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SOCIAL AND PSYCHOLOGICAL ADAPTATION OF ELEMENTARY SCHOOL CHILDREN BY MEANS OF WATER GAMES

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Author contribution: A – study design; B – data collection;
C – statistical inference; D – manuscript production.

Abstract

Social adaptation of elementary school children to collaborative experience is a burning issue. Children's communication based on gadgets in online world becoming more and more widespread enhances difficulties in the process of real communication.

Aim is investigation of dynamics of social and psychological adaptation of elementary school children using play-based methodology in groups of initial teaching to swim as one of means of social adaptation.

Methods. Participants in the study were 9-year-old children sportsmen (gymnasts) («FENIKS–Spartak» sports school) being at sports and health-improvement training camp, and formed control (n=13) and experimental (n=13) groups. Study duration – 21 days. Water classes were held 45 minutes every day. In the course of the study the method of sociometry (study of interpersonal relations in group) according to Moreno J-L was used. The main means of influencing the children of the experimental group were using water games requiring different kinds of interaction between children on classes. Consequently, for the control group mostly individual form of arranging tasks was used.

Results. The sociometric status indicator of experimental group showing the level of social and psychological adaptation has considerably risen statistically at the close of study (compared to the control one) from 31,3 ± 12,8 % (Mx ± σ) at the beginning of work to 51,4 ± 14,6 % (Mx ± σ) at the end ($t = 3,73$; $p \leq 0,01$)). The children of the control group have not shown considerable statistical changes according to the mentioned indicator. The analysis of the sociometric status in the experimental group has shown that the level of social and psychological adaptation has improved greatly as a result of using play-based methodology on the stage of initial teaching to swim.

Conclusions. Water games and intentionally created social pedagogical situations come with improvement of social adaptation of children as part of the community. The more games motivating for interaction there are the easier and better the process of children's social communication within a group goes. It is shown that as a result of intentionally organized interaction within a group the number of mutual choices grows, that means that relations between children become more diverse, and the whole structure of a group improves.

Key words: adaptation, water games, sociometrics, physical education, school children.

Introduction

In nowadays society the problem of social adaptation and saving mental health of a person becomes a burning one (Harkusha, 2013; Yermolenko, 2010). The issue of social adaptation of children is relevant and requires attention of psychologists, teachers, and parents (Morodenko, 2009). A great number of scientific works are devoted to searching the means for increasing efficiency of physical education of children and teenagers, as well as their social and psychological adaptation within the

learning process. Scholars contend that the main indicator of psychological adaptation of a child to communication in a group is formation of adequate behavior while studying: establishing contacts with students and teacher; developing the skills of studying (Berezovska & Smoliak, 2014). Researchers determine social adaptation as a process with the help of which a child attains a state of social balance in the absence of experiencing conflict with others (Morodenko, 2009). Scientists remark that beginning of school studies is a serious stage in life of elementary school student. The intensity of studies provokes stress, fatigue, disconfidence, and discontent among a lot of students (Prokofieva & Anosova, 2016; Mykhno, 2015). During this time children writhe under failures at school which can further lead to a broad range of problems. Inappropriate behavior of a teacher, objective difficulties of adaptation to school lead to emergence of school stress, and some of them, even to neurosis, and fears (Ovcharova, 2003; Katić et al., 1997). The level of awareness of teachers about the symptoms, diagnosis and treatment of psychomotor disorders among school students has been investigated by researchers (Novak et al., 2016). Scientists have established low level of awareness of school teachers about psychomotor disorders among school students. The teachers have difficulties not only in determining the epidemiology of various disorders but in correct identification of the whole spectrum of symptoms.

One of the means of social and psychological adaptation of elementary school students' age we consider physical exercises, particularly, play-based method of physical activity. Top scientists contend that in physical education play-based method is used to solve educational, recreational and disciplinary tasks (Moskalenko, 2007; Bodnar & Kindzera, 2016). Such method obtains a huge role in development of elementary school age motor activity (Bilitiuk, 2006). Researchers have improved the methodology of using active games for optimization of PE lessons for primary school children (Shuba, 2017).

