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THE DEVELOPING OF SOCIAL SKILLS IN PUBESCENT CHILDREN THROUGH SWIMMING PRACTICE

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CONCEPTUAL GUIDELINES OF THE RESEARCH

Relevance and importance of the addressed problem. Within an increasingly digitally connected society, characterized by various rapid social and technological changes, the process of developing social skills, as well as face-to-face interaction, constitutes essential topics for the integration of adolescents into society. Modern society faces social and psychological instability, and the virtual environment has become increasingly present in the socialization process, especially during puberty—a fact that can bring risks and difficulties for children, who may become vulnerable to the potential problems and dangers associated with this environment [17, 28].

The socialization process is viewed through various theories, each emphasizing a different mechanism of how we become ”social beings”.

According to certain theoretical approaches, this socialization process can be continuously optimized through specific educational activities adapted to the developmental level of children. These methods facilitate the acquisition of relationship and cooperation skills, while encouraging constructive competition within a protected and supervised framework [1].

According to specialized research, the development of social identity represents a complex process in which belonging to various social groups plays a decisive role [10, 19, 23, 37]. The student tends to associate with groups that resonate with their own values and aspirations, as these offer a sense of belonging, consolidate self-esteem, and facilitate the affirmation of their identity.

The investigated problem is of major importance both for the family environment and for society. We can argue that the socialization of children, and their preparation for community integration respectively, constitutes a highly topical subject whose relevance is emphasized precisely by the absence of a systematic approach at this educational level. During puberty, sports activities can decisively influence the complex process of socialization, facilitating the formation of sustainable social skills. At this stage, the child becomes capable of assuming roles and responsibilities, becoming aware of their uniqueness, and building solid interpersonal relationships.

Through the ideas promoted by the authors A. Bradea and V.C. Blandul, it is emphasized that through the design of appropriate activities, socialization undergoes continuous improvement, being considered a fundamental and necessary action in student development [6 p. 299]. Most specialists in the field [14, 15, 20, 29, 34] admit that through swimming, team spirit, cooperative learning, interaction, and mutual support are harnessed.

Currently, swimming represents a phenomenon whose importance has significantly increased, becoming more present in daily life. Its great power of attraction has led an increasing number of children to choose this sporting field, where contests and competitions occupy a central place in current concerns [33]. Children who practice swimming or any other sport can benefit from participating in social and educational activities that help them develop socio-emotional skills such as self-confidence, empathy, cooperation, communication, and conflict management.

However, the field of socialization of children at a pubescent age, within training sessions and school camps, is treated more at a general level through hypotheses, ideas, and opinions, without proposing a precise and differentiated methodology. From specialized literature, we noted that in many cases—especially in initiation and sports training lessons, including swimming—remarkable attention is given to physical and specific preparation, while aspects regarding the formation and development of social qualities and skills are often neglected [8, 15, 21]. In the current research, our concern focused on the development of social skills in children at a pubescent age by identifying concrete activities that contribute to achieving this objective.

The need to evaluate the level of socialization as a starting point for designing an intervention program constitutes the fundamental premise of our scientific endeavor.

The main reason for choosing this topic was determined by the need for an in-depth understanding of the socialization process and the formation of educational values in pubescent children. Practicing swimming within training demands a prospective, formative, and dynamic process, aiming at improving the instructional system and capitalizing on the educational potential of this sport.

Description of the situation in the research field and identification of problems. In the current research, the starting point was the analysis and evaluation of the development of social skills in the socialization process of pubescent children. Socio-relational aspects of an affective and attitudinal nature manifested within the student group are considered, as well as the psychosocial dynamics based on relationships of sympathy-antipathy, acceptance-marginalization, and attraction-rejection. The researched problem is approached interdisciplinarily at theoretical and experimental levels by numerous researchers from fields such as psychology, pedagogy, sociology, philosophy, and anthropology [4, 9, 11, 12, 18, 23].

Authors C. Zamfir and L. Vlăsceanu [31, p.546] develop the concept of socialization as a ”psycho-social process of transmission-assimilation of attitudes, values, conceptions, or behavioral models specific to a group or community, with a view to the social formation, adaptation, and integration of a person”.

The opinions of authors from the fields of sport and psychology are eloquent in this regard. They state that practicing a sport brings benefits regarding the social development of children, materialized through: interaction and communication, development of social relations, assuming roles and responsibilities, empathy and team problem-solving, as well as through the acquisition and formation of social skills [2, 14, 35].

We note, however, that research in the field of socialization has targeted sports in general, rather than specific sports branches [2, 11]. In addition, these studies have addressed socialization through sport only to a small extent; they demonstrated that sports activities—whether we talk about training, competitions, or free-type activities—increase the socialization level of children, develop their self-confidence, and enhance their creative spirit. At the same time, the segment of pubescent children is insufficiently researched. During this period, characterized by significant changes in physical, emotional, and social development, motor activities and sport play an important role in developing collaboration skills, self-confidence, and assuming responsibility [1, 14, 21, 22, 23].

In this regard, through the bibliographical reference framework, new and relevant knowledge was obtained, which allowed us to select contents, means, and instructional methods that influence the socialization of pubescent students. These were subsequently used to substantiate the methodological support in developing and implementing a specific program applied within swimming training sessions and camps.

The important scientific problem solved resides in the theoretical and experimental substantiation of the socialization process of children based on the proposed program as a model for applying and practicing swimming-specific means and contents, which will lead to an increase in the level of socialization, general motor capacity, as well as specific motor skills of the students.

The research hypothesis assumes that by participating in socialization activities included in the swimming training program and in school camps, pubescent children will develop social skills

and establish stronger interpersonal relationships, as well as a more solid social identity, due to interactions and collaboration with other members of the swimming team or group.

The purpose of the research consists of creating specific socio-pedagogical conditions that facilitate and contribute to increasing the level of socialization of pubescent students by applying the Program developed based on swimming-specific means and content.

Research objectives:

1. Studying the concept of socialization and identifying current practices regarding the socialization of pubescent children through swimming practice;

2. Determining the level of motor development and the degree of socialization of children in the context of swimming practice;

3. Sociological research on the importance of socialization activities through swimming practice;

4. Argumentation of the effectiveness of the experimental program regarding the socialization of pubescent children, implemented in swimming training and swimming camps.

The novelty and originality of the work is given by the argumentation of key characteristics that formed the basis of the development and implementation of the experimental program, characteristics including: the specific nature of the socialization process from the perspective of physical and specific preparation of students who practice swimming, and the specification of activities aimed at optimizing the socialization process.

The theoretical significance of the work is constituted by the analysis of the concept of socialization and highlighting the importance of the process of forming and developing communication, collaboration, and social integration skills in preadolescents, which allowed us to develop and argue for the use of socialization activities for pubescent children who practice swimming, aiming to increase the degree of socialization.

The applied value of the work is given by the possibility of successfully implementing, within swimming training and swimming camps, the content elements introduced in the experimental program, which will significantly streamline the integration process and develop interpersonal and behavioral skills in a sporting context.

Scientific results proposed for defense: Theoretical and methodological substantiation of the study on the socialization process of pubescent children in the context of swimming practice; Development of a socialization program structured on swimming training and extracurricular activities (school camps); Experimental validation of the program and argumentation of its efficiency in the process of integration and social interaction.

Implementation of scientific results: The content of the socialization program for pubescent children was implemented within swimming training sessions and activities carried out in the summer camp at Costinești. Eighth-grade secondary school students from the "I. C. Vissarion" Theoretical High School in Titu, Dâmbovița County, participated in this endeavor.

Approval of research results: The results of the present research were validated and disseminated in the form of articles and reports within national and international scientific sessions held between 2021 and 2024. These were published in indexed specialized journals and conference volumes such as: *Analele USV Știința și arta mișcării*, vol. XVI, 2023; *Sport. Olimpism. Sănătate*, 7th Edition, Chișinău 2022; *Integrare prin cercetare și inovare. Științe sociale*, Chișinău 2023; *Proceedings of the 15th International Management Conference: „Managing People and Organizations in a Global Crisis”*, Bucharest, 2021; *Știința Culturii fizice*, no. 41/1, Chișinău, 2023, *Revista „Graiul Dâmboviței”*, no. 8/ June 2022.

The research results and the Program for the socialization of pubescent children through swimming in training and school camps were presented in specialized workshops. At the same time, they served as teaching material within the methodico-pedagogical committees of teachers in the county and in the municipality of Târgoviște.

Structure and volume of the thesis: The work consists of: introduction, 3 chapters, general conclusions and practical recommendations, bibliography with 174 titles, 11 appendices, 147 pages of basic text, 46 figures, and 16 tables. The obtained results are published in 8 scientific works.

Keywords: socialization, puberty, swimming, social skills, interpersonal relationships, social integration.

