

## SPECIAL PHYSICAL EDUCATION IN POLICE: MODEL OF EDUCATION AND TRAINING

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### Abstract

*This paper describes a model of education and training in Special Physical Education, teaching and scientific discipline, particularly in the education and training of students at the Academy of Criminalistic and Police Studies in Belgrade. The present model of education and training through a program of Special Physical Education is based on science, the scientific method and police practice and other disciplines involved in the construction of personal integrity and professional capacity of students, using specially designed educational and training programs. The current model is divided into several qualitatively different and dependent phases of training (basic level, advanced level and situational level) which differ in the tasks of education, mechanisms to engage, by the specificity and complexity of the motor structures that are learned, according to the objectives of application and methods.*

**Key words:** *teaching and scientific area, the police, karate, judo, jujutsu*

### Introduction

Special Physical Education (SPE) is taught at all levels of police education, training and skills development in the Republic of Serbia. According to the scientific nomenclature, it is regarded to be part of police science and, more specifically, it falls in the group of special police science subjects. As a teaching discipline it is among the narrow vocational subjects and the police institutions of higher education include it among their main courses (Milosevic, Zulic, Bozic, 1989, 1991; Mudric, Milosevic, Jovanovic, 2004; Milosevic & Milosevic, 2013a, b; Milosevic & Milosevic, 2014; Amanovic, Baic, Nikac, Ljubisavljevic, 2015). As regards the structure of the courses at the Academy of Criminalistic and Police Studies, Special Physical Education belongs to the group of compulsory subjects within the Department of Police Sciences. The very first forms of organized training of the late 19th and early 20th centuries paid considerable attention to physical training (personal defense) in training police personnel in Serbia (Bogdanovic, 2002, Amanovic, Andjelic-Nikolendzic, 2011; Milosevic & Milosevic, 2014). Over time, we used different names such as jujutsu, self-defense, special physical training. The name of Special Physical Education came into use at the end of the nineteen sixties. Police High School in Sremska Kamenica, began working in September 1967, as a major center for education and training of personnel for the purposes of public security, included the Department for adult education in Zemun (internship course). As regards the curriculum, it was found that the School of the four-year education study subjects from three areas: general education courses, professional courses and military objects. The first group of subjects in which the students get a general store of which are acquired in other high schools, among other items and Physical Education.

The professional part of the curriculum, which trains students to act in the field of public security, included Professional physical education among other specialized subjects. Within the professional physical education students are educated separately from jiu-jitsu, judo and karate. Later, these two subjects are given the title of General Physical Education and Special Physical Education. Shortly thereafter, in 1972, the Police College opened in Zemun with the status of an independent institution of higher education. Subjects to be studied were divided by similarity of teaching materials (general education, general professional and subject and listed by departments. So the department of security and police science, as one of the major subjects, comprised the subject called the Special Physical Education (SPE). It is important to emphasize that the eighties laid the scientific foundations of Special Physical Education. By defining the structure of the motor performance of a policeman, modeling the training process in elite karate, modeling and management of the system of self-defense on the principles of cybernetics (Milosevic, 1985 Zulic 1987, Milosevic, Gavrilovic, Ivancevic, 1988 Milosevic et al. 1989) SPE was established a separate teaching field. Thus, at the end of the eighties Republican communities Sciences of the Republic of Serbia on the basis of a scientific research and the organization of the education system at the officers verified the activity of Special Physical Education and constituted as a special scientific discipline that is placed in the police and security sciences (Milosevic, Kesetovic, Lipovac, Banovic, Mudric, Tomic et al., 2006a; Milosevic and Milosevic, 2014). Special Physical Education teaching and scientific disciplines resulting from physical education and sport and incorporated in police studies (Milosevic et al., 1988; 1989; 2005; Mudric 2001; Monk,

