HopaSuS

Co-funded by the European Union

Country report: Lithuania

Prepared by Tavo Europa

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TAVO EUROPA

Contents

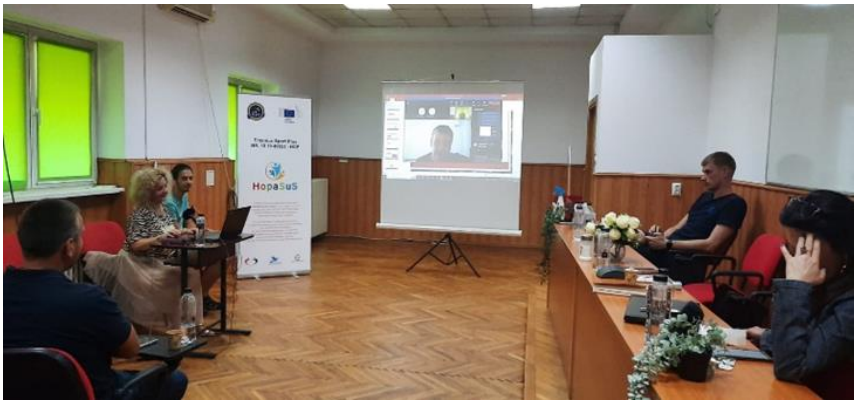
Introduction

This report names the activities implemented by the Lithuanian organization Asociacija Tavo Europa from June 1, 2022 (start of the project) to May 31, 2023.

The report includes: a description of the team's participation in international partner meetings, tools developed for publicity and dissemination results, an overview of the pilot toolkit and a presentation of the results achieved during the research. Each part clearly defines the organization's responsibilities and achieved results, as well as the relationship with the project's objectives.

Kick-off meeting in Romania

The first meeting of project partners took place on July 26-28, 2022 in Bucharest, Romania. Association Tavo Europa was represented by president Donatas Verseckas. The meeting was also attended by partners from other organizations - Adina Geambasu, PhD University Lecturer at UNEFS, Andreea Ionel, head manager at Tudor Argezi School (Romania), Milan Djupovac - president of SDCS Sabac and Dragana Drljacic, leading researcher of SDCS Sabac (Serbia). Partners from Bulgaria - WalkTogether association president Vilislava Metodieva and researcher, youth trainer Ida Valkova joined remotely.



The main purpose of the meeting was to confirm the responsibilities of the organizations, discuss pending tasks and draw up a clear schedule for the performance of work. Each organization presented its activities and team members that will be involved in the implementation of the HopaSus project. Future mobility meetings, main work packages, deliverables and milestones were discussed during the meeting. Each partner organization familiarized itself with the tasks that await them. For example, Tavo Europa, in addition to participating in partner meetings in Romania and Serbia and organizing such a meeting in Lithuania, undertook to participate in a training event in Bulgaria, to contribute to the preparation of the HopaSus guide for sports teachers and to organize dissemination events for the local community. Together with the WalkTogether association, the Tavo Europa team became responsible for the general dissemination and communication of the project's results.

In addition to activities directly related to the project, the hosting organization presented traditional Romanian culture – a visit to the National Village Museum Dimitrie Gusti was organized, as well as a visit to UNEFS to present the university facilities and workshop at Tudor Arghezi School.

The meeting in Bucharest became the basis for further cooperation.

Transnational partner meeting in Serbia

On March 24-26, 2023, the second meeting of partners took place in Šabac, Serbia. The Tavo Europa team was represented by four team members - Greta Paskočiumaitė, Lina Bartaševičiūtė, Pauline David and Mariangela Cardone. The meeting was also attended by partners from Bulgaria (WalkTogether), Romania (UNEFS) and Serbia (SDCS). The first day of the meeting started with a session led by UNEFS: all the partners were guided through a review of the timeline of the project, its budget and each partners responsibilities, alongside a summary of future activities to be implemented. The lead was then taken by SDCS, who presented the results, analysis and conclusions related to the research previously conducted in all the partners countries on youth engagement with sports and videogames. After a quick coffee break, UNEFS as the coordinator of the project proceeded to introduce the partners to the country report template. Later on, all the partners joined a session of exchange of good practices related to the production of educational material for the project, a session that ended with the definition of the strategies that will be adopted by each partner in the process.

The second day of the project was opened by a workshop organized by SDCS in a local sport club: the project's mascot, Hopasus, appeared during the children' training encouraging them to exercise and animating the training.

The last sessions of the meeting focused on the communication&media strategy for the project and on the future activities to be implemented. Also video production for dissemination was organized by SDCS: the partners gathered to decide the script for the videos, including the questions to interview each other on the current state of the project and its implementation.

During this meeting, the date of the visit in Lithuania was agreed. The tasks that the partners will try to implement in the near future have been defined.

The pilot toolkit

Before starting the research with young people, the Tavo Europa team analyzed the HopaSus research protocol and recommendations for the project's target group. In order for the prepared material to be fully understandable to the Lithuanian audience, the Research manual for practitioners was translated into Lithuanian, as well as the recommendations were prepared in Lithuanian.

Recommendations included sharing on social media channels as well as providing information to beneficiaries. In the meantime, the Research protocol and related recommendations have been submitted to the schools that have implemented the project activities.

Research

Target group

In the case of Lithuania, two schools of general education were chosen, whose students of grades 5-8 (11-15 years old) participated in the HopaSus project. In these schools, physical education classes are held three times a week in accordance with the procedure established by the Ministry of Education, Science and Sports.

One school is located in the small Lithuanian town of Marijampolė - it is the Marijampolė Municipality Mokolai pro-gymnasium. This is a public school, from which 34 students participated in the project.

Another school is the private Erudit Lyceum, located in Kaunas, one of the largest cities in Lithuania. 32 children from this school participated.

In order to achieve successful cooperation, contacts with physical education teachers and school administration were maintained.

A total of 66 children participated in the study, and the implementation of the activities was ensured by two members of the "Tavo Europa" team - Indrė Apuokienė and Vytautas Dranseika.

Research period

In accordance with the prepared research methodology, the research in Lithuania consisted of three stages: initial test, implementation of HopaSus recommendations and final test. In Lithuania, the first stage took place in both schools in January 2023, the second in February. In between the implementation of challenges, teachers included suggested physical tasks in physical education lessons. During the study, the children had to perform 5 physical challenges, and photos of their posture (from the front and side) were also taken.

Survey

Before starting the physical challenges, parents and guardians of the children participating in the project were given access to an online survey aimed at gathering information about the children's healthy behavior. The survey was conducted in Marijampolė in November 2022, while in Kaunas - in January 2023. A total of 61 parents/guardians completed this survey.

Main achievements

1. There has been a lot of interest from school administrations and parents/guardians. Schools feel the need to enrich physical education lessons with new tools, making lessons more attractive and encouraging children's physical activity, while also fostering mental well-being.

2. Children expressed an interest in video games, and this idea also interested parents, who admitted that they often view children's time using digital technologies as a threat rather than an opportunity.
3. The children willingly performed the given tasks and shared advice with each other on how to better overcome each of them. This made it possible to strengthen mutual relations.

Challenges

1. Some children were ashamed of their bodies or being filmed, so extra preparation was needed.
2. Not all parents and guardians openly accepted the offer to get involved in the study, due to a lack of knowledge about the HopaSus project and Erasmus+ opportunities in general. All questions were answered, but this required additional resources, in the future, a methodology for informing parents and school administrations could be developed for similar studies.
3. The process of processing visual material is a very long process, in the future smart solutions could be sought to make it easier.

Results

Subjects

Subjects were classified in three groups: parents/guardians (hereinafter *parents*), children and coaches/TPE (hereinafter *sports teachers*).

Parents

The online survey about physical activity, healthy behavior and playing video games related habits of children filled out 148 parents (ROM, N = 42; LITH, N = 61; SRB, N = 45). Additionally, another 56 parents (12 from ROM, 24 from BUL, 5 from LITH and 15 from Serbia), who did not fill out the survey, gave their written consent for their child's participation in the research. However, only parents who participated in the survey are considered participants in the research, and further all the results of the research related to parents concern those parents who filled out the survey.

Based on survey's answers most of the parents from all three countries were female (Fig. 1).

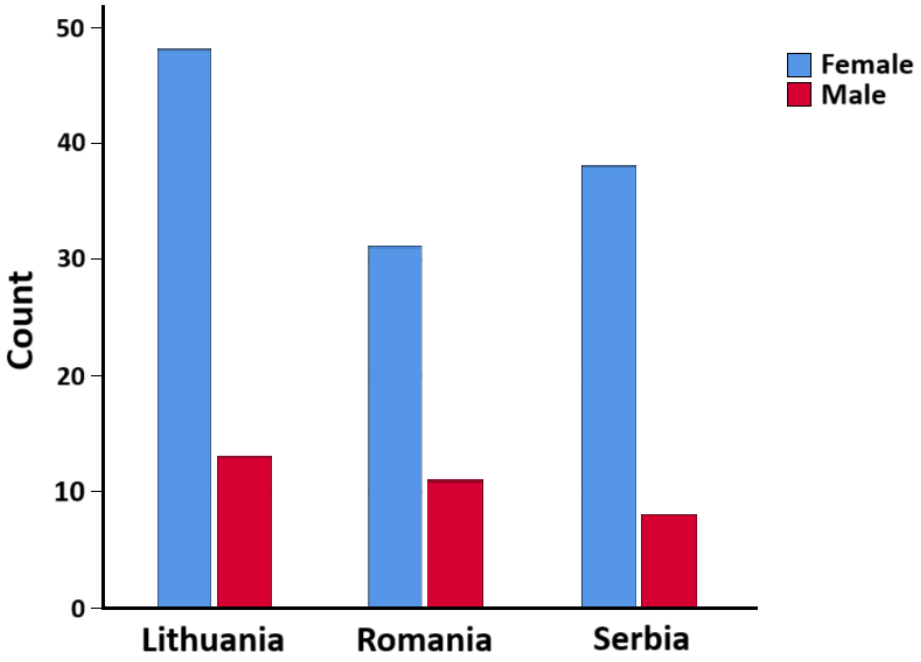


Fig. 1. *Gender of involved parents.*

Parents and children from ROM and LITH mostly live in cities (ROM = 90.5 %, LITH = 80.3%), contrary to those from SRB, who mostly live in villages (54,3%) (Fig. 2).

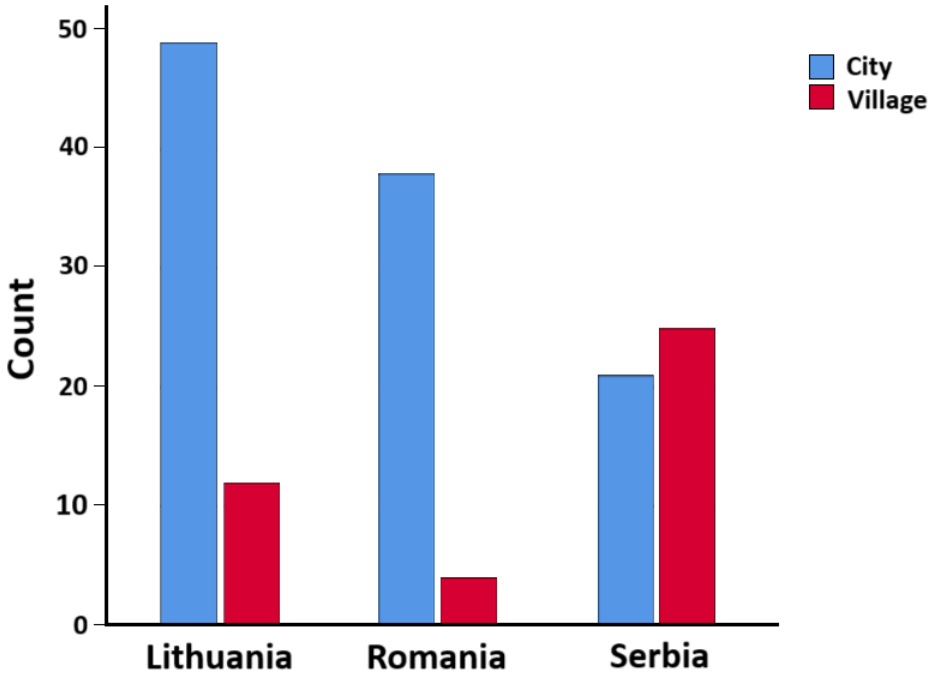


Fig. 2. *Place of residence.*

Children

Children's group was consisted of 204 boys and girls aged 11 to 15 years, divided in four subgroups: ROM (N = 54), BUL (N = 24), LITH (N = 66) and SRB (N = 60), mostly female (ROM = 52,3%, LITH = 57.4% and SRB = 84.8%) except for BUL, where the entire sample was made up of male subjects. Children were involved from schools or sports clubs.

Sports teachers

The sample of sports teachers consisted mainly of physical education teachers, with the exceptions of the Serbian sample, which also included sports coaches. The Serbian sample consisted of 1 physical education teacher and 3 sports coaches (dance, artistic gymnastics and volleyball). Overall samples' structure is given in Table 1.

