Bulletin of "Carol I" National Defence University
10.12753/2284-9378-20-74

CHARACTERISTICS OF THE MILITARY'S MOTRICITY AT DIFFERENT AGES

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The article addresses the motricity of military personnel at different ages, in three periods of life in service, as follows: the period of military high school education; the period of initial training as a military; the period of maturation and continuous professional development. Also, we presented in the article the manner of evolution of the military from a physical point of view, starting immediately after the selection process and continuing with the period of professional development (period marked by maximizing motor performance in the first phase, keeping oneself for as long as possible at this level, and then obviously reducing it as retirement is approaching).

Keywords: motricity; motor qualities; motor skills; age; physical effort; professional development; performance.

The Explanatory Dictionary of the Romanian Language defines *motricity* as an "ability of the superior nervous activity to move quickly from one excitation process to another, from a certain dynamic stereotype to another"[1] or a "property of certain nerve cells to cause muscular contractions"[2].

In the specific literature in the field of physical training and sports, "the motricity concept is defined as expressing a both innate and acquired human being ability to react with the locomotor system to external and internal stimuli, in the form of a movement…, a set of processes and mechanisms by which the human body or its segments move, detaching from a landmark, by phasic or dynamic muscle contractions, or maintain a certain posture by tonic contractions"[3]. Also, from a psychological point of view, motricity is "the function that ensures the realities with the material and social environment and which has as peripheral support the striated muscles"[4].

Thus, in summary, motricity is represented by all motor acts, performed through the contraction of skeletal muscles, realized so as to maintain the relationships with the natural or social environment, also by performing skills specific to sports.

The analysis of motricity, taking into account the complexity of its content and forms, can be performed in order to achieve didactic purposes, only through its component substructures: the act, action and motor activity. These components represent the *micro, meso and macrostructure of the movement*, with different levels of structuring and integration that make up a hierarchical functional system[5].

The motor development of the military is often seen as a process of progressive learning of specific motor skills during his/her initial training (not infrequently, during the training process, when a military is subjected to the execution of a complex motor skills structure, he/she states that he/she has not done something like this from the "military school"). From this perspective, the study of motor skills should not be reduced only to the initial training of the military, but, on the contrary, this process should include the description and explanation of changes in motor behavior that operate at the base of military career, during maturity and until the moment of exit from the military system.

Learning, consolidating, improving and using motor skills are tests that the military personnel is subjected to throughout their careers. This process begins early on, with the acquisition of basic and utility-applied motor skills in the family and in school. Subsequently, given that the military accesses the system following a rigorous selection process consisting of medical, psychological and physical tests, basic skills are consolidated, improved and combined into movement sequences that will lead to the acquiring of complex skills specific to the military environment. Together

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with the process of development (maturation), the perception of the military environment becomes penetrating, favoring cognitive experiences that maximize motor performance. Maintaining oneself at this maximum level the motor performance and going down as slowly as possible on the descending slope, largely depends not only on the performance of each military, but also on the pedagogical mastery of the instructors.

This article analyzes the motricity of the Romanian army soldiers, who are in certain periods of their military career, at different ages, as follows:

- the period of high school education, in the national military colleges (age group – from 14 to 18). Although the students of the mentioned institutions are not military in the true sense of the word, as they do not take the "Military Oath", I considered it appropriate to analyze this category of personnel which represents the basic nucleus for the training of officers;
- the period of initial military training, in military institutions of higher and post-secondary education and application schools/branch training centers (age group – between at least 18 years old and the age of graduating the institution);
- the period of growing and continuous professional development, when the military actually carries out its activity in the army structures; this period corresponds practically to adulthood, as it is called in the literature (adult I – from 35 to 45 years, adult II – from 45 to 55 years, late adult – from 55 years to retirement, in the case of the military).

The period of military high school education

At the level of national military high schools, the development of motricity is mainly achieved by carrying out the activity of physical training and sports, which together with the other disciplines in the curricula, contribute to shaping the personality of students, representing the intermediate link between physical education in military high-school and military higher and post-secondary education.

The general objective of the activity of physical training and sports in the national military colleges (as military high schools are called in Romania) consists in the development of the bio psychomotor skills of the students necessary for the professional insertion within the military system.

The specific objectives are reduced to: increasing the body's resistance to environmental factors and increasing the capacity for physical and intellectual work; stimulating the growth process and ensuring harmonious physical development, in the sense of improving somato-functional indices and preventing the installation of deficient physical attitudes; forming and maintaining the correct attitude of the body; training and development/education of basic motor qualities, as well as combined ones; training, consolidation and improvement of basic and military-applicative motor skills; stimulating interest and building the independent capacity for practice physical exercise; broadening the horizon of knowledge by mastering the system of values and norms necessary for the practice of physical training and sports; educating the spirit of discipline, of collective action, of mutual help and first aid; the development of morally-volitional traits, such as punctuality, discipline, courage, initiative, determination; developing the ability to orient oneself in space; increasing responsibility for one's own training.