2001, Slater 2001; Takhar, 2002, Pagon, 2003; Mudric et al., 2004; Porada, Erneker, Holcr & Holomek, 2006; CEPOL, 2007; Milosevic & Milosevic, 2013a, b; Milosevic and Milosevic, 2014; Amanovic et al., 2015). As such, SPE uses knowledge of fundamental (basic) sciences, special sciences and applied sciences, and therefore the research in the field of Special Physical Education is sometimes fundamental and at other times developmental or applied. Accordingly SPE offers contemporary knowledge and answers on how the process of education and training of students and police officers should be organized, programmed, implemented and controlled in order to achieve the best educational and training effects and cause the planned changes in the domain of the offered knowledge, abilities and skills (Milosevic et al., 1988; Milosevic et al., 1989; Masic Z. Milosevic M., Dopsej et al.1997; Amanovic et al., 1999; Anderson, Plecas, Segger, 2001, Amanovic, Mudric, Jovanovic, 2003; Amanovic Milosevic, Mudric, Dopsaj, Peric, 2006; Milosevic et al., 2006a, b; Mašić, 2006; Kostovski, Masic, Djukanovic, 2011; Amanovic, Kostovski, Blazevic et al., 2013; Milosevic and Milosevic, 2013a, b; Baltic, Amanovic, Ljubisavljevic, Blazevic, Kostovski, 2015). To that effect, SFO uses educational and training programs and facilities, which are exclusively oriented to the development of physical integrity and the capacity of the police officers or segments of their job profile (Milosevic et al. 1988; Milosevic et al., 1989; Amanovic et al., 2001; Amanovic, 2003; Masic 2009; Milosevic and Milosevic, 2013a, b; Milosevic and Milosevic, 2014; Amanovic et al., 2015). The largest part of the program of Special Physical Education is aimed at identifying and overcoming several techniques of martial systems (judo, karate, aikido) and their application across the jujutsu techniques, in various, special living and working conditions of police officers and other workers who deal with security tasks. Also, several international as well as national documents provide recommendations and standards related to the behavior of police officers, their education and training. Within the United Nations system, as well as the Council of Europe, made international instruments which consider the issue of ethical and legal police conduct contained in the Code of Conduct for police officers (UN General Assembly Resolution 34/169 of 17.12.1979), the Basic Principles on the Use of force and Firearms (VII UN Congress in 1990 - the basic principles 1, 18, 19 and 20), then in the Council of Europe Declaration on the Police Act 1979, and the recommendations adopted by the Committee of Ministers of the Council of 19.09.2001. under the name European Code of Police Ethics. As well Law on Police (Official Gazette of the Republic of Serbia, no. 101/2005), the Regulation on conditions and manner of use of force (Official Gazette of the Republic of Serbia, no. 133/2004), the Ordinance on the manner of performing police duties (Official Gazette of the Republic Serbia, No.27 / 2007) Instructions on police Ethics and Methods of Conducting police (Official Gazette of the Republic of Serbia, No.41 /

2003) and other national standards. Some of these standards apply to the education and training of Special Physical Education officers of different working profiles. Accordingly, it is expected that in accordance with the requirements of harmonization of Serbian police education with European and international law enforcement education, Special Physical Education is to be at a level that is essential to all forms of police education, training and development, both here and in Europe in order to ensure the development of satisfactory social and anthropological competence of police officers (De Rover, 1998; Porada, Erneker, Holcr & Holomek, 2006; CEPOL, 2007; Buturac & Solomon, 2013; Milosevic & Milosevic, 2013b; & Milosevic Milosevic, 2014; Amanovic et al., 2015). The aim of this paper is to present the scientific basis of SFO through a model of education and training in Special Physical Education, to point out to its advantage over similar subjects which offer only the description of a larger or smaller number of techniques sufficient to develop certain skills but not the requisite knowledge, as well as to emphasize the benefits of introducing this concept in all higher education and police institutions in Europe and worldwide.

### The model of education and training in Special Physical Education

In order to ensure meaningful and comprehensive influence of SPE educational and training programs on the student as a system, in addition to being familiar with the structure of this system, its adaptive characteristics, its functioning, and, of course, it is necessary to know the impact of education and training on the system transformation (Milosevic et al., 1988; Mudric 2001; Mudric et. al., 2004; Lozovina, Lozovina Bonacin, 2011; Bonacin, Bonacin Da, Lozovina, M., 2013; Milosevic & Milosevic, 2013a, b; Baltic, Amanovic, Ljubisavljevic, Blazevic, Kostovski, 2015; Milosevic & Milosevic, 2014; Amanovic et al., 2015). For this purpose a unique mathematical model of SPE education and training has been developed (Milosevic et al. 1994, 2005):

