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## OPTIMIZING TRAINING AND MAXIMIZING NAVAL PENTATHLON PERFORMANCE THROUGH THE COACHING PROCESS

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### Abstract

*Objectives.* Efficiency of the training process requires as an essential condition, the use of methods of awareness, empowerment and motivation of athletes, applied individually.

Research objectives:

- ✓ Knowledge of subjects in all aspects that may influence sporting performance;
- ✓ Individualization of training and maximization of performance by introducing coaching sessions into the preparation process;
- ✓ Awareness and empowerment of athletes through optimal application of coaching methods;
- ✓ Achieving a training planning model to achieve planned performance without adversely affecting the professional (educational) activity of athletes.

*Methods.* The research carried out started from the premise that the proper application of methods specific to effective coaching and adequate management of training resources can lead to improved performance behavior of athletes. In a preliminary research, through direct observation, motor testing and the application of an opinion questionnaire, we identified some aspects of the motor behavior of the subjects in the experimental group. This data formed the basis for the construction of sets of questions specific to coaching sessions and applied in this research. The designed training plan contains training lessons optimized for the usual conditions of the naval academy's learning process and with the resources in this situation.

*Results.* Comparative analysis of the results, based on mathematical-statistical and graphical methods, reveals significant increases in performance at the final testing stage in favor of the experiment group. The dynamics of the results demonstrate a significant evolution of the results of the experiment group, carried out during the training program carried out according to the designed model, which confirms the effectiveness of the application of the training program with the implementation of the coaching sessions.

Statistical calculation of the correlations between the performance of subjects recorded in morphofunctional, general and specific motor tests demonstrated significant positive links in the correlations analyzed. Statistical results confirm a very good evolution of the results for most motor tests.

*Conclusions.* At the level of the Naval Academy's naval pentathlon team, the success of the coaching process is reflected in the development of effective training and competition strategies, awareness of the ability to achieve accepted objectives, optimal adaptation to concrete competitive conditions, mobilization of own resources, capacity to analyze competition and identify problems.

*Keywords:* naval pentathlon, coaching, training.

### Introduction

Maximizing the performance objectives of the naval pentathlon requires major changes in the attitude of the coach (Smith, 2005) and athletes, effective managerial behavior by choosing optimal solutions in the planning and scheduling of training. The active involvement of the athlete in his own training, the promotion of a coach-sports dialogue in a positive and encouraging manner, as well as the freedom of conscious choice of tasks and

objectives, will be effective working methods, whereby the athlete will have the opportunity to make the most of his own potential.

The optimal way to solve complex situations, occurring during the competition, determines the level of performance of the athlete (Teodorescu, Ganera 2013). In order to develop the capacity to solve these complex situations during the competition, we developed sets of questions for the conduct of coaching sessions. They

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were aimed at identifying as many solutions as possible to streamline the preparation and the choice of the most suitable one.

The effectiveness of coaching is influenced by the quality of the relationship between the coach and the athletes, the level of confidence that can be established in these relationships, the ability of the coach to direct the athlete in the optimal awareness of the work tasks, objectives and empowerment in this regard. It is also very important to involve and deepen aspects related to the knowledge of athletes from the psychological, motor, physiological point of view, the persuasive capacity of the coach and a high quality level of communication between him and the athletes. The coach's mission is to direct the athlete before, during and after the competition, in psychological and tactical aspect (Coaching International Federation, 2007). The main objective is to make the most of the athlete's performance capacity. In order to achieve the objective, the coach must implement his entire professional baggage, in order to create the athlete, an emotional state conducive to the achievement of maximum performance, through an effective motivation of the athlete.

The role of the coach continues also in the direction of emotional states (Sherman, 2009), created by the success or failure of the athlete, so that the subsequent training activity is carried out in conditions of maximum efficiency. Awareness implies the constant connection with the environment, which gives a certain degree of control over reality. Empowerment involves freedom of choice. In the training process, awareness is manifested in the aspect of awareness of kinesthetic sensations (indispensable form in motor learning), awareness of psycho-motor abilities (which facilitates the motivation of athletes and increases self-confidence) and awareness in the form of a permanent feedback with the environment (colleagues, adversary, equipment, climatic conditions) (Passmore, Sinclair, 2020).