1. SUBSTANTIATION OF THE CONCEPT OF SOCIALIZATION IN THE CONTEXT OF SWIMMING PRACTICE AT A PUBESCENT AGE

Chapter 1 performs an in-depth analysis of the social integration process, highlighting the fundamental theoretical aspects correlated with this phenomenon. This endeavor aims to establish a solid conceptual framework based on references from specialized literature to highlight how swimming becomes an essential educational pillar at a pubescent age [10, 11, 17].

Socialization is examined in a broad sense, highlighting its importance and role in individual evolution. Also, the specific features of development at a pubescent age are highlighted, covering aspects such as general physical, mental, and personality development, as well as the formation of social skills in this critical stage of life [9, 30].

Within this chapter, the forms and institutions of socialization are detailed, emphasizing the importance of sport as a factor of social integration. The socialization of pubescent children through sport in general, and through swimming training and camps in particular, is analyzed [5, 16, 25, 36]. Also, the issue of social skills at this age is addressed, examining aspects regarding the challenges of the pubescent period, the preadolescent crisis, and the effects of socialization through swimming practice. In addition, the benefits and impact of this activity on social development are highlighted.

In this context, swimming is analyzed not only as a sports discipline but as a true catalyst for socialization, providing a structured framework where interaction, healthy competition, and self-evaluation interweave harmoniously.

Through the diversity of organizational forms—from technical sessions to team games—this sport facilitates the assimilation of moral and civic behaviors fully transferable to daily life, contributing directly to consolidating the preadolescent's self-esteem and emotional balance. In essence, under appropriate pedagogical guidance, the motor behavior specific to swimming stimulates mutual support and self-efficacy, transforming training into a space for forming well-balanced and socially adapted personalities.

A priority strategy in this process is play, used as the main method for assimilating technical skills and specific elements of swimming. This learning method shows increased efficiency, capitalizers on the natural predisposition of pubescent children and their increased interest in ludic activities. Thus, physical effort becomes a stimulating framework through which the child explores, learns, and discovers new motor and relational capacities.

It is important to note that organizing swimming camps represents another effective means of socialization, defined as a system of non-formal and institutionalized educational influences carried out in an extracurricular regime [4, 14]. However, in national and foreign specialized literature, the socialization of pubescent children in this framework is treated predominantly at a theoretical level,

offering general hypotheses and opinions without proposing a precise and differentiated methodology.

Chapter 1 ends with a series of conclusions that synthesize the main aspects addressed, thereby preparing the framework for the subsequent exploration of the socialization of pubescent children through swimming.

Chapter 2, METHODOLOGICAL FRAMEWORK OF THE RESEARCH ON THE SOCIALIZATION PROCESS OF PUBESCENT CHILDREN WITHIN TRAINING SESSIONS AND IN SWIMMING SCHOOL CAMPS, presents the experimental framework, research methods, and the content of the fact-finding (ascertaining) and formative pedagogical experiment. Understanding the socialization level of children at a pubescent age and identifying concrete activities meant to contribute to the proposed research purpose and objectives were achieved by investigating the impact of socialization within swimming and by developing specific educational interventions.

In this endeavor, a complex of **methods** established in specialized literature was used [3, 13, 18, 24, 32]: the bibliographical study method (for the theoretical substantiation of the socialization process and the features of the pubescent age); pedagogical observation (for tracking students' behavior during swimming training and camps); the questionnaire survey method (questionnaires addressed to parents, coaches, children); the physical and specific preparation testing method (on land and in water); the experimental method (comparative study using a control group and an experimental group to validate the efficiency of the proposed program); the sociometric method (the main tool for measuring interrelations, including the sociometric test, matrix, and sociograms to identify "popular" and "marginalized" statuses, etc.); the statistico-mathematical method (for data processing and interpretation); the graphical and tabular method (for representing results);

The endeavor followed two essential objectives:

- the implementation of the intervention itself, within which the experimental groups followed an adapted program focused on team games and interactive activities (on land and in water) to optimize physical, technical preparation and the degree of socialization. In contrast, the control groups benefited from classical instruction based on the standard school curriculum.

- the final evaluation and data processing to validate the effectiveness of the proposed program applied over a six-month macrocycle, including a centralized preparation stage in the swimming camp.

For this purpose, two groups were formed, experimental and control, each consisting of 25 students (15 boys and 10 girls). The subjects were aged between 13-14, being 8th-grade students at the "I. C. Visarion" Theoretical High School in Titu, Dâmbovița County, an educational institution with an integrated swimming program.

The seven applied motor tests are described, as well as the sociometric matrix, and the organization and conduct of the pedagogical experiment during its three main stages:

Stage I (2021–2022): Documentation and theoretical substantiation. A preliminary stage aimed at preparing the conceptual and methodological framework: studying specialized bibliographical sources regarding the socialization process and analyzing school programs with a swimming profile; establishing the theoretical framework for conducting the research and developing work tools (questionnaires for parents, children, and coaches - see Appendices 1a, b, c); selection of the research sample by forming study groups: 50 8th-grade students (13 and 14 years old) from the "I.C. Vissarion" Theoretical High School in Titu, Dâmbovița County (integrated

sports program); 50 specialists (swimming teachers/coaches from Dâmbovița, Giurgiu, Argeș counties and Bucharest); 50 parents from urban and rural environments (Dâmbovița County).

Stage II (September - December 2022): The fact-finding (ascertaining) experiment. Having as its main objective the evaluation of the initial level of the subjects and the design of the intervention. This stage included: selection of physical and specific preparation tests, their administration, and statistical interpretation of results; psychosocial evaluation (monitoring behavior and applying initial sociometric tests to establish the starting socialization level of both groups); research through survey (implementing and processing questionnaires through quantitative and qualitative analysis); designing and applying the experimental program of socialization through swimming, adapted both for training sessions and swimming camps.

Stage III (2022 - 2023): The formative experiment and final evaluation. This stage constituted the core of the research and included the implementation of the proposed program through:

- *Conduct of the pedagogical experiment:* implementing the experimental program over a 6-month macrocycle (see Appendix 6) and a centralized two-week stage in the swimming camp (see Appendix 9). Activities included team games (on land and in water) and specific exercises adapted to the needs of the experimental group to optimize technical and social preparation. The control group followed classical instruction according to the standard school curriculum (physical education lessons and optional swimming), without additional interventions.
- *Final testing and concluding:* This stage involved re-applying the same sociometric and motor tests to both groups to measure progress. Here, the methods of processing and interpreting the applied statistico-mathematical data are detailed, along with the analysis of motor parameters, the sociometric matrix, and the questionnaire-based survey. The recorded results are presented in centralizing tables and graphically represented, being subsequently analyzed and interpreted to highlight the effectiveness of the program and to formulate the general conclusions of the research and methodical recommendations for the further development of the program.

In addition to these, an analysis of students' opinions and interests was performed, as well as the views expressed by parents and specialists regarding improving the socialization degree and developing social skills of children at a pubescent age, thereby providing an overview of the impact of the proposed program.

The sociological survey highlighted a discrepancy between students' needs and current training strategies. Thus, 54% of respondents stated that they feel the need for more active socialization with peers during preparation, while activities specific to this purpose are present in a low percentage. This reality is confirmed by specialists, of whom 82% state that they use socialization games only occasionally, and 18% rarely, with no answer variant indicating a constant practice in this regard. The analysis revealed that coaches prioritize technical aspects and sports performance over the development of social interaction skills. However, there is a clear openness to innovation: specialists opted for introducing socialization activities within training sessions and swimming camps, recognizing their potential in the proper development of students' social competences. This openness is also supported by the parents' perspective, with the survey identifying a high interest on their part in extracurricular activities such as swimming camps. Parents perceive these preparation periods as ideal environments for reducing social isolation, increasing self-confidence, and developing children's independence, considering them a necessary extension of the instruction process in the pool.

To determine the general and specific motor status of pubescent students, the fact-finding experiment was conducted by applying a set of seven tests adapted to the 8th-grade level. The tests were performed between October 15 and November 20, 2022, on a sample of 50 students (n=30 boys și n=20 girls), selected according to the specific nature of swimming practice. Also, the dynamics of the socialization process were evaluated, namely the influence of the sports group on the development of social skills. The centralized data regarding physical development are presented in Table 1.

Table 1. Fact-finding data obtained in motor skills tests

No	Motor Tests	Boys (n=30)				Girls (n=20)			
		X	±m	σ	CV%	X	±m	σ	CV%
1.	50m sprint running, sec.	7,93	0,03	0,20	2,59	8,34	0,10	0,46	5,54
2.	Standing long jump, cm.	166,83	0,98	5,42	3,24	149,05	1,11	4,96	3,33
3.	Sit-ups in 30 sec, number	26,73	0,22	1,25	4,70	25,15	0,23	1,03	4,13
4.	1000m endurance running, sec	297,9	1,81	9,96	3,34	304,2	2,80	12,55	4,12

In the context of the data presented above, for dry-land physical preparation, better statistical differences are notable in favor of boys compared to girls for most physical tests, but these do not present a major significance.

