Co-funded by the European Union

#MovingSchoolsChallenger

Research Activities: Second Report On The Students' Physical Activity And Health-Related Behaviours Questionnaire.

DELIVERABLE D2.4 (WORK PACKAGE 2)

INDEX

I. RESEARCH METODOLOGY

I.1. Aims and design of research

As previously stated in the earlier report on the research activities related to the physical activity questionnaire for students (Work Package 2: Deliverable 2.2), one of the main objectives of the Moving Schools Challenger (MsC) project is to increase daily physical activity among students and promote other healthy behaviors, such as improving diet and reducing sedentary lifestyles. To assess whether this objective is achieved, we have proposed research activities to evaluate whether students in the participating centers of the MsC program exhibit improvements in their health behaviors.

During the pilot study in the 2023/2024 academic year, more than a hundred schools from seven European countries—Spain, United Kingdom, Poland, Bulgaria, Italy, Serbia, and Hungary—were involved. All students from the participating schools, aged 6 to 18 years, were invited to complete a questionnaire at the beginning of the project (September to November 2023). Later, students were asked to complete an identical questionnaire at the end of the pilot study (May 2024), after all challenges had been proposed and completed (Figure 1).

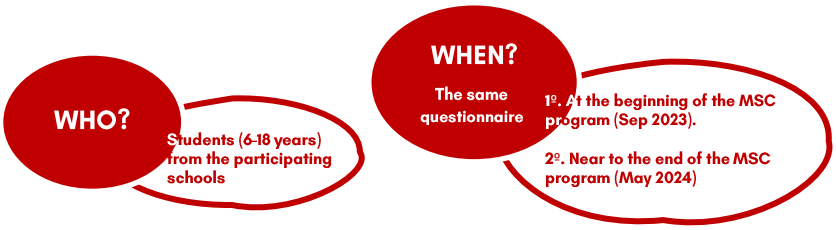


Figure 1. General design of the research activities (students' questionnaire) in the pilot project of the MsC program.

Thus, this deliverable provides a comprehensive description of the results derived from the analysis of data collected in the final phase of the pilot study (second student questionnaire report). It also offers a preliminary comparison between the results obtained from the pre- and post-intervention evaluations, comparing levels of physical activity, self-reported physical condition, diet quality, and other related factors before and after the implementation of the MsC program.

I.2. Self-report instrument: Students' questionnaire

As previously specified, for the post-intervention evaluation, students from the participating centers were asked to complete the same questionnaire used in the pre-intervention evaluation. As with the pre-intervention evaluation, teachers from the participating schools were instructed to administer the questionnaire online to their students during school hours. Once again, the questionnaires ensured anonymity, and the responses were systematically coded to maintain consistency and confidentiality.

As a reminder, the administered questionnaire contains four distinct sections designed to assess the level of physical activity and other health-related behaviors (e.g., sleep, diet, or self-perceived physical condition) of the students, as well as their perceptions, interests, and opinions about physical activity, sports, school facilities, etc. (see Annex 1).

SECTION A. General questions: school, grade, class, gender, age, and place (urban or rural) where the school and the participant's home are placed.

SECTION B. Physical activity and physical fitness level: The second section includes three questionnaires designed to evaluate the level of physical activity and the level of physical fitness of students:

B.1. Modified PACE+ questionnaire. The PACE+ is a simple questionnaire that has been frequently used to assess whether children and adolescents accomplish with the WHO physical activity recommendations. The modified version of the PACE+ questionnaire includes four questions asking students to reflect on the past 7 days and report: (i) if they engaged in at least 60 minutes of physical activity per day, (ii) the number of days they participated in vigorous physical activities, (iii) the number of days they engaged in activities to strengthen muscles and bones, and (iv) the number of days they performed exercises to stretch or relax their muscles.

B.2. PAQ-C/A (Physical Activity Questionnaire for Children/Adolescents). The PAQ-C/A is a self-administered questionnaire aimed at assessing moderate to vigorous physical activity in children and adolescents over the previous 7 days. It includes ten items: nine are used to determine the activity level, and the last item evaluates whether an illness or other event hindered the child from participating in regular activities during the past week. The overall score ranges from 1 to 5, with higher scores indicating greater levels of physical activity.

B.3. IFIS (International Fitness Scale). The IFIS scale is a straightforward self-reported tool created to assess overall physical fitness, including its main components: cardiorespiratory fitness, muscular strength, speed-agility, and flexibility.