$$y(t) = k_i + \frac{k_f}{1 + e^{a_0 + a_1 A t}}$$

where in:  $y$  - the level of training that is introduced as the factor score of expert assessment officer who achieved the multidimensional criteria. Score for any participant education is calculated using multivariate analysis (Momirovic, 1984; Peric, 2006).  $t$  - time training in classes,  $k_i$  - initial level of knowledge,  $k_f$  - final level of knowledge,  $a_0$ ,  $a_1$  parameters that define the shape of the curve and depend on the modalities of the educational process as well as the quality of teaching organization (preparation of educational materials for the articulation, manner of articulation of educational material in lectures and exercises), quality of the implementation of teaching

(educational methods and their distribution, educational material and its distribution, quality educational materials and the quality of its software distribution), material support for teaching, personal characteristics and competence of the teachers. A - adaptive characteristics policemen (morphological, motor, functional, cognitive, conative and health), which is below explicated. The current model is a more diverse and quality-dependent learning phase specific motor structures of varying complexity and their application under different objective functions through three levels of education and training (Milosevic et al., 1988; Milosevic et al., 1989, Milosevic et al., 1994 ; Mudric, 2001; Mudric et al., 2004; Milosevic et al., 2005; Milosevic & Milosevic, 2013a, b) primary or basic education level (SPE1), advanced or directed educational level (SPE2) and situational level of education and training (SPE3). Planned phases of education and training, basic, advanced and situational (Scheme 1) are methodical steps pyramid training with the main objective to reach successful and efficient performance of complex policing tasks i.e. intervention, and in her application techniques of defense and attack, as well as performing planned tasks and duties of members of the police and those who are engaged in security (Milosevic et al., 1988; Milosevic et al., 1989; Milosevic et al., 1994; Milosevic et al., 2005; Milosevic & Milosevic, 2013a, b). Education in Special Physical Education is provided for motor learning algorithms and programs of varying complexity and learning their implementation in standard and situational conditions specific movements of policemen to the development and adaptation of adaptive characteristics (Mudric et al., 2004; Milosevic et al., 2005; Milosevic & Milosevic, 2013a). An algorithm in the SPE is divided into conceptual, derived conceptual and situational. The conceptual include algorithms attitudes, trends, falls, throws, blocks, kicks, cleaning, levers and grips. In derived conceptual algorithms include variations and combinations of the various elements of attitudes, movements, falls, throws, kicks, blocks, cleaning, levers and grips, while situational algorithms include algorithms binding, control, delivery, attack, interception, defense and counter-attack in different environments and situations. In each phase of the individual algorithms materialize multitude of motor programs (Milosevic et al., 1994; Mudric et al., 2004; Milosevic et al., 2005; Milosevic & Milosevic, 2013a, b; Milosevic and Milosevic, 2014). Motor learning in Special Physical Education is a relatively permanent process of improving the performance of the movements using different activities. This process is based on improving motor program that is to improve the command sequence of the central nervous system which alter the degree of muscle activation, adjusting the level of generated power with external resistance and other conditions of movement (Milosevic et al., 1989, 2003; Amanovic et al., 2006 ; Amanovic, Kostovski, Blazevic et al. 2013; Milosevic & Milosevic, 2013a, b; Milosevic and Milosevic, 2014).

In the first and second phases of education and training are taught the conceptual and conceptual derived algorithms that make motor programs of varying complexity. In situational stage of education and training are taught algorithms that adapt to the learned motor programs a given situation. A motor program means a set of commands (pulse) extending from the central nervous system (CNS) in muscles (motor units) in order to produce a sufficient amount of force at a given time and to interact with the bone system and the external environment produces a sufficient amount of muscle force and the desired type of movement.