During high school, the student "changes his self-perception, including body image, as an expression of his identity. The biological, intellectual and moral maturation is progressively felt in the displayed conduct, the self-search being replaced by the self-assertion (U. Șchiopu). The body image located peripherally in childhood acquires persistence, polarizing the attention of the young person who is constantly looking to improve (adjust) this image"[6].

High school students, especially those of the national military colleges, go through a period of life characterized by a series of stomato-functional and mental characteristics. Considering the age at which the students of the national military colleges are, namely the period of adolescence, we considered it necessary to highlight some features and consequences of their impact on military life, a period characterized by the following transformations:

- the trunk grows rapidly in all sizes, increases the circumference of the chest, improving and amelioration the function of the heart and cardiovascular system;
- the muscles increase in volume and strength. The small muscles (of the hands, feet, spine, intercostal) acquire a shape and consistency

similar to the adult muscles, the movements being performed more precisely and safely. The organs and systems are completed in parallel with sexual maturation;

- ossification of the skeleton continues vigorously. The balance between the volume of the heart and that of the blood vessels is established by increasing and thickening the heart muscle. Thus, the blood circulation improves, the circulation speed slows down, the pulse slows down, the blood pressure becomes equal to that of the adult;
- the coordination structures of the neuro-endocrine system mature, a significant fact in balancing the performance of motor acts and actions and in their superior regulation. Motor responses become complex and nuanced due to the development of skills to perceive significant elements for effective motor behavior. Military college student assesses his or her chances of success and makes plausible predictions about his or her own motor performance;
- in terms of motor qualities, they progress, in the ninth and tenth grades, maintaining the possibility to act, by specific means, on the development/education of coordination capacity and speed; indices of coordination, speed and aerobic endurance are increasing rapidly, and flexibility must be constantly maintained; force exercises must be performed with medium and submaximal intensity so as not to affect the musculoskeletal system, not yet fully consolidated;
- there is a permanent process of improving the motor skills and abilities consolidated in the previous stages, thus seeking to effectively cover the area of existing motor activities (educational, competitive, leisure, body expression etc.);
- the students' psyche develops more and more, they acquire logical thinking, which is also completed by its critical side. Attention and memory become sustainable, the spirit of initiative develops, the need to assert oneself, to check one's own strengths.

Somatic-functional and mental transformations are strongly influenced by the specific conditions of national military colleges, where the school makes a consistent impression on the formation of the adolescent's personality compared to the family environment or social micro group in which students spent their childhood.

Once admitted to the military college, the student leaves the parental guardianship, is released from their permanent observation and has to abide by the rigors of military regulations. Students go through a period of adaptation to the new conditions - uniform, order and discipline, strict and very busy daily schedule, diet, ever-increasing demands of military education, responsibility for their own activity - which put a strong imprint on their mental and physical life.

From the measurements performed by the specialists in the field, it results that the somatic indices of the students from the national military colleges are superior to the students from the civil high schools. Also, the functional indices, respectively the state of health (physical and mental) and the body attitude present differences in a positive sense for the students from the national military colleges, as the admission in these institutions is made, as mentioned above, after completing of a recruitment activity and then a selection consisting of medical, mental and physical tests.

During the years of study, the positive attitude of the students towards physical training and sports must be noticed, as they want to become real fighters, being aware that through this activity they can accomplish their goal. Also, within this activity, the feeling of personal honor, of the prestige of the group is manifested, particularities that must be exploited by physical education teachers, coaches and instructors, thus benefitting from the interest shown in training lessons for the development of endurance and physical strength, shaping the external appearance of the body and educating, in general, the ability to move.

Therefore, at this level, motricity is not limited to the high school curriculum, but comprises complex ways of adapting to various situations (many of them similar to the military action environment), mastering one's own body, information processing, building certain reasoning and use of different forms of expression. After all, learning every move is "an experimental approach felt bodily"[7].

The period of initial training as a military

The initial training period takes place in military higher education institutions, military schools of warrant officers and non-commissioned

officers, application schools/branch training centers, depending on the category of participating military personnel and the training program. In these military training structures, the activity of physical training and sports aims to develop and strengthen the motor capacity of students in order to increase their physical and mental potential while maintaining optimal health. The aim is to improve the anatomical structure and improve the body's functions in order to obtain the best possible psychophysical efficiency. Military physical education is seen primarily as a process of adapting the body to increasing functional efforts, to new experiences, in terms of strength and speed, endurance and flexibility, coordination of movements and dexterity, mental strain and other numerous requirements. It aims at learning, developing, consolidating and improving motor skills and abilities specific to the development of military actions.