To highlight the level of specific preparation in water, three tests were applied to evaluate the manifestation level of swimming-specific skills, which are transferable to the broader domain of social attitudes.

Table 2. Fact-finding data obtained in swimming-specific tests

No	Specific Tests	Boys (n=30)				Girls (n=20)			
		X	±m	σ	CV%	X	±m	σ	CV%
1.	100m backstroke swimming, sec.	96,96	1,01	5,57	5,74	103,1	1,05	4,72	4,58
2.	100m freestyle swimming, sec.	90,66	0,55	3,05	3,36	95,5	0,98	4,39	4,65
3.	100m breaststroke swimming, sec.	100	0,53	2,91	2.91	104,25	0,88	3,94	3,78

Regarding the swimming tests, the trend of superior performances in favor of boys is maintained, although the differences do not reach a determined threshold of statistical significance. These slight differences can be attributed to morpho-functional characteristics and differentiated growth rates, which directly influence propulsion capacity and technical efficiency in the aquatic environment for this age group. Standard deviation values indicate low data dispersion around the means, and the coefficient of variation, located below the 10% threshold, confirms the high homogeneity of the groups, both for boys and girls.

To evaluate the socialization level, empathy, and mutual relationships among students practicing swimming, the sociometric test was used [18]. Its implementation involved formulating specific questions through which children identified their preferred peers, those with whom they

encounter communication difficulties, or people alongside whom they feel comfortable during training sessions and related camps. The data collected served to map group dynamics, offering a clear picture of tension points and the cohesion of the investigated collective.

The indices calculated based on the sociometric matrix were: sociometric status I=n/ (N-1), where n represents the number of choices received, and N the number of subjects.

Table 3. Preferential status indices, groups I A and II B, preliminary stage

Choices-Rejections		**No. of subjects with same preferences**		**Preferential status index**		**Psychosocial value of preferential type**	
Gr.I	**Gr.II**	**Gr.I**	**Gr.II**	**Gr.1**	**Gr.2**	**Gr.I**	**Gr.II**
15	**11**	**1**	**1**	**0,50**	**0,33**	**POPULAR**	
12	**11**	**1**	**1**	**0,45**	**0,33**		
12		**1**		**0,45**		**3**	**2**
9	**9**	**1**	**1**	**0,25**	**0,25**	**ACCEPTED**	
8	**8**	**2**	**2**	**0,20**	**0,16**		
7	**6**	**1**	**2**	**0,08**	**0,08**	9	10
5	**5**	**1**	**1**	**0,04**	**0,08**		
5		**2**	**3**	**0,04**			
4		**2**	**1**	**0,04**			
0				**2**	**3**	**INDIFFERENT**	
0						**2**	**3**
0							
11	**9**	**2**	**1**	**-0,45**	**-0,33**	**MARGINALIZED**	
8	**9**	**1**	**1**	**-0, 33**	**-0,25**		
7	**7**	**2**	**1**	**-0,29**	**-0,25**	**11**	**10**
4	**6**	**2**	**1**	**-0,16**	**-0,25**		
4	**6**	**1**	**1**	**-0,16**	**-0,25**		
4	**6**	**3**	**1**	**-0,16**	**-0,16**		
	6		**1**	**-0,08**	**-0,12**		
	5		**2**		**-0,12**		
	5		**1**		**-0,04**		

The analysis and interpretation of results allowed the identification of models and trends in interpersonal relationships, classifying group members into: popular, accepted, indifferent, and marginalized. Based on the indices in Table 3, collective sociograms were developed – graphic tools that allow the visualization of the relational network structure and the position of each member in the student group.

The analysis of the sociometric test results applied to pubescent students who practice swimming (groups I A and II B) highlights a low degree of cohesion among members. Thus, we note that at the level of the preferential type index "popular," three subjects were recorded in group I A and two in group II B; for "accepted," nine in group I A and ten in group II B; for "indiferent," two in group I A and three in group II B; and for "marginalized," 11 subjects in group I A and ten in group II B. It is observed that the groups subjected to research are relatively homogeneous from the perspective of initial relating and socialization. However, the researched group is characterized by a significant lack of cohesion, a fact that can generate major difficulties in collaboration processes and in reaching common goals. This deficient dynamics is confirmed by the presence of unilateral

choices (students who offered options but were not nominated in turn) and mutual rejections – a phenomenon that fragments the unity of the sports group.

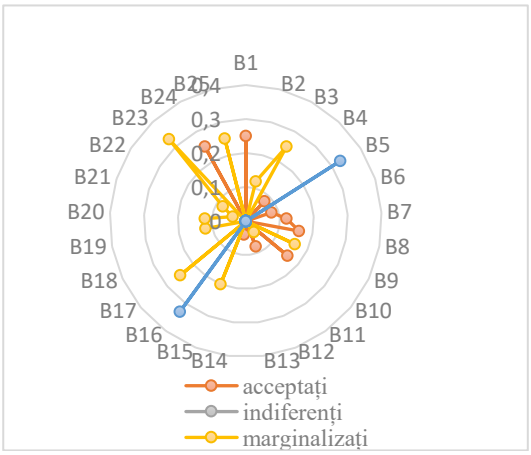


Fig. 1. Sociogram of group I A

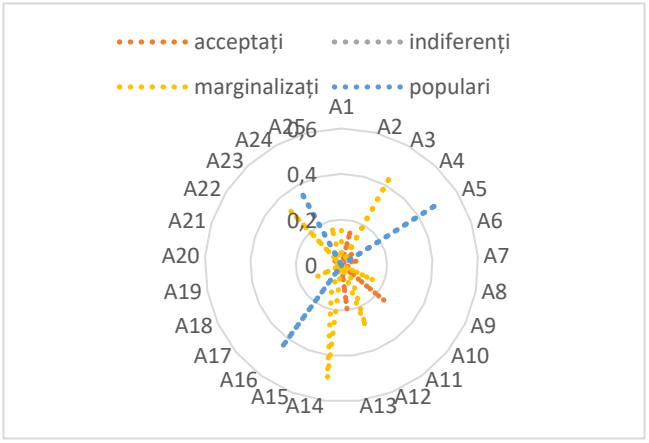


Fig.2. Sociogram of group II B

These results formed the foundation for designing the intervention, confirming the need for interactive methods in teaching swimming. Based on these considerations, a model program was developed using modern teaching strategies aimed at favoring the socialization process of pubescent children in this specific context. The structure was based on a comparative analysis of school programs for lower secondary and vocational education (swimming profile).

In this regard, the contents of the discipline were designed over a six-month macrocycle, structured into seven mesocycles, each subdivided into weekly microcycles. The program included three training sessions per week, totaling 160 hours and aimed at implementing competences in full accordance with the Preparation Syllabus for the swimming discipline, as well as specific regulations for swimming activity [38].

The instructional strategy was developed to cover all components of sports training, targeting physical and specific development as well as socialization activities.

In the structure of lessons conducted at the pool with the experimental groups, specific technical preparation means were included alongside exercises dedicated to social interaction. Thus, the time allocated exclusively to socialization within training sessions was approximately 15-20 minutes, with an emphasis on games and exercises carried out both on land and in the aquatic environment.

At the same time, the program focused on contents, means, and specific activities was proposed and applied, with priority on increasing the socialization degree of children within the swimming camp. Activities were organized through frontal, individual, and group work forms, based on specialized literature regarding the development of social skills and specific forms for pubescent children [5, 16, 18, 27, 32, 33]. The design of this endeavor highlights the balance between physical preparation and social interaction. Thus, during the two weeks of camp, 25-30 minutes per training session were allocated for interactive exercises and games, specific contests (including water polo elements), boat rides, and recreational activities. All these actions aimed at optimizing efficient communication, team cooperation, problem-solving, emotional management, and building positive relationships, thereby ensuring the achievement of educational objectives provided by the school syllabus in a non-formal and attractive learning framework.

The methods of conducting the socialization-characterized activities included in the program focused on:

1.Activities included in the preparation program at the pool within swimming training.

a. Exercises on land and in water: aiming to influence general physical development and basic and specific technical preparation;

b. Communication games: meant to develop social and communicative skills through exercises such as "Swim and Mime," "The Whale and the Stoppages," which require attention and group coordination. They also offer an interactive framework through which children practice active listening, clarification/interpretation of messages, and team cooperation.

c. Fun and emotional development games: which encourage collaboration and emotional management in the aquatic environment. Examples include: ”*Underwater Rocket*”, ”*North Pole and South Pole*”, ”*Mermaids and Sharks*”, or ”*Last Swimmer Standing*” [34],

d. Adapted recreational and competitive activities: through which students develop their self-confidence and team spirit, giving them a sense of accomplishment and satisfaction: ”*Adapted Water Polo*”, ”*Water ball relay*”, ”*Underwater object hunt*”, ”*Push the ball*”.