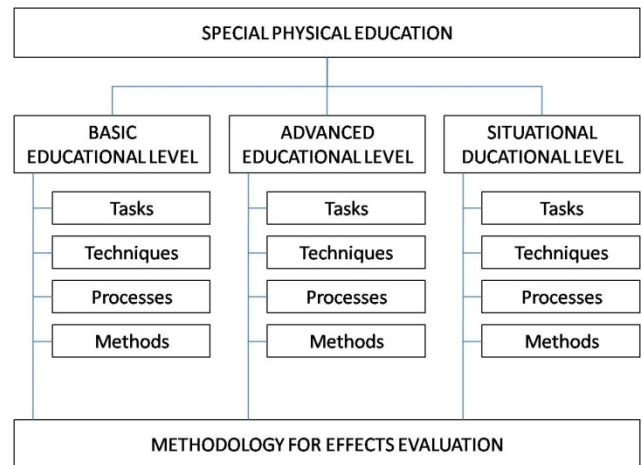


Figure 1. Models of education in Special Physical Education (Milosevic et al., 1994)

On the basis of previous studies conducted in various populations of elite athletes (karateka, judoka, jujutsu athletes, boxers, wrestlers), as well as among students, policemen and members of the security services, have created a model that the training process, as has been said in parts more qualitatively different and dependent stages of education (basic, advanced and situational). The phases differ in the tasks of education, mechanisms that engage in structuring special algorithms and programs, according to the specificity and complexity of the motor structures that are learned, according to the objectives of the application in terms of interception, defense, attack, counter-attack, controls and methods. The model provides a special methodology for monitoring the effects of education. Such a defined model triggers different effects that can be described by a function that is sensitive to the individual characteristics of the participants. The basic part of education adopted the basic techniques through conceptual learning mobility programs that are implemented movements, positions, punches, blocks, falls, throws, levers. The quality and speed of structuring natural techniques as well as the accuracy and speed of their implementation, and segment depend on mechanisms for conceptual structuring and control of basic techniques (Milosevic et al., 1988; Mudric et al., 2004; Milosevic et al., 2005; Milosevic and Milosevic, 2013a, b; Milosevic and Milosevic, 2014).

In the second phase (advanced level) of the basic techniques are made more complex structure of offensive and defensive types of linear, branched and cyclic structures. The quality and speed of structuring depends on mechanisms for conceptual structuring and control of complex, integrated open and closed motor programs (Mudrić et al., 2004; Milosevic et al., 2005; Milosevic and Milosevic, 2013a, b; Milosevic and Milosevic, 2014). In the third phase, situational training, learn the rules of applying the learned motor programs in a variety of combat conditions and real application (Mudric et al., 2004; Milosevic et al., 2005; Milosevic and Milosevic, 2013a,b; Milosevic and Milosevic, 2014). At this stage of education are structured conceptual and situational elementary and complex motor programs. The quality and speed of structuring those programs depends on mechanisms for conceptual and situational structuring and control of integrated open and closed elementary and complex motor programs. Then, they also depend on the mechanism for reprogramming situational complex programs. The development of these mechanisms brings about precise, timely and rapid implementation of SPE techniques in conceptual and variable conditions of the struggle. Finally, in the third phase of training, special attention is paid to developing mechanisms for the control and regulation selection facilitation and inhibition of efferent motor pathways. This mechanism has the task of enabling the efferent impulses to the realization of art in the most efficient way to get to the organ and thereby challenge the correction speed. The mechanism controls the rate and timing of application technique and the adequacy of situational behavior of police officers. All these stages differ in the tasks of education, mechanisms that engage in structuring special algorithms of movement and motor programs, according to the specificity and complexity of the motor structure, in aims and methods of application (Mudric et al., 2004; Milosevic et al., 2004; 2005; Milosevic and Milosevic, 2013a, b; Milosevic and Milosevic, 2014). The proposed model allows to determine the individual learning pace of police officers and that any tailor optimal methodical instruments. Using the proposed model and appropriate methodology, it is possible, in order to rationalize training, to divide the population of students (police officers) into several groups which are characterized by different rates of learning. Each group will have different odds on the wrong training effects and accordingly for each group will be determined by the dynamics of adequate educational sessions (Mudric et al., 2004; Milosevic et al., 2004, 2005; Milosevic and Milosevic, 2013a, b; Milosevic and Milosevic, 2014).