The age at which the young military of the mentioned training structures are, approximately, between 19 and 30 years old, a period in which the growth and development of the human body takes place, reaching the optimal degree of somatic-functional maturity. At this age, the respiratory and cardiovascular systems overcome the developmental crisis, function synergistically and adapt to physical effort, the metabolism being more balanced. Under the influence of physical effort, the main systems (circulation, respiration and nervous regulation of body functions) reach optimal values, during this period ensuring biological support for resisting the intense psychophysical demands specific to military activity.

A specific feature of the military system is that the training of human resources in educational institutions and, subsequently, at the level of training subunits is performed at the same level of standardization, regardless of age and sex. In this respect, the exquisite skill of the military instructor is to lead the training towards the fulfillment of the designed objectives, by homogenizing the study formations/training groups/training subunits, taking into account the following characteristics of the age period analyzed:

- in the somatic sphere – uneven and sometimes asymmetrical, arrhythmic, alternating and differentiated growth and development between the sexes (height and body weight, bust, wingspan, thoracic perimeter, bitrohanterian and biacromial diameters, limb length, muscle mass and strength etc.); while aging, the properties of the muscles increase (excitability, contractility, conductivity, tone) in relation to the degree of training, but their elasticity decreases; the musculoskeletal system strengthens, the bones become heavier, the joints stabilize, the muscles increase in volume and strength, the speed and ability to move normalize;
- in the functional sphere – at the level of the respiratory system the thoracic box increases, the diaphragm is strengthened, the respiratory movements are amplified and the vital capacity is increased. Also, the type of breathing changes, being predominantly abdominal, in men with lower ribs and in women with upper ribs, and the exchange of gases between the lungs and tissues becomes more efficient; at the level of the circulatory system, at this age the weight of the heart, contractions (85-86/min), blood pressure (120/75 mm), its volume (250-300 cm^3) are stabilized, in the conditions of a normal functioning; the digestive system, endocrine system and nervous system are perfected, stabilized and matured;
- in the psychological sphere – at this stage it is characterized by physical vigor, amplified by intelligence, memory, abilities and skills fully usable, as well as a more efficient performance, a period of great sensory-perceptual manifestations. Following numerous psychological studies, related to human personality, obvious differences between the two sexes were found. Therefore, in the field of military training it is necessary to take into account the fact that young women have a greater sensitivity to colorful visual stimuli, sounds and noises, have a better developed sense of touch, hands skills are more mobile, fast and coordinated. Women have stronger verbal skills and cope with stress more easily. Men have more developed spatial-visual sensibilities, have pronounced mathematical skills and abstraction skills. Instead, they have greater aggression and real evaluative mobility[8].

The body image, located peripherally in the period before joining the military system, acquires consistency, polarizing the attention of the military student who is constantly looking to improve this image. Motor responses are becoming increasingly complex and nuanced as we develop the skills to perceive the significant elements for effective motor behavior. Also, the sensory sensitivity contributes to the completion of the motor repertoire of the

individual, for athletes obtaining top results in sports and military-applicative competitions both during participation in the training program and after graduation.

However, at the age of majority of participants in initial training programs, there are still opportunities for somatic-functional development. The activity of physical education and sports, within these military training structures, aims to continue the physical development through a technical-methodical activity carried out at a high level, in order to complete and capitalize on previous training.

The period of maturation and continuous professional development

Although this age period has not been treated as such in the literature, as it initially coincides with the transition from adolescent to young adult status and later to adulthood (adult I, adult II and, less for the aging adult), I consider that, from the motricity point of view, the period of maturation and continuous professional development, specific to the military system, can be divided into two stages: stage 1 – from graduation from the initial training institution to the age around 35-40 years old; stage 2 – from 35-40 years old until leaving the system. These stages of age at which the military are situated represent the middle period of life, of middle maturity, in which they engage in an offensive attitude, of rebuilding their own lives, by activating latent valences and by assuming new freedoms and roles.

In stage 1, the vast majority of military personnel are concerned with maintaining the youthful shape and structure of the body, the complex of motor and mental qualities specific to age being the result of training in previous periods of growth and bodily development. Thus, the physical vigor is specific at this stage, doubled by intelligence, memory, abilities, fully usable skills with maximum performance. Also, the good ability to master one's own possibilities and strengths creates a sense of accomplishment, power and spirit, trained to achieve the goal of promotion in the military career.

At this stage, the professional development from a motor and intellectual point of view of the military is completed both by exercising the attributions of the positions they are assigned, and by participating in career and specialization courses organized in military educational institutions. Basically, the foundations are laid and the status of military is finalized, identifying a series of skills and capacities, whose progress is made in parallel with the increase of professional experience. Professional success is obviously conditioned by the military's biomotor resources, more precisely by his/her psychomotor capacity.