Table 1. *Sample's structure*

	No. of children	**Years (X ± SD)**	**No. of parents**		**No. of sports teachers**
			M	**F**	
ROM	54	12.3 ± 1.5	11	31	5
BUL	24	13.8 ± 1.4	/	/	?
LITH	66	12.5 ± 1.4	13	48	2
SRB	60	13.0 ± 1.0	8	38	4

ROM – Romania, BUL – Bulgaria, LITH – Lithuania, SRB – Serbia, No. – number, X – mean, SD – standard deviation.

RESULTS OF SURVEY ON CHILDREN'S HABITS REGARDING PHYSICAL ACTIVITY AND PLAYING VIDEO GAMES

Physical activity

Children's health habits were assessed indirectly through a survey intended for parents. The survey collected information about the child's physical activity and habits related to playing video games. As previously mentioned, parents from Bulgaria did not fill out the online survey, but gave written consent for their children's participation in the research. For this reason, the report shows the results for the other three countries.

Fig. 3 shows the way children from Lithuania, Romania and Serbia go to school and back. Looking at the total sample, 54% of children walk, 38% use transport (car, bus, etc.), and 8% use bicycles, rollerblade, skate, etc. There are present significant differences between the way of

transportation between children from different countries (x^2 = 15. 65, p < 0.01). Children from Romania don't use bicycles etc., while children from Serbia mostly walk to school.

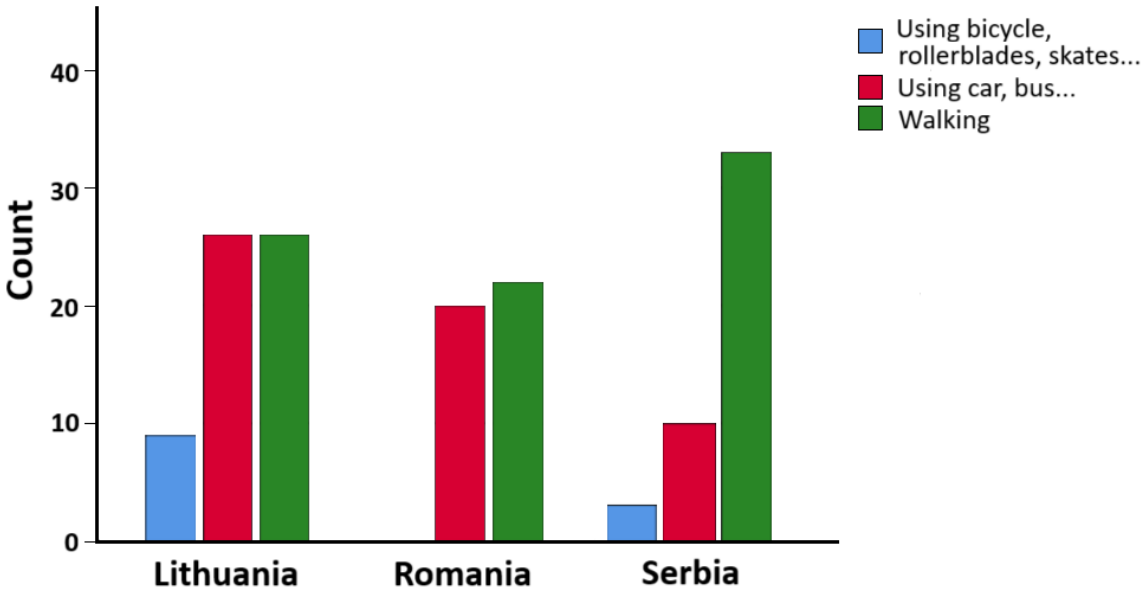


Fig. 3. *Transportation to school*

Children who walk or use bicycles usually travel up to 2 km (89%) to school and back (Fig. 4). Romanian and Serbian children mostly travel from 1 to 2 km, and Lithuanian, up to one kilometer. In all three countries there are the fewest children who travel more than 3 km.

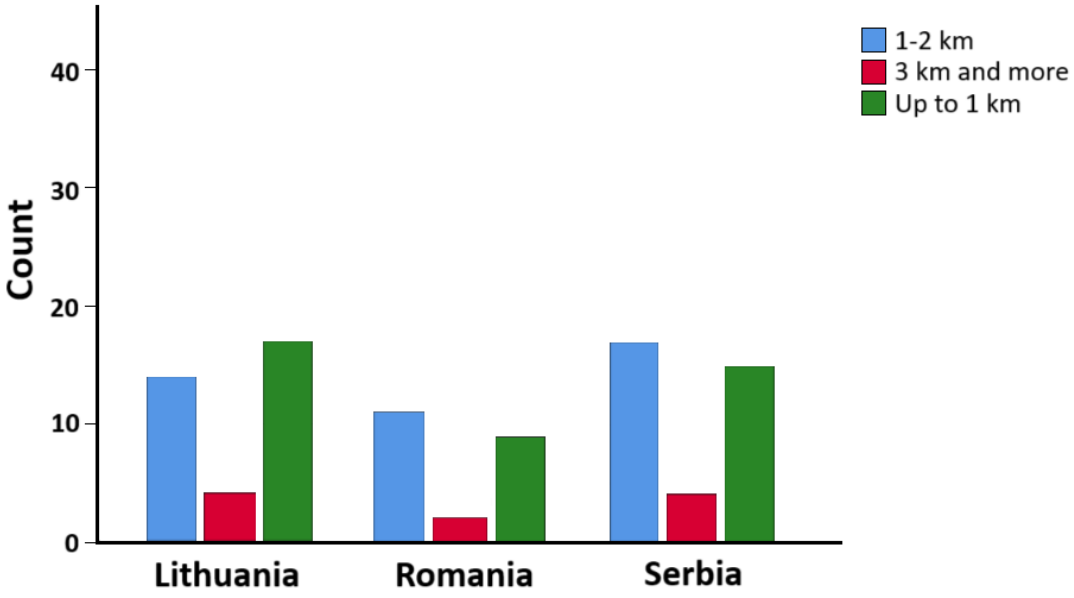


Fig. 4. *Kilometers of transport.*

Differences between the subgroups (LITH, ROM and SRB) were shown in terms of whether the children train any sports outside of physical education classes ($x^2 = 50.76$, $p < 0.001$). While in Lithuanian and Romanian samples the ratio is in favor of children who do not practice sports (LITH = 71%, ROM = 62%), the Serbian sample mostly consisted of children who practice some sport (96%, against 4% of children who do not practice sport, Fig. 5). As could be expected, children from Serbian sample practice sport more times a week (Fig. 6) than children from Lithuania and Romania ($x^2 = 16.14$, $p < 0.01$).

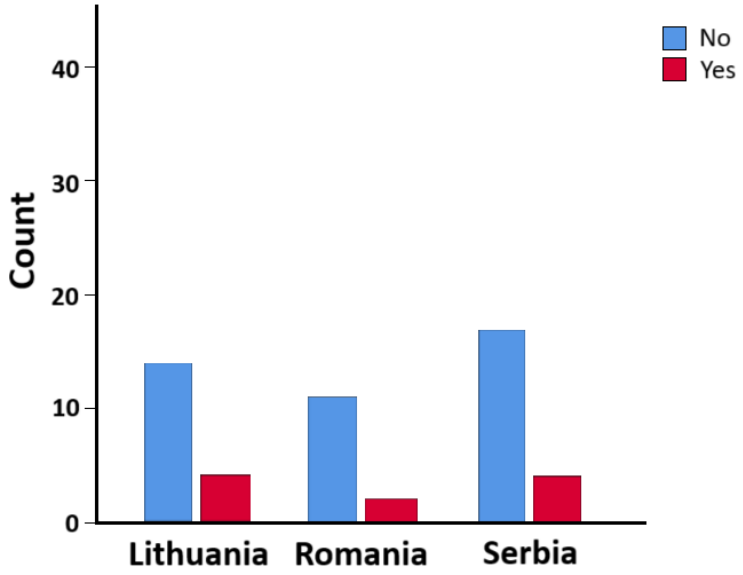


Fig. 5. *Practicing sports.*

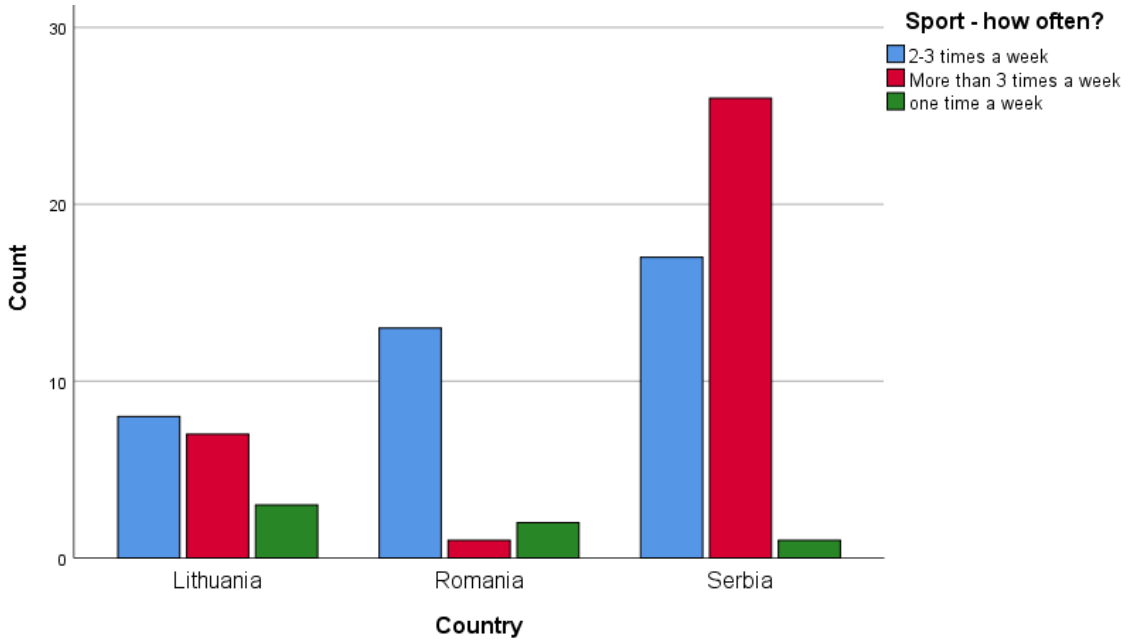


Fig. 6. *How often children practice sports weekly.*

Participation in physical activity (PA) outside the school is practiced by 79% of the total sample. By comparing the subgroups, a significant difference is observed (Fig. 7). The ratio between children who practice PA and those who do not is much higher in the Lithuanian and Serbian sample, compared to the Romanian one (x^2 = 9.58, p < 0.01). While in the Romanian sample, 38% of children do not practice PA, in the Serbian and Lithuanian samples, it is 15% each. Likewise, Lithuanian and Serbian sample practice PA mostly 2-3 times a week, then more than 3 times a week and at the end one time a week. (Fig. 8) Romanian sample practice PA mostly 1 time, and 2-3 times a week. More than 3 times a week practice only 5% of the sample.