SECTION C. Other Physical activity and physical fitness level: This third section includes questions designed to evaluate screen time, sleep time and quality of diet.

C1. Screen time (HBSC). We incorporated three simple questions, adapted from the HBSC questionnaire, to assess the time students spend watching television (including videos, DVDs, streaming platforms, etc.), playing computer or console games, and using electronic devices (e.g., phone or tablet) for internet browsing, social networking, etc., on weekdays and weekends separately.

C2. Sleep time. The questionnaire includes a simple general question about sleep time on weekdays and weekend days.

C3. Quality of diet (KIDMED questionnaire). This questionnaire is designed to assess adherence to the Mediterranean Diet (MD) among children and adolescents. It consists of 16 questions, each indicating a positive or negative association with the MD. The scoring ranges from 0 to 12, where questions with a negative association are scored as -1 and those with a positive association as +1. The total score categorizes adherence into three levels: (i) optimal MD (≥8 points), (ii) improvement needed to align with the MD (4-7 points), and (iii) very low diet quality (≤3 points).

SECTION D. Students' perceptions: This section of the questionnaire comprises eleven questions regarding students' perceptions, interests, and/or opinions about physical activity, sports, school facilities, etc.

I.3. Statistical analysis

Descriptive statistics are presented as mean and standard deviation for continuous variables, and as frequency and percentage for categorical variables. Initially, we analyzed the entire sample comprising participants with valid data in the post-intervention questionnaire from all countries, and then stratified by gender (boys and girls) and age group (children [<13 years] and adolescents [≥13 years]) (see Section III. Overall Findings). Group differences were assessed using independent samples T-tests for continuous variables and Chi-square tests for categorical variables. Subsequently, we conducted country-specific analyses to compare results across Spain, United Kingdom, Poland, Bulgaria, Italy, Serbia, and Hungary (see Section IV. Country-specific Findings). Variations among countries were evaluated using one-way analysis of variance (ANOVA) with Bonferroni adjustment for post-hoc pairwise comparisons for continuous variables, and Chi-square tests for categorical variables. Finally, an initial comparative analysis is included, contrasting the results obtained from the pre- and post-intervention questionnaires in graphical format (see Section IV).

All statistical analyses were performed using STATA v.14.0 for Windows (Science Plus Group), with statistical significance set at P<0.05. Graphs were generated using GraphPad Prism v.9.0 software for Windows.

II. PARTICIPANTS INVOLVED IN THE POST-INTERVENTION PA QUESTIONNAIRE

A total of 2,591 students from 49 schools completed the post-intervention questionnaire: 778 were from Spain, 48 from the UK, 180 from Poland, 154 from Bulgaria, 327 from Italy, 853 from Serbia, and 275 from Hungary (Table 1). The participants' ages ranged from 6 to 18 years, with an overall mean (SD) of 12.72 (2.45) years. Significant age differences ($p<0.05$) were found among all countries, except between Bulgaria and Spain ($p=1.000$), Bulgaria and Poland ($p=1.000$), Bulgaria and Italy ($p=0.351$); and between Italy and Poland ($p=1.000$), and Italy and Serbia ($p=1.000$). Participants with a higher mean age were from Hungary (13.76±2.58), Spain (13.22±2.91), and Bulgaria (12.96±1.86), while those from the UK were significantly younger (8.81±1.18) (Table 1).

Approximately half of the participants were boys (50.06%). However, gender distribution varied significantly among the seven countries ($p<0.001$). A higher percentage of boys completed the questionnaire in the UK (58.33%) and Hungary (56.73%), while in Bulgaria, Poland, and Italy a higher percentage of girls participated (57.79%, 54.44%, and 52.29%, respectively). In Spain, an equal number of boys and girls completed the post-intervention PA questionnaire (Table 1).

In the overall sample, the majority of participants were in grades 5 to 8 (72.37%). Significant differences were observed in the distribution of grades across countries ($p<0.001$). In the UK, most participants were in grade 4 (54.17%); in Bulgaria, grade 5 (22.73%); in Poland (31.11%), Italy (38.23%), and Serbia, grade 6 (21.1%); in Spain, grade 7 (33.8%); and in Hungary, grade 5 (22.55%) or grade 10 (20.0%) (Table 1).