2. Activities carried out within the school camp.

This stage aimed at consolidating interpersonal relationships in a relaxed framework, through:
- games and adventure: dynamic activities meant to stimulate team spirit and courage;
- recreational activities and themed hikes: used for exploring the environment and stimulating informal communication;
- personal autonomy management activities: by introducing self-management tasks and preparation of swimming equipment.

At the same time, strategies were implemented to facilitate interactions among children, coaches, and parents, coupled with mechanisms for monitoring and evaluating progress in the socialization process. This approach allowed an overview of how the extended social environment influences the integration of each student.

The share of activities intended for socialization during the pedagogical experiment was 16.66% within swimming training, and 33.32% during camps respectively, representing a double volume of time allocated to social interaction in the extracurricular environment.

Chapter 2 ends with a series of partial conclusions that offer an initial perspective on the impact of socialization within school swimming camps.

3. SCIENTIFIC ARGUMENTATION OF THE PROGRAM ON THE SOCIALIZATION OF PUBESCENT CHILDREN WITHIN SWIMMING TRAINING SESSIONS AND IN SCHOOL CAMPS

Chapter 3 materializes the validation endeavor of the proposed intervention, focusing on the analysis and interpretation of data recorded in the basic pedagogical experiment. This chapter provides the necessary scientific argumentation to demonstrate the efficiency of the socialization program, reflected in the evolution of motor performance indices and the social status of pubescent students.

To obtain a highly faithful analysis of the differences between the means recorded in the two testings (initial and final), the calculation of the t-Student criterion value for independent and correlated samples was used [26]. Thus, the statistical significance of the progress recorded by both groups was determined. The experiment included an experimental group and a control (witness) group, each composed of 25 subjects (15 boys and 10 girls). The evolution of physical preparation parameters was monitored through four standard tests: speed (50m), standing long jump, sit-ups,

and endurance (1000m). Also, swimming-specific tests were evaluated: 100m freestyle, 100m backstroke, and 100m breaststroke. The detailed analysis of indicators obtained by the subjects of the control and experimental groups is highlighted in Tables 4 and 5. The statistical evaluation process of indicators tracked the subjects' evolution between initial and final testing for both samples.

Table 4. Comparative analysis of initial and final results defining the level of general and special physical preparation of students in the experimental and control groups (boys, n=30)

No	Tests	Groups	Initial indices $\bar{x} \pm m$	Final indices $\bar{x} \pm m$	Statistical significance	
					t	P
1.	**50 m sprint running, sec.**	E	7,86±0,21	7,38±0,20	2,40	< 0,05
		C	7,99±0,18	7,92±0,18	0,37	>0,05
		t	0,48	0,51	-	-
		P	>0,05	>0,05	-	-
2.	**Standing long jump, cm**	E	166,8 ±6,39	183,33±5,70	2,59	<0,05
		C	166,86 ±4,47	167,4± 4,67	0,11	>0,05
		t	0,007	2,16	-	-
		P	>0,05	<0,05	-	-
3.	**Sit-ups in 30 sec., no. reps.**	E	26,80±1,42	32,13±1,40	3,61	<0,01
		C	26,53±1,18	27,00±1,30	0,36	>0,05
		t	0,14	2,68	-	-
		P	>0,05	<0,01	-	-
4.	**1000m endurance running, sec.**	E	296,93±9,02	278,73±4,65	2,51	<0,05
		C	298,86±9,05	293,13±5,74	0,79	>0,05
		t	0,15	1,95	-	-
		P	>0,05	>0,05	-	-
5.	**100 m backstroke test, sec.**	E	95,40±4,34	87,46 ±3,74	2,17	<0,05
		C	98,53±5,52	95,53±5,35	0,61	>0,05
		t	0,44	1,23	-	-
		P	>0,05	>0,01	-	-
6.	**100m freestyle test, sec.**	E	89,80±3,72	81,73±3,61	2,46	<0,05
		C	91,66±2,05	88,93±2,01	1,56	>0,05
		t	0,44	1,74	-	-
		P	>0,05	>0,05	-	-
7.	**100m breaststroke test, sec.**	E	99,53±2,61	91,46±3,11	3,11	<0,01
		C	100,6±3,04	98,13±3,03	0,91	>0,05
		t	0,26	1,53	-	-
		P	>0,05	>0,05	-	-

Note: n - 15 P- 0,05; 0,01; 0,001 EG - n=15; CG- n=15
df = 14 ; t = 2,145; 2,624; 4,140
df = 28; t = 2,048 2,763 3,674

The analysis of statistical data recorded by the experimental group indicates a superior increase in means compared to the control group, demonstrating the effectiveness of the socialization program applied within training sessions and the swimming camp.

The results of the evaluation of the 50m sprint running test (Table 4) highlight in the experimental group of boys an initial arithmetic mean of 7.86 sec, and 7.38 sec at final testing respectively, recording a decrease of 0.48 sec. A significant progress is observed, supported by the

index value t =2,40 at the significance threshold P <0,05. In the case of boys in the control group, the initial mean value was 7.99±0.18 sec, and the final one was 7.92 sec, reflecting an insignificant decrease, confirmed by the t-Student value at a threshold P >0,05.

Table 5. Comparative analysis of initial and final results defining the level of general and special physical preparation of students in the experimental and control groups (girls, n=20)

No	Tests	Groups	Initial indices x ±m	Final indices x ±m	Statistical significance	
					t	P
1.	50 m sprint running, sec.	E	8,47±0,30	7,90±0,26	2,19	<0,05
		C	8,30±0,44	8,20±0,42	0,71	>0,05
		t	0,24	0,62	-	-
		P	>0,05	>0,05	-	-
2.	Standing long jump, cm	E	150,4±5,56	163,8±3,90	2,99	<0,01
		C	147,7±4,13	151,8±4,00	1,13	>0,05
		t	0,39	2,15	-	-
		P	>0,05	<0,05	-	-
3.	Sit-ups in 30 sec., no. reps.	E	25,1±0,99	29,3±0,96	3,68	<0,01
		C	25,2±1,13	27,1±1,21	1,82	>0,05
		t	0,06	1,31	-	-
		P	>0,05	>0,05	-	-
4.	1000m endurance running, sec.	E	304,7±5,84	290,2 ± 4,34	3,05	<0,01
		C	310,2±7,92	306,2 ± 6,29	0,61	>0,05
		t	0,55	2,09	-	-
		P	>0,05	<0,05	-	-
5.	100 m backstroke test, sec.	E	104,2±4,46	95,3±3,42	2,39	<0,05
		C	104,5±5,03	100,8±4,90	0,83	>0,05
		t	0,04	0,92	-	-
		P	>0,05	>0,05	-	-
6.	100m freestyle test, sec.	E	95,0±3,94	86,6±2,95	2,62	<0,05
		C	94,8±4,89	92,2 ±4,00	0,64	>0,05
		t	0,03	1,12	-	-
		P	>0,05	>0,05	-	-
7.	100m breaststroke test, sec.	E	104,7±4,13	96,5±3,15	2,43	<0,05
		C	103,6±3,77	99,9±3,51	1,13	>0,05
		t	0,19	0,72	-	-
		P	>0,05	>0,05	-	-

Note: n - 10 P- 0,05; 0,01; 0,001 EG- n=10 fete, CG- n=10 girls
df - 9 ; t = 2,262; 2,821; 4,781
df - 18; t = 2,101; 2,552; 3,922

In the experimental group of girls, the initial arithmetic mean obtained was 8.47 sec, and 7.90 sec at final testing respectively, recording a progress of 0.57 sec.

A significant improvement is observed, supported by the index value t=2,19 at the significance threshold P<0,05. In the case of the control group of girls, the initial mean value was 8.30 sec, and the final one was 8.20 sec, reflecting an insignificant decrease, confirmed by the value t=0,71 at P>0,05.

Regarding the differences between the means of the boys' groups, no significant differences were observed at the initial evaluation between the experimental and control groups, with the value

of the t-Student criterion at the threshold P>0,05. This trend was also maintained at final testing, where differences remained insignificant P>0,05. In the case of the girls' sample, insignificant differences were also found between the means of the two groups at initial testing. The situation remained unchanged at the final evaluation, where the t-Student value indicates the absence of a statistical difference between groups for this specific indicator.

In the standing long jump test, the results of the boys in the experimental group indicate a progress of 16.53 cm (from 166.8 cm at initial testing to 183.33 cm at the final one), while in the control group the increase was only 0.54 cm (from 166.86 cm to 167.4 cm). At final testing, the experiment group (boys) recorded significant progress with values of the t-Student criterion at a significance threshold lower than 5% (P<0,05), confirming the statistical validity of evolution between the two moments of the research. In contrast, the control group did not show relevant progress, with the value of the t-Student criterion being at a significance threshold higher than 5% (P>0,05).

The girls' experimental group recorded a progress of 13.4 cm (from 150.4 cm to 163.8 cm), statistically validated by the value t=2,99 at the significance threshold P <0,01.