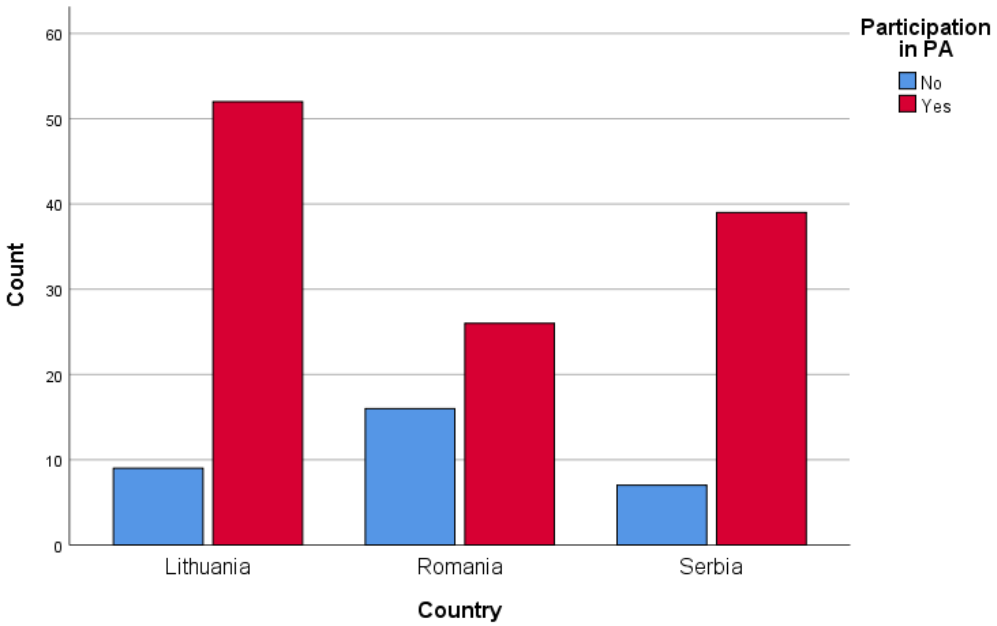


Fig. 7. *Participation in PA.*

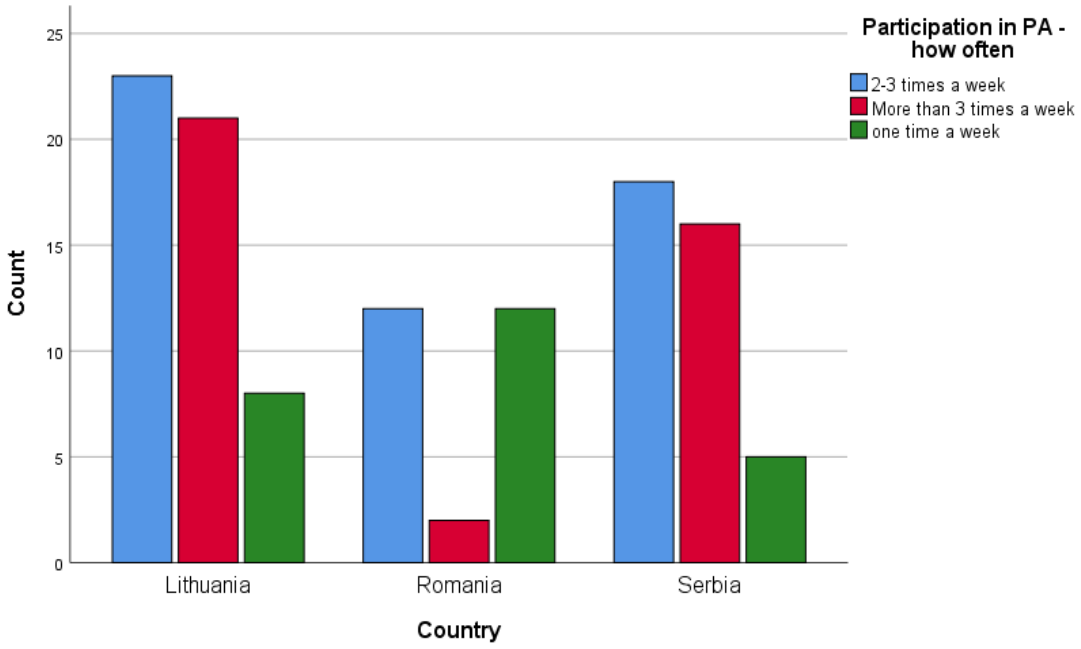


Fig. 8. *How often children practice PA weekly.*

Playing video games

Based on parents' statements, 74% of the total sample of children play video games, with significant differences noted between children from Lithuania and Romania compared to children from Serbia (Fig. 9). Namely, results show that children from Lithuania and Romania play video games significantly more than children from Serbia ($x^2 = 31.17$, $p < 0.001$). Unlike the LITH and ROM subgroups, the results of the survey indicate that in the SRB sample there is a higher

percentage of children who do not play video games (54%) compared to those who play video games (46%).

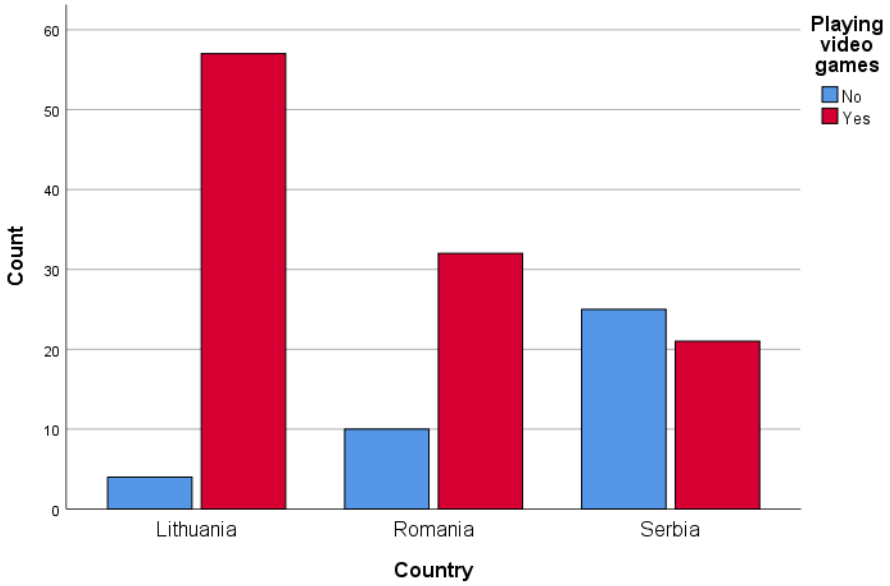


Fig. 9. *Playing video games.*

The following results refer only to children who play video games. Parents who stated that their children do not play video games, did not provide answers to the following statements.

Observing the time of playing video games during the day (Fig. 10), it can be seen that children mostly spend 1-2 hours playing video games, while children from Lithuania spend more than 4 hours significantly more than children from Romania and Serbia ($x^2 = 14.30$, $p < 0.01$).

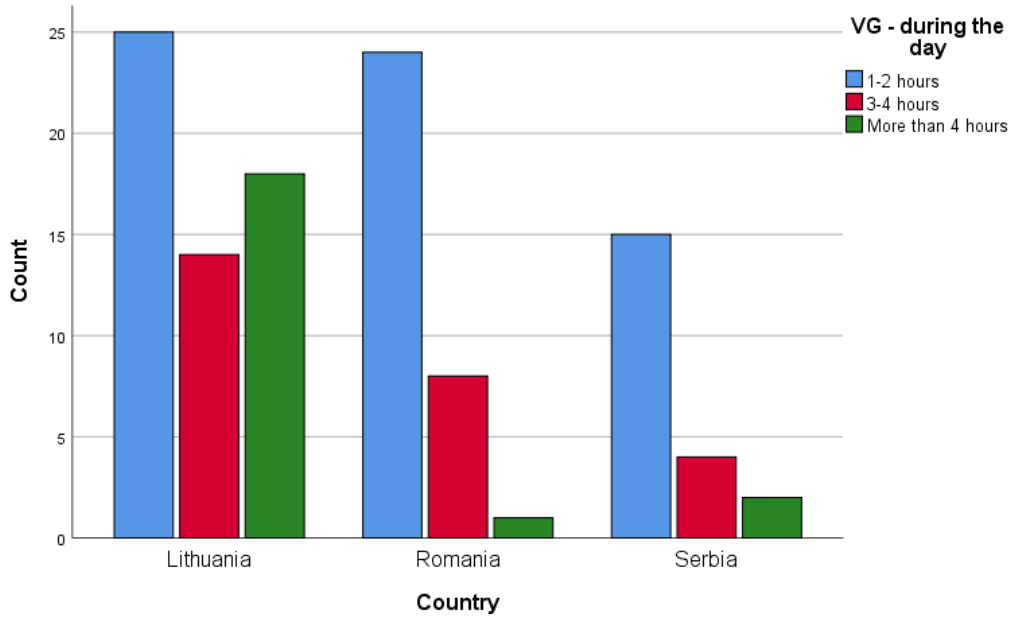


Fig. 10. *Playing video games during the day.*

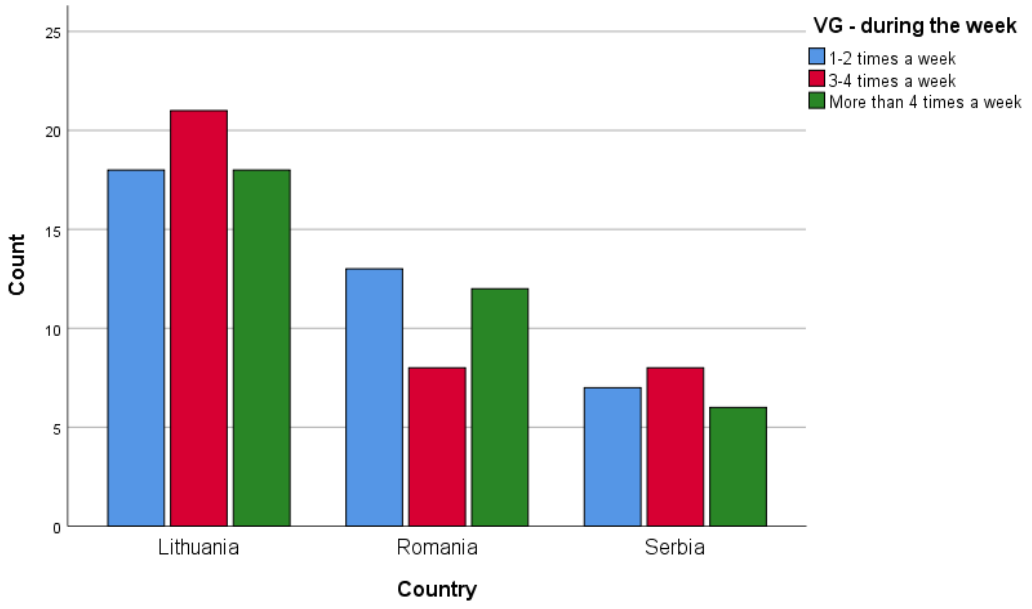


Fig. 11. *Playing video games during the week.*

Lithuanian and Serbian children in highest percentage play VG 3-4 times a week, contrary to ROM subgroup who mostly spend 1-2 days, or more than 4 days a week (Fig. 11). However, regarding how often children play video games a week, no significant differences between subgroups were noted ($x^2 = 1.82$, $p > 0.10$). Most children play video games on weekends and such a trend is present in all three subgroups (Fig. 12)

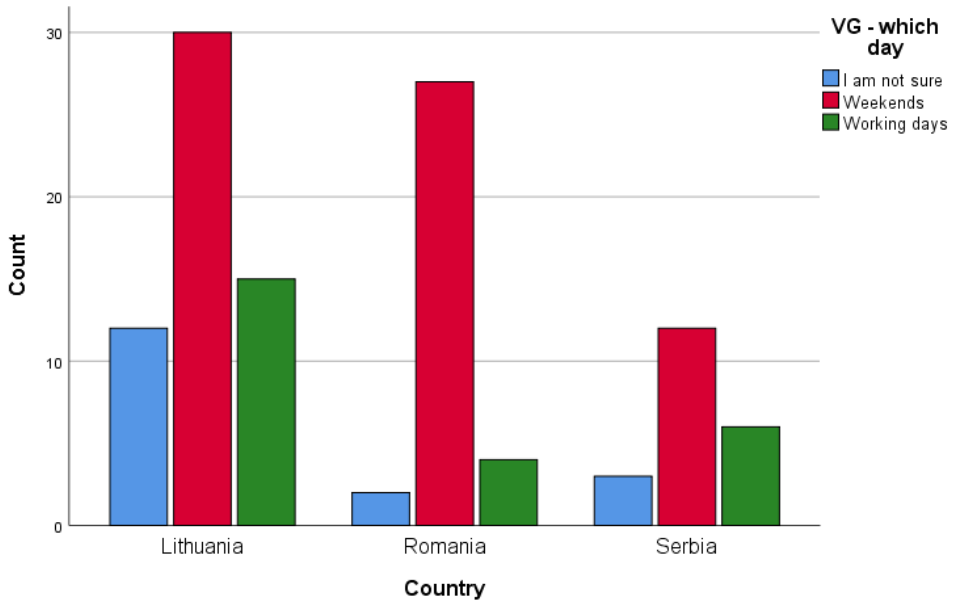


Fig. 12. *Days of playing video games.*

When it comes to the way children sit while playing video games (Fig. 13), there are significant differences in parents' statements between subgroups (x^2 = 12.18, p < 0.05). The highest percentage of parents from Romania and Lithuania believe that their children sit correctly, while the majority of parents from Serbia believe the opposite.

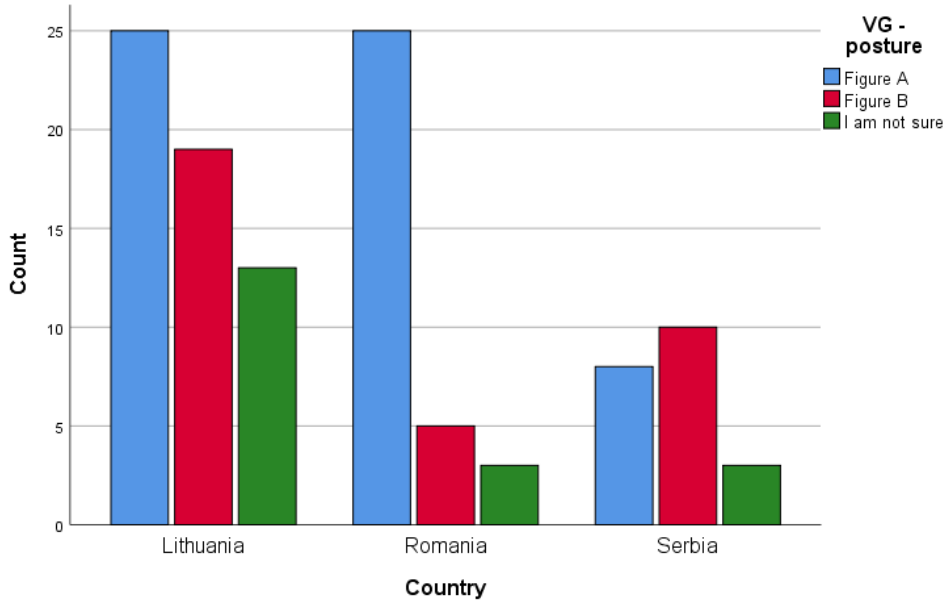


Fig. 13. *Posture of children while playing video games.*

Significant differences between the subgroups were also noted regarding the extent to which parents pay attention to what time of day the child will play video games (x^2 = 13.43, p < 0.01). In all three subgroups, the highest percentage of parents take care of it (Fig. 14), which is

especially pronounced among parents from Romania (LITH = 44%, ROM = 82%, SRB = 67%), however, among Lithuanian parents, the percentage of those who do not take care, or not sure is also high (56%).