Empowerment requires commitment, a conscious choice, taking responsibility for individual actions, issues that positively influence performance. Responsibility is related to choice (Roberts 2014).

The performance resulting from the coaching sessions is visible in the form of body efficiency and not technical correctness as in the case of training. In this respect we can correlate the coach's work with that of removing some negative effects that are found in technical mistakes, and the coach's work with the effort to help the athlete in identifying the causes that prevent the maximum exploitation of potential and the application of viable solutions in achieving performance.

For a coach, the basic mission will remain the stimulation of the athlete to strengthen his awareness and

accountability (Teodorescu, Ganera, 2013). In this respect, the questions used in the coaching sessions will be oriented towards focusing attention on the answer and optimizing communication through continuous feedback. At the same time, coaching will aim for the athlete to be aware of the relationship between the current level of motivation, the real possibilities of progress, highlighting all the athlete's skills that will propel him to achieve maximum performance. The athlete's empowerment will follow in his conscious choice of the best solution for performance and ownership. In this sense, the questions used in the coaching sessions will be oriented towards focusing attention on the answer and optimizing communication through continuous feedback. At the same time, coaching will aim for the athlete to be aware of the relationship between the current level of motivation, the real possibilities of progress, highlighting all the athlete's skills that will propel him to achieve maximum performance. The athlete's empowerment will follow in his conscious choice of the best solution for performance and ownership.

The fundamental elements of the coaching process consist of good planning, implementation of the plan established within the framework of specific actions and effective monitoring of the activity (Lyle, Cushion, 2016). Some specialists consider it necessary to analyze the athlete's condition in order to raise awareness of wishes, self-responsibility through the development and conscious acceptance of planning, implementation of the plan and an evaluation of the effectiveness of the coaching plan implemented (Parsloe, Leedham, 2016).

Achieving the ultimate objective in the case of the naval pentathlon requires the introduction into planning of several components of performance, of great importance being the formation of technical-tactical skills, the strategy applied here being learning through action, manifested in the form of challenges and demands (Teodorescu, Ganera, 2013). For the competition period, the coaching sessions will be oriented towards the establishment of competition strategies, materialized in the tactics approached for each challenge. The coach's questions will guide the athlete towards the formation of the ability to anticipate future specific actions in the competition and combative behavior, in line with the competitive environment and its own potential.

Individualization in the coaching process is strictly necessary. Starting from here, the coaching process must be seen as unique and original and the training must be approached in particular (Eastabrook, Collins, 2019). The effectiveness of coaching is dependent on adjustment, which is a continuous process achieved in optimal feedback and communication. In turn, the effectiveness of feedback consists of continuous monitoring, carried

out through the recording, recording and interpretation of the data necessary to organize the coaching process. Both video recordings related to the obstacle technique and the strategies of tackling the race are helpful elements in the planning of the preparation. Improving and maximizing performance must be stable, predictable and managerial.

### Assumptions

1. Implementing coaching sessions in the preparation process can improve competitive performance by making the training effort more efficient and optimally mobilizing individual athletes' resources;

2. The awareness and empowerment of athletes through coaching-specific methods will have a beneficial influence on the way in which training is carried out, especially during individual training sessions during the holidays.