By comparison, the control group showed a visibly smaller increase of only 4.1 cm (from 147.7 cm to 151.8 cm), which was statistically insignificant (P>0,05).

At initial testing, the values of the t criterion confirmed the homogeneity of the groups for both boys and girls, with no significant differences between samples. At final testing, the statistical value of the progress recorded by boys and girls with values of the t-Student index at the significance threshold lower than 5% (P <0,05) attests to the efficiency of the applied intervention methodology, demonstrating a far superior evolution compared to the classical instruction of the control group.

The evaluation of abdominal strength (sit-ups in 30 sec) indicates superior progress of the experimental group compared to the control group. At initial testing, the boys' means were close: 26.8 repetitions (EG) compared to 26.53 repetitions (CG). The value of the t-Student criterion at the significance threshold higher than 5% (P >0,05) confirms the homogeneity of the samples at the start of the research, providing the necessary premises to validate the impact of the applied program. At the end of the experiment, the boys in the GE reached a mean of 32.13 repetitions, marking a progress of 5.33 sit-ups, which is highly statistically significant at P <0,01. In contrast, the control group obtained a mean of 27.0 sit-ups, with a marginal progress of only 0.47 repetitions, insignificant from a statistical perspective (P>0,05). Although no relevant differences were observed between the two samples at initial evaluation, final testing highlights a clear superiority of the experimental group. The inter-group comparison at the end of the research confirms this significant progress, with the value of the t-Student criterion corresponding to a significance threshold of 1% (P<0,01).

In the female sample, the experimental group evolved from 25.1 to 29.3 repetitions, marking a progress of 4.2 repetitions, with a significant t-Student index value at a threshold of P<0,01. The control group recorded a smaller increase, from 25.2 to 27.1 repetitions (a progress of 1.9 repetitions). However, at the end of the research, the t-Student criterion indicates values below the critical significance threshold (P>0,05), which confirms a relatively close evolution of the subjects, without a decisive statistical influence of the experimental variable in this test.

The evolution of endurance running over the 1000 m distance in boys highlights the effectiveness of the experimental program. Thus, the experimental group progressed significantly, from 296.93 sec to 278.73 sec, achieving an improvement of 18.2 seconds – a result confirmed by a

statistical significance threshold below 5% (P<0,05), In contrast, the control group showed an insignificant decrease in time, from 298.86 seconds initially to 293.13 seconds at the end, with the significance threshold in this case being greater than 5% (P>0,05).

The analysis of differences between the experimental group and the control group reveals insignificant values in both phases of the research (P>0,05). This aspect attests to the initial and final balance of the samples, while emphasizing the importance of maintaining the specific program to consolidate the progress observed among EG subjects.

In the girls' experimental group, a remarkable progress in performance is noted, from 304.7 sec initially to 290.2 sec at the end, marking an improvement of 14.5 seconds – a result supported by the values of the t criterion at a confidence threshold P<0,01. The control group recorded a minimal evolution, from 310.2 seconds to 306.2 seconds, which represents a progress of 4 seconds, considered statistically insignificant P>0,05.

Although no relevant differences were observed between the two samples at the initial evaluation, the final testing highlights a clear superiority of the experimental groups, confirmed by the value of the t-Student criterion, which indicates a statistical significance threshold P<0,05. These results confirm the effectiveness of the intervention among girls as well, validating the impact of the program on specific endurance.

According to the data presented in Tables 4 and 5, an improvement in the mean value was observed for both experimental groups in the 100 m backstroke test. Boys in the experimental group recorded a significant performance evolution, with the mean times decreasing from 95.4 seconds (initial testing) to 87.46 seconds (final testing). This notable progress of 7.94 seconds confirms the effectiveness of the applied methodology. Unlike them, boys in the control group obtained a much smaller improvement of only 3.0 seconds, evolving from an initial mean of 98.53 seconds to a final mean of 95.53 seconds.

The differences between the means highlighted within the experimental group present significant values of the t-Student criterion, with the significance threshold being located at a level of P<0,05, which confirms the validity of the intervention. In contrast, the control group records stability of results, with the index value being located above the critical significance threshold P >0,05.

The results obtained by the girls' experimental group indicate the presence of significant differences between testings, highlighted by the value of the t-Student criterion at the significance threshold P<0,05. The control group presents statistically insignificant progress, with the value of the t index being at a significance threshold higher than 5% (P>0,05).

Analyzing the differences between the means of the experimental and control groups, both in the case of boys and girls, the absence of significant differences is observed at both stages of testing, with values consistently remaining above the significance threshold P>0,05.

In the 100 m freestyle test, the boys' experimental group recorded a significant improvement of 8.07 seconds, evolving from 89.80 seconds to a final mean of 81.73 seconds. Statistical validation through the t-Student criterion, located below the significance threshold P<0,05, attests to the effectiveness of the experimental program in optimizing travel speed in water.

The control group obtained minor progress, from 91.66 seconds at initial testing to 88.93 seconds at the final one (a difference of only 2.73 seconds), a result situated well below the level of the experimental group. The value of the t-Student criterion confirms the insignificant character of this progress, with the significance threshold being above 5% (P>0,05), which attests to the stability of results in the absence of the intervention program.

In the case of the girls' experimental group, a significant improvement in the mean execution time is observed, which was reduced by 8.4 seconds. This increase in performance is statistically confirmed by the value of the t index at a significance threshold P<0,05, demonstrating the efficiency of the program in the girls' sample as well. Although the control group records a time improvement of 2.6 seconds, this progress is insignificant.

The comparative analysis of means between samples (EG vs. CG) indicates the absence of significant differences at both moments of testing. This initial homogeneity confirms that the superior progress of the experimental groups is the direct result of the methodology applied during the research.

The analysis of results in the 100 m breaststroke test highlights a significant progress within the boys' experimental group, reflected by the reduction of the mean execution time at final testing by 8.07 seconds. This evolution is statistically validated by the t-Student test value, which indicates a significance threshold P<0,01, confirming the positive impact of the applied methodology.

The mean values recorded by the control group indicate an insignificant decrease of only 2.47 seconds. In parallel, the data indicate the maintenance of relative homogeneity between samples, with inter-group differences remaining statistically insignificant (P>0,05), a fact that attests to the maintenance of relative homogeneity between samples despite the qualitative leap achieved by the experimental group.

Regarding the girls' experimental group, the results in the 100 m breaststroke test reflect a significant improvement, with execution time decreasing by 8.2 seconds over the experimental period. The success of the intervention is statistically validated by the value of the t-Student criterion at a significance threshold P<0,05 attesting to the efficiency of the proposed methodology in optimizing swimming skills. The control group recorded limited progress of only 3.7 sec, an evolution considered statistically insignificant (P>0,05). These data emphasize the stability of results in the absence of the specialized program and highlight the clear superiority of the group that benefited from the experimental methodology.

The comparative analysis of data highlights positive progress and insignificant differences between genders, confirming the effectiveness of the experimental program. The low values of standard error and standard deviation attest to the fidelity of the investigated samples, while the values of the coefficient of variation below 10% demonstrate a high homogeneity of the collectives researched in all applied tests.

The comparative analysis of the results of the sociometric testings of the control and experimental groups aimed at objectively evaluating the student group dynamics using the sociometric test—an essential tool for identifying leaders and positive relational models [3, 14]. The results demonstrate that, unlike the control group, the activities in the model program and the cooperation experiences in the swimming camp facilitated mutual support and recognition of individual potential. The synthesis of data confirms that the applied methodology contributed decisively to consolidating positive relationships and increasing cohesion within the experimental group.

The analysis aimed at calculating preferential status indices (individual and group) and developing sociometric matrices, offering a faithful picture of the structure and dynamics of interpersonal relationships. The processing of entered data involved creating sociograms and a detailed interpretation report for the initial and final moments of the research.

The comparative analysis between the experimental group and the control group allowed for determining the direct impact of the applied program (in training sessions and the swimming camp)

on the social integration process of the subjects. This methodology involved classifying subjects into specific categories (popular, accepted, indifferent, and marginalized) based on the attractions and rejections expressed among group members. The analysis of the experiment results was performed separately for each group, using the sociometric matrices and related status indicators. In addition, comparisons were made between the results of the two samples to highlight the relevance of differences between values recorded at final testing.

The analysis of results, correlated with the sociometric matrix of each group, highlights significant differences between the experimental group and the control group regarding the number of attractions and rejections recorded.

Within the experimental group, a positive restructuring of the social structure was observed through the appearance of 9 mutual choices and a considerable decrease in the number of rejections. While the phenomenon of rejection was initially generalized, at final testing, subjects appeared with no negative options, a fact that confirms increased cohesion and a climate based on mutual respect. In contrast, the control group showed insignificant changes, maintaining a stagnant relational dynamic and even recording an intensification of the exclusion phenomenon and negative options, a fact determined by difficulties in relating and cooperating.

