



Volume XXII 2019

ISSUE no.2

MBNA Publishing House Constanta 2019



Scientific Bulletin of Naval Academy

SBNA PAPER • **OPEN ACCESS**

General aspects regarding the technique of swimming in the military pentathlon

To cite this article: I. Sabin Sopa and M. Pomohaci, Scientific Bulletin of Naval Academy, Vol. XXII 2019, pg. 352-365.

Available online at www.anmb.ro

ISSN: 2392-8956; ISSN-L: 1454-864X

doi: 10.21279/1454-864X-19-I2-042

SBNA© 2019. This work is licensed under the CC BY-NC-SA 4.0 License

General aspects regarding the technique of swimming in the military pentathlon

¹Ioan Sabin Sopa and ²Marcel Pomohaci

¹ Senior Lecturer PhD, Faculty of Science, Department of Environment Science, Physics, Physical Education and Sport, “Lucian Blaga” University, Sibiu, Romania
sopa_sabin@ulbsibiu.ro

² Associate Professor PhD, Faculty of Science, Department of Environment Science, Physics, Physical Education and Sport, “Lucian Blaga” University, Sibiu, Romania
marcelpomohaci@yahoo.com

Abstract. The present article is looking for presenting the particularities of the 50 m swimming with obstacles component of the military pentathlon. We presented the components of the race and all the obstacles present in this competition, and also we tried to analyse the technique of swimming between the obstacles that is very important in obtaining good results. The article also present a series of exercises and also training programs that can improve the results of the military pentathlon team.

1. Introduction

The theoretical basis - The results of the scientific researches elaborated in recent years by numerous authors [1] [2] [3], broadened the area of representations about the educational potential of physical education in military higher education. The complex psychomotor and personality qualities have a formative role in the educational process of the future component of a military representative team [4].

In military physical activity research papers, scientist analyzed anthropometric parameters and also have been aiming at testing their relationship with physical fitness [5] and monitoring the effectiveness of military physical training programs [6].

The concept of military physical ducation, materialized by a model of a complex and dynamic system has its own characteristics and particularities. Thus, by the wide range of specific means this discipline demonstrates its viability in the curricula of military higher educational institutions. Character flexible and permanent openness of physical education is given by the goals pursued the physical education and sports, namely regulation and self-regulation in psychomotricity plan; receiving, processing and issuing responses neuropsychomotor [7].

The area of the military pentathlon has developed spectacularly from one edition to the next. Today, more than 30 nations are present in the circuit of international pentathlon competitions. Most of the time the military pentathlon is included in the World Military Games [8].

2. Aim of the research

The aim of the research was to present the technique of swimming in the 50 m race with obstacle component of the military pentathlon and also to present a series of exercise and training program looking to improve the performances of military students' components of the military pentathlon.

3. Methods of the research

The 50m obstacle swimming test, component of the military pentathlon, is statistically the highest rated, the score equivalents according to the international tables being 1 second = 24 points. As can be seen in Figures 1 the four obstacles: the gate, the raft, the table, and the beam are arranged on the length of the swimming pool at equal distances, the technique of swimming between the obstacles and especially the technique of approaching the obstacles procedures being decisive in the ergonomics of the final time.



Fig. 1. Presentation of obstacles in swimming 50m

The start in the 50 m test of the military pentathlon

The start of this race shown in Figure 2 is similar to the start of the crawl swimming style.

The technical mechanism in the start-up phase

- position on block start
- the impulse
- pushing
- the airway
- entry into the water
- work under water and surface

The main goal of the start is to quickly execute all phases provided by the competition regulations, in order to achieve as efficiently as possible a maximum result.



Fig. 2. The start in the swimming 50m with obstacles

Position on block start

This is a preparatory position on the block start so that the effort is minimal; the position of the head allows an impulse in a shorter time and express an optimal trajectory of the center of gravity. The main prerequisite is that air flight is as long as possible due to the low density and minimal braking environment. Entry into water will be done with a loss, minimum speed, at a specific depth for each swimming style. Underwater swimming requires an increase in initial entry speed and motor action at the optimum time to continue increasing the speed of the swimming.

The first signal of the starter referee - a long whistle or two or three intermittent signals followed by a long signal. The swimmer climbs to the back of the block start (the position is at his choice, standing or leaning); second signal: "Take seats" command, the swimmer takes the starting position at the edge of the swimming pool at the block start as follows: standing bent forward, with legs spaced at the width of the shoulders; with the heels facing outward to catch all the fingers on the edge of the block start. The lower members are slightly flexed to form biomechanically angles between the segments involved in making an effective push. The hands grab the edge of the block, the neck muscles are relaxed (chin in the chest). Before the start signal, the weight in the posterior plane (on the heel) is slightly passed. The position is achieved by moving to the edge of the block. The third signal is the starting signal, a short signal (whistle or pistol), as the swimmers stand motionless on the block start. Following the start signal, by a short pull of the flexion-extension of the arms, they leap forward and above the head. The legs are flexed from the triple flexion chain slightly. The trunk is plunged forward by a treadmill movement until it reaches an oblique position toward the block start. After the pushing elbow is completed with a pushing motion in support of the block start.

The air way

When we detach from the block start, no changes in the center of gravity trajectory can be made, but only of the body segments in relation to it, which may negatively or positively influence the length of the start and body entry into the water. The position of the body during the airway is stretched, with the chin in the chest (look at the toes), with arms above the head, with shoulders, back and abdomen contracted.

Entering the water

The body enters the water stretched at a sharp angle to the horizontal of the water.

Working underwater and going to the surface

For the crawl process, working underwater is to start immediately after full immersion, foot strokes, head lift, traction with an arm to return to the surface. The way of returning to the surface determines the stage of preparation in the attack phase of the first obstacle.

Frequent mistakes

To the block start position

- Rigid waiting position - Effect: Response speed at reduced starting signal; low start efficiency; energy effort unnecessary.

- Do not catch the edge of the block start with your toes - effect: after the start and unbalance to the front; the impossibility of pushing the feet (the start becomes a simple fall into the water).

At the swing

- swing back or rotating the arms. Although not necessarily mistakes, these movements result in a delayed detachment from the block start with negative consequences mainly in the short speed tests.

On the air and entering the water

- body positions, in echer, with folded legs, with bending movements
- leg stretching - effect: these positions may have a negative influence on the initial speed due to high braking

- leap forward leg motivated by fear of jump - effect: low jump length, deep diving, zero initial speed

- head jump on the back - effect: changing the head position, entering the water on the stomach

Working underwater and going to the surface

- leg movements begin late or do not go to the surface - effect: loss of initial speed.

Start Learning Methodology

On land

1. From sitting, taking the starting position
 2. Jump from squat to squat position
 3. Standing, step forward with the approach of the back leg, taking the starting position
- Exercise 3 with squatting
On the edge of the basin
From sitting seated forward, with arms up, simple fall forward
In the small water basin, "the dolphin jump"
From standing squat position on the edge of the basin, a simple drop forward
Standing leaning forward with your arms up, falling into the water
Exercises 5-8 with pushing
Exercises 5-9 on block start
From block start
Exercises 5-10 with forward throwing
Exercise 11 with underwater work
Learning commands on counting
Start with contest orders
Exercises for improvement
Start the contest at intensities, different tone of the starting signal
Exercise 15 with departure from start blocks at distances different from the starter
Start with different time intervals between the "Take seats" command and the starting beep
Start by measuring reaction time on start phases
Start with measuring the length of the jump
Start with measuring the efficiency of underwater work
Jump with bad start signals.

Ways of passing obstacles in the 50m test

a. First obstacle - The gate

Technical Mechanism

The first obstacle in the 50m obstacle swimming test of the military pentathlon consists of a gate with a length of 3m made up of two beams transversely arranged in the forward direction. The first is fixed and the second mobile. The gate shown in Figure 3 is set at a distance of 9m from the start.



Fig. 3. The first obstacle – The gate

After the start, the athlete performs a plunge at an average depth of 0.80m - 1.20m so that the exit from the water is executed near the first beam (Figure 4).



Fig. 4. Exiting the water after the first obstacle

Upon leaving the water, the student must attack the obstacle beam 1 according to the preferential side (Figure 5). Side-To-Side traction is performed. The movement is completed for one cycle to get the other arm. The feet perform a water movement. Simultaneously with the movement of the arms and legs, the student will also use the inertia due to the concave impulse as a result of jumping on the block start so that he can perform a lifting in support of the first obstacle. Continue with lifting the trunk and executing the jump under the second obstacle with a small plunge in the depth as close as possible to the second beam at a distance of 0.40 - 0.50 m. In this way, the exit from the water will be done at a distance of 2.80 - 3.20m.



Fig. 5. Support in cross-beam 1 (right); fly and plunge under crossbar 2 (left)

Frequent mistakes

- avoiding the obstacle or slipping from the fixed beam;
- leaving the water after the obstacle;
- non-observance of the passage under the second beam;
- not coordinating the arms for attacking the first beam;
- delayed attack of the fixed obstacle;
- deep jump after the first obstacle;
- the absence of optimal impulse force after the second beam;
- non-synchronization of the frequency of the arms and legs to the attack of the fixed beam;
- short jump after the first hurdle.

Methodological guidelines

- developing the upper train muscles to achieve coordination in the squat position on the first transverse beam;
- in the learning phase, the student will execute as many jumps as possible so that the arm cycle in the immediate vicinity of the first transverse beam will be completed according to the preferential side;

- mandatory execution of the jump on the first transverse beam. Failure to do so involves penalizing the ergonomics of the total time by 1.8 - 2.5sec.

b. Obstacle II - Raft Technical Mechanism

The second obstacle is located at a distance of 8m from the first obstacle and is represented by a 3m long mobile raft (Figure 6). The mobile raft exhibits a metallic margin of 10cm wide for entering and exiting the obstacle at the entrance and exit. At the time of the attack, the student performs a rotation around the center axis so that the handy arm is above. At the entrance to the raft, the tiller arm traverses the rim.

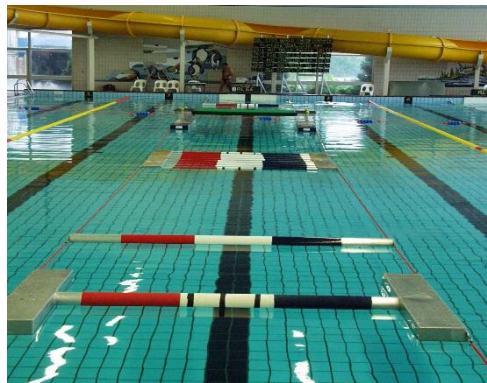


Fig. 6. Floating platform in the obstacle system

The arms execute under the raft the movement characteristic of the brass style, after which the skillful arm performs an abduction and support movement on the upper edge of the raft (Figure 7).



Fig. 7. The attack of the second obstacle

The legs perform the craze-style movement before attacking the obstacle. When the arm is disengaged from the lower edge of the raft, the opposite leg performs a flexion motion and snaps onto the edge of the raft in support for the second impulse. The same algorithm in this sequence is also performed at the exit under the raft so that the student will swim to the third obstacle with an initial speed.

Frequent mistakes

- avoiding the obstacle or insufficient capacity to maintain apnea under the raft and exit from the line;
- non-coordination when moving under the raft;
- lack of work of arms and legs under the raft;
- not using the entrance and exit edges of the obstacle with the arms;
- non-use of the entry and exit edges of the obstacle with the legs;

- exit the obstacle with the wrong arm;
- the uncoordinated work of the arms and legs under the raft;
- sliding at the moment of impulse when leaving the obstacle;
- not using the rim's edge when leaving the obstacle.

Methodological guidelines

- during the learning period, emphasis will be placed on increasing the time of apnea;
- specific psychological training will be primarily focused on mental training to eliminate anxiety from the time of going under the raft;
- learning the technical process of obstacle crossing will be done after the student has managed to coordinate his arm movements between obstacle I and II so that the obstacle II attack will always be carried out with the skillful arm.

c. The third obstacle - the table (fixed platform)

Technical Mechanism

The third obstacle, the table is represented by a fixed platform situated at a height of 0.50 m above the water with a width of 1.20 m. It is located at a distance of 8m from the second obstacle. At the time of the attack, the student must consider optimal use of the handy arm that will execute traction on the edge of the table. Based on the longitudinal components of the acceleration force and the inertia force at the moment of traction on the edge of the table and the force perpendicular to the axis of the graphical representation resulting from the process of trampling the water with the legs, an obstacle attack occurs. The resultant force in the parallelogram of forces gives the student the possibility of lifting the trunk on the table, which can be executed depending on the morphofunctional possibilities of the athlete in two ways:

- lifting in the arms of the support and putting arms on the table (figure 8)



Fig. 8. Lifting over the obstacle the table

- lifting by knee attack on the table by applying the escalating application method (Figure 9).



Fig. 9. Escalation of the third obstacle

After climbing on the table, jumping is prepared from the top of the table in two variants:

- by jumping the "frog style" from the lower edge to the upper one, followed by the detachment, figure 10 (impulse on both lower members).



Fig. 10. The jump of the "frog style" from the lower edge to the top of the third obstacle

- in the absence of specific force in the arms lifting on the table can be done as follows: in support in the hands, raising the knee on the lower edge of the table; hanging it with a new support point according to the podium preference; pushing into the arms and lifting on the table. The movement is completed by one step towards the side of the table leading to the aisle and followed by a detachment. The impulse at the time of detachment is made according to the lateral side (Figure 11).



Fig. 11. The impulse phase and the preparation of the water inlet phase - the third obstacle

Frequent mistakes

- avoiding the obstacle or imposing at the attack;
- stationary for a long time on the obstacle;
- unbalanced jump on the table;
- not synchronizing the movement of the attacking arm with the obstacle;
- deep jump after the table;
- the lack of coordination of the jump step;
- sliding off the table when jumping;
- insufficient impulse when climbing on the table;
- the non-use of the arms when the obstacle is attacked.

Methodological guidelines

- before moving on to learning how to pass this obstacle, the student will appropriately coordinate arm movements between the second obstacle and the third, so that the attack will always be done by preferential laterality;

- the learning process will be graduated from 0.20 cm with increments of 5 to 5cm of table height from water level.

- at the time of detachment, a support point on the edge of the table is considered to be the second block start.

d. The fourth obstacle - Crossbeam

The fourth simple and difficult obstacle at the same time in the ergonomics of time for this test consists of a movable transverse beam situated at a distance of 11.80 m from the third obstacle and 6 m from the finishing. Crossing the obstacle is similar to the second obstacle - the raft - underneath (fig.12).

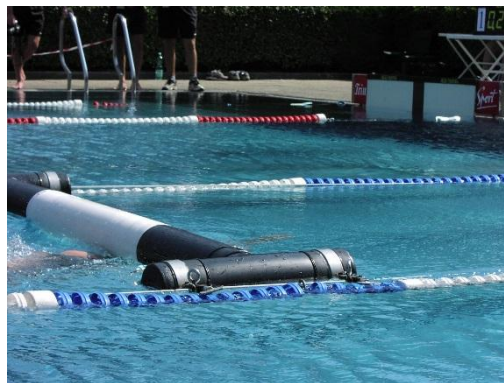


Fig. 12. Attack of the fourth obstacle – transverse beam

The tight arm performs the grip of the beam underneath, followed by longitudinal traction. The opposite leg performs a flexion and follows the attack at the exit of the obstacle by replacing the arm's hand. The final impulse is achieved with the median part of the plant of the foot, the student continues the movement with an increased acceleration force to achieve the finishing.

Frequent mistakes

- stopping or avoiding obstacles;
- the non-existence of the attack phase;
- non-use of impulse force when leaving the obstacle;
- lack of coordination of the arms with the legs at the entrance to the obstacle;
- non-use of the obstacle;
- lack of coordination of breathing with the movement of the arms;
- lack of coordination of breathing with the movement of the feet;
- inefficient movement of the body when leaving the obstacle;
- sliding the foot at the moment of impulse when leaving the obstacle;

Methodological guidelines

- learning the obstacle crossing procedure before the second obstacle course
- the raft - since the diameter of the crossbar of the fourth obstacle is 20cm;
- the final impulse to be achieved with the medial plane of the attack foot plant;

Swimming technique between obstacles

Technical Mechanism

While walking the obstacle distances, the student will swim in the crawl style. Compared to the rules imposed by this style on breathing coordination with arm and leg movements (Figure 13), in the

50m obstacle swim, it is necessary to observe the number of arms (cycles) between the obstacles - the swimming test with self-control.

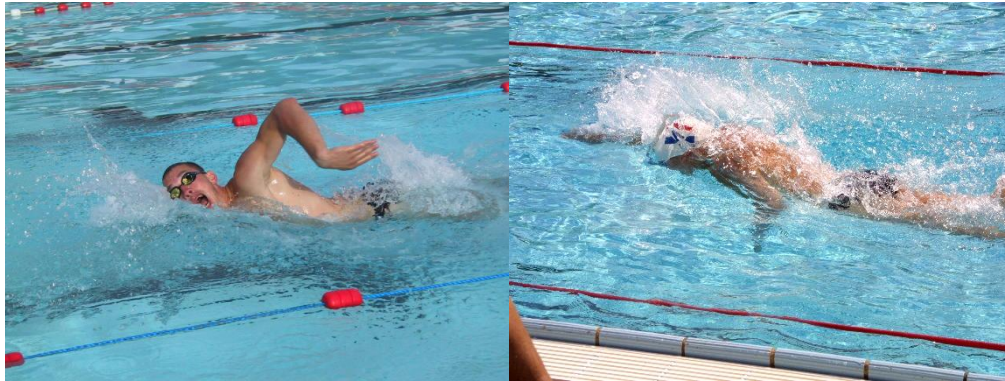


Fig. 13. Swimming between the obstacles

Compliance with the algorithm determines the sequence of achieving a correct dynamic stereotype in the art approach the obstacle (Fig. 14).



Fig.14. Swimming between the third obstacle – the table – and the fourth obstacle – the transversal beam

Frequent mistakes

- arms bent too much underwater;
- underwater movement is too short;
- the arms fall into the water or are stretched beyond the median line of the body;
- shortening the rowing by pulling out of the water before full arm stretching;
- hurried foot movements (too small a step) and ineffective;
- the stiffness of ankle and knee joint;
- leg movements are not synchronized from the triple flexion chain;
- legs get too much out of the water;
- pauses in the movement of the arms;
- movement of the legs are irregular;
- non-synchronization of the arms cycle with breathing and movement of the legs;
- the front arm delays the start of the traction;
- failure to complete the arm movement in the air phase;
- pushing the arm forward on the side opposite to the part to be breathed;
- non-synchronization of breathing with the movement of the feet;
- leg movement is short and irregular;
- at the entrance to water the full extension of the forward arm;

- the head sinks too much for expiration;
- turning the head in inspiration without the movement of the shoulders;
- the absence of inspirational twist;
- continuous exhalation outside the water;

Methodological guidelines

- breathing should be done in 5 arms. This will increase the hypoxicity of this test;
- in the learning process, emphasis will be placed on jumping on the block start and the third obstacle
- the table, to achieve the longest plunge and increase underwater;

The Finish

Technical Mechanism

The finishing is done on the last 6 meters, from the last obstacle the transverse beam, and the edge of the swimming pool. After the moment of impulse in the transverse beam, by arcing and flexing the foot with the median part of the plant, there is an inverse rotation than at the entrance to the last obstacle with respect to the medial axis of the trunk. To increase the speed on the finishing distance of the test, the impulse is very energetic. The 20cm diameter of the obstacle favors a large contact surface between the obstacle and the attacking foot plant (fig. 15).

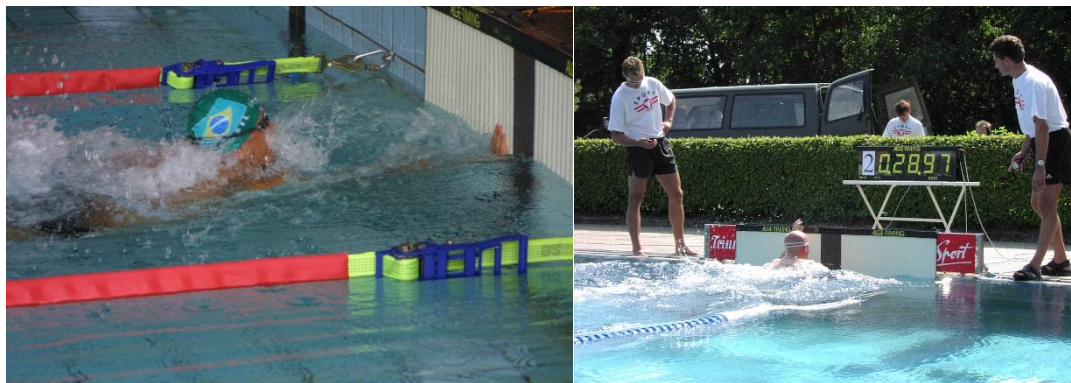


Fig. 15. Exiting the fourth obstacle and finishing the race

Frequent mistakes

- in the attack phase, stopping arm movements;
- in the attack phase, stopping the movements of the legs;
- attacking the wall with the flexed-arm from the elbow;
- the sliding is not held straight ahead before finishing;
- non-synchronization of arm movements,
- non-synchronization of leg movements;
- lifting the head before reaching the wall with the arm;
- extending the sliding phase to complete, touch the wall;

Methodological guidelines

- in the learning process, emphasis will be placed on specific attack exercises on the foot, with flexion of the foot to the wall, for an energetic impulse;
- in the process of consolidation and refinement, the breathing on the finishing distance of the test will be monitored, until reaching the edge of the swimming pool, in order to reduce the distance;

Description of the crawl swimming style

The training of swimming skills can be approached in a new orientation, not imposed by the sympathy for any of the four procedures, but by the biomechanical characteristic that is mandatory in the development of the skill. The succession of swimming learning is:

- Accommodation with the aquatic environment, learning breathing;
- Learning floating in both positions;
- Learning the forward movement with leg movements;
- Joining arm movements to feet without breathing;
- Combining all components: positions, leg movements, arms, accompanied by breathing movements to increase speed and swimming resistance;

Gymnastic elements applicable to the process of learning the processes of swimming:

The gymnastic elements with applicability in the swimming will be done in the introductory part, respectively when accommodating with water and sliding. The osteoarticular and muscular system will be developed in accordance with the requirements of the discipline. The specific strength of the back, upper and lower train muscles will be developed in accordance with the valences and characteristics of the optimal performance models at the level of military students in accordance with the requirements of the new guideline. Repeats of algorithms will be conducted under appropriate dosing conditions. Breaks will be active with specific breath activation-specific movements.

The underwater accommodation

The first stage of training to swim is of particular importance because it faces individualization of the subject with environmental conditions - with water that is a powerful stimulus capable of triggering strong defensive reflexes. Entry into the water has favorable effects on the body, influencing thermoregulation, blood circulation, space balance, tactile sense, nature of mental processes, thinking, etc. The apparent form of adaptation is manifested in the respiratory act. Control of breathing imposed by the feeling of anxiety in specific conditions causes an obvious disturbance of breath: inspiration becomes deep, and superficial exhalation - a fact that induces a form of mechanical fatigue, distinct from that caused by effort. All exercises at this stage aim to accommodate with water, reduce stress.

The algorithmic system of the specific means in the process of learning the processes in the water

Exercise no. 1 (working position)

The first entrance to the swimming pool is also the most difficult. The student has anxiety and is dominated by this feeling. Muscle contraction, joint blocking, unnecessary, coarse movements are obstacles in swimming learning.

Objective: Achieve an ergonomic and relaxed position in water by eliminating stress. This position allows the transition from the accommodation stage to the ability to sit underwater under the conditions of the overall practice.

Exercise no. 2 (underwater accommodation)

From the "fundamental position", the subject will sink into the hanging position, grabbed by the edge of the swimming pool. The dive will be preceded by deep inspiration. Surface recovery is slow, with eyes closed, so water can cause relaxation by buffering action on facial muscles.

Exercise no. 3 (vertical float)

Performing vertical diving from hanging at the edge of the basin by a "break-in" support, with the trunk and the well-stretched lower members (in a decontracted position). After a few seconds of diving, palm rests 1-2 cm above the edge they were supported. Floating is provided by vital capacity, apnea, intra-capillary pressure, the hydrostatic force on the body, etc. These contribute to the

stimulation of the trunk water adduction without coordinated additional actions. The exercise is repeated until the beginner student, regardless of the level, in the conditions of maximum vital capacity, manifests the ability to float. This moment represents the main means in the evolution of the psycho-mental system in swimming learning. The psychic quality, revealed by courage and self-control in the conditions of the sport-water system requires and determines, in the circumstances of a sanguine choleric temperament, positive aspects that allow the continuity of the specific effort, concurrent with the conscious manifestation of the will. To increase the depth of immersion you can use the method of developing the force by working under difficult conditions with objects such as stick, rope.

Exercise no. 4 (water stepping)

Based on the explanation, the previous exercise will resume. The explanation is the following method, which will coincide with the return to the surface (when the head has reached the surface of the water). The first moves will be carried out: they are executed with their legs and arms, aiming at least maintaining the head at the surface of the water to ensure the respiratory movements. The movement of the legs is similar to the pedal on the bicycle or it will be to step the water simultaneously with both members by pushing the water down. At the same time, the arms will move along a circular trajectory (from the front to the front and in lateral). To keep in touch with the air, the beginner tends to lift his head a lot. This is done from the vertical to the oblique, on the back, and its movements will not attack the water properly, which will result in the failure of the execution. The most effective position is the vertical one or slightly sloping forward. At first the head will not be removed from the water unless the cycle of the arms is followed by the respiratory cycle. After learning the movements will become effective (after several repetitions), the head will be kept light and will be held continuously at the surface of the water. During exercises if flooding is difficult, it is recommended to do it with a help system.

Exercise no. 5 (test)

The control of specific motor skills can be achieved in the context of the combination of exercise no. 4 with a standing jump on the edge of the swimming pool. The method of practicing will be applied in the context in which we want to maintain the surface of the water. Thus, the transition from the general practice to the partial practice determines the realization of the first phase of the motor skills. To form the belief that no matter how submerged they are the body tends to rise to the surface (freely, without any movement) we have introduced this jump into the depth. The helpful means that can intervene in the process of forming the first phase of specific motor skills are: the end of a string, a stick. The subject will perform the jump at first in support of the helper object. Depending on its reaction, from a technical and methodological point of view, it will be used to accelerate or delay the moments of the first sequences of repeating the jump. The sense of slip is highlighted when the subject has the opportunity to "feel" the water under the effect of his movements. The correctness of the movements - traversing the water and advancing to the edge - leads to the abandonment of the exercise in difficult conditions. Upon entering the water when the exhalation is performed in two strokes, it causes self-regulation of the air-water-cycle system.

Exercise no. 6 (raft on the chest and on the back)

The initial position is simulated on land: the body is perfectly stretched, the head is well framed by the extended arms (from the joints), the open palms are placed on the ground, the extension legs from the flexion triple joint, the slightly spaced heels, the close peaks. The specific motor skills of land-based training through positive transfer will be transferred to technical and psychomotor training in water training. From the fundamental position, the legs leave the wall by inserting the head into the water.

Reference

- [1] Drăgănescu, E. (2000). Optimizarea conținutului educației fizice privind pregătirea profesional aplicativă a studenților de la universitățile de medicină în baza intensificării procesului de studii/Teza de doctorat, Chișinău, p. 157-165.
- [2] Drăgănea, A. (2002). Teoria Educației Fizice și a Sportului, Editura București, p. 177-186.
- [3] Râșneac, B. V. (2004). Utilizarea tehnicii de calcul în evaluarea performanțelor sportive, Editura Transilvania, p. 34-51.
- [4] Epuran, M. (2001). Psihologia sportului de performanță, Editura FEST, București, p. 324-336.
- [5] Kobermann, A. M. & Mayhew, J. (2012). *Relationship of Body Mass to Army Physical Fitness Test Performance in College ROTC Cadets*. 25th Annual Student Research Conference. Kirksville, Truman State University.
- [6] Wen-Chyuan Chen, K.; Pin-Kun, C.; I-An, L.; Ku Fu, X.; Mei-Chieh, H. & Tian Chong Liang, M. A (2007). Study of basic military training on the physical fitness and physical selfconcept for cadets. *J. Phys. Educ. Recreat.*, 13(2):6-12.
- [7] Ene-Voiculescu, V., Lazar, I. (2016). Nato specific evidence in higher education of marine. "Mircea cel Bătrân" Naval Academy Scientific Bulletin, Vol. XIX, Issue 1, p. 393-394.
- [8] Ene, V. (2003). Orientări moderne în antrenamentul sportiv din pentatlonul militar, Editura Academiei Navale "Mircea cel Bătrân", 205p.