However, in spite of detailed investigation of many aspects of the process of elementary school children's physical education, the process of their social and psychological adaptation has not been investigated enough. Social and psychological adaptation of elementary school students', their inner world, is often neglected by specialists of physical education including school psychologists.

Using play-based method at the stage of initial teaching to swim has to come with improvement of social adaptation of elementary school students within a group. With benefit of reasonably selected water games we can solve the tasks of preventive measures against social disadaptation of elementary school students.

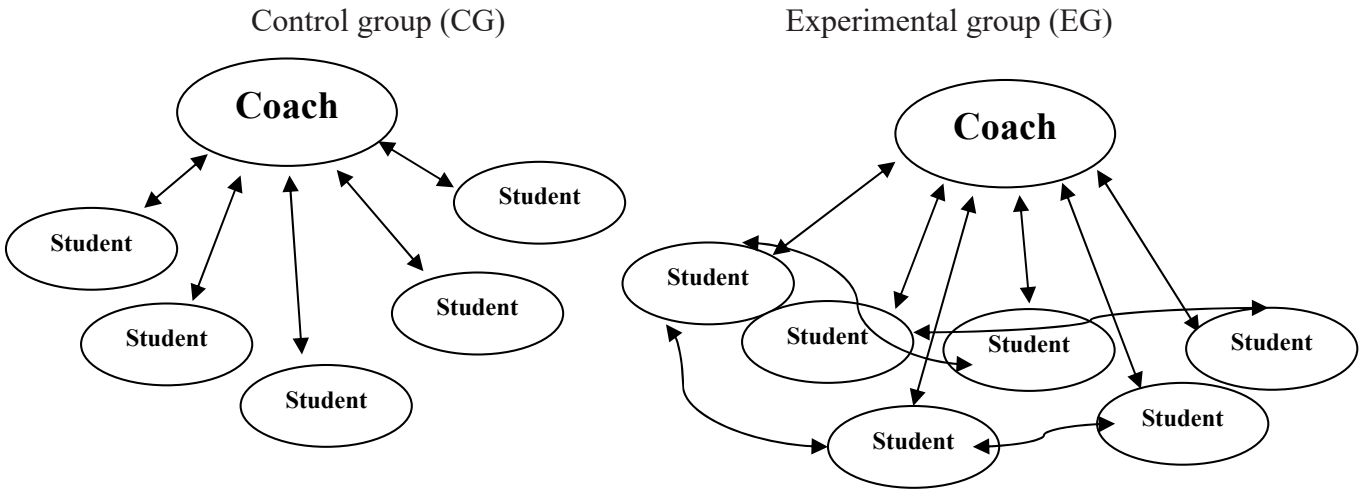
Research objective is to investigate the dynamics of social and psychological adaptation of elementary school children with the use of play-based methodology in groups of initial teaching to swim as one of means of social adaptation.

Methods

Participants. Participants in the study became the children sportsmen (gymnasts) of the «FENIKS–Spartak» sports school being at the sports and health-improvement training camp «Khvylia». The age of the participants was 9 years old. Two groups were formed: control group (n=13) and experimental group (n=13). The investigation was held during 21 days (one session in a sports and health-improvement training camp). Water classes were held 45 minutes every day.

Research arrangement. In the course of the study the method of sociometry (study of interpersonal relations in group) according to Moreno J-L was used (Moreno, 1958). The main means of influencing the children of the experimental group were using water games requiring different kinds of interaction between children on classes; for the control group mostly individual form of arranging tasks was used (classic form) (Derevianko et al., 2012; Shulha, 2008). Both in the control and experimental groups the games were bringing the same educational sense in the context of mastering swimming skills, but they differed greatly in the context of social interaction arrangement.

The interaction while using pedagogical methods within the control and experimental groups (EG) are shown in the picture 1. For the children from the EG group it enhanced the creation of the environment for wider interaction.