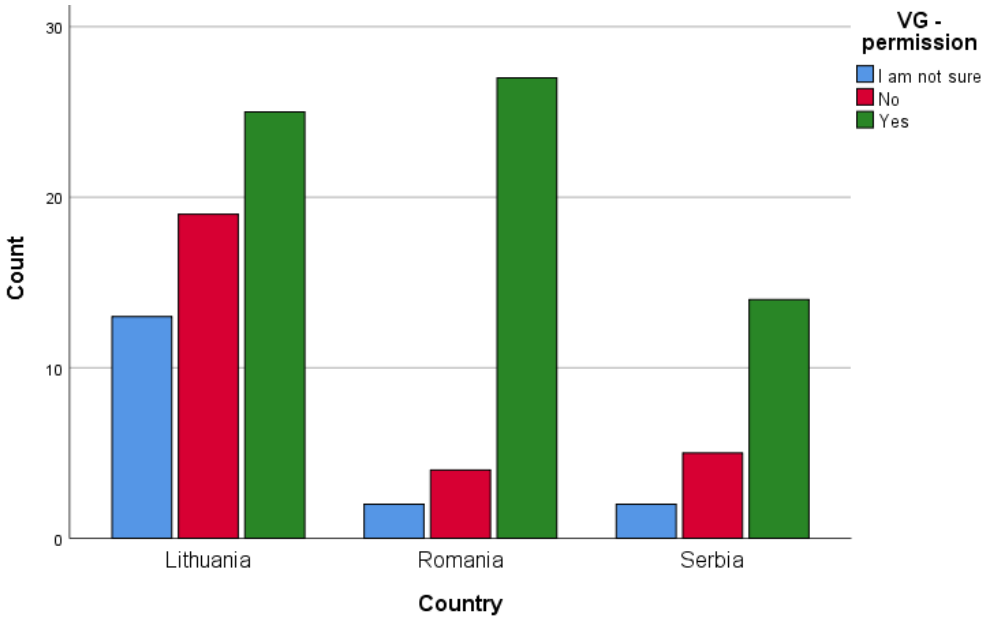


Fig. 14. *Parental permission to play video games.*

Significant differences between subgroups are not noted in terms of how well parents are able to control time of their children's video game playing (x^2 = 4.00, p >0.10). Parents from all 3 subgroups stated in the highest percentage that they can control this topic (Fig. 15).

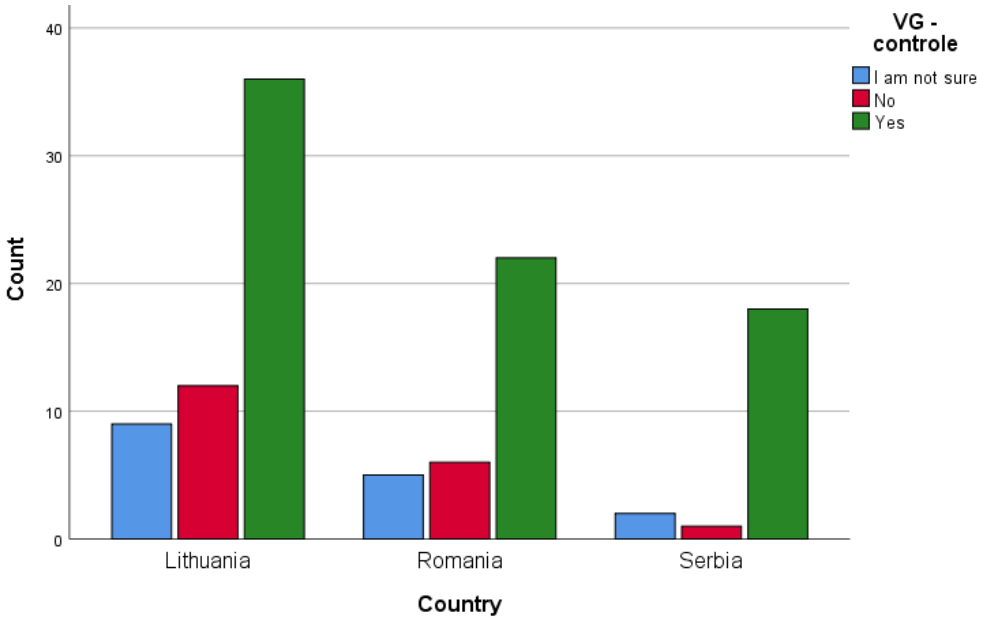


Fig. 15*. Parental control of playing video games.*

Most children from all three countries like to talk with their parents about video games (LITH = 61%, ROM = 82%, SRB = 62%; Fig. 16), however, there is noted a significant difference between subgroups in terms that Romanian subgroup has significantly lower percent of those who do not like to talk/not sure, relative to other two subgroups (x^2 = 15.24, $p < 0.01$).

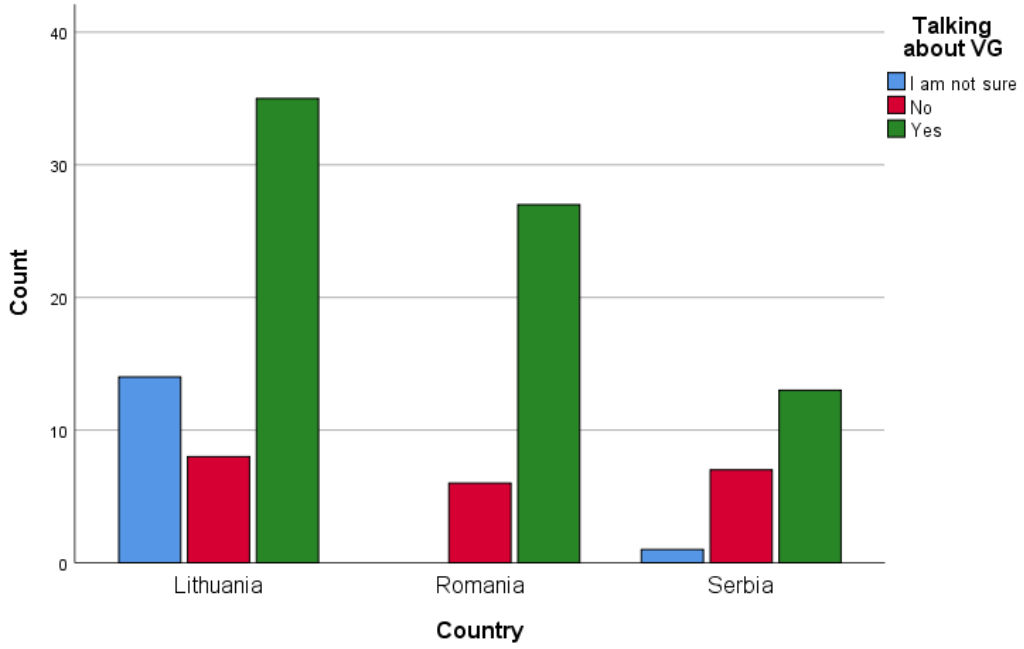


Fig. 16. *Talking about video games.*

Imitation of video games characters mostly is present at Lithuanian sample, while children from Romania and especially from Serbia usually do not use to do that (x^2 = 18.18, $p < 0.01$).

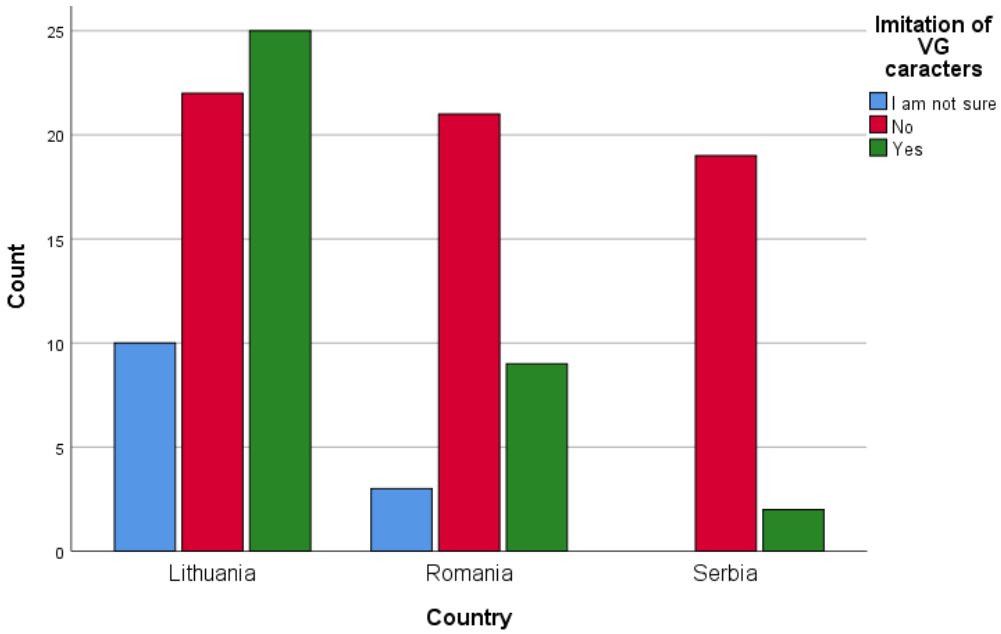


Fig. 17. *Imitation of video games characters.*

Results of research show that children from all three countries prefer to practicing sports rather than play sports video games (Fig. 18), however, Serbian sample significantly less like to play sports video games (91%) than children from Lithuania (44%) and Romania (70%), just like Romanian children do it less than Lithuanian one ($x^2 = 16.83$, $p < 0.01$).

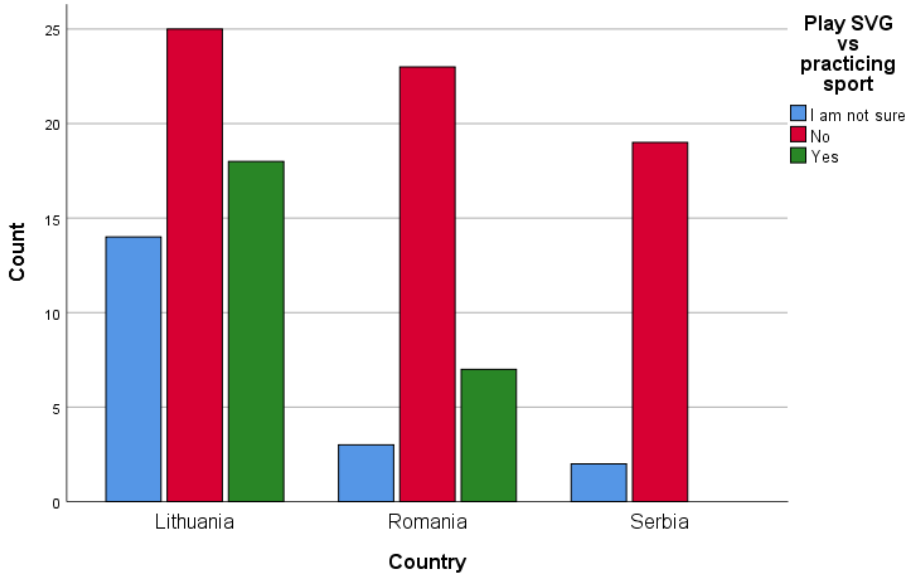


Fig. 18. *Play sports video games versus practicing sports.*

The last statement on which the parents had to give their attitude was that playing video games with sports content, in which the child's task would be a certain physical exercise in order to achieve the best possible result in the game (higher number of points, moving to another level,

etc.), could positively improve a child's physical activity level. Based on the results (Fig. 19) Lithuanian parents have significantly different attitudes about the positive effects of playing video games than parents from Romania and Serbia (x^2 = 19.63, p < 0.01). 77% of Lithuanian parents think positively, related to 38% of Romanian and 38% of Serbian.