### Methods

The research subjects were 30 students from the "Mircea cel Bătrân" Naval Academy in Constanta, divided into two samples. Coaching sessions with representative team athletes were conducted with a structure with four distinct stages: goal management, reality analysis, options and will (Witmore, 2019). During the coaching sessions, performance and operational objectives specific to each sporting event in the naval pentathlon were established together with each athlete. After an analysis of the existing reality, the objectives set were subsequently adjusted according to individual potential (initial testing). From a managerial point of view, the necessary steps were taken to ensure the necessary resources for the preparation and optimization of the training conditions (Landsberg, 2005). The questions in the coaching sessions aimed to direct the athlete towards the choice of objectives, elaboration and choice of optimal solutions for achieving the objectives, without making any suggestions to this effect (Witmore, 2019). The meetings were set individually for each athlete in the experimental group, with a frequency of one session lasting 45 to 60 min.

every three weeks. The main aim of the meetings was to optimize and maximize performance in training and competitions, by "awareness and empowerment of the athlete" (Teodorescu, Ganera 2013), but also by maintaining an optimal motivation in the conduct of training and in the re-establishment of maximum performance.

Using direct observations, subject testing and the opinion questionnaire, in preliminary experimental, we identified different aspects of the motor behavior of the subjects in the experimental group, in particular the strengths (Proyer, 2015). These were topics of building questions in coaching sessions. Question sets have been geared towards identifying as many efficiency solutions as possible and choosing the most suitable one by the subject. Discussions were free, with final responses centralized for better management of the solutions chosen by the subjects.

### Results:

The evaluation of the two samples was planned in the training plan according to the stages of evolution of the athletes and the training objectives. Thus, the initial evaluation was planned at the end of the adjustment phase of the training plan, 30 days after the start of training. Through this evaluation we carried out a diagnosis of the general, specific motor level of the morphological and physiological characteristics of athletes (Table 1). The final evaluation (Table 2) was used to assess athletes' performance prior to the competition period. It was intended to establish a hierarchy within the experimental team to facilitate the selection of the representative group, consisting of 6 athletes. By implementing the preliminary programme in the preparation of the naval pentathlon lot, the performance of the experimental group compared to the control group has been improved.

**Table 1 Main statistical indicators of research - initial assessment**

Nr. crt.	Parameters compared	Average		Criteria			
		Experiment Group	Control Group	„Cv”		“t”	“p”
				Experiment Group	Control Group		
<b>MORFOFUNCTIONAL TESTS</b>							
1	C.F.	82,667±5,69	80,8±7,083	6,883	8,766	0,796	>0,05
2	Weight	77,56±8,171	73,413±8,128	10,535	11,072	1,394	>0,05
3	Height	1,789±0,071	1,743±0,094	3,969	5,393	1,512	>0,05
4	B.M.I.	24,153±1,06	24,107±1,22	4,389	5,061	0,11	>0,05

TESTS OF GENERAL MOTRICITY							
1	800m flat	152,333±4,03	152,6±3,979	2,646	2,607	0,183	>0,05
2	100m freestyle	89,867±13,239	95,4±12,397	14,732	12,995	1,182	>0,05
3	100m flat	13,067±0,782	12,809±0,748	5,985	5,84	0,923	>0,05
4	Rowing 500m	111,333±5,407	108,4±10,034	4,857	9,256	0,997	>0,05
TESTS OF SPECIFIC MOTRICITY							
1	800m+shooting	131,267±7,995	136,133±7,726	6,091	5,675	1,695	>0,05
2	800m+T.G.	124,267±7,778	129,067±13,52	6,259	10,475	1,192	>0,05
3	Rowing RIB	102,867±4,955	100,467±4,533	4,817	4,512	1,384	>0,05
4	Utility swimming	46,235±5,302	48,193±5,263	11,468	10,921	1,015	>0,05
5	Lifesaving	74,474±2,495	74,799±2,936	3,35	3,925	0,327	>0,05
6	Seamanship1	209,133±4,138	209±4,471	1,979	2,273	0,082	>0,05
7	Seamanship2	15,447±1,636	15,287±1,661	10,591	10,865	0,266	>0,05
8	Obstacle race	192,333±10,019	199,133±18,7	5,209	9,391	1,241	>0,05

**Table 2 Main statistical indicators of research - final evaluation**

Nr. crt.	Parameters compared	Average		Criteria			
		Experiment Group	Control Group	„Cv”		“t”	“p”
				Experiment Group	Control Group		
MORFOFUNCTIONAL TESTS							
1	C.F.	81±4,598	79,867±6,058	5,677	7,585	0,577	>0,05
2	Weight	77,567±6,605	73,413±8,128	8,515	11,072	1,536	>0,05
3	Height	1,801±0,057	1,75±0,088	3,165	5,024	1,884	<0,05
4	B.M.I.	23,853±0,695	23,787±0,751	2,914	3,157	0,724	>0,05
TESTS OF GENERAL MOTRICITY							
1	800m flat	147,267±4,267	150,667±3,436	2,897	2,281	2,404	<0,025
2	100m freestyle	86,067±11,455	92,933±11,566	13,626	12,446	2,109	<0,025
3	100m flat	12,493±0,608	12,867±0,425	4,867	3,303	1,953	<0,05
4	Rowing 500m	98,467±4,688	107,867±9,97	4,761	9,243	3,304	<0,005
TESTS OF SPECIFIC MOTRICITY							
1	800m+shooting	125,93±4,096	132,53±7,891	3,253	5,954	2,875	<0,005
2	800m+T.G.	116,2±4,362	124,467±11,3	3,754	9,079	2,643	<0,01

3	Rowing RIB	96,067±4,166	99,267±3,955	4,337	3,984	2,158	<0,025
4	Utility swimmin	42,554±4,013	46,778±3,956	9,43	8,457	2,903	<0,005
5	Lifesaving	69,164±3,275	73,746±3,074	4,108	4,168	2,985	<0,005
6	Seamanship1	196,533±4,809	204,667±5,678	2,447	2,774	4,234	<0,0005
7	Seamanship2	15,973±1,059	15,133±0,769	6,63	5,082	2,486	<0,01
8	Obstacle race	183,467±8,21	195,467±18,658	4,475	9,545	2,28	<0,025

**Table 3 Main statistical indicators of research - dynamics of results - experiment group**

Nr crt	Parameters compared	Average		Criteria				M.Cr.
		M1±DS1	M2±DS2	„Cv”		“t”	“p”	
				T.I.	T.F.			
<b>MORFOFUNCTIONAL TESTS</b>								
1	C.F.	82,667±5,69	81±4,598	6,883	5,677	3,19	<0,005	-2,017
2	Weight	77,56±8,171	77,567±6,605	10,535	8,515	0,012	>0,05	0,009
3	Height	1,789±0,071	1,801±0,057	3,969	3,165	2,965	<0,01	0,671
4	B.M.I.	24,153±1,06	23,853±0,695	4,389	2,914	2,097	<0,05	-1,242
<b>TESTS OF GENERAL MOTRICITY</b>								
1	800m flat	152,333±4,03	147,267±4,267	2,646	2,897	4,962	<0,0005	-3,326
2	100m freestyle	89,867±13,239	84,067±11,455	14,732	13,626	7,305	<0,0005	-6,654
3	100m flat	13,067±0,782	12,493±0,608	5,985	4,867	6,246	<0,0005	-4,393
4	Rowing 500m	111,333±5,407	98,8±4,443	4,857	4,443	6,463	<0,0005	-11,257
<b>TESTS OF SPECIFIC MOTRICITY</b>								
1	800m+shooting	131,267±7,995	125,933±4,096	6,091	3,253	3,494	<0,005	-4,063
2	800m+T.G.	124,267±7,778	116,2±4,362	6,259	3,754	4,753	<0,0005	-6,492
3	Rowing RIB	102,867±4,955	96,067±4,166	4,817	4,337	7,505	<0,0005	-6,61
4	Utility swimming	46,235±5,302	42,554±4,013	11,468	9,43	5,938	<0,0005	-7,962
5	Lifesaving	74,474±2,495	70,564±2,899	3,35	4,108	6,481	<0,0005	-5,25
6	Seamanship1	209,133±4,138	196,533±4,809	1,979	2,447	11,289	<0,0005	-6,025
7	Seamanship2	15,447±1,636	16,173±0,873	10,591	5,398	1,86	<0,05	4,7
8	Obstacle race	192,33±10,019	183,47±8,21	5,209	4,475	9,805	<0,0005	-4,61

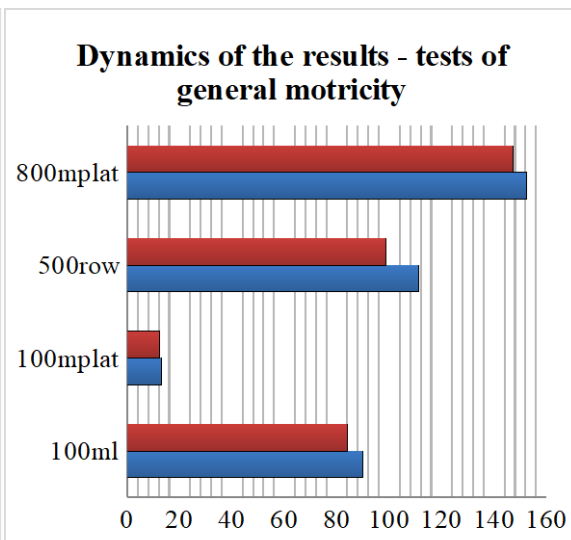
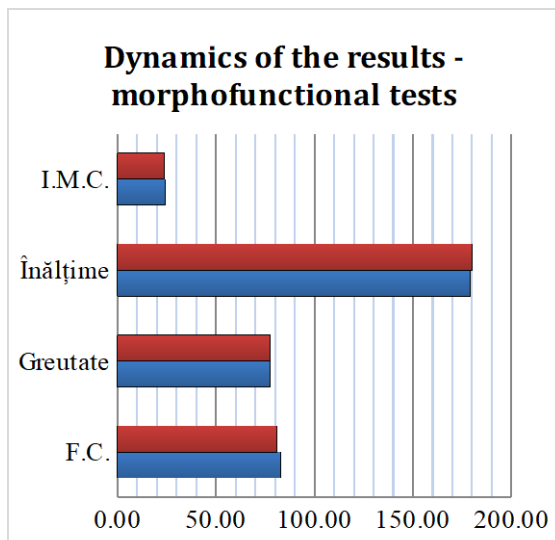


Fig. 1 Dynamics of results in morphological testing experiment group- T.I./T.F

Fig.2 Dynamics of results in general motor testing experiment group – TI/TF

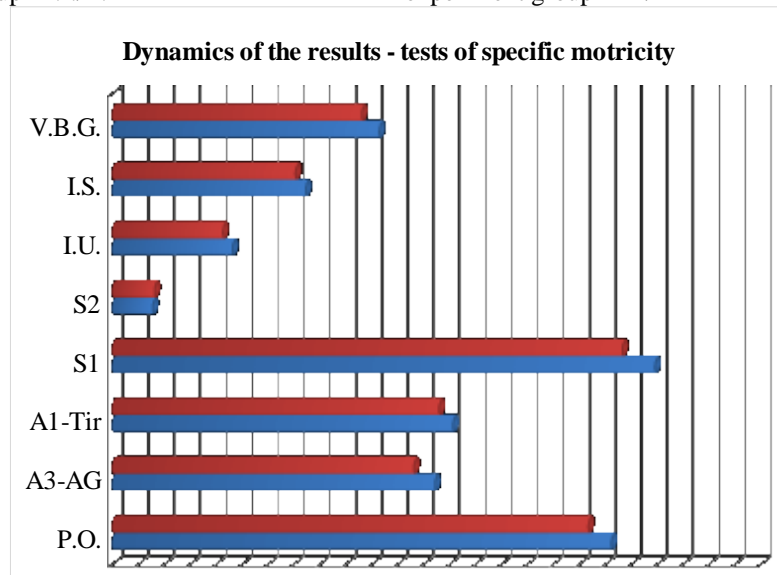


Fig.3 Dynamics of specific motor test results – experiment group – TI/TF

### Discussions

Most subjects want to improve their current performance or win certain samples according to the strong skills available to them, but the main concern is the individual tasks on the teaching line. In order to achieve the objectives, the most common responses lead to the need to possess psychic skills such as trust, will and desire to achieve a certain performance.

The steps of the training that the athletes of the pentathlon team consider necessary for an optimal development are represented by: improvement of the

level of physical training, improvement of the specific skills of the samples, mental training carried out through complex trainings and training competitions. Coaching sessions were deemed necessary at any level of the athlete's training. Most athletes recognize that their performances are close to average, relative to the competition performance, their opinion being that they are around the figures 6-7 out of 10, compared to the possible goal to achieve and they are confident that in one year of preparation they can reach level 8-9, in two years level 10 (level 10 represents everyone's dream).



About training planning and athletes' options, we can say that resistance training stresses are not approved, but all athletes are aware of their need. There are many suggestions from athletes regarding the individualization of training (the performances required in training for each test to be correlated with individual potential) in order to improve performance. At the unit level, feelings of doubt in performance are generated in some cases by: the time available for recovery and the lack of effort advocates. For the competition period, there are feelings of doubt about the performance of the proof, due to the complexity of the sample and the environmental factors that may prevent the achievement of the maximum performance aspects that have resolved in the improvement of the preparation for this test by working under the conditions of the competition, including from a climatic point of view. For the next competition, all athletes are motivated to achieve superior performance

and the general conclusion is that it is considered a necessity to conduct training centrally, according to a schedule and the intention of all is to train according to the recommendations of the coach and the existing planning.

It is also considered very important, in the efficiency of sports training, self-discipline and the organization of their own time, all athletes are determined to harmonies their study activity, sports training and the restoration of the organization (rest). Physical and moral support is expected from the coach. Teachers and direct commanders expect a better understanding that athletes perform additional work that contributes greatly to the promotion of the institution. To achieve the desired result, the motivation of athletes leads to the desire to change lifestyle: leisure, eating, smoking, rest. For performance, most athletes are willing to give up certain hobbies or computer games as well as changing the way of leisure, and the benefits expected by them from achieving good results are largely related to the recognition in the social environment of the work done and the performance achieved. The conduct of each competition challenge creates different emotions depending on the level of improvement of the athlete, and the previous performances very good bring confidence in most cases. Emotive states before the start can be the engine of better performance in the competition samples but for certain stages of the samples, which require maximum concentration, emotions can have negative influences: shooting,

throwing grenades, seamanship. We found it beneficial that athletes have confidence in the support provided by the coach during sports training and find it useful to discuss the coaching sessions. The help considered necessary on the part of the coach is represented in the view of the athletes by the understanding of certain personal states or problems that require an adaptation of the load of the effort for different moments arising during the preparation. The main obstacle to achieving maximum performance in the competition is recognized as self-confidence and a desire to win.

### Conclusions

Comparative analysis of the results, based on mathematical-statistical and graphical methods, reveals significant increases in performance at the final testing stage in favor of the experiment group. The dynamics of the results (Table 3 and fig. 1,2,3) demonstrate a significant evolution of the results of the experiment group, carried out during the training programmed carried out according to the designed model, which confirms the effectiveness of the application of the training program with the implementation of the coaching sessions. The designed training plan contains training lessons optimized for the usual conditions of the naval academy's learning process and with the resources in this situation. Statistical results confirm a very good evolution of the results for most motor tests. The performance differences between initial and final testing, identified as significant by applying statistical methods, demonstrate the effectiveness of the application of the training plan designed on managerial principles and also of the coaching program which confirms the first hypothesis of the research. The comparative analysis of the statistical results between the experiment and control group highlights significant increases in favour of the experiment group, which certifies that the stages of the coaching programmed have contributed to the optimal improvement of the sporting performance of the representative group of the naval academy. The performance differences of the two groups confirm the second hypothesis of the research. The application of the question sets, within the coaching sessions, designed to maximize performance in the training process and in the competition, played an important role in the preparation, by mobilizing the resources of the athletes during the sustained effort, optimizing the communication of the coach-sports and the effective individualization of the training.

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