Pic. 1. The scheme of interaction between the teacher-coach and the children in the control and experimental groups.

The games used in the research (Bulhakova, 2009; Bulhakova, 2005):

1. The series of exercises and games for mastering aquatic environment were the exercise «Submerging face in water, opening eyes under water», «Washing face» game, «Submarine ship» game, «Gathering treasures» game – for the control group. For the experimental one they were the «Sea-fight» game and «Underwater greeting» game.

2. The series of exercises for mastering aquatic environment («Breathing out into water»): for control group they were the games «Kettle's on» (children perform breath-in, submerge their face into water, and perform complete breathing out – on the surface of water we can see the bubbles formed during this process), and «Who's got more bubbles?» (children also perform long breathing out into water during which the number of the bubbles formed and depth of the children's breathings out are compared). For the experimental group except the games mentioned above the «Pump» game was used (during this fun team game children are standing in low water and holding hands, first in pairs, and then – in a circle; on the coach's cue, the numbers one perform breathings in while the numbers two perform breathings out squatting down into water, and vice versa), and the «Pitching» game (children form a tight circle, in the centre of which stands the leader). On the leader's cue, the children take a «float» position. The leader touches the back of one random participant who's floated to the surface, and he/she breathes out, goes to the bottom, and keeps there as long as possible, and after that straightens out and comes to the surface. The child keeping in water the longest after breathing out becomes the winner.

3. Improving exercises. In the control group the tasks for improving arm and feet action the «Motor boat race» game (dog paddle racing, feet crawl, breathing out), and the «Ferriage» game (swimming race to the imaginary marked «bank») were used. As for the experimental group, the «Motor boat race» game was renovated, and its point was to do the tasks in pairs, and then – in trios (one child was performing rowing moves with arms, and the partner was holding their heels with hands while performing feet crawl impact movements, then children were taking turns). Also the «Fast tugboat» game was used (children were divided into 3–4 teams of 6–8 people; each team lining up into a column in pairs had to cross the finish line 8–10 m off the starting line). Two variations of the game were used: the first one – the participant standing in front was moving arms back and running till finish in water, and the one standing behind was taking the hand of the participant standing in front, and was working with feet crawl in turns gliding through the water; the second variation: the first participant was lying on the water having moved the feet back and performing rowing moves with arms in water in turns, and the second one was grabbing their partner's feet and helping them to reach finish as fast as possible by pushing their partner's feet forward.

4. Training dives. In the CG while doing dives the exercise execution was performed to a separate coach-teacher's cue for every student. In the EG while doing dives the exercise execution was performed by a number of students and the whole

group which highly increases the overall emotional background of the group (feet-first dive – «soldier», holding hands).

Statistical inference. Research materials are processed in the statistical inference program – IBM SPSS 20 with the help of standard program package Microsoft Excel. We were determining the Student's t-test to statistically check the probability of disagreements between the investigated indicators of control and basic groups and the mean value approach to determine general characteristics of the group due to the investigated indicators (Mx; δ; V).

Results

The dynamics of social status of the children within the group was investigated by us as an indicator of their social adaptation. To assess the impact of the proposed methodology of social adaptation of elementary school students at the beginning and at the end of the experiment sociometrics was used (table 1, pic. 2).