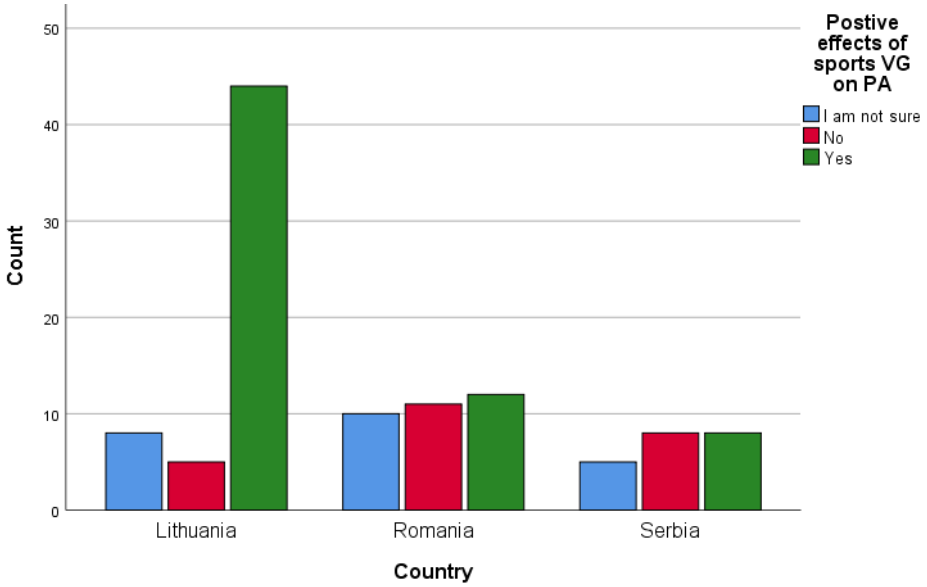


Fig. 19. *Positive effects of playing sports video games on the physical activity level of children.*

Resume of the results of survey on children's habits regarding physical activity and playing video games

Looking at the results of the HopaSus survey, it can be seen that the Romanian and Lithuanian subsamples were made up mostly of children from the city, in contrast to the Serbian one, which mostly consisted of children from the countryside. Given that the headquarters of the Lithuanian and Romanian partners are in the capitals of their countries, and that the Serbian organization is from a smaller town in West Serbia, this information is not surprising. The SDCS sample also included children from the rural area (Platicevo village), and given that Sabac is a relatively small town, children from the countryside often attend school in the city.

Further, the results of the survey shows that mostly mothers took part in the research and there was no difference between the countries participating in the project. Such findings could be explained by the fact that these are school-age children and that it is most likely that mothers take on the role of taking care of their curricular and extracurricular activities or were more open than fathers to participate in the survey. When it comes to the gender of the children, looking at the total sample, it is noticeable that there is a significant difference between Bulgarian (and the other three subsamples), which consisted of only male children. However, since Bulgarian parents did not participate in the survey, only the results for the Lithuanian, Romanian and Serbian subsamples

will be discussed. In this regard, in terms of percentage, slightly more girls than boys participated in the research, but given that no statistically significant differences by gender were recorded, it can be considered that the total sample included an equal number of both male and female children. The same applies to subsamples by country.

Based on parents' responses, children in all three countries mostly go to and from school by walking, and then by using car, bus etc, as a way to transport. There is a noticeable difference between children from Serbia, who use walking significantly more than the other two ways of transportation (cars, buses… or bicycles, rollerblades...), in contrast to children from Lithuania and Romania, who use, with a large percentage, transportation by car and bus. Also, a subsample of children from Romania does not use bicycles, rollerblades and skates to go to and from school at all. As mentioned before, these are children who mostly live in the capital, where there is heavy traffic, and it is assumed that parents prefer to drive their children to school for safety reasons. In contrast to the Romanian subsample, in the Lithuanian one it was recorded that children use bicycles, rollerblades and skates as a means of transport. However, the Lithuanian subsample included a higher percentage of children from the countryside than the Romanian one, so it can be concluded that bicycles, rollerblades, etc. are mostly used by children from the countryside and that, accordingly, there are no differences in the mode of transport between these two subsamples. The reason why in the Serbian subsample by far the largest number of children goes by walking can be explained in a similar way. Given that they live in a small town, schools are not far from the place of residence, traffic is also not as busy as in big cities, so it is not difficult for children to walk to school and back.

Differences between the subsamples were recorded in terms of whether the children train any sports in favor of Serbian children. However, it can be easily explained by the fact that the Serbian subsample included children from sports clubs in addition to schools. Further, children from Romania are engaged in physical activity beside regular physical education classes and sports training significantly less than children from Lithuania and Serbia. Unlike children from the other two countries, children from Romania, even if they practice additional physical activities, usually do it only once a week (LITH and SER mostly 2-3 times a week, and then more than 3 times a week). If these results are compared with the answers of parents regarding children playing video games, it is noticeable that parents from Romania are also less likely to allow their children to spend more time playing video games, and it could be concluded that parents from Romania value the time spent studying more. However, this is just an assumption. The survey did not monitor the children’s success at school so that such a conclusion could be drawn with certainty. Thus, we do not have an adequate explanation for such data and it could be the subject of further studies.

Regarding playing video games survey results show that in Lithuanian and Romanian subsamples there are significantly more children who play video games compared to those who do not play. In Serbian subsample results show the opposite - there are more non-players than players. Such results can be connected with the fact that children from Serbia are more involved in sports and also used to practicing some kind of physical activity beside regular physical education classes. Also, children from Serbia who use to play video games do not prefer it in relation to playing sports. Seems that children from Serbian subsample prefer to be physically active than virtually.

Furthermore, children from all three countries usually spend 1-2 hours per day playing VG, while in Lithuanian's subsample there are significantly more children that play VG for more than 4 hours, than in the other two countries. Children from Lithuania also like talking about video games and imitating VG's characters the most out of all three subsamples. It is less pronounced with children from Romania, while children from Serbia generally do not like to imitate characters more than to imitate.

If we pay attention to the parents' answers regarding what they think about whether playing sports video games can have a positive effect in terms of increasing children's physical activity, we can see a significantly more positive attitude of parents from Lithuania on this issue than parents from Romania and Serbia. Based on this, it could be concluded that the attitude of parents about the benefits/harms of playing video games influences how much time their children will spend playing VG. It is evident that Lithuanian parents have a more positive attitude towards this issue, and consequently allow their children to play video games more than parents from other two countries. On the other hand, parents from Romania are especially careful when their children play VG's during the day, and accordingly their children spend a maximum of 1-2 hours playing VG's. In addition, Serbian parents have no positive attitude about the effect of playing video games on a child's physical activity so it is possible that they direct their children more towards sports and engagement in some forms of physical activity.

When it comes to the way children sit while playing video games, Romania and Lithuania parents mostly declare that their children sit correctly, while the majority of parents from Serbia believe the opposite. We emphasize that this result does not mean that children from Serbia have a worse body posture than children from Romania and Lithuania, but only represents the attitude of the parents about this issue. These findings will be further interpreted in the part of the report that refers to the assessment of the postural status of the children who participated in the research.

Based on the overall results of the survey and their interpretation, the following dominant finding could be highlighted: *the extent to which children will practice sports and use the potential of playing sports video games depends largely on the attitude of parents about these issues.*

RESULTS OF THE PHYSICAL SKILL'S ASSESSMENT

Statistical data analysis of physical skills assessment was performed using non-parametric statistical procedures. The Wilcoxon Signed Rank test was used to compare the results at the initial and final testing for each subsample (country), and the Kruskal-Wallis test was used to compare the results between countries at the initial and at the final testing. In the case of significant differences, additional Mann-Whitney U tests were applied to determine which subsamples differed. Following are the results of physical skill assessments.

Tables 2 and Table 3 represent results of comparison initial (PRE) and final (POST) testing by country (Romania, ROM; Bulgaria, BUL; Lithuania, LITH and Serbia, SRB), as well as comparison between countries (OVERALL). By looking at the results of all five tests, it can be

seen that each subsample had a certain improvement in performance after applying the HopaSus recommendations. All subsamples show better results at the final testing at the *plastic bags juggling* test (ROM, $z = -2.89$, $p < 0.01$; BUL, $z = -2.83$, $p < 0.01$; LITH, $z = -3.40$, $p < 0.05$; SRB, $z = -4.69$, $p < 0.001$). Children from ROM and BUL had performance improvement also at the *taking the T-shirt off* (ROM, $z = -2.46$, $p < 0.05$, BUL, $z = -2.24$, $p < 0.05$), as well as SRB at *skipping the rope* ($z = -5.08$, $p < 0.001$). Finally, BUL and SRB subsamples at the final testing show better average results (AVRG) of performing all five tests (BUL, $z = -3.20$, $p < 0.01$; SRB, $z = -5.35$, $p < 0.001$).

Table 2. Country results of the motor skills assessment at the initial (PRE) and final (POST) testing using HopaSus tests skipping the rope (SR), plastic bags juggling (PB), and taking the T-shirt off (TS), as well as comparison between countries PRE and POST.

		SR		PB		TS	
		X ± SD	***z***	**X ± SD**	***z***	**X ± SD**	***z***
ROM	PRE	1.3 ± 0.6	-0.81	1.6 ± 0.6	-2.89**	1.6 ± 0.8	-2.46*
	POST	1.4 ± 0.7		1.9 ± 0.3		1.9 ± 0.3	
BUL	PRE	0.7 ± 0.8	-1.41	0.7 ± 0.5	-2.83**	1.2 ± 0.7	-2.24*
	POST	0.8 ± 0.8		1.1 ± 0.7		1.4 ± 0.7	
LITH	PRE	1.5 ± 0.6	-0.97	1.4 ± 0.7	-3.40*	1.8 ± 0.6	-1.41
	POST	1.4 ± 0.8		1.8 ± 0.4		1.9 ± 0.5	
SRB	PRE	1.3 ± 0.7	-5.08***	1.6 ± 0.5	-4.69***	1.8 ± 0.4	-1.54
	POST	1.8 ± 0.4		2.0 ± 0.1		1.9 ± 0.4	
OVERALL	PRE	1.3 ± 0.7	14.14**	1.4 ± 0.7	30.48***	1.7 ± 0.6	18.83***
	POST	1.5 ± 0.7	29.13***	1.8 ± 0.5	52.39***	1.8 ± 0.5	18.47***

*X ± SD - mean ± standard deviation, z - result of comparison. * - differences significant on the level p < 0.05, ** - differences significant on the level p < 0.01, *** - differences significant on the level p < 0.001.*

Table 3. Country results of the motor skills assessment at the initial (PRE) and final (POST) testing using HopaSus tests dribbling the ball (DB) and throwing the ball behind the back (TB), as well as average results of all 5 HopaSus tests (AVRG) and comparison between countries PRE and POST.

		DB		TB		AVRG	
		X ± SD	***z***	**X ± SD**	***z***	**X ± SD**	***z***
ROM	PRE	1.3 ± 0.8	-1.83	1.0 ± 0.8	-0.94	1.5 ± 0.3	-0.57
	POST	1.7 ± 0.6		1.2 ± 0.8		1.5 ± 0.4	
BUL	PRE	1.4 ± 0.6	-1.73	0.7 ± 0.7	-1.73	1.0 ± 0.3	-3.20**
	POST	1.6 ± 0.5		0.9 ± 0.7		1.2 ± 0.3	
LITH	PRE	1.2 ± 0.8	-1.16	1.0 ± 0.9	-1.96	1.4 ± 0.4	-1.55
	POST	1.3 ± 0.8		1.2 ± 0.8		1.5 ± 0.4	
SRB	PRE	1.4 ± 0.7	-3.89***	1.4 ± 0.7	-1.51	1.5 ± 0.3	-5.35***
	POST	1.8 ± 0.4		1.6 ± 0.6		1.8 ± 0.2	
OVERALL	PRE	1.8 ± 0.7	3.40	1.1 ± 0.8	15.12**	1.4 ± 0.4	30.69***
	POST	1.6 ± 0.7	17.33**	1.3 ± 0.7	22.92***	1.6 ± 0.4	50.32***

X ± SD - mean ± standard deviation, z - result of comparison. * - differences significant on the level $p < 0.05$, ** - differences significant on the level $p < 0.01$, *** - differences significant on the level $p < 0.001$.

By comparing the results between the subsamples at initial and at the final testing (see Table 2 and Table 3, **OVERALL** → PRE and POST) findings indicate that there were differences in the performance of the SR, PB, TS and TB tests as well as in AVRG at the initial testing. At the final testing differences between subsamples were notable regarding all monitored variables. Further statistical analysis determined which subsamples differed, both on individual tests and on the average score.

Fig. 20. represents results of comparison between subsamples at the initial and at the final testing using *skipping the rope* HopaSus test (see **SR → OVERALL** → PRE and POST). As presented in the Table 2 at the initial testing ROM, LITH and SRB subsamples differ from BUL one ($z = -14.14$, $p < 0.01$) in terms that children from those countries showed better results than children from Bulgaria (ROM, $z = -2.37$ $p < 0.05$; LITH, $z = -3.46$, $p < 0.01$; SRB, $z = -2.58$, $p < 0.05$). At the final testing larger differences with a higher level of significance were noted ($z = -29.13$, $p < 0.001$). At the final testing, Children from Romania and Lithuania still had better performance than children from Bulgaria, but without statistical progress between PRE and POST. After implementing the recommendations Serbian children showed progress in performing the SR test so showed better results than children from Romania ($z = -3.20$, $p < 0.01$), Lithuania ($z = -3.68$, $p < 0.001$) and Bulgaria ($z = -5.18$, $p < 0.001$).