Most of school centers attended by the students were located in urban environments (90.52%), with only 9.48% in rural settings. There were significant differences in the urban-rural distribution among the countries in the MsC project pilot study ($p<0.001$). The percentage of students attending urban schools ranged from 75.54% in Italy to 99.35% in Bulgaria, with all participants from the UK attending urban schools (Table 1).

Table 1. **Main characteristics of participants involved in the second PA questionnaire for students, for all sample and by country**

	All	Spain	UK	Poland	Bulgaria	Italy	Serbia	Hungary
Number of schools (n)	49	10	5	8	3	4	9	10
Total students (n)	2591	778	48	180	154	327	853	275
Age (mean±SD)[1]	12.72±2.45	13.22±2.91	8.81±1.18	12.53±1.59	12.96±1.86	12.41±1	12.28±2.3	13.76±2.58
Gender (n, %)[2]								
Boys	1297 (50.06)	377 (50.00)	28 (58.33)	82 (45.56)	65 (42.21)	156 (47.71)	433 (50.76)	156 (56.73)
Girls	1294 (49.94)	377 (50.00)	20 (41.67)	98 (54.44)	89 (57.79)	171 (52.29)	420 (49.24)	119 (43.27)
Grade (n, %)[3]								
Grade 0 (Kindergarten; <6 years)	5 (0.19)	-	5 (10.42)	-	-	-	-	-
Grade 1 (6-7 years)	162 (6.20)	138 (17.74)	-	1 (0.56)	-	-	19 (2.23)	4 (1.45)
Grade 2 (7-8 years)	50 (1.91)	-	-	-	2 (1.30)	-	44 (5.16)	4 (1.45)
Grade 3 (8-9 years)	77 (2.94)	1 (0.13)	11 (22.92)	-	3 (1.95)	-	58 (6.80)	4 (1.45)
Grade 4 (9-10 years)	169 (6.46)	70 (9.00)	26 (54.17)	2 (1.11)	12 (7.79)	-	53 (6.21)	6 (2.18)
Grade 5 (10-11 years)	327 (12.50)	34 (4.37)	6 (12.50)	25 (13.89)	35 (22.73)	-	165 (19.34)	62 (22.55)
Grade 6 (11-12 years)	526 (20.11)	98 (12.60)	-	56 (31.11)	27 (17.53)	125 (38.23)	180 (21.10)	40 (14.55)
Grade 7 (12-13 years)	581 (22.22)	263 (33.80)	-	46 (25.56)	28 (18.18)	93 (28.44)	129 (15.12)	22 (8.00)
Grade 8 (13-14 years)	441 (16.86)	84 (10.80)	-	30 (16.67)	22 (14.29)	109 (33.33)	161 (18.87)	35 (12.73)
Grade 9 (14-15 years)	143 (5.47)	90 (11.57)	-	20 (11.11)	16 (10.39)	-	-	17 (6.18)
Grade 10 (15-16 years)	61 (2.33)	-	-	-	6 (3.90)	-	-	55 (20.00)
Grade 11 (16-17 years)	66 (2.52)	-	-	-	2 (1.30)	-	43 (5.04)	21 (7.64)
Grade 12 (17-18 years)	7 (0.27)	-	-	-	1 (0.65)	-	1 (0.12)	5 (1.82)
School zone (n, %)[4]								
Urban (in the city)	2367 (90.52)	752 (96.66)	48 (100)	171 (95.00)	153 (99.35)	247 (75.54)	752 (88.16)	244 (88.73)
Rural (in the countryside)	248 (9.48)	26 (3.34)	-	9 (5.00)	1 (0.65)	80 (24.46)	101 (11.84)	31 (11.27)
Students' home zone (n, %)[5]								
Urban (in the city)	2157 (82.49)	710 (91.26)	48 (100)	148 (82.22)	127 (82.47)	234 (71.56)	713 (83.59)	177 (64.36)
Rural (in the countryside)	458 (17.51)	68 (8.74)	-	32 (17.78)	27 (17.53)	93 (28.44)	140 (16.41)	98 (35.64)

Values are presented as frequency (n) and percentage for categorical variables and as mean and standard deviation for continuous variables. Abbreviations: n=number; PA=Physical Activity; SD=standard deviation.

[1]p<0.05 for pairwise comparisons between countries (ANOVA test, with Bonferroni post hoc analyses), except between Bulgary and Spain (p=1.000), Poland (p=1.000), and Italy (p=0.351); and between Italy and Poland (p=1.000) and Serbia (p=1.000).