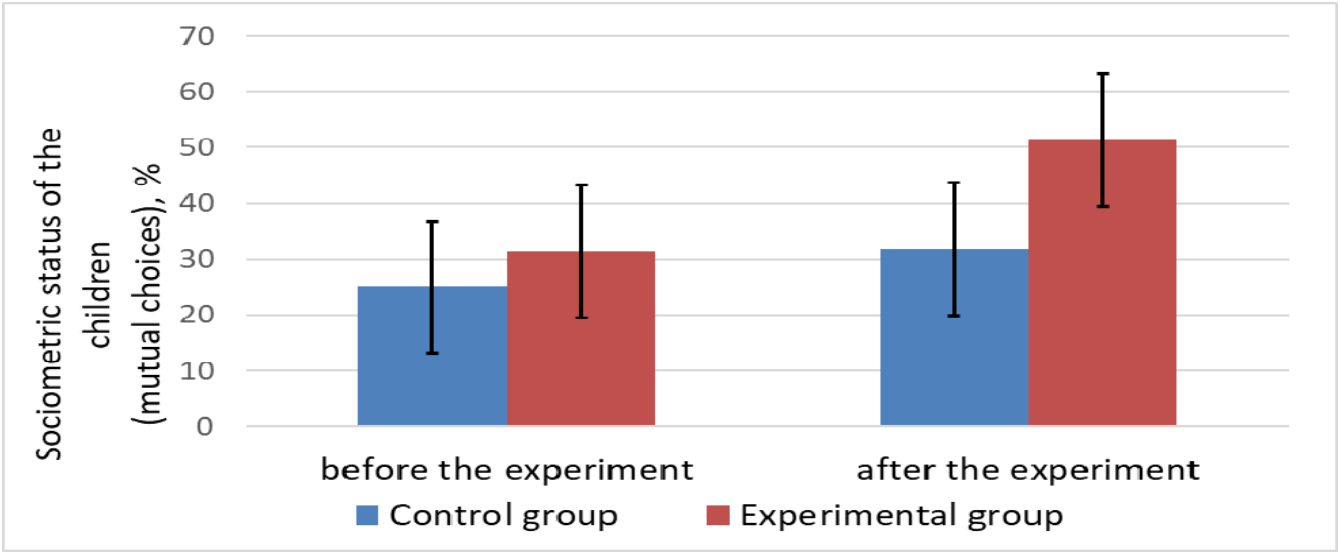
Table 1

Dynamics of sociometric status of the children of the control and experimental groups

Groups	Average number of mutual choices within a group $M_x \pm \sigma$				Student's t-test
	Absolute value, times		Relative value, %		
	before the experiment	after the experiment	before the experiment	after the experiment	
EG (n=13)	3,75±1,54	6,17±1,75	31,25±12,83	51,42±14,58	3,73**
CG (n=13)	3,00±1,41	3,82±2,14	25,00±11,75	31,83±21,88	1,08
Student's t-test	1,29	2,91*	1,29	2,91*	–

Notes: $p > 0,05$; * – $p \leq 0,05$; ** – $p \leq 0,01$

We determined both absolute value of the children's status within the group (the number of mutual choices) and relative one – compared to the greatest possible number of choices that a child can get within this group (in our research, when n=13, the greatest possible number of choices that a participant can get is 12).