According to the data centralized in Table 6, at initial testing, the values of preferential status indices for the "popular" category ranged between 0.37 and 0.50 in the case of the experimental group (three subjects), while in the control group, only two subjects stood out, with an index value of 0.33. At final testing, significant differences are found between the two samples, with the evolution being clearly superior in the case of the experimental group, highlighting a significant distance from the control sample regarding the consolidation of leader positions.

Table 6. Preferential status indices of experimental group I A and control group II B, at initial and final testings

Choices-Rejections				**No. of subjects with same preferences**				**Preferential status index**				**Psychosocial value of preferential type**	
IT		FT		IT		FT		IT		FT			
Gr. IA	Gr. IIB	Gr. IA	Gr. IIB	Gr. IA	Gr. IIB	Gr. I A	Gr. IIB	Gr. I A	Gr. II B	Gr. I A	Gr. IIB	Gr. I A	Gr. II B
15 12 12	11 11	16 10	10 10	1 1 1	1 1	1 1		0,50 0,45 0,37	0,33 0,33	0,58 0,41 0,33		POPULAR IT FT 3 3	 IT FT 2 0
9 8 7 5 4	9 8 6 5	7 6 5 4 3 1		1 2 1 1 2 2	1 2 2 1 3 1	1 2 1 1 1 1	1 5 1 2 7 1 1	0,25 0,20 0,16 0,12 0,08 0,04	0,25 0,16 0,12 0,08	0,25 0,20 0,16 0,12 0,08 0,04	0,25 0,16 0,12 0,08 0,04	ACCEPTED IT FT 8 16	 IT FT 9 11
0	0	-	0	2	3	2	2	0	0	-	0	INDIFFERENt IT FT 3 0	 IT FT 3 3

11	9	14		2	1	1	1	-0,45	-0,33	-0,54	-0,29	MARGINALIZED			
8	9	13		1	2	2	2	-0,33	-0,25	-0,41	-0,25				
7	7	11		2	1	1	3	-0,29	-0,16	-0,37	-0,16				
4	6	10		2	3	1	1	-0,16	-0,12	-0,29	-0,12				
4	6	8		1	1		1	-0,08	-0,04		-0,08				
4	6	6		3	1		1				-0,04	IT	FT	IT	FT
	6	5			1		1								
	5	4			2		2					11	6	10	11
	5	3			1										

In the case of the experimental group, three subjects are still noted in this category, but the values of preferential status indices increased, ranging between 0.33 and 0.58. In contrast, in the control group, no subject is identified in the "popular" category anymore; subjects designated as such at the first testing moved, in the end, to the "accepted" category.

Analyzing the preferential type psychosocial value "popular," we observe a decrease also in the number of subjects who have the same preference.

Regarding the control group, which did not participate in activities focused on developing social skills carried out in training sessions and the swimming camp, preferential status indices indicate only a slight increase in the number of those "accepted."

More precisely, an evolution was recorded from 9 subjects at initial testing (with index values between 0.08 and 0.25) to 11 subjects at final testing (with limits between 0.04 and 0.25). This minor evolution confirms the stagnation of group dynamics in the absence of a specific intervention program.

The analysis of the "accepted" category within the experimental group highlights most clearly the impact of the intervention program. If at initial testing, 8 subjects were identified (with preferential status index between 0.04 and 0.25), at final testing, their number doubled, reaching 16 subjects. We thus note a significant increase in the degree of social acceptance as a result of interactive activities carried out through our proposed program. The comparative analysis of preferential status indices in the "indifferent" category highlights that although at initial testing both groups recorded three subjects in this position, the evolution at final testing was divergent. Within the experimental group, all previously indifferent subjects were integrated into the "accepted" category, which demonstrates an increase in internal cohesion and a superior socialization level compared to the control group.

Regarding the "marginalized" psychosocial value, at initial testing, the difference between investigated groups was minimal: 11 subjects in the experimental group (with preferential status indices between -0.45 and -0.08) and 10 subjects in the control group (with indices between -0.33 and -0.04). At final testing, in the case of the experimental group, a significant change is observed: the number of marginalized decreased to six subjects (with indices between -0.54 and -0.29). This "migration" of subjects was achieved towards the "accepted" category, a fact that confirms the efficiency of the program in reducing phenomena of isolation and social excludion. The control group does not record positive changes but a slight regression: the number of "marginalized" subjects increased from ten to eleven, with the index values of preferential status being maintained within similar parameters. The lack of a specific intervention favored, in this case, the accentuation of isolation and exclusion phenomena.

To reveal the place of each subject within the collective, we resorted to the analysis of sociograms performed in the initial and final stages (Figures 3-6), a method that allowed the

visualization of structural changes and the place of each subject in the group. These graphic representations confirm the restructuring of the relationship network and support conclusions regarding the growth of group cohesion.

The comparative analysis of sociograms highlights an accented status dynamic within the experiment group, marked by predominantly positive changes. Thus, subjects A1, A3, A9, A15, A17 change their status from the "marginalized" category to that of "accepted," while A13 evolved from the status of "indifferent" to that of "accepted." A notable evolution is observed in the case of subject A4, who promoted to the "popular" category, consolidating the core of leaders of the group. Although most mutations are ascending, isolated cases of position reconfiguration are also recorded, such as the transition of subject A16 from the status of "popular" to that of "accepted" or the migration of A20 from the "indifferent" category to "marginalized."

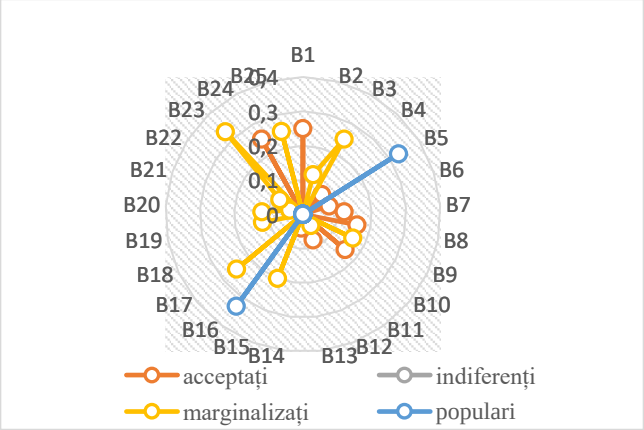


Fig. 3. Sociogram of control group II B at initial test

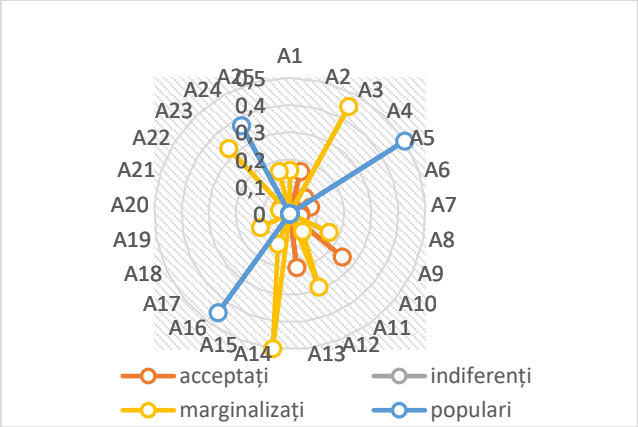


Fig. 4. Sociogram of experimental group I A at initial test

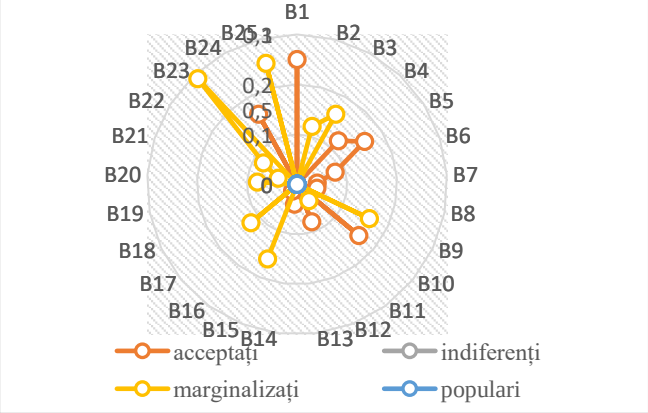


Fig. 5. Sociogram of control group II B at initial test

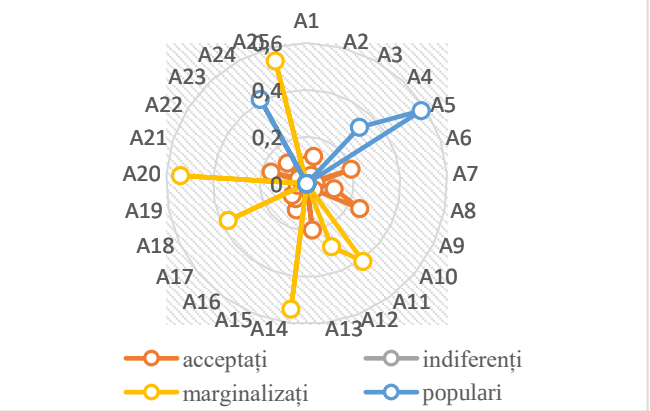


Fig. 6. Sociogram of experimental group I A at initial test

The individual mutations presented reflect an overall reconfiguration of the investigated social microgroup. In order to highlight modifications produced at the level of the relational structure, the obtained sociometric data were processed through percentage reporting of each preferential status, with results centralized in Table 7. These offer a perspective on how swimming practice forms can influence interpersonal relationships and the social position of participants.

