

## The Role of Didactic Strategies in Optimizing the Training of Handball Players at the Wing Post – the Analysis of the Somatic Indicators

<sup>1</sup> Bernicu Andrei Răzvan, <sup>2</sup> Mihăilescu Nicolae

<sup>1</sup> Sports High School Suceava, <sup>2</sup> University of Pitesti

Correspondence: Bernicu Andrei Răzvan (e-mail: razvan\_bernicu@yahoo.com)

### Abstract

**Scope.** Designing a didactic strategy means predictability, experience and adaptation of methods and means to the structure of human material, which highlights and differentiates it from the algorithm : the strategy offers alternatives, the option of manifesting intelligent behavior, while the algorithm involves a mechanical state of an action sequence. **Methodology.** The experiment took place between December 2017 - June 2018, in the city of Suceava, with the 18 team of Suceava Sports High School specialized on the wing post. During this period, the team maintained its regular training program, the wings following our proposed program to analyze its effect on improving the tracking parameters. We estimate that the scientific approach to training, from the perspective of the physical, technical and psychological components of sports training, will increase the competitive yield. **Results.** After we apply our program we see the changes: - at the body fat of the extreme players decreasing significantly from  $15.72 \pm 3.42\%$  to  $13.57 \pm 2.52\%$ ; - the level of active mass of our subjects recorded a statistically significant increase from  $42.73 \pm 1.97\%$  to  $45.97 \pm 2.16\%$ ; - the basal energy needs of our athletes suffer a significant increase, from  $1697 \pm 127.6$  kcal to  $1818 \pm 124.1$  kcal. **Conclusion.** The training program has show us good results, but any planning can not achieve perfection, requiring continuous improvements, gait adjustments and additions in line with the requirements of modern handball. The proposed program can be continuously implemented in the research team, by adapting to the conditions of the moment and the proposed objectives.

**Keywords:** handball, wing , training, strategies

## **Introduction**

Teaching strategies have the role of prefiguring the most appropriate, logical and effective methodological approach to addressing a concrete teaching and learning situation, thus preventing mistakes, risks and undesirable events in teaching. In this context, we talk about the whole of the objectives, content, means and methods of education, the algorithm of the activity of the subjects of the educational process, subject to evolution.

The didactic strategies support the development of mental processes and can be diversified in providing the necessary conditions for the processing of information: some address general learning, the others activate the distinct processes, specifically (Joita, E., 2002, p. 101).

Designing a didactic strategy means predictability, experience and adaptation of methods and means to the structure of human material, which highlights and differentiates it from the algorithm: the strategy offers alternatives, the option of manifesting intelligent behavior, while the algorithm involves a mechanical state of an action sequence. From this perspective, the strategy can be viewed as a global picture originally planned but permanently perfect during its course. The strategy summarizes a twofold pedagogical option: an assumed option, for a certain way of combining methods, processes, means of learning, forms of learning organization, and an option for a certain approach to heuristic learning, heuristic , algorithmization, experimental research”(Cerghit, I., coord., 1980, p. 59).

The activity of physical education, sports activity is an activity with multiple practical valences, and the teacher / coach should not neglect the transmission of useful theoretical information that underlies the formation of attitudes and beliefs and feed-back.

Feedback reflects „retrospection in order to maintain balance” in relation to or influence of external variables (Pop, C.L., 2008, p. 22). In physical education and sport, feed-back has constructive value, considered to be the link between teachers and students. It shows how the message was understood, assimilated and accepted.

Feedback, as information sent back to the source, has a motivating role, or has a corrective, immediate or delayed role.

Strategies in performance sports focus on sports training and athletes' ability to respond to the challenges of competition to maximize their potential. The modes of action, goal programming, application and assessment will be tailored to the age and level of training, while maintaining optimal health status, ensuring a harmonious physical development and showing a driving capacity that is favorable to professional and social insertion.

Previous assertions support the judicious planning of training that is based on teaching strategies, accompanied by objectives. Gloria Rață (2008a, pp. 212-213) proposes the following steps useful in the design of motoring: setting general or final goals, frame and reference objectives or intermediate objectives for all performance cycles for each lesson. It is the coach who sets the basic and operational objectives for each lesson. Each goal has a time to be reached.

In the area of sport, extending the paradigm, we work with assigning numbers to facts and phenomena, so the evaluation is subordinated to a previously established standard or scale, which leads to a hierarchy of subjects and implicitly to a value appreciation (Nicola I. , 1996, p. 400). We have to do with measuring and evaluating what are complementary operations and even giving us quantitative data, they give us a global picture of the performance of athletes. Their functions are control, system regulation, prediction, classification and selection, educational and social. The coach's diagnosis will help him adapt his teaching strategies to the particular situation of the group he is instructing and each individual athlete, the latter benefiting from a strengthening of efforts according to the performance goals.