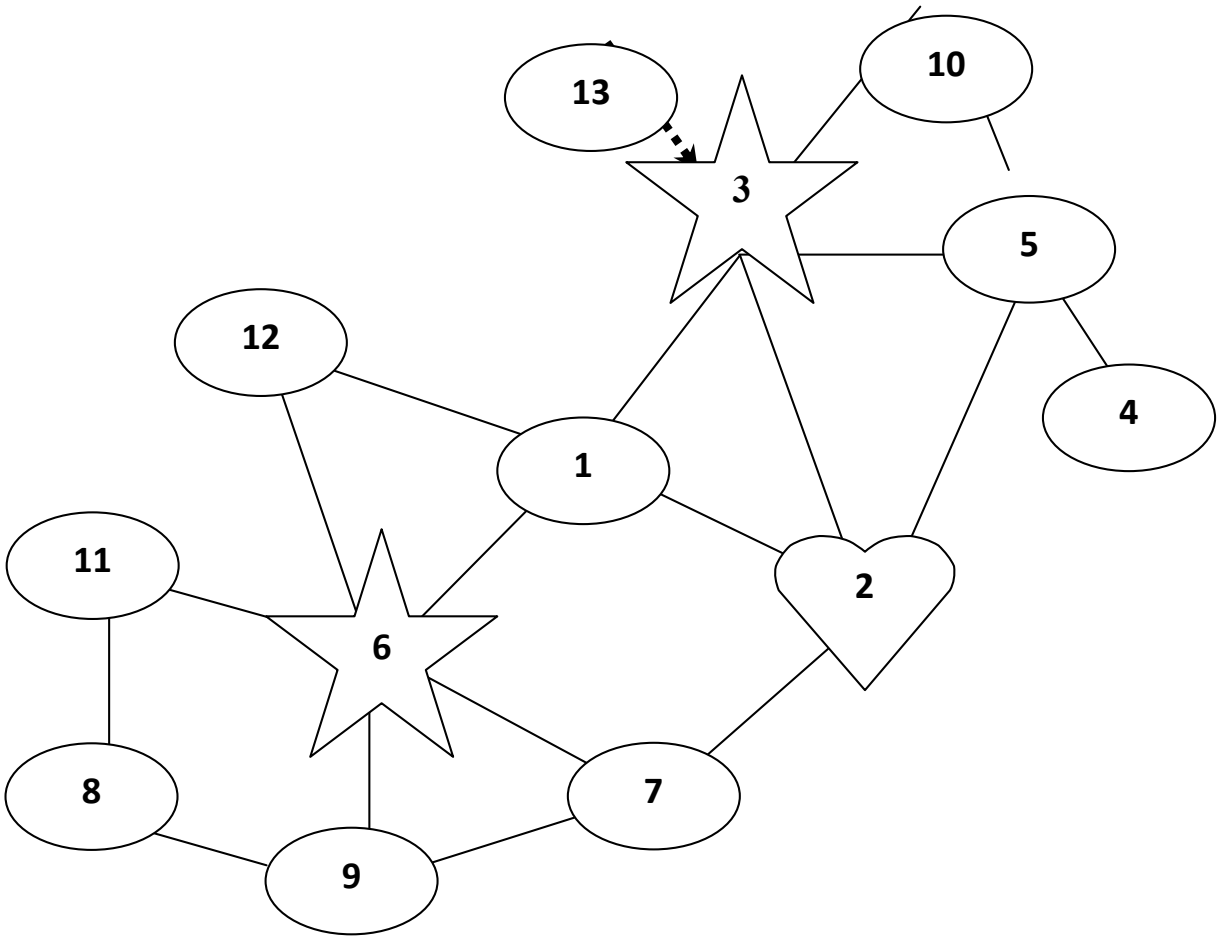
Pic. 2. Indicators of social status changes of participants of the control (n = 13) and experimental (n = 13) groups during the experiment based on sociometrics

So, if at the beginning of the research an average indicator of social cohesion of the EG children (31,3 ± 12,8 % (Mx ± σ)) compared to the CG (25,0 ± 11,8 % (Mx ± σ)) statistically did not have reasonable differences (t = 1,29; p > 0,05), at the end of the research a statistically considerable difference between the groups examined was fixed. After conducting an educational experiment an average indicator of social cohesion of the EG children (51,4 ± 14,6 % (Mx ± σ)) became statistically considerably higher compared to the CG (31,8 ± 21,9 % (Mx ± σ)) (t = 2,91; p ≤ 0,05).

Thus, the level of social adaptation of the EG children has statistically considerably improved and was 31,3 ± 12,8 % (Mx ± σ) at the beginning of work, and became 51,4 ± 14,6 % (Mx ± σ) to the end of this process (t = 3,73; p ≤ 0,01). The CG children have not shown statistically considerable changes according to this indicator (table 1, pic. 2).

In response to the research it was established (pic. 2) that the EG indicators have risen to the value corresponding to half of this group (50%), which demonstrates that every separate participant of the group has received a higher number of choices (and chosen mutually), showing their level of social adaptation. The microclimate has also become more favorable in general for its participants.

Thus, we can note that within the EG our hypothesis has found its statistical proof. The children began to communicate a lot more, in response to which friendlier atmosphere within the group in general has formed. Despite the fact that both groups were staying at the same camp, the CG did not have such changes. We consider that it is connected in a way with the following factors: intensity of training; absence of close relatives nearby; application of the methodology of swimming lesson structure we have suggested (play-based component as a process of socialization of personality).



Pic. 3. Rating scheme of social interaction (SI) of the EG children based on sociometrics at the beginning of the research (n = 13)

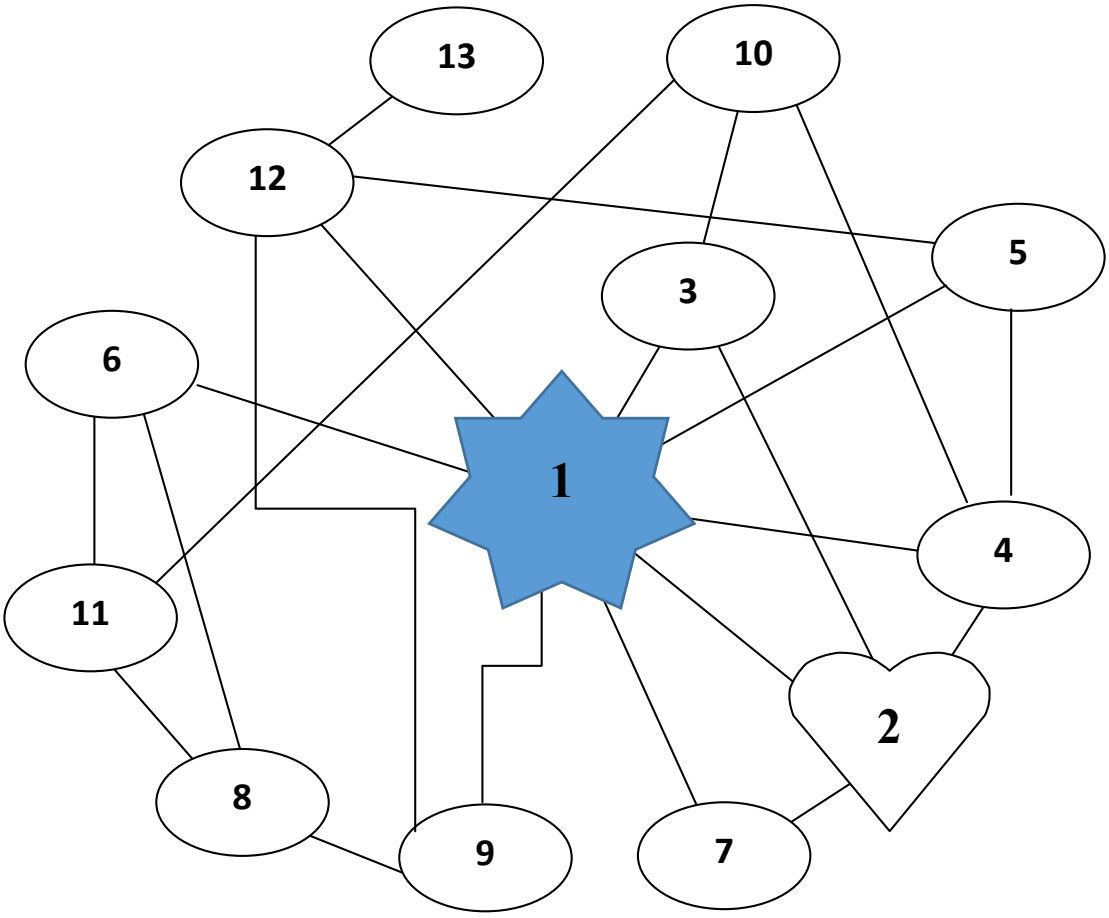
Variety of relations between children (according to rating scheme of mutual sympathies) characterizes social adaptation as a dynamic process being able to change its nature and depth depending on which factors will affect it. And, as besides quantitative indicators sociometrics lets realize qualitative analysis of situation dynamics within a group and observe the condition of its separate members, having enough data, we have developed an interaction scheme of relations within the EG children (pic. 3 and 4).

From the picture 3 we can see some EG peculiarities:

1. An overall number of mutual choices was low, especially taking into account that sociometrics conducted by us using nonparametric procedure and the children's number of choices was unlimited. That means that social contacts within the group were weakened in a way.

2. Along with one emotional leader (conditionally labeled with a «heart») two specialist leaders having the same status stood out within the group (conditionally labeled with a «star»), but they did not interact. Such situation carries a potential conflict when there are two rival centers of influence.

3. In the group of four children (30,8 %), there were only two mutual choices, there were also almost «exiles» within the group (15,4 %) – these were the children whose number of choices equaled one, and in one case this choice was also not mutual. Such children (46,2 %) feel lonely, distant, and often experience problems with social adaptation.



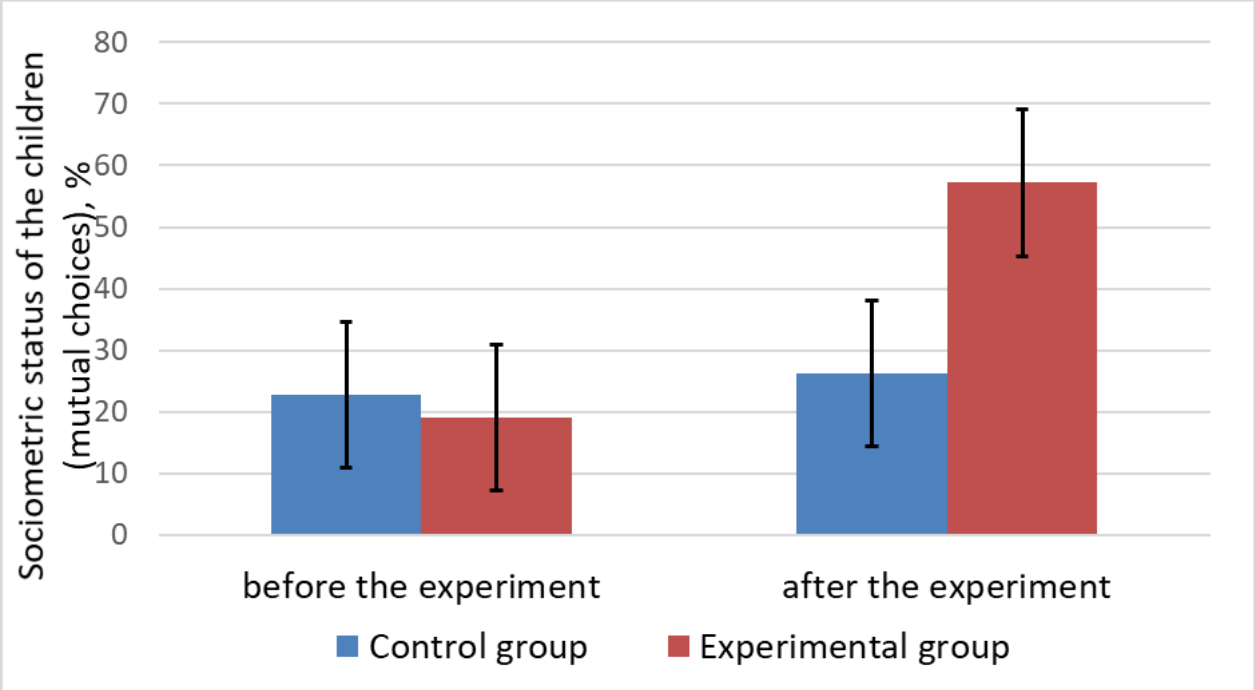
Pic. 4. Rating scheme of social interaction (SI) of the EG children based on sociometrics at after the research (n = 13)

The scheme of social interaction of the EG children after conducting the experiment is shown in the picture 4. In response to the research considerable changes have been discovered. An overall number of mutual choices has risen. Social contacts within the group have become more complete, interaction

between the children has become richer. Also, if before two specialist leaders having the same status but not interacting stood out within the group (pic. 3), till the time when the experiment ended one bright leader having a higher status compared to the previous «stars» has stood out within the EG (conditionally labeled with a «star»). Such situation within a group is more favorable, especially for solving the tasks connected with some kind of activity (but not rest or entertainment). So, almost all the children within the group (92,3 %) had three and more mutual choices (only one «exile» child having only one choice remained), and there were no unmutual choices at all.

So, the level of social adaptation among the EG children has improved considerably, which is shown by the results of both quantitative and qualitative analysis of sociometric data.

During the experiment pedagogical monitoring was conducted twice: at the beginning of the research and at the end of it (pic. 5). The objective of monitoring was to gather factual evidence concerning social activity of children at swimming classes and compare the received results.



Pic. 5. Results of pedagogical monitoring of the number of contacts (interaction activeness) of the EG and CG children at swimming lessons

Discussion

In the research there was observed an assumption about the impact of play-based method on the stage of initial teaching to swim on social adaptation of elementary school students within a group. It has been discovered that the sociometric status indicator showing the level of social and psychological adaptation among the children of the EG compared to CG has considerably improved statistically till the end of the research – from 31,3 ± 12,8 % (Mx ± σ) at the beginning of work to 51,4 ± 14,6 % (Mx ± σ) at its end ($t = 3{,}73$; $p \leq 0{,}01$). In the CG no considerable changes according to this indicator were revealed. The sociometric status analysis has shown that the level of social and psychological adaptation among the EG children has considerably improved in response to using play-based method on the stage of initial teaching to swim.

These figures complement the results of research by Morodenko E.V. (Morodenko, 2009), Berezovska L.I., Smoliak M.A. (Berezovska & Smoliak, 2014). This complements the data by Novak A., Romanovska-Tollochko A., Knysak M. (Novak et al., 2016), Prokofieva O. O., Anosova D. I. (Prokofieva & Anosova, 2016), Ovcharova R. V. (Ovcharova, 2003), Katić R., Dizdar D., Viskić-Štalec N., Šumanović M. (Katić et al., 1997)

about relevance of search of effective ways to overcome difficulties of adaptation of elementary school students to the process of studying at school. The findings of the research complement the data by Bodnar I.R., Kindzera A.B. (Bodnar & Kindzera, 2016), Bilitiuk S.A. (Bilitiuk, 2006), Moskalenko N.V. (Moskalenko, 2007), Shuba L.V. (Shuba, 2017), Kosinac Z., Katić R. (Kosinac & Katić, 1999) about effectiveness of performing physical exercises, particularly, swimming, to improve physical, mental and functional state of children. This indicates the necessity of using active games for optimization of PE lessons for primary school children. Studying interpersonal relations in a group of elementary school children to examine their social and psychological adaptation it is relevant to use sociometric method by Moreno J-L (Moreno, 1958).

In the course of processing the data received the difference between social activity of the children at the beginning of the research and at the end of it was examined. The findings of pedagogical monitoring have given a positive tendency in development of interaction activity between children. It has been established that the level of social interaction between the children has improved considerably within the experimental group compared to the control one. At the close of the experiment the children began to take more active part in the social life of the group, became more attentive, friendly and polite in attitudes towards their peers.

Conclusions

Thus, our research has shown that the following factors affect social adaptation of elementary school students: correctly chosen methodology of education, nature of water games, presence of situations involving interaction, nature of such interaction.

Water games and intentionally created social pedagogical situations come with improvement of social adaptation of children as part of the community. The more games motivating for interaction there are the easier and better the process of children's social communication within a group goes. It is shown that as a result of intentionally organized interaction within a group the number of mutual choices grows, that means that relations between children become more diverse, and the whole structure of a group improves. Using water games can solve not only recreational, educational and disciplinary tasks, but also the tasks of social adaptation of children as part of the community. With benefit of physical education (reasonably selected games) we are able and need to solve the tasks of preventive measures against social disadaptation, especially of elementary school students. It is worth stressing that physical education is one of means of training activity being difficult to mediate with gadgets and transfer to virtual reality. Therefore, it is worth using physical exercises not only for children's physical development, but also as environment for direct social interaction organizing it in a respective way.

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