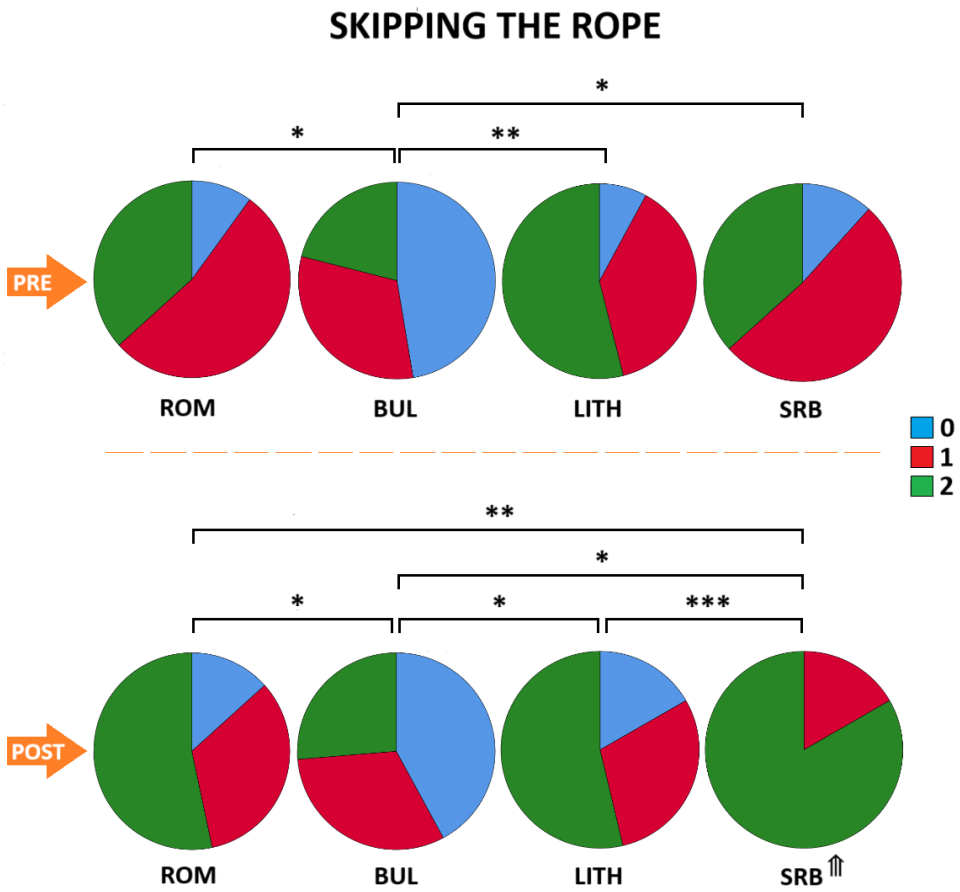


Fig. 20. *Results of comparison of subsamples' (ROM, BUL, LITH, SRB) performance at the initial (PRE) and at the final (POST) testing using the skipping the rope HopaSus test. Symbols * indicate values where are present a significant differences between subsamples, * - differences significant at the level p < 0.05, ** - differences significant at the level p < 0.01, *** - differences significant at the level p < 0.001. Symbol "⍰" indicate differences in the results of the same subsample PRE and POST at the p < 0.001 . (Note that "0" indicates the lowest, and "2" the best score).*

When performing the *plastic bags juggling* test (see Table 2**, PB → OVERALL →** PRE and POST) at the initial testing, similar results were recorded, as for the SR test (z = -30.48, p < 0.001). Children from ROM, LITH and SRB showed better results than children from Bulgaria (ROM, z = -4.46 p < 0.001; LITH, z = -4.05, p < 0.001; SRB, z = -5.33, p < 0.001). After implementing recommendations (at the final testing) all four subsamples showed improvement in performing the test, with children from Romania, Lithuania and Serbia showing better results than children from Bulgaria (ROM, z = -4.57 p < 0.001; LITH, z = -4.29 p < 0.001; SRB z = -6.61 p < 0.001). Also, children from Serbia had a better performance than children from Bulgaria (z = -6.61 p < 0.001) and Lithuania (z = -3.03 p < 0.01).

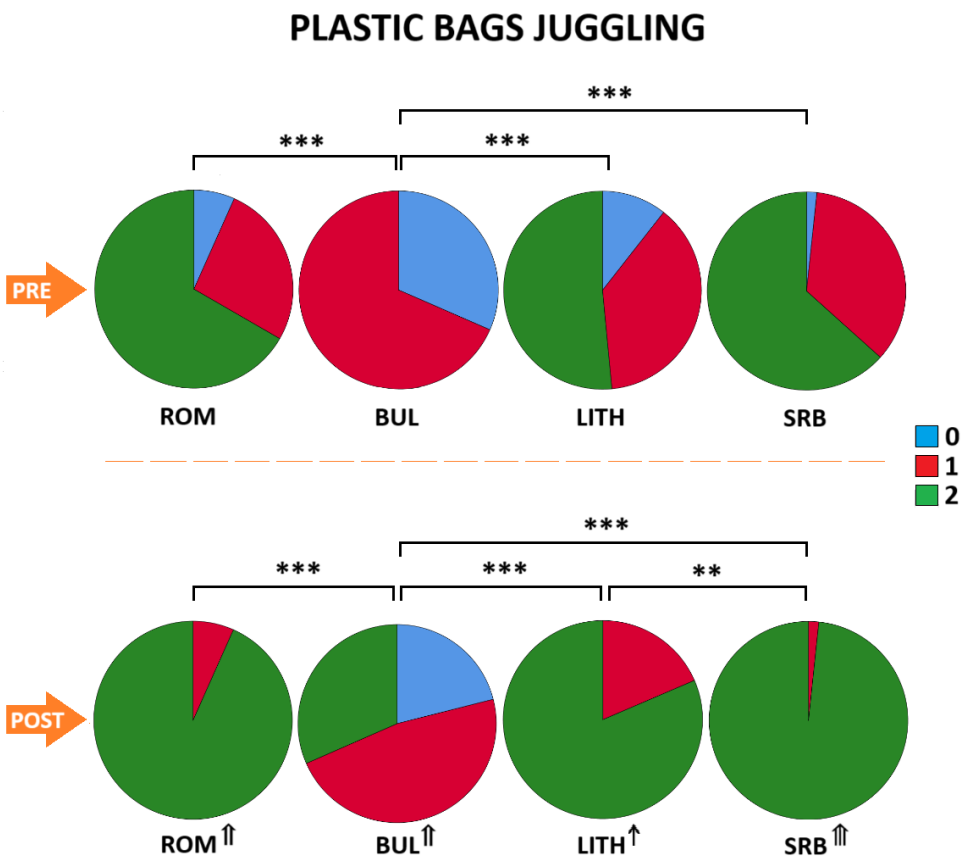


Fig. 21. *Results of comparison of subsamples' (ROM, BUL, LITH, SRB) performance at the initial (PRE) and at the final (POST) testing using the plastic bags juggling HopaSus test. * - differences significant at the level p < 0.05, ** - differences significant at the level p < 0.01, *** - differences significant at the level p < 0.001. Arrows indicate differences in the results of the same subsample PRE and POST, ↑ - p < 0.05, ⇑ - p < 0.01, and ⤊ - p < 0.001. (Note that "0" indicates the lowest, and "2" the best score).*

By looking at the Fig. 23, which represents results of comparison of subsamples performance at the initial (PRE) and at the final (POST) testing using the *taking the T-shirt off* HopaSus test it can be seen that PRE, as well as POST Romanian, Lithuanian and Serbia children showed better performance than Bulgarian one (PRE: ROM, z = -2.27 $p < 0.05$; LITH, z = -4.01, $p < 0.001$; SRB, z = -3.85, $p < 0.001$ and POST: ROM, $z = -2.69$ $p < 0.05$; LITH, $z = -3.07$, $p < 0.01$; SRB, $z = -3.78$, $p < 0.001$). Furthermore, after implementation of HopaSus recommendation (POST vs. PRE), the Romanian sample showed statistically significant improvement in performing the test ($z = -2.46$, $p < 0.05$).

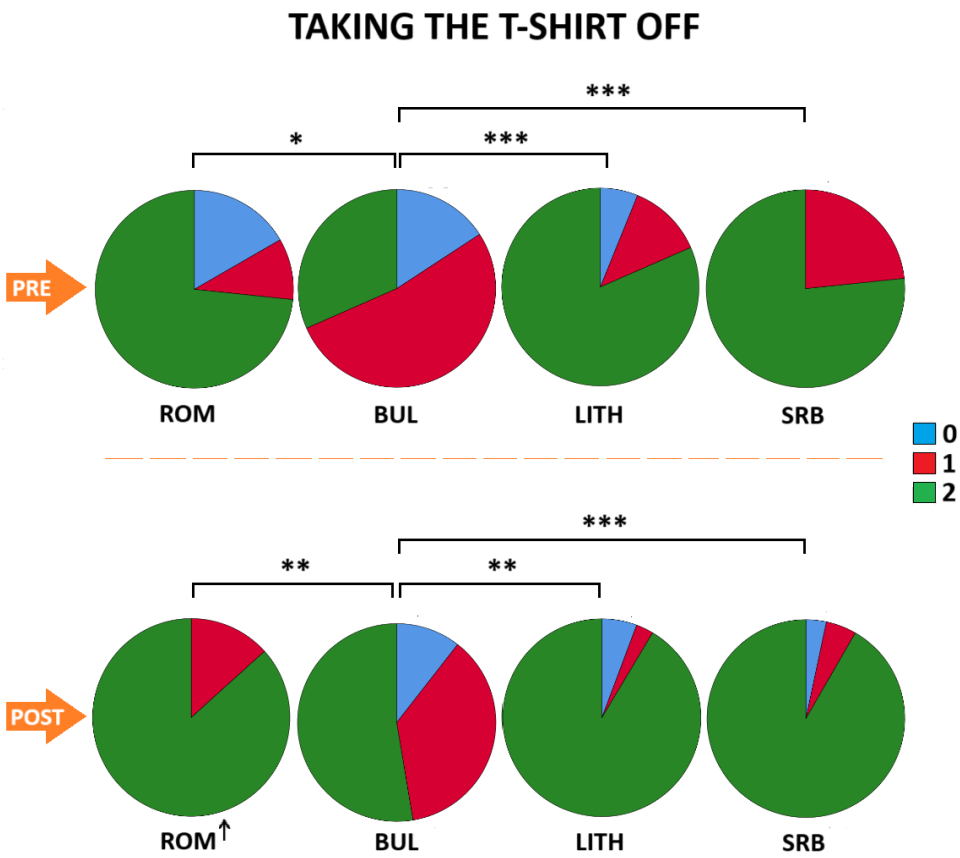


Fig. 22. *Results of comparison of subsamples' (ROM, BUL, LITH, SRB) performance at the initial (PRE) and at the final (POST) testing using taking the T-shirt off HopaSus test. * - differences significant at the level p < 0.05, ** - differences significant at the level p < 0.01, *** - differences significant at the level p < 0.001. Arrow (↑) indicates the difference of the results of the same subsample PRE and POST at the level p < 0.05. (Note that "0" indicates the lowest, and "2" the best score).*

Using tha *dribbling the ball* test at the initial testing between subsamples there were no significant differences recorded (z = -3.40, $p >$ 0.05). At the final testing Serbian subsample showed better results than the Lithuanian one, as a consequence of statistically significant improvement in performing the test POST vs. PRE of Serbian children (z = -3.89, $p <$ 0.001).

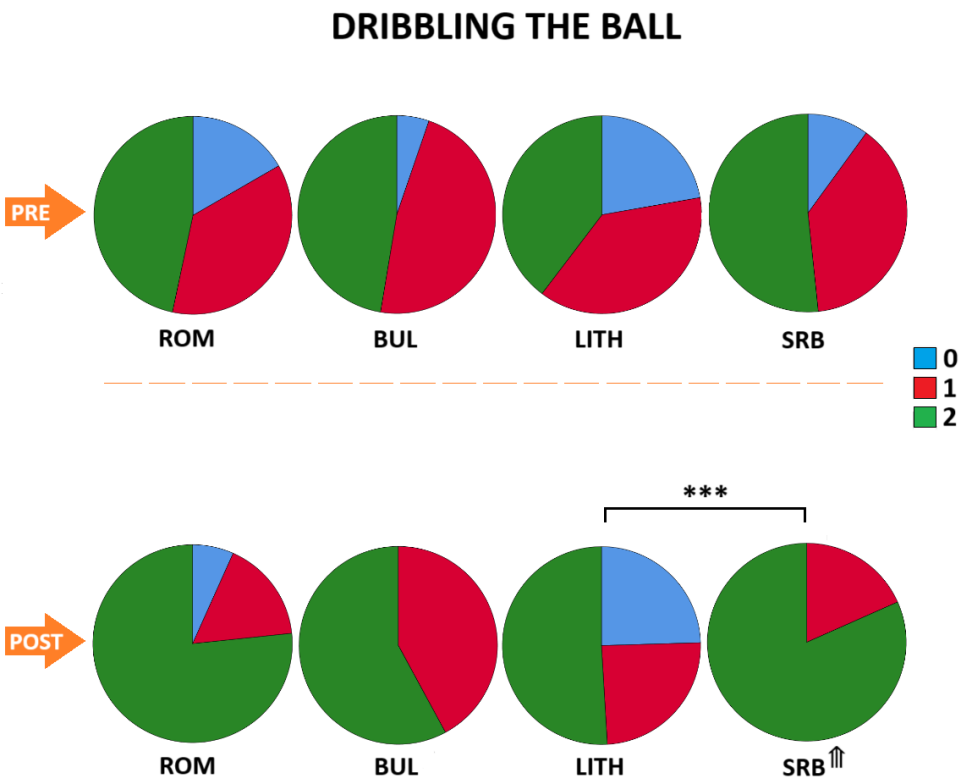


Fig. 23. *Results of comparison of subsamples' (ROM, BUL, LITH, SRB) performance at the initial (PRE) and at the final (POST) testing using dribbling the ball HopaSus test. *** - differences between subsamples significant at the level p < 0.001. Arrow symbol (⇑) indicates the difference of the results of the same subsample PRE and POST at the level p < 0.001. (Note that "0" indicates the lowest, and "2" the best score).*

Comparisons in performing *throwing the ball behind the back* test (Fig. 24) showed that at the initial testing Serbian children had better results than Bulgarian (z = -3.39, $p <$ 0.01) and Lithuanian children (z = -2.98, $p <$ 0.01). After implementing of HopaSus recommendation, at the final testing Serbian children showed better performance than Bulgarian (z = -4.18, $p <$ 0.01) and Lithuanian (z = -3.61, $p <$ 0.001), as well as Romanian one (z = -3.16, $p <$ 0.01), even though none of the subsamples did not statistically improve the performance after the period of implementation of recommendations (POST vs. PRE).