[2]p=0.054 for comparison of sex distribution between countries (Pearson Chi^2 =12.35).

[3]p<0.001 for comparison of grades distribution between countries (Pearson Chi^2=2057.67).

[4]p<0.001 for comparison of school zone distribution between countries (Pearson Chi^2=149.47).

[5]p<0.001 for comparison of students' home zone distribution between countries (Pearson Chi^2=141.91).

Similarly, most participants (82.49%) resided in households located in rural environments, while 17.51% lived in urban settings. Significant country differences were also observed in this regard (p<0.001), with the percentage of students living in rural households ranging from 8.74% in Spain to 35.64% in Hungary. Notably, none of the participants from the UK lived in rural households (Table 1).

Main results:

A total of 2,591 students, aged 6 to 18 years (mean age: **12.72** years), from **49 schools** across the **seven countries**, completed the post-intervention PA questionnaire for students, within the first pilot study of the MsC project. Nearly **half** of the participants were **girls** (49.94%), and **most** of students were in **grades 5 to 8** (72.37%) and attending schools in **urban settings** (90.52%). Only 17.51% of participants lived in rural households. Significant differences were observed in the distribution of all basic socio-demographic characteristics between the participants from different countries involved.

III. OVERALL RESULTS

III.1. Physical activity level

In total, 88.57% of the participants reported engaging in at least 60 minutes of physical activity daily over the past week. On average, participants engaged in vigorous activities, strength exercises, and stretching exercises on 3.87 (2.00), 3.00 (2.06), and 3.04 (2.14) days, respectively (Table 2). Notable differences emerged between boys and girls regarding their physical activity levels. A smaller percentage of girls (86.09%) compared to boys (91.21%) met the 60-minute daily physical activity requirement over the past week (p<0.001). Furthermore, girls participated in vigorous activities (3.87±2.00) and strength exercises (3.00±2.06) less frequently than boys (4.24±2.00 and 2.74±1.94; both p<0.001); no significant differences were observed between boys and girls in the mean days participating in stretching exercises per week (3.10±2.19 and 2.98±2.08 for boys and girls, respectively; p=0.146).

Table 2. Physical activity participation in all sample and segmented by gender and age group.

	All	Boys	Girls	P1	Children (<13 years)	Adolescents (≥13 years)	P2
Reaching 60 min/day of PA (n, %)				**<0.001**			**<0.001**
No	299 (11.43)	114 (8.79)	180 (13.91)		119 (9.14)	180 (13.72)	
Yes	2316 (88.57)	1183 (91.21)	1114 (86.09)		1184 (90.87)	1132 (86.28)	
VPA (days; mean±SD)	3.87±2.00	4.24±2.00	3.50±1.92	**<0.001**	4.09±2.01	3.64±1.96	**<0.001**
Strengthening exercises (days; mean±SD)	3.00±2.06	3.25±2.12	2.74±1.94	**<0.001**	3.04±2.07	2.95±2.04	0.254
Stretching exercises (days; mean±SD)	3.04±2.14	3.10±2.19	2.98±2.08	0.146	3.09±2.16	2.98±2.12	0.190

Values are presented as frequency (n) and percentage for categorical variables and as mean and standard deviation for continuous variables.
P1: p-value for differences between boys and girls estimated by Pearson Chi^2 for categorical variables (i.e., reach 60 min/day of PA) and non-paired T-t continuous variables (i.e., mean days in the last week doing VPA, strengthening, and stretching exercises).
P2: p-value for differences between children (<13 years) and adolescents (≥13 years) estimated by Pearson Chi^2 for categorical variables (i.e., reach 6(min/day of PA) and non-paired T-test for continuous variables (i.e., mean days in the last week doing VPA, strengthening, and stretching exercises).
Abbreviations: n=number; PA=Physical Activity; SD=standard deviation; VPA: Vigorous Physical Activity.

When comparing responses based on age group (children aged <13 years and adolescents aged ≥13 years), we observed that a higher percentage of children (90.87%) than adolescents (86.28%) engaged in physical activity for at least 60 minutes per day in the last week ($p<0.001$). Additionally, younger children, on average, spent more days engaging in vigorous physical activities (4.09±2.01) than adolescents (2.95±2.04). No significative differences were found between children and adolescents in mean days engaging strength exercises (3.09±2.16 vs. 2.95±2.04; $p=0.254$) or stretching exercises (3.09±2.16 vs. 2.98±2.12; $p=0.190$) (Table 2).