Table 7. Percentage distribution of sociometric indices at initial and final testings of the experimental and control groups

Sociometric category	Experimental group, initial (%)	Experimental group, final (%)	Control group, initial (%)	Control group, final (%)
Popular	12	20,8	8	8
Accepted	28	44	32	36
Indifferent	36	24	40	36
Marginalized	24	12	20	20

According to the data presented above, we note that at initial testing, the experimental group records the following distribution: 12% students with "popular" status, 28% "accepted," 36% "indifferent," and 24% "marginalized." It is observed that vulnerable statuses ("indifferent" and "marginalized") total 60% of the entire group, while positive statuses represent 40%. In the control group, a relatively close initial distribution is observed: 8% popular, 32% accepted, 40% indifferent, and 20% marginalized. In this case too, the share of vulnerable statuses is 60%, and that of positive statuses is 40%.

Therefore, the applied tests indicate an initial sociometric structure characterized by the predominance of neutral and peripheral positions. This similarity supports the comparability of the samples, provides concrete information regarding group relationship and socialization, and constitutes an appropriate framework for evaluating the impact of the intervention.

After analyzing the values obtained at final testing and calculating sociometric indices, significant differences were observed within the experimental group between the two moments of evaluation. These positive evolutions are evident at the level of preferential type psychosocial statuses. Thus, the percentage of "popular" students increased from 12% to 20%, indicating a consolidation of central positions in the relationship network of the group. The category of "accepted" students recorded a major increase, from 28% to 44%, representing a difference of 16 percentage points. This evolution reflects the intensification of positive relationships and an increase in the social integration level.

In contrast, in the control group, the category of "accepted" students recorded only a slight increase, from 32% to 36%, reflecting a variation of 4 percentage points that does not substantially modify the group configuration. Regarding the vulnerable statuses of this group, the share of "indifferent" decreased insignificantly from 40% to 36%, while the percentage of "marginalized" remained constant at 20%.

Cumulatively analyzing, a smaller evolution of positive statuses (popular + accepted) is observed within the control group from 40% to 44%, while vulnerable statuses (indifferent + marginalized) decrease from 60% to 56%. These variations are minimal and do not indicate a significant restructuring of the relational network. They can be explained by the natural dynamics of the group and daily interactions specific to the school environment, in the absence of a programmed intervention.

The comparative analysis highlights major structural discrepancies: while the experimental group recorded an increase in positive statuses of 24 percentage points (from 40% to 64%), in the control group the advance was only 4 points (from 40% to 44%). Symmetrically, the reduction of vulnerable statuses was six times greater in the case of the experimental group (24% compared to 4%), confirming the decisive impact of the intervention program on group cohesion.

Another relevant aspect is the halving of the share of "marginalized" students in the experimental group, from 24% to 12% - a situation that is not found in the control group, where this category remains constant at 20%. This discrepancy highlights the impact of the intervention on reducing social isolation phenomena. At the same time, the increase in the share of "accepted" students in the experiment group (from 28% to 44%) is far superior to that in the control group (from 32% to 36%), which confirms the consolidation of positive relationships as an effect of the applied program. These results demonstrate that the Socialization Program conducted within training sessions and swimming camps had a significant impact on the psychosocial status of participants.

In conclusion, the results of the statistico-mathematical analysis and the interpretation of sociometric data confirm the validity of the experimental endeavor. Thus, the important scientific problem solved - focused on the theoretical and experimental substantiation of the socialization process of children through the swimming-based model program - led to a significant increase in the socialization level, as well as to the optimization of the general and special motor skills of students. These findings validate the efficiency of the proposed methodology and constitute the foundation for formulating the general conclusions of the thesis.

GENERAL CONCLUSIONS AND RECOMMENDATIONS

1. The considerable technological advance in recent years has led specialists in the field of Sport Science to focus their efforts towards solving specific problems of the current generation. Human motor activity is founded on acquired behaviors, while motor action integrates an essential subjective dimension (aspirations, ideals, goals) oriented towards the evolution of the individual's status and role in the group structure [6].

The research of the investigated problems, in this case the socialization of pubescent students through swimming practice, brought to light the essence and basic concepts of this topic.

Specialized literature demonstrates the existence of research regarding socialization through sport in general and through swimming in particular, but it requires the existence and adjustment of sufficient material regarding educational strategies aiming at the socialization of pubescent children in a systemic and organized manner. Through the bibliographical reference framework, new and relevant knowledge was obtained, which was used for developing the methodological support in elaborating and implementing a specific program of socialization of children through swimming training and swimming school camps.

2. The proposed model program centered on the socialization of students through swimming was substantiated on scientific evidence and theoretical foundations that attest to the role of motor activities in personality formation. According to specialists, sport constitutes an optimal framework for developing and establishing sustainable principles in physical, mental, and social plans.

The structure of the proposed program was designed so that the socialization component holds a share of 16.66% within training lessons and 33.32% during the swimming camp. This time distribution directly facilitated reaching the objectives established in the research.

3. The sociological survey, whose subjects were students, parents, and coaches, highlighted a diversity of opinions regarding priority in swimming training and school camps. A relatively low socialization level of pubescent students is highlighted, but also the need for developing and applying a specific program of activities targeting an increase in children's socialization degree.

Answers given by students regarding concerns and ways of spending free time are relevant in this regard: 18% are concerned with study, 66% state they socialize in the virtual environment, and 16% are involved in sports activities.

4. From the answers expressed by specialists, it was revealed that a large percentage of respondents allocate more time to technical preparation and competitions and less to conducting socialization activities. A large share among specialists conduct socialization and social skill development activities in children "occasionally" (68%) or "rarely" (18%), and only a small extent "constantly" (20%)

5. Within the preliminary experiment, data recorded for the four physical tests and three swimming-specific tests (100m freestyle, 100m backstroke, and 100m breaststroke) indicate a normal evolution, determined by biological growth and individual values of subjects—a statement confirmed by statistical indicators of dispersion and homogeneity showing good values (below 10%), which characterizes collectives at this pubescent age. The obtained values are representative for this age, being close to values encountered in specialized literature (SNEA) both in girls and boys. In swimming-specific tests, the mean values show differences between girls and boys, with higher values in the 100m breaststroke test in favor of boys.

6. To highlight the relational dynamics of subjects included in the experiment, the sociometric test was used as the primary investigation tool. The analysis of data collected through the sociometric matrix highlights, at the beginning of the research, an average level of socialization of pubescent students. Although functional, this initial stage revealed a group structure requiring optimization. Results support the need for implementing intervention programs based on swimming-specific means, specially designed to maximize social integration potential and consolidate cohesion among students.

7. In the initial evaluation, no significant differences were observed between the control group and the experimental group, both in physical and specific tests, regardless of the subjects' gender. Values of the t-Student index were below the significance threshold ($P>0,05$), confirming the homogeneity of samples at the debut of the research.

8. At final testing, both experimental subgroups recorded remarkable progress. Statistically, differences are significant, with calculated t-index values exceeding the critical threshold for a significance level of 5% ($P<0,05$) in all tests applied to boys. In the case of the experimental group of girls, a superior performance improvement was recorded, with t-index values corresponding to a significance threshold of 1% ($P< 0,01$) n the strength-speed/explosive-power test – standing long jump, and at the significance threshold of 5% ($P< 0,05$) - in 50m sprint running, sit-ups from dorsal recumbency, and 1000m endurance running tests.

According to results recorded in swimming-specific tests, at the end of the experiment, a appreciable performance improvement of children in the experimental batch is noted compared to the control one. This evolution confirms the efficiency of exercises and means included in the proposed program. In the three swimming-specific tests, both boys and girls in the experimental group achieved significant decreases in execution times ($P< 0,05$). In contrast, students in the control group recorded limited progress, statistically insignificant, with t-Student criterion values located below the significance threshold ($P > 0,05$).

9. The evaluation results of the socialization degree, at final testing, demonstrate a significant improvement of indicators in the experimental group compared to the control one. A remarkable evolution was recorded within the experimental group in the category of accepted students (subjects

integrated and validated by peers). Their share doubled, increasing from 32% to 64% at the final one, a fact reflected by the increase in the number of expressed options from 8 to 16 choices.

This evolution demonstrates an increased preference for inclusion within the GE, while in the control group the dynamics remained relatively constant, with a minor increase from 36% to 44% (from 9 to 11 choices). At the same time, the success of the intervention is confirmed by the evolution of those isolated and rejected (marginalized category).