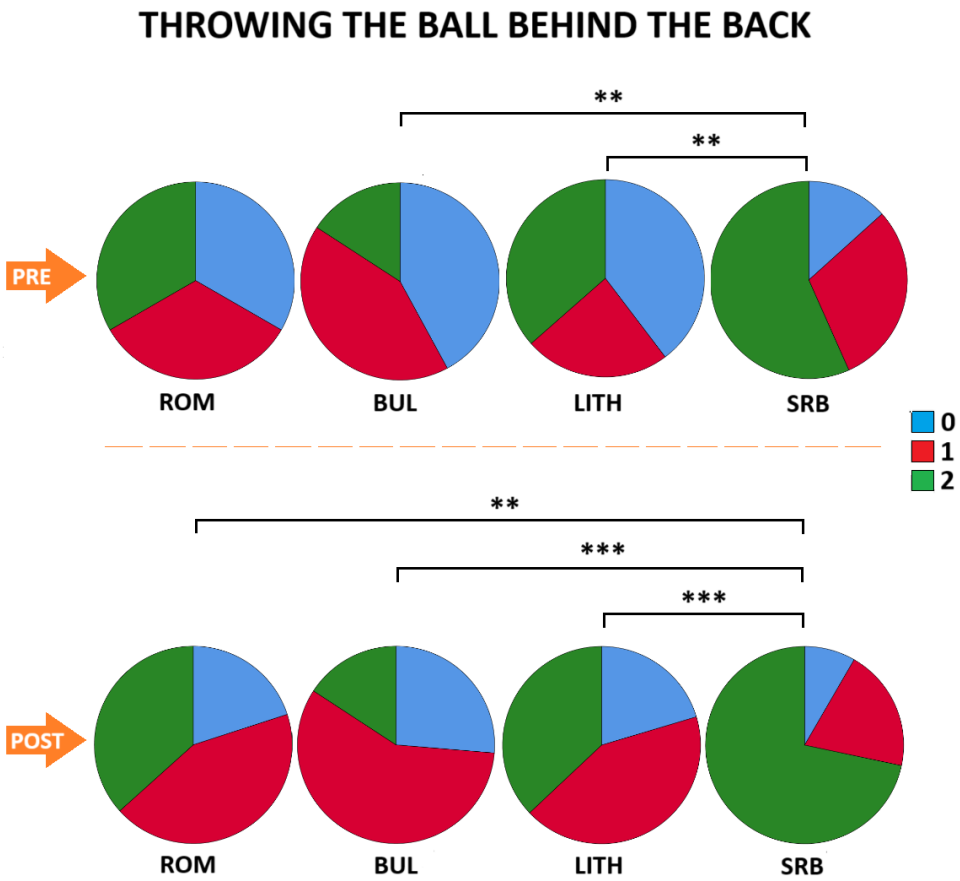


Fig. 24. *Results of comparison of subsamples' (ROM, BUL, LITH, SRB) performance at the initial (PRE) and at the final (POST) testing using throwing the ball behind the back HopaSus test. Symbols **, and *** indicate differences between subsamples significant at the level p < 0.01 and p < 0.001, respectively. (Note that "0" indicates the lowest, and "2" the best score).*

Determining the level of physical skills

Based on the sum of the results of all five tests (total score) at the initial testing, which was a minimum of 3 and a maximum of 10, the norms for determining the level of physical skills were formed. A total score between the 25th and 75th percentiles, was considered average. Below and above the average were considered results below the 25th and above the 95th percentile, respectively. Table 4 represents the norms of physical skills performance.

Table 4. Norms of HopaSus test battery based on the results of the research.

NORMS			
HOPASUS	**Below Average**	**Average**	**Above Average**
	<5	5-8	9-10

test battery total score			

Table 5. Distribution of results of physical skills assessment by subsamples in relation to categories (below average, average and above average).

	Below average		Average		Above average	
	PRE	**POST**	**PRE**	**POST**	**PRE**	**POST**
ROM	10%	3%	73%	47%	17%	50%
BUL	53%	16%	47%	79%	/	5%
LITH	17%	9%	60%	57%	23%	34%
SRB	5%	/	72%	25%	18%	75%

Resume of the results of the physical skills assessment

Summarizing results of the physical skills assessment it can be generally concluded that HopaSus recommendations had a positive impact on physical skills of children from all four countries that participated in the research. It is notable that after the period of implementation of recommendations children show better performance in all five physical challenges (POST vs. PRE), even though statistically significant differences between initial and final testing for throwing *the ball behind the back* test were not recorded.

At the initial testing children from Romania, Lithuania and Bulgaria showed better results than Bulgarian ones mainly in all tests except in the *dribbling the ball*, (where subsamples did not differ from each other) as well as regarding the average score of all five tests. Serbians also had better results than Lithuanians regarding *throwing the ball behind the back* test. These results suggest that children from different subsamples were not on the same physical skills level when research was started. It is obvious that children from Bulgaria had a lower level of physical skills than children from other three countries.

After implantation of HopaSus recommendations (final testing), greater differences between the subsamples were recorded. Still, children from Romania, Lithuania and Bulgaria showed better results in all tests except *dribbling the ball*. Further, Serbian children had better performance than Romanian and Lithuanian at *skipping the rope* and *throwing the ball behind the back*, and also than Lithuanian children at *dribbling the ball*. Regarding average score at the final testing Serbian children showed better performance than Romanian, Bulgarian and Lithuanian children, and Romanian and Lithuanian were better in tests' performing than Bulgarian. Such results, as will be explained further, do not necessarily mean that the HopaSus recommendations had the least impact on children from Bulgaria, it is just in accordance with the fact that before the

recommendations were implemented, children from Bulgaria were at a lower level of physical skills than children from the other three countries.

If the results of the comparison between the initial and final testing of the same subsample are reviewed it can be seen that children from Serbia improved significantly in the performance of *skipping the rope*, *plastic bags juggling*, *dribbling the ball* and at the average score. Romanian children improve their performance at *plastic bags juggling* and *taking the T-shirt off*, Lithuanian at *plastic bags juggling*, and Bulgarian at *plastic bags juggling*, *taking the T-shirt off*, as well as at the average score of all five HopaSus tests. These results suggest that HopaSus recommendations had a positive impact on children's physical skills which varied from subsample to subsample.

Generally observing, the greatest progress after the implementation of the HopaSus recommendations was noted in children from Serbia and Bulgaria. Since the Hopasus recommendations for parents and coaches were based on recommendations, not on an obligation, and since we did not have the possibility to control the extent to which they were implemented, we are not able to draw clear conclusions regarding the origin of differences in performance between children of different subsamples. As far as the Bulgarian sample is concerned, the explanation is not difficult to give considering that the sample consisted of children with a lower level of physical skills, so a targeted physical exercise program could have had a positive impact on their performance to a greater extent than is the case with the Romanian and Lithuanian subsamples.

When it comes to the Serbian's subsample, if we look back at the results of the survey that was part of this research, we will first notice that the sample consisted of children who were largely involved in sports (or have positive attitude about physical activity in general), and we can assume that they have developed a desire to prove themselves, to compete etc., by overcoming their own limits and that in this regard they were more motivated to apply the recommendations consistently and with dedication. Second, the results of the survey may indicate that parents from Serbia, as they already have a high positive attitude towards sports/physical activity and their impact on children's health, possibly approached the implementation of the recommendations more seriously than other parents.

Based on the overall results of the physical skills assessment with a large degree of confidence we can generally conclude that:

- *HopaSus recommendations could have a positive impact on physical skills of children ages from 11 to 15, regardless of geographical origin.*
- *Children who are distinguished by the qualities necessary to achieve sports achievements (resilience, motivation, commitment, etc.) will show better results in the assessment of physical skills using the HopaSus test battery, as well as the improvement of physical skills after recommendations implementations.*
- *Parents' approach to sports/physical activity have a large impact on their children's achievement results.*

RESULTS OF THE POSTURAL ASSESSMENT

Postural status assessment was performed from the front and from the side view, frequencies and contingency tables as well as the Kruskal-Wallis test were used for comparison of the results between countries (ROM, BUL, LITH, and SRB). In the case of significant differences between subsamples, additional Mann-Whitney U tests were applied.

Fig. 25 represents the contingency table of total sample results obtained from the front and from the side view. Results show that Most children (54%) showed good posture (grade 0), minor deviations (grade 1) had 43% and major deviations (grade 2) were present in 3% of the total sample.

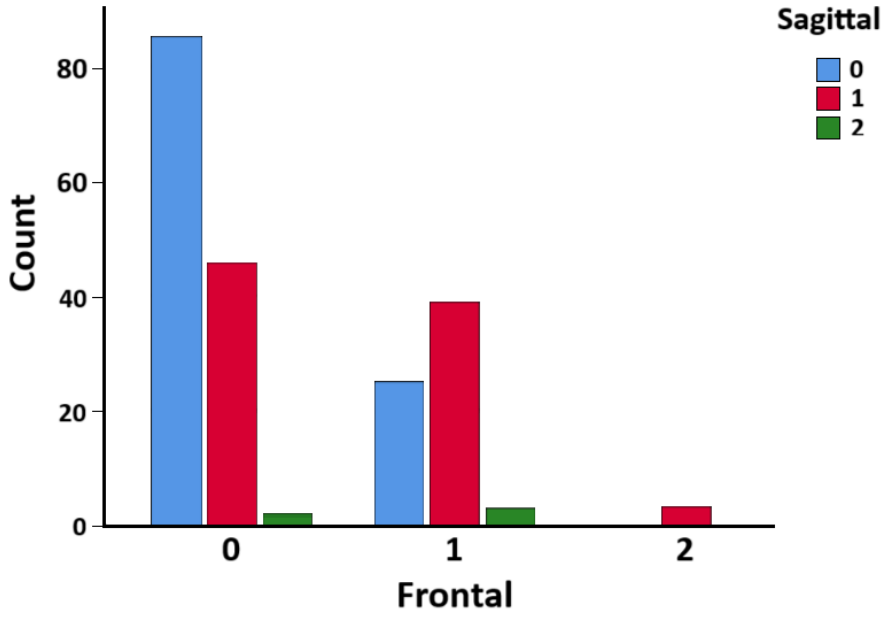


Fig. 25. *Contingency table of total sample results of postural status assessment obtained from the front (frontal) and from the side (sagittal) view. Note that "0" indicates the best score - good posture, absence of postural disorders, "1" - minor deviations, the presence up to two postural disorders and "2" the lower score, major deviations - presence of more than two postural disorders.*

Analyzing data by country results showed that children involved in research from Romania, Lithuania and Serbia mostly have good posture from the *front view* (ROM = 79%, LITH = 58% and SRB = 70%). Minor deviations were present in 21% of Romanian children, 42% of Lithuanian and 30% of Serbian children while major deviations have not been recorded for these subsamples. Contrary, postural status of Bulgarian subsample were as follows: grade 0 - 46%, grade 1 - 42% and grade 2 - 13% of children.

Assessing from the *side view* results showed that children from ROM, LITH and SRB also have mostly good posture (ROM = 68%, LITH = 53% and SRB = 63%). Minor deviations were present in 28% of Romanian, 47% of Lithuanian, and 33% of Serbian children, while major postural disorders were present in 4% of Romanian and 3% of Serbian children. Lithuanian

children had no high level of postural disorders from the side view. Results for BUL subsample indicate that there are most of the children with minor postural deviations (92%). Good posture from the side view as well as major postural disorders were present in 4% of children each.