Participants were classified into those who meet WHO physical activity recommendations (i.e., accumulate at least 60 minutes of moderate-to-vigorous physical activity per day throughout the week, combined with the participation in aerobic activities of vigorous intensity and exercises that strengthen muscles and bones at least three days a week) and those who do not. Overall, 76.10% of the participants met the recommendations; this percentage was higher among boys (78.49%) than girls (21.51%; $p=0.007$) and among children (77.90%) compared to adolescents (73.31%; $p=0.032$) (Figure 3).

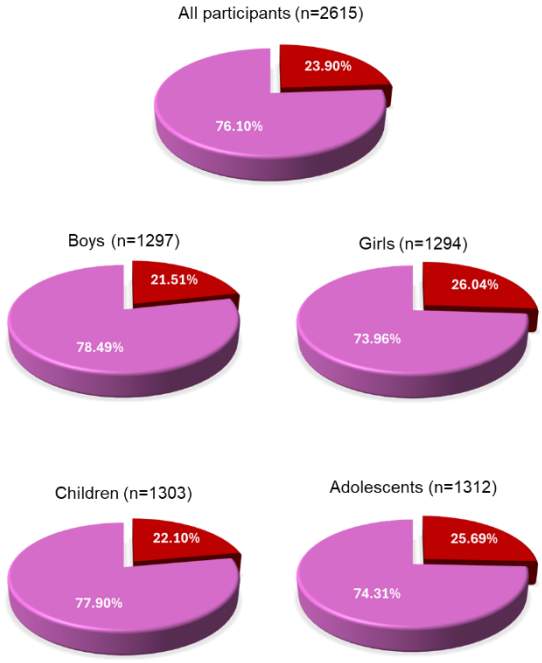


Figure 3. Percentage of participants meeting physical activity recommendations for all sample and segmented by gender (boys and girls) and age group (children and adolescents). Significant differences were found in the percentage of compliance with PA recommendations based on gender (Pearson $Chi^2=7.34$; $p=0.007$) and age group (Pearson $Chi^2=4.61$; $p=0.032$). Slight variations are observed in the total number of participants (n) included in the gender and age groups, due to missing or impossible data in grouping variables.

In the overall sample, the most commonly performed physical activity was walking for exercise, followed by bicycling, and jogging or running (Table 3). Girls reported higher participation than boys in walking for exercise, swimming, dancing, skateboarding, and volleyball (all $p<0.05$). Conversely, boys reported greater involvement in activities such as rowing, tag, bicycling, jogging or running, baseball, football, racquet sports, soccer, hockey, basketball, and skiing (all $p<0.05$). Furthermore, boys reported more physical activity than girls during Physical Education classes, recess, lunchtime, early afternoon, evenings, and on each day of the previous week (Table 3).

Table 3. **Values in PAQ-C/A questions for all participants and segmented by gender and age group.**