### Distribution of educational materials and programs

In accordance with the dynamics of education and training, each phase has specific goals and tasks, initiating the use and development of certain processes and skills that are assessed the current status, use appropriate techniques that make up

motor programs with special methodical instruments which are taught motor skills and develop adaptive characteristics (Mudric et al., 2004; Milosevic et al., 2004, 2005; Milosevic and Milosevic, 2013a, b; Milosevic and Milosevic, 2014). All stages of education or training have their own information and motor (energy) treatments, which are clearly and precisely defined by the components of educational training regimes (Mudric et al., 2004; Milosevic et al., 2004, 2005; Milosevic & Milosevic, 2013a, b; Milosevic and Milosevic, 2014). Their relationship in the individual phases is different (Milosevic et al., 2004, 2005; Milosevic & Milosevic, 2013a, b; Milosevic and Milosevic, 2014). The first stage of education or training educational programs comprises 60% of information and 40% of motor activities. Advanced or targeted levels of education use training programs that have been developed to combine 55% of information with 45% of motor activities. The education training programs of situational training consist of 45% of information and 55% of motor content (Figure 2). Information treatment involves various sources of information about the movement or movements that are to be implemented, such as demonstration by the movement of the teacher, audio visual equipment, various explanations highlighting the most important requirements for the fulfillment of the decisive phase of implementation of motor program and so on. All of the information is received through visual and adaptive channels and used for comparative analyses of the actual movement and the movement of models or comparative analyses between the specified requirements and the resulting effect of movement. Results of these analyses should be used to determine the correction of movement through the corrections entered into the program or through adequate energy support of the current program, which, in fact, constitutes motor learning (Milosevic et al., 1989; Mudric et al., 2004; Milosevic et al., 2004; 2005; Milosevic and Milosevic, 2013a, b; Milosevic and Milosevic, 2014).

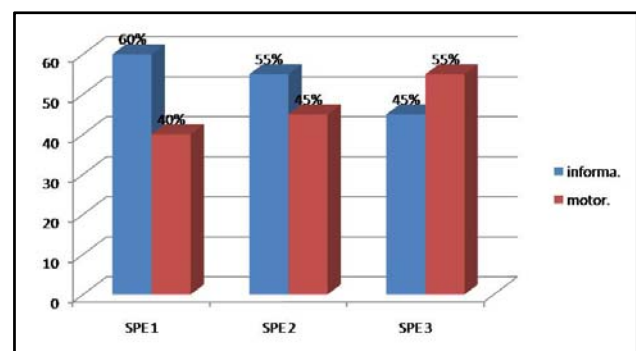


Figure 2. Cognitive and energy treatment in relation to the training stage

The multi-phase motor development is characterized by the establishment of feedback channels (proprioceptive and kinesthetic) and the creation of control and regulation models for the realization of motor programs, as well as the development of various motor skills.

Regardless of the population in question in the educational model conceived in this way, basic, advanced and situational education or training shall have different duration. The basic education or training requires 25 to 30% of the total time of education or training. The advanced education or training requires from 20 to 25% of the total time of education or training. The situational education or training call for about 50% of the total estimated time (Figure 3). Within the motor program the content ratio (means and methods) aimed at developing basic, targeting and situational adaptation characteristics of students or police officers is different (Chart 3). General treatment consumes 25%, targeted 22% and special up to 53% of the total time allocated for motor treatments (Mudric et al., 2004; Milosevic et al., 2004, 2005; Milosevic & Milosevic, 2013, b; Milosevic and Milosevic, 2014). It may be noted that the special physical education and training of police officers and police students is exceptionally well based on science and the scientific method so that its validity is directly verifiable in police practice. The methods used during the training indicate in which way motor algorithms and programs are presented and structured across certain stages of training. The method used in SPE involves practicing in different modes. There are two regimens in this model, discrete and continuous. The forms of these regimes are regular, progressively increasing or progressively decreasing and mixed. When it comes to the discreet mode, exercise takes place in discrete intervals of time whose length and frequency depend on the objective to be achieved. The continuous mode is characterized by continuous exercise for any moment of the observed time interval. In addition to the modes and regimens, the method defines the conditions under which specific motor programs are structured and implemented (Mudric et al., 2004; Milosevic et al., 2004, 2005; Milosevic & Milosevic, 2013a, b; Milosevic and Milosevic, 2014).

### Conclusion

Based on the above said and the practical evaluation of the presented model of education and training in Special Physical Education, we are able to draw the following conclusions: Education and training in Special Physical Education ensure the adoption of new knowledge and skills, influence the favorable constellation of anthropological characteristics, health status and social positioning of students, and police officers. Acting positively through the program activities of Special Physical Education, changing the appropriate levels of capabilities directly leading to qualitative changes in the behavior of students and police officers, in terms of adequate, effective and adaptive personality functioning when exposed to high risk and stress, which is particularly manifested in situational response, rapid finding of solutions, and - in the professional sense - in more efficient solving of policing tasks, i.e. the development of personal integrity and professional capacity of students and police officers.

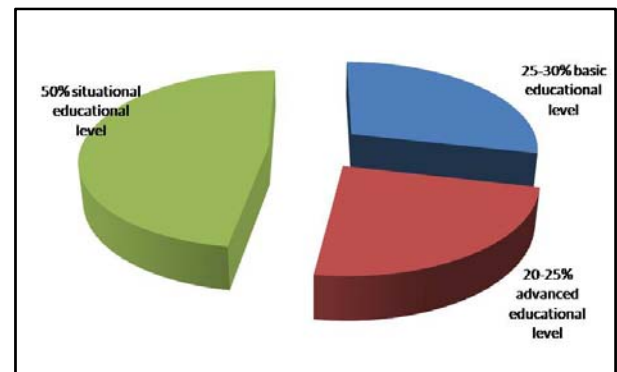


Figure 3. The duration of each level in relation to the total time of education and training

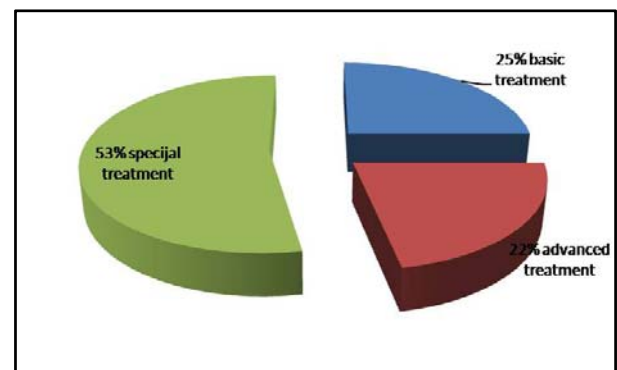


Figure 4. Ratio content (means and methods) within the motor programs

The model of SPE education and training comprises several different and interdependent phases presented through three levels of education and training: the basic level of education and training; the advanced or targeted level of education and training; and the situational level of education and training. Overall, the task of education and training in special physical education is the advancement of information and energy components of the student and/or a police officer. With regard to the objectives to be achieved within the information components, we can speak about education and upbringing, and when it comes to the energy component, we can speak about training, that is, about transformation of characteristics and abilities as well as health promotion. Achieving the objectives and tasks of SPE is a continuous process which envisages parallel developments of physical skills (muscle force and its dimensions, energy potentials, speed, etc.) and of situational abilities of a student/a police officer, taking into account the physiological processes within human organism. Based on the aforementioned, Special Physical Education as an autonomous teaching the scientific area is important in the education and training of students at the Academy of Criminalistic and Police Studies and police officers, not only in the Republic of Serbia, but can also be recommended to other European countries and the world as a reliable, scientifically based instructional course for the construction of personal integrity and professional capacity of students and police officers, and others who are engaged in the business of security.

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## SPECIJALNO FIZIČKO OBRAZOVANJE U POLICIJI - MODEL EDUKACIJE I OBUKE

### Sažetak

U radu se opisuje model edukacije i obuke u Specijalnom fizičkom obrazovanju, nastavno - znanstvenoj disciplini, posebice u obrazovanju i obuci studenata na Kriminalističko-policijskoj akademiji u Beogradu. Ovaj model obrazovanja i obuke kroz programe Specijalnog fizičkog obrazovanja temelji se na znanosti, znanstvenoj metodi i policijskoj praksi, te s drugim disciplinama sudjeluje u izgradnji osobnog integriteta i profesionalne sposobnosti studenata, koristeći posebno dizajnirane obrazovne i trening programe. Trenutni model je podijeljen u nekoliko kvalitativno različitih i ovisnih faza obuke (temeljna razina, napredna razina i situacijska razina) koje se razlikuju po zadacima edukacije, mehanizmima koji se angažiraju, po specifičnosti i složenosti motoričkih struktura koje se uče, po ciljevima primjene i po metodama.

**Ključne riječi:** nastavno-znanstveno područje, policija, karate, judo, ju jutsu

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