Analyzing obtained results significant differences in body posture between the subsamples had shown (front view, $z = 12.39$, $p < 0.01$; side view, $z = 28.31$, $p < 0.001$). From the front view (Fig. 26) statistically better results show a ROM subsample compared to the Bulgarian one ($z = 3.16$, $p < 0.05$). From the side view (Fig. 27) greater differences were found in terms that ROM, LITH and SRB subsamples show better results than BUL (ROM, $z = -4.86$, $p < 0.01$; LITH, $z = -4.29$, $p < 0.01$; SRB, $z = -4.67$, $p < 0.01$).

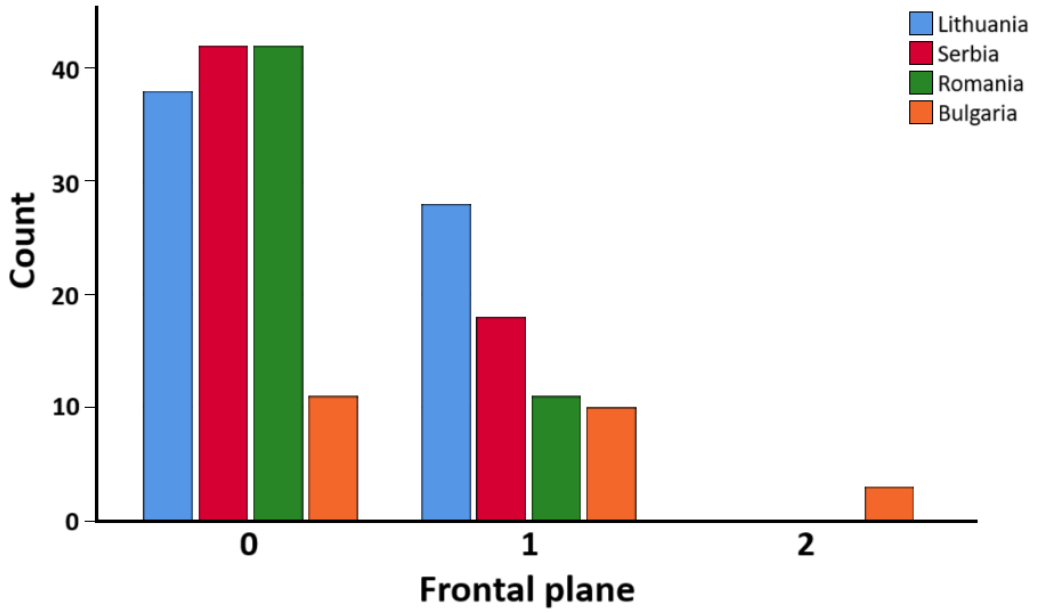


Fig. 26. *Frequencies of the results of postural status assessment by country, assessed in the frontal plane (from the front). "0" - good posture, "1" - minor disorder, and "2" major deviations of good posture. * - differences between countries at the level p < 0.05.*

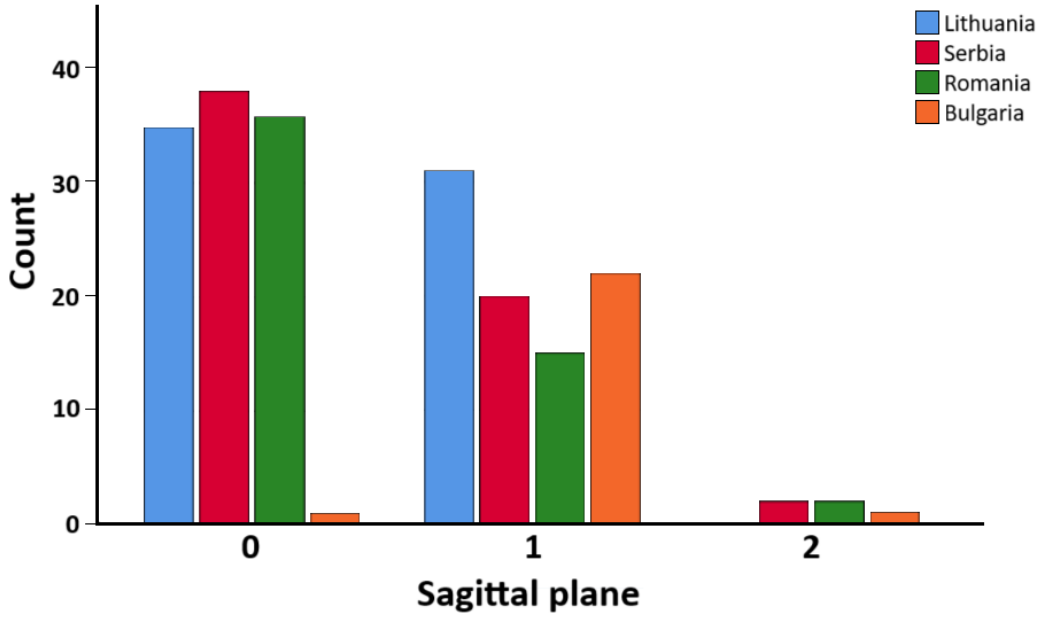


Fig. 27. *Frequencies of the results of postural status assessment by country assessed in the sagittal plane (from the side). "0" - good posture, "1" - minor disorder, and "2" major deviations of good posture.*

Resume of the results regarding postural assessment

Results of the assessment of postural status of children from four European countries indicate that most children have good posture. Minor disorders are present in lower percentages, and there are also some children with major deviations of good (normal) posture.

Even statistical analysis did not reveal differences between ROM, LITH and SRB subsamples, considering the ratio of good posture versus the presence of minor postural disorder, it is observed that it is high in favor of normal posture of children from Romania and Serbia, and slightly lower in children from Lithuania than ROM and SRB children. Children from Bulgaria generally had worse posture than children from other three countries, especially in the sagittal plane (side view) where only 4% of children had normal posture and 92% had minor postural disorder. However, it is encouraging that this disorder stage is known to be correctable with physical exercises so we assume that with a programmed physical activity aimed at correcting body posture it could be improved. Contrary, it is worrying that 13% of BUL subsample (as well as 4% of ROM and 3% of SRB) had postural disorders that are not easily correctable by physical activity.

As in recent decades there has been a trend of increasing postural disorders in children, it can be concluded that the results of this research are in the line with the results of previous studies that dealt with the assessment of body posture in children and youth. Also, the results of current research indicate that Bulgarian children generally have worse posture than children from Romania, Lithuania and Serbia. Still, interpreting the results it should be borne in mind that it

refers primarily to the children who participated in the study and that we should be careful about generalizing the findings to the entire population of children aged 11-15 years.

As could be noticed, the distribution of the results has a similar trend in all four subsamples (the most are children with good body posture, followed by a smaller number of children with the first stage of the disorder and the least are those with greater deviations from normal body posture). The distribution is only disturbed in children from Bulgaria, and that is in the sagittal plane where the largest number of children have some kind of deviation. However, we cannot generalize this data to the entire population of children from Bulgaria aged 11-15 as the subsample consisted of only 24 children, mostly aged 13-15 years. As adolescents they are in a transition stage of life with a dramatical physical, psychological and emotional changes which reflect on their behavior, change of mood, motivation, interests, etc. Also, this is the period of life when youngsters tend to act in some way just to draw attention, or to fit into society. Also, in this period of life, a role model is of great importance for children, someone with whom they feel the need to identify. Sometimes it could be positive, but often negative role models. And what does it have to do with body posture?

Posture is much more than just engaging our muscles and bones at static and dynamic conditions. It involves our perception, emotions and the environment we are in (Dunk, Callaghan, & McGill, 2005). Therefore, there are many factors that can affect body posture, from the time of day when the assessment is made, to fatigue, bad mood, impaired physical and mental health (e.g. depression, anxiety, stress) etc. With all this in mind, if we relate these findings to the results of the posture assessment of the Bulgarian subsample, we can better explain the findings of this research. For example, it was enough for one child to want to draw attention by disobeying the instructions on taking an adequate position for assessment with bad posture, for the other children to follow him/her. Another child may have been emotionally affected because of the break up of a love relationship so that felt as “everything fell apart” to him/her. Another one maybe spent the whole night on social networks, so came to the testing sleepless and tired. And so on and so forth.

Since during the postural assessment we were not able to control all the factors affecting body posture, when interpreting results we have to take it into account and suggest that in future research, better control of the research inclusion criteria as well as a larger sample, should be provided.

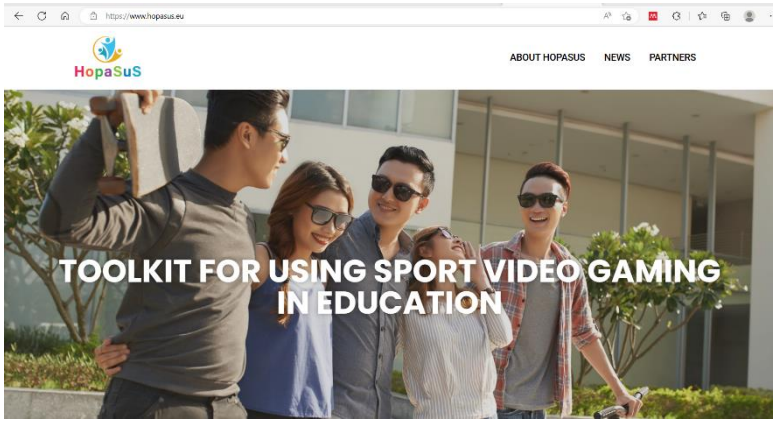
Now, it is interesting to look back at the results of the survey and parent’s attitude on sitting their children while playing video games. Just to remind, Romanian and Lithuanian parents mostly declare that their children sit correctly, while the majority of parents from Serbia believe the opposite. Results of postural assessment did not show differences in postural status of Serbian children vs. Romanian and Lithuanian, just opposite - most of the Serbian children had good posture. Furthermore, Serbian children had also slightly higher ratio “normal vs. minor disorders” than Lithuanian children, so results of the survey regarding this issue could refer to it that Serbian/Lithuanian parents their attitude that playing video games, at the very least, cannot have (or “have”, as in the case of LITH parents) a positive effect on the physical status of children, project as a behavior of their children while playing video games. Also, these findings may be the result of parents' prejudices, lack of knowledge or setting high/low criteria etc.

Based on the overall results of the postural assessment we can generally conclude that:

- *Children that were involved in the research have good posture, or have minor disorders that can be corrected by physical exercises.*
- *During the postural assessment it has to take into account children's psychophysical health, as well as the environmental conditions.*

Dissemination and Communication – Video tutorials

Tavo Europa together with partners from Bulgaria WalkTogether is responsible for project communication and dissemination. Tavo Europa is responsible for disseminating results and news on the official project website www.hopasus.eu.



Tavo Europa also prepared 4 video tutorials on how to use sport video gaming in classroom and activities with youth. The purpose of the videos is to recommend suitable games that encourage physical activity and to justify their benefits. These videos, together with other project results, will be presented on social media - the project's Facebook account and website, and will also be presented separately to target groups and beneficiaries.

The list of the video tutorials:

1. How to include video games in physical education efficiently? – HopaSuS – Social Entrepreneurship For Youth To include video games in physical education, educators can strategically integrate them into the curriculum. They can choose active games that require physical movements and incorporate them into structured lessons, providing sports-related activities in a virtual environment. Game-based challenges and competitions can promote teamwork, problem-solving, and fitness. Balancing traditional activities with video game sessions allows students to experience the benefits of both. Utilizing motion-sensing technology and wearables enhances interactivity, enabling progress tracking and goal-setting. By incorporating video games, educators leverage technology to engage students in active play, fostering a lifelong love for physical activity and health.
2. Why is it useful to use video games to encourage activeness kids? – HopaSuS – Social Entrepreneurship For Youth Using video games to encourage sports among kids is incredibly useful for several reasons. These games provide an interactive and engaging platform that captures children's attention, making physical activity more enjoyable. By combining the virtual world with real-world movements, they bridge the gap between

screen time and active playtime. Video games also offer a safe environment for kids to practice sports skills, learn strategies, and improve coordination without fear of injury or failure. They foster resilience and perseverance through experimentation and learning from mistakes. With instant feedback and rewards, these games motivate children to achieve milestones and set personal goals. By incorporating educational elements, video games enhance cognitive development, problem-solving skills, and teamwork, creating a holistic approach to learning and fitness. Ultimately, leveraging video games empowers kids to lead healthier lifestyles, develop a love for sports, and make the journey of becoming active more fun and engaging.

3. Examples on active games for encouraging physical activity – HopaSuS – Social Entrepreneurship For Youth In this video, we will outline a few examples of specific games designed to encourage sporting activity among kids. These games are carefully crafted to combine the excitement of video games with the physicality of sports, motivating children to get active and stay engaged. By showcasing these examples, we aim to inspire parents, educators, and gaming enthusiasts to embrace the power of active video games in promoting a love for sports among the younger generation. Let's dive into the world of interactive gaming and unleash the joy of sports!
4. What you didn't know about HopaSus project – HopaSuS – Social Entrepreneurship For Youth Introducing the HopaSus Project! Calling all parents, gamers, and sports enthusiasts! HopaSus is revolutionizing how kids engage in sports. Combining active video games with physicality, we're turning screen time into active playtime! It's not just fun and games! HopaSus also has educational benefits, with skill-building exercises, teamwork challenges, and many more gaming activities to encourage kids to commit to an active lifestyle!