	All	Boys	Girls	P1	Children (<13 years)	Adolescents (≥13 years)	P2
PAQ-C/A – Q1: specific PAs							
Skipping	1.83±1.14	1.86±1.21	1.82±1.08	0.477	1.97±1.19	1.70±1.08	**<0.001**
Rowing/canoeing	1.21±0.70	1.24±0.77	1.19±0.63	**0.037**	1.24±0.74	1.19±0.65	0.105
In-line skating	1.48±0.97	1.49±1.02	1.47±0.92	0.550	1.60±1.09	1.37±0.82	**<0.001**
Tag	1.79±1.15	1.89±1.22	1.69±1.07	**<0.001**	1.95±1.22	1.63±1.04	**<0.001**
Walking for exercise	3.08±1.45	2.99±1.48	3.17±1.41	**0.002**	3.04±1.42	3.11±1.47	0.211
Bicycling	2.47±1.40	2.74±1.47	2.20±1.27	**<0.001**	2.60±1.43	2.34±1.36	**<0.001**
Jogging or running	2.13±1.36	2.24±1.43	2.04±1.29	**<0.001**	2.25±1.42	2.01±1.30	**<0.001**
Aerobics	1.35±0.83	1.38±0.88	1.32±0.77	0.092	1.38±0.85	1.32±0.80	0.052
Swimming	1.56±1.06	1.45±0.96	1.67±1.15	**<0.001**	1.61±1.11	1.51±1.01	**0.018**
Baseball, softball	1.34±0.82	1.39±0.88	1.30±0.76	**0.007**	1.34±0.82	1.35±0.83	0.776
Dance	1.47±1.02	1.30±0.81	1.66±1.17	**<0.001**	1.53±1.06	1.42±0.98	**0.007**
Football	1.70±1.21	2.03±1.42	1.37±0.84	**<0.001**	1.82±1.28	1.59±1.14	**<0.001**
Racket sports	1.84±1.28	2.12±1.45	1.55±1.01	**<0.001**	1.96±1.35	1.72±1.20	**<0.001**
Skateboarding	1.45±0.90	1.39±0.88	1.51±0.93	**0.001**	1.42±0.88	1.48±0.92	0.091
Soccer	1.50±1.07	1.77±1.30	1.23±0.71	**<0.001**	1.54±1.14	1.45±1.01	**0.049**
Street hockey	1.47±0.99	1.54±1.04	1.39±0.93	**0.001**	1.50±1.04	1.43±0.94	0.058
Volleyball	1.71±1.16	1.50±0.97	1.92±1.29	**<0.001**	1.73±1.19	1.68±1.13	0.256
Floor hockey	1.41±0.89	1.45±0.96	1.36±0.81	**0.016**	1.46±0.94	1.36±0.84	**0.005**
Basketball	1.77±1.20	2.00±1.34	1.56±0.99	**<0.001**	1.84±1.23	1.71±1.16	**0.009**
Ice skating	1.24±0.78	1.28±0.85	1.21±0.68	**0.029**	1.26±0.79	1.23±0.76	0.336
Cross-country skiing	1.33±0.85	1.42±0.97	1.23±0.69	**<0.001**	1.29±0.82	1.36±0.88	**0.038**
Ice hockey/ringette	1.20±0.70	1.24±0.78	1.15±0.60	**0.002**	1.18±0.67	1.21±0.72	0.282
Other (option 1)	1.85±1.29	1.87±1.34	1.84±1.23	0.460	1.96±1.33	1.74±1.24	**<0.001**
Other (option 2)	1.64±1.23	1.72±1.31	1.58±1.15	**0.005**	1.74±1.29	1.55±1.16	**<0.001**
PAQ-C/A – Q2: PA at PE classes	4.06±0.97	4.23±0.92	3.90±0.97	**<0.001**	4.18±0.89	3.94±1.02	**<0.001**
PAQ-C/A – Q3: PA at recess	2.57±1.25	2.81±1.34	2.33±1.11	**<0.001**	2.93±1.29	2.20±1.10	**<0.001**
PAQ-C/A – Q4: PA at lunch time	2.09±1.29	2.29±1.41	1.89±1.12	**<0.001**	2.33±1.39	1.85±1.14	**<0.001**
PAQ-C/A – Q5: PA at early afternoons	3.12±1.29	3.30±1.30	2.95±1.25	**<0.001**	3.32±1.23	2.93±1.32	**<0.001**
PAQ-C/A – Q6: PA at evenings	3.02±1.26	3.14±1.28	2.89±1.23	**<0.001**	3.13±1.22	2.92±1.29	**<0.001**
PAQ-C/A – Q7: PA at last weekend	3.01±1.18	3.15±1.22	2.89±1.13	**<0.001**	3.19±1.15	2.84±1.19	**<0.001**
PAQ-C/A – Q8: general PA at last week	3.09±1.22	3.33±1.22	2.87±1.17	**<0.001**	3.23±1.21	2.96±1.22	**<0.001**
PAQ-C/A – Q9: PA level last week by day							
Monday	3.19±1.36	3.38±1.34	2.99±1.35	**<0.001**	3.29±1.33	3.08±1.39	**<0.001**
Tuesday	3.23±1.30	3.41±1.26	3.06±1.32	**<0.001**	3.32±1.29	3.14±1.32	**0.001**
Wednesday	3.26±1.33	3.41±1.30	3.10±1.33	**<0.001**	3.36±1.31	3.16±1.34	**<0.001**
Thursday	3.32±1.30	3.45±1.28	3.20±1.31	**<0.001**	3.35±1.29	3.29±1.31	0.188
Friday	3.45±1.32	3.61±1.30	3.28±1.32	**<0.001**	3.53±1.30	3.36±1.34	**0.001**
Saturday	3.41±1.42	3.63±1.38	3.21±1.42	**<0.001**	3.61±1.36	3.21±1.45	**<0.001**
Sunday	2.98±1.43	3.14±1.45	2.81±1.39	**<0.001**	3.16±1.41	2.79±1.43	**<0.001**

Values are mean and standard deviation. All questions in the PAQ-A questionnaire are registered with a categorical scale ranged from 1 t

p1: p-value for differences between boys and girls estimated by non-paired T-test.