Thus, within the experimental group, the marginalization rate decreased considerably, from 44% to 24% (from 11 to 6 subjects). In contrast, in the control group, the marginalization phenomenon recorded a slight tendency to increase, from 40% to 44% (from 10 to 11 subjects), emphasizing thereby the efficiency of the program applied to the experimental group.

These progresses were made possible by implementing effective intervention solutions meant to diminish the negative impact of external factors such as: the socio-family environment, specific conditions for conducting swimming activities, adaptation capacity to the program, and bio-psycho-physical features of 13-14 year old students. However, qualitative analysis indicates that swimming-specific means have not yet fully reached their socialization potential, requiring a refinement of used exercises.

10. Therefore, the present research substantiates the need for implementing such intervention programs in training sessions and school camps, developed and adapted including for other age categories (primary cycle, 11-12 years). Extending these methodical strategies will allow facilitating children's socialization process and reaching the expected efficiency in consolidating school and sports group cohesion.

Thus, the results obtained by us following research led to solving the important scientific problem of the research, which consisted of the theoretical and experimental substantiation of socialization through the model program based on swimming-specific means and contents - a fact that ensured not only an increase in social interaction indices but also optimized general and special motor skills of pubescent students to a superior level.

***

Based on the results and theoretical-experimental research, we can make the following methodico-practical recommendations:

- Organizing non-formal activity programs (camps, trips, group activities, etc.) with an emphasis on developing social skills and interpersonal relationships, promoting collaboration, interaction, and efficient communication among group members, with a view to maintaining a positive and encouraging socio-affective climate;

- Diversifying instruction content by applying strategies based on swimming-specific means adapted to real conditions of the training process and sports preparation camps. The goal is to use the aquatic environment not just for performance, but also as a vector for developing self-confidence and social competences;

- Selecting and implementing specific strategies and interventions within swimming lessons (team cooperation activities, communication exercises, and role games) meant to facilitate group cohesion and the accelerated integration of new members;

- Planning and applying specific instruction sessions, both within lessons and swimming camps, through programs including role games, constructive feedback, and individualized support. These interventions have the role of helping pubescent students develop communication, conflict-resolution skills, and build healthy interpersonal relationships;

- Dynamically adapting instruction methodology by permanently diversifying preparation forms and methods, so that they match the development degree of motor qualities, skills, and specific abilities of each student-athlete;

- Ensuring and creating a sporting climate, a safe and favorable environment within groups, where participants feel comfortable and are encouraged towards active involvement in collective life.

- Effectively attracting and involving parents or legal guardians in the socialization process. It is essential to inform them regarding strategies used in the program to ensure continuity of social skill development in the family environment as well, transforming parents into active partners of the educational endeavor.

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LIST OF AUTHOR'S PUBLICATIONS ON THE THESIS TOPIC

1. PETRE D.I., **NEDELCU R. I**. Cercetări privind analiza opiniilor experților privind influența factorilor motivaționali asupra înotului și performanței la vârsta de 9-10 ani. În: Analele USV Știința și arta mișcării, vol. XVI, numărul 2, 2023, p. 149-155. https://doi.org/10.4316/SAM.2023.0217
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ANNOTATION

Nedelcu Răzvan-Ioan, *The Developing of Social Skills in Pubescent Children through Swimming Practice*, Doctoral thesis in Educational Sciences, specialty 533.04 – Physical Education and Sports, Kinetotherapy, and Recreation, Chișinău, 2026

The structure of the thesis: introduction, 3 chapters, general conclusions and recommendations, bibliography of 174 titles, 225 pages, of which 147 pages are basic text, 16 tables, 46 figures, and 11 appendices. The results obtained are presented in 8 scientific papers.

Keywords: puberty, swimming, socialization, social skills, interpersonal relationships, social integration.

The purpose of the research is to create specific socio-pedagogical conditions that facilitate and contribute to increasing the level of socialization of pubertal students through the application of a developed Program based on the specific means and content of swimming.

Research objectives: to study of the concept of socialization and to identify the current practices regarding the socialization of pubescentl children through swimming practice; assessing the level of motor development and the degree of socialization of children in the context of swimming practice; sociological research on the need of socialization activities through swimming practice; arguing the effectiveness of the Program of activities aimed at children's socialization, implemented in training sessions and camps.

The novelty and scientific originality lie in the argumentation of key characteristics that formed the basis for the development and implementation of the experimental program, characteristics that include: the specificity of the socialization process from the perspective of the physical and specific training of students who practice swimming, the specification of activities aimed at optimizing the socialization process.

The important scientific solved problem lies in the theoretical and experimental substantiation of the socialization process of children based on the proposed program as a model for the applying and practicing of swimming-specific means and content, which involves increasing the level of socialization, general motor skills, and specialized motor skills of students.

The theoretical significance lies in the analysis of the concept of socialization and the importance of the process of forming and developing the communication, collaboration, and social integration skills of adolescents, which enabled the development and justification of the use of socialization activities for pubescent children who practice swimming, with the aim of increasing their level of socialization.

The practical applicability of the research is given by the possibility of successfully applying the content elements introduced in the experimental program in swimming training sessions and school camps, contributing significantly to the efficiency of the socialization process and to the development of social and behavioral skills **in a sports context.**

The implementation of the scientific results: The content of the socialization program for pubescent children was implemented in swimming training sessions and in activities carried out during the summer camp in Costinești, with 8th grade secondary school students from the "I.C. Vissarion Titu" Theoretical High School.

ADNOTARE

Nedelcu Răzvan-Ioan „*Formarea aptitudinilor sociale ale copiilor de vârstă pubertară prin practicarea înotului”.* Teză de doctorat în științele educației specialitatea 533.04 - Educație fizică și sport, kinetoterapie și recreație, Chișinău, 2026

Structura tezei: introducere, 3 capitole concluzii generale și recomandări, bibliografie din 174 titluri, cuprinde 225 pagini**,** dintre care 147 text de bază, 16 tabele 46 figuri și 11 Anexe. Rezultatele obținute sunt prezentate în 8 lucrări științifice.

Cuvinte-cheie: pubertate, înot, socializare, abilități sociale, relații interpersonale, integrare socială.

Scopul cercetării constă în creearea condițiilor sociopedagogice specifice care să faciliteze și să contribuie la creșterea nivelului de socializare a elevilor de vârstă pubertară, prin aplicarea Programului elaborat pe baza mijloacelor și conținutului specific înotului.

Obiectivele cercetării: studierea conceptului de socializare și identificarea practicilor actuale privind socializarea copiilor de vârstă pubertară prin practicarea înotului; aprecierea nivelului dezvoltări motrice și a gradului de socializare a copiilor în contextul practicării înotului; cercetarea sociologică privind necesitatea activităților de socializare prin înot; argumentarea eficacității Programului de activități privind socializarea copiilor, implementat în antrenamente și tabere.

Noutatea și originalitatea științifică este dată de argumentarea unor caracteristici cheie care au stat la baza elaborări și implementării programului experimental, caracteristici ce includ: specificul procesului de socializare din perspectiva pregătirii fizice și specifice a elevilor care practică înotul, specificarea activităților care vizează optimizarea procesului de socializare.

Problema științifică importantă soluționată rezidă în fundamentarea teoretică și experimentală a procesului de socializare a copiilor pe baza programului propus ca model de aplicare și exersare a mijloacelor și conținuturilor specifice înotului, fapt ce va conduce la creșterea nivelului de socializare, a capacității motrice generale, precum și a deprinderilor motrice specifice ale elevilor.

Semnificaţia teoretică constă în analiza conceptului de socializare și importanța procesului de formare și dezvoltare a abilităților de comunicare, colaborare și integrare socială a adolescenților, fapt ce ne-a permis elaborarea şi argumentarea utilizării activităţilor de socializare a copiilor de vârstă pubertară ce practică înotul, având ca obiectiv creşterea gradului de socializare.

Valoarea aplicativă a lucrării este dată de posibilitatea aplicării cu succes în antrenamentele de înot și în taberele școlare a elementelor de conținut introduse în programul experimental, ce va contribui la eficientizarea semnificativă a procesului de socializare și dezvoltarea abilităților sociale și comportamentale în context sportiv.

Implementarea rezultatelor ştiinţifice. Conținutul programului de socializare a copiilor de vârstă pubertară a fost implementat în antrenamentele de înot și în activitățile desfășurate în tabăra de vară de la Costinești, cu elevii ciclului gimnazial (clasele aVIII-a) din Liceul Teoretic „I. C.Vissarion Titu”, județul Dâmbovița.

NEDELCU Răzvan-Ioan

THE DEVELOPING OF SOCIAL SKILLS IN PUBESCENT CHILDREN THROUGH SWIMMING PRACTICE

Specialty 533.04. Physical education, sport, kinetotherapy and recreation

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