion, the tested players are very useful for the team as a whole, although they lack speed; many of them cannot be considered players having the capacity to reach high performance.

The sportsmen' evaluation must take place after each training cycle, in order to quickly trace the gaps from the training process and to manage the training considering the results obtained by each sportsman. A greater importance must be given to the individual training, to be able to reduce the gaps between the sportsmen from the team, as well as the gaps between the sportsman's own qualities. If the trainers know these problems, the efficiency of the trainings will raise and consequently, the performance will be perfected.

The training methodology used during the research allowed the improvement of the sportsmen's performances and the balancing of the force-speed ratio; it also brought about a raise in the performance of each quality. All the sportsmen that took part in the study had improvements in speed and force as well as in the combination of the two. These improvements could be also seen during the matches from the competition's program.

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