P2: p-value for differences between children (<13 years) and adolescents (≥13 years) estimated by non-paired T-test.

Abbreviations: PAs=Physical Activities; PAQ-A=Physical Activity Questionnaire for Adolescents. Q=Question.

When comparing age groups, children had higher average participation in activities like skipping, skating, bicycling, jogging or running, swimming, dancing, football, racquet sports, soccer, hockey, and basketball than adolescents. In contrast, adolescents participated more in skiing (all $p<0.05$). Children also scored higher in all questions related to physical activity levels across different periods of the previous week (all $p<0.001$), except for physical activity performed on Thursday ($p=0.188$) (Table 3).

The overall result of the PAQ-C/A is a continuous score from 1 to 5, with higher scores indicating a higher level of activity. In the total sample, the mean value of the overall PAQ-C/A score was 2.88±0.75 points (Figure 4). A significantly higher score was achieved by boys (3.05±0.76) compared to girls (2.72±0.71; $p<0.001$). Additionally, children obtained a higher average score (3.05±0.72) than adolescents (2.71±0.75; $p<0.001$).

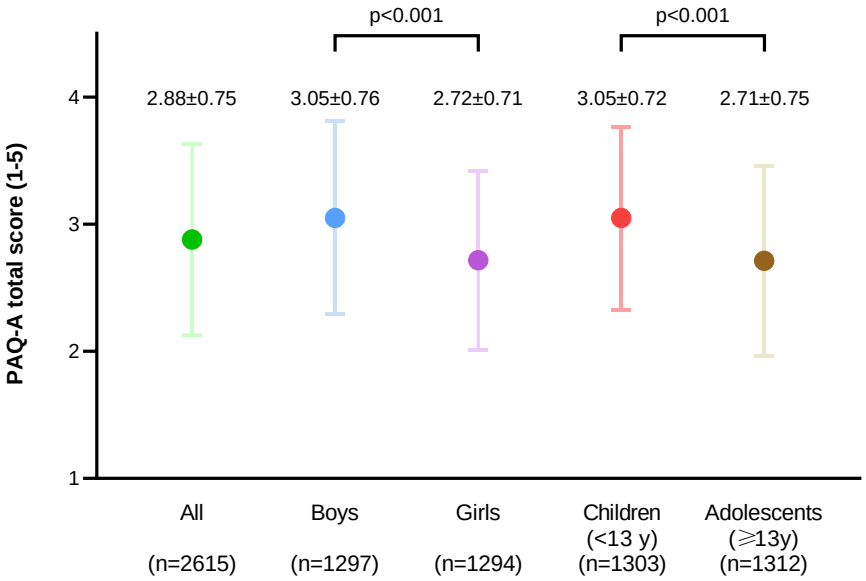


Figure 4. PAQ-C/A total score for all sample and segmented by gender (boys and girls) and age group (children and adolescents). The circular symbols represent the mean, and the lines the standard deviation in each group. p-values for differences (unpaired T-test) by gender and age group are shown. Slight variations are observed in the total number of participants (n) included in the gender and age groups, due to missing or impossible data in grouping variables.

Main results:

Over three-quarters (76.13%) of the participants met the WHO physical activity guidelines, which include at least 60 minutes of moderate-to-vigorous physical activity daily, along with vigorous-intensity aerobic activities and muscle and bone-strengthening exercises at least three days a week. Boys and children showed higher compliance rates compared to girls and adolescents. The overall average score on the PAQ-C/A questionnaire for the entire sample was 2.88 out of 5. Boys and children also achieved higher scores on this questionnaire compared to girls and adolescents, respectively.