Regarding motricity, top characteristics of the stage that the military go through are reached, as follows: the maximum development of muscle strength in the first phase, decreasing by about 10% around the age of 40; physical endurance capacity is maximum and may remain so until the end of this stage; the accuracy of the movements is at its highest until around the age of 30; high ability to learn movements quickly, especially rhythmic ones; fine and efficient regulation of movements, thus obtaining the best results in learning complex movements specific to the military environment; the easily acquiring of any motor skills, the appropriate native endowment leading to exceptional results.

Consequently, motricity at this age can be found in the following purposes: complex volume of motor skills and abilities; high sensory-perceptual capabilities; improved basic motor schemes; superior capacity to convey messages through nonverbal communication; the ability to exercise independently; superior socializing ability[9].

Stage 2 or middle adulthood is characterized by maximum professional achievement, harmonization of interests and balancing the personality of the military. This age "is populated by a multitude of stressful events, which significantly affect not only the state of health, but also the psychological configuration"[10].

Physically, there are inherent changes, even if they are installed gradually, at a rhythm that differs from case to case, depending on the genetic endowment of the individual, lifestyle, and how he/she knew how to adapt to the hard trials of military life. Therefore, once the individual exceeds the age of 40, he/she begins to face an involution of physiological indicators (vital capacity, basal metabolism, cardiac index, respiratory capacity) and, in parallel, a change in anthropometric dimensions (body height gradually decreases, while weight increases due to increased adipose tissue, to the detriment of muscle). The passing of the years causes erosions on the physical aspect, the descending slope on which the physical force is

engaged continues, and the bones become thinner in density, especially after the age of 50. The motor skills of the individual are affected as the years accumulate.

Motricity has nuanced dynamics during this stage, as follows: the speed of movements decreases slightly even after 30 years of age and growingly after 40 years of age; the accuracy of the movements decreases slightly after 40 years of age and a little more after 50 years of age, but the specific professional demands preserve it quite well for a long time; the intensity of the movements decreases noticeably, even if the military tends to consider it lower than it really is; complex movements, which are of major importance from a professional point of view, are fairly well preserved, especially in the first phase of this stage, and are supported by various motivations and compensations.

Regarding the state of health, mainly after reaching the age of 50, various chronic diseases can be installed – cardiovascular diseases, osteoarthritis, hypertension, diabetes, increased lipid profile, obesity – these can be avoided through a healthy lifestyle and, obviously, through the systematic and continuous practice of physical exercises. In this sense, for the military detected with such pathologies, the development of physical effort must be preceded by a medical check-up and the doctor's opinion, as well as by the guidance of a specialist in physical training and sports activities.

Within the activity of military physical education and sports, the aim is to establish realistic objectives, according to the age and training of the military, as follows: maintaining the capacity for physical effort and an optimal state of health; developing resistance to fatigue and other stressors, ensuring a capacity for rapid recovery of strength; the development of the fighting spirit, of the group cohesion; educating mental stability, moral-volitional and intellectual traits, aesthetic sense and social responsibility.

In conclusion, following a rigorous selection process and after completing the initial and continuous training programs, the military acquires a motricity with a high level of improvement during the period of maturation and professional development (approximately 30 to 40 years of age), during which the motor skills (including those related to the use of weapon systems and military equipment) are capitalized at higher levels. Motor skills, regardless of the age of the military, enrich their biological and psychological heritage. Physical exercise or specialized motor act, as a basic means of physical education and sports, is the biological stimulus that ensures harmonious morpho-functional development, education of motor qualities, as well as the acquisition of motor skills specific to military activities.

NOTES:

1 https://www.dex.ro, accessed on 01.11.2020.

2 *Ibidem.*

3 A. Dragnea, A. Bota, *Teoria activităţilor motrice*, Didactic and Pedagogical Publishing House, Bucharest, 1999, p. 3.

4 M. Epuran, *Motricitate şi psihism în activităţile corporale*, FEST Publishing House, Bucharest, 2011, p. 15.

5 A. Dragnea and colab., *Educaţie fizică şi sport – teorie şi didactică*, FEST Publishing House, Bucharest, 2006, p. 3

6 *Ibidem*, p. 48.

7 *Ibidem*.

8 A.D. Pelmuş, *Eficientizarea activităţii de educaţie fizică militară în procesul de instruire a forţelor, premisă a creşterii potenţialului de luptă*, Teză de doctorat, Editura Universităţii Naţionale de Apărare "Carol I", Bucharest, 2019, pp. 135-136.

9 G. Ciapa, „Motricitatea omului – necesitate socială", *Bulletin of "Carol I" National Defence University,* no. 3, Bucharest, 2015, p. 188.

10 R. Paloş, S. Sava, D. Ungureanu, *Educaţia adulţilor – Baze teoretice şi repere practice*, Polirom Publishing House, Iaşi, 2007, p. 148.

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