### **Material method**

The experiment took place between December 11, 2017 - June 3, 2018, in the city of Suceava, with the -18 team of Suceava Sports High School specialized on the wing post.

The above mentioned period covered the preparatory period (December 4, 2017 - January 26, 2018), return (January 27, 2018 - March 10, 2018) and final tournaments (semifinal: 18-22 April 2018 and final: 2-3 June 2018) 2017/2018, organized by the Romanian Handball Federation.

During this period, the team maintained its regular training program, the wings following our proposed program to analyze its effect on improving the tracking parameters.

The subjects of the research went through two evaluation sessions:

- initially between 14 and 16 December 2017;
- final in the period 24-26 May 2018.

We estimate that the scientific approach to training, from the perspective of the physical, technical and psychological components of sports training, will increase the competitive yield.

## Results and discussions

Following the implementation of the training program, the careful follow-up of the athletes' evolution and the evaluations carried out, we created a database that was processed and interpreted statistically. This is necessary to draw conclusions on a quantitative basis and to check whether our assumptions are valid or not.

On December 16 and May 26, the subjects of our research supported physical assessments in the Areni Hall. Thus, the effort capacity through the test battery was evaluated. The results of the evaluation are presented in Table 1.

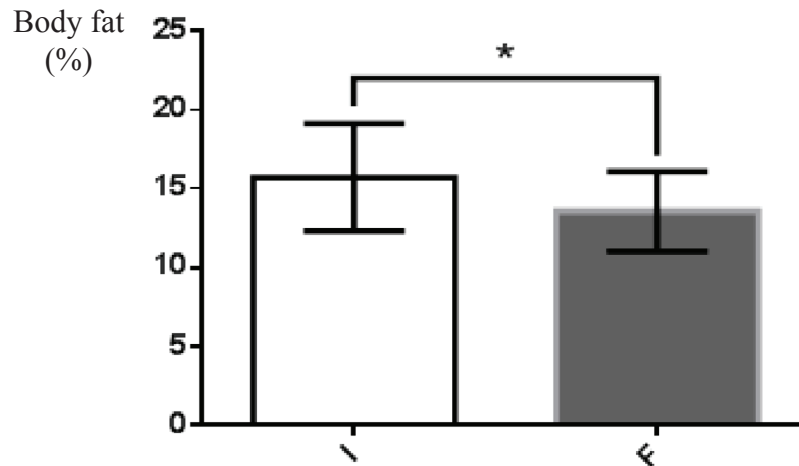
**Table no. 1.** Performance parameters (mean  $\pm$  standard deviation)

Parameter	Initial	Final	p
Height (cm)	174,8 $\pm$ 4,27	175,1 $\pm$ 4,24	0,101
Body mass	69,23 $\pm$ 7,26	68,65 $\pm$ 6,45	0,520
Body mass index (kg/m <sup>2</sup> )	22,65 $\pm$ 1,93	22,39 $\pm$ 1,85	0,364
Body fat (%)	15,72 $\pm$ 3,42	13,57 $\pm$ 2,52	0,016*

<b>Parameter</b>	<b>Initial</b>	<b>Final</b>	<b>p</b>
Muscle mass (%)	42,73 ± 1,97	45,97 ± 2,16	0,006*
Basal metabolic rate (kcal)	1697 ± 127,6	1818 ± 124,1	0,0008*
Visceral fat (1 – 30)	4 ± 0,81	2,75 ± 0,96	0,015*

\* statistically significant difference between groups

In the handball and basketball game, body mass is the limiting factor that determines the posture that the athlete plays (Drinkwater et al., 2007; Hoare, 2000).



*Fig. 1. Change in body fat values in research*

Figure 1 shows the differences that occur at the level of body fat in the athletes studied.

The training program influences the body fat of the extreme players in a positive sense, decreasing statistically significantly from 15.72 ± 3.42% to 13.57 ± 2.52%. This difference of about 2% can weigh heavily in influencing the other physical components by eliminating inactive tissue from the body.

Our request had two totally different moments, one during the championship, before a training period (winter) and the other at the

end of the summer season. We must also take into account the diet specific to our population, which is richer in December and based on fats of animal origin.

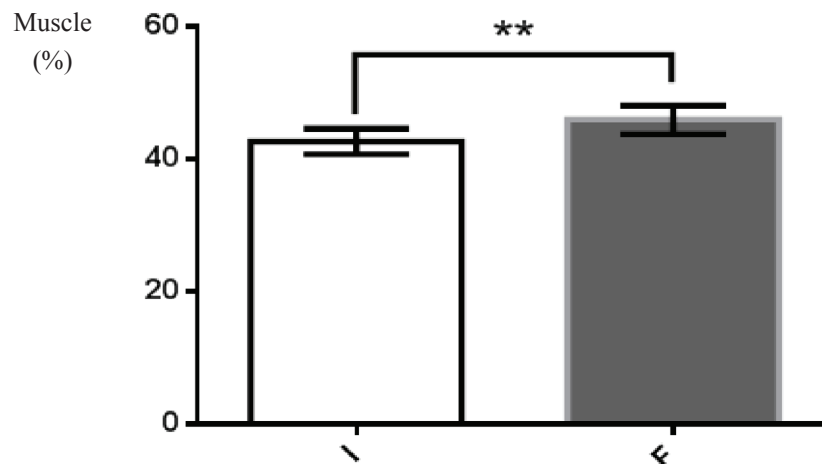


Fig. 2. Modification of muscle mass values in subjects of research (\*\* -  $p < 0.005$ )

Muscle mass is an important parameter of the body composition of the handball player. The level of active mass of our group of subjects recorded a statistically significant increase from  $42.73 \pm 1.97\%$  to  $45.97 \pm 2.16\%$  (Figure 2).

Percentage change in muscle mass is likely to be related to the decrease in body fat, and in this case we can talk about body remodeling during the championship. These changes are a result of the implications of the training program, but let us not forget that they are largely determined by each individual's life regime.

Fig. 3. Change in basal metabolic rate values in subjects of research (\*\*\*) -  $p < 0.0005$ )

The basal energy needs of our athletes suffer a significant increase, from  $1697 \pm 127.6$  kcal to  $1818 \pm 124.1$  kcal (Figure 3).

Each human individual has a fatty substrate in all tissues, including around internal organs. The weight in question is visceral fat, it has a protective role for internal organs, but it damages the excess.

In our case, visceral fat dropped significantly from  $4 \pm 0.81$  to  $2.75 \pm 0.96$  (Figure 4), which demonstrates the effect of physical handball effort on this tissue.

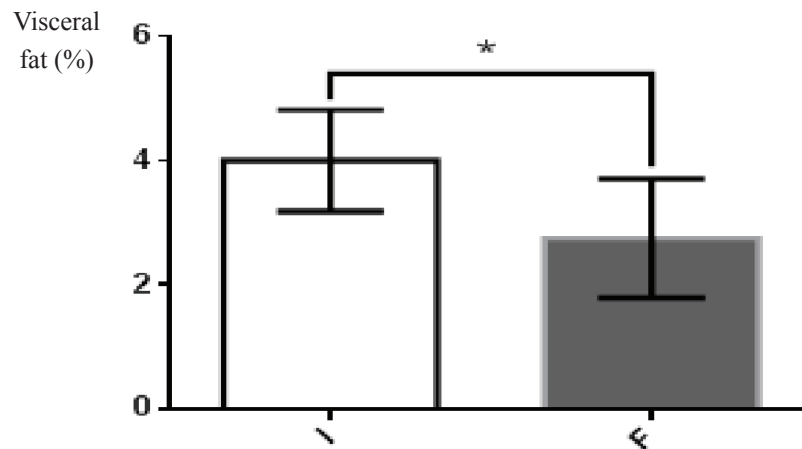


Fig. 4. Change in visceral fat values in subjects of research (\* -  $p < 0.05$ )

Since visceral fat is a parameter used in the assessment of obesity, there is no high level of our lot because it is subjected to a stressful exercise regimen. In the literature, we do not find similar references, which are reported for people who have problems with body mass, elderly people or various diseases.

### **Conclusions**

The training program has resulted in good results, but any planning can not achieve perfection, requiring continuous improvements, gait adjustments and additions in line with the requirements of modern handball.

A full handball player encompasses high-level components: physical, cognitive, technical, tactical, psychological, etc.

At the physical component, some changes occurred, so:

- despite the insignificant change in body mass, the ratio of adipose tissue to muscle mass has changed in favor of the active mass of athletes involved in this research;
- as the muscle mass increases, the basal metabolic rate has increased, and the adipose layer around the internal organs has decreased its level.

The proposed program can be continuously implemented in the research team, by adapting to the conditions of the moment and the proposed objectives.

#### **References:**

1. Cerghit, I. (1980). *Metode de învățământ*, Editura Didactică și Pedagogică, București.
2. Joița, Elena. (2002). *Educația cognitivă*, Editura Polirom, Iași.
3. Nicola, I. (1996). *Tratat de pedagogie școlară*, Editura Didactică și pedagogică, București
4. Pop, Cristina-Lucreția, (2014). *Comunicarea în educație fizică și sport*, Editura ProUniversitaria, București.
5. Rață, Gloria, Rață, Gh. (2008a). *Didactica educației fizice și sportului*, Editura PIM, Iași.