III.2. Self-reported physical fitness

Self-perceived physical fitness was evaluated using the IFIS scale. Overall, 62% of participants rated their general physical fitness as good or very good, while only 4% rated it as very poor (Figure 5). Specifically, 53% of participants reported good or very good cardiorespiratory fitness, 53% in muscular strength, 58% in speed/agility, and 45% in flexibility. Conversely, only 5%, 4%, 4%, and 8% rated their levels in these respective fitness indicators as very poor (Figure 5).

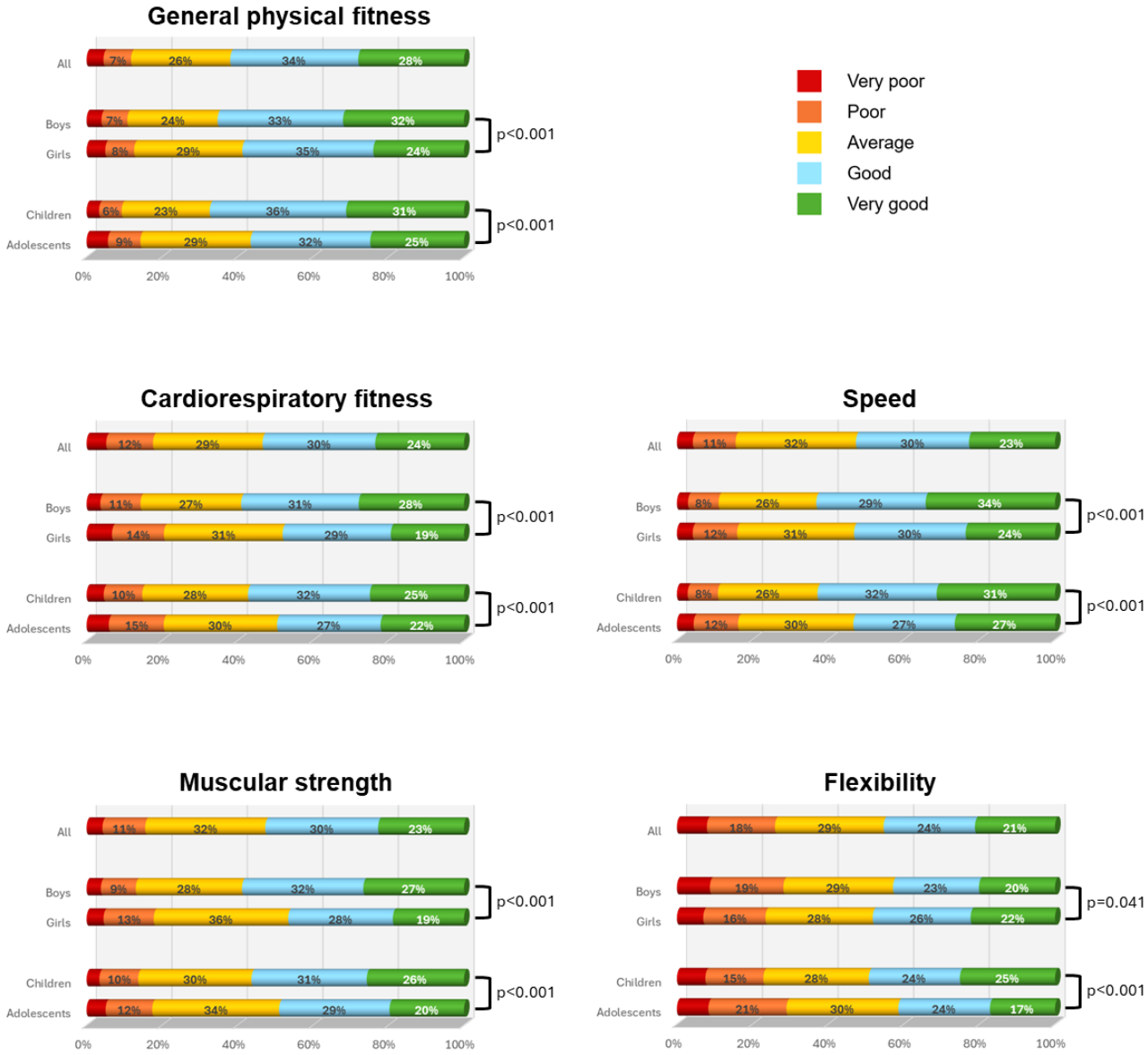


Figure 5. Self-reported physical fitness level in all sample and by gender and group age. Differences in percentage distribution between groups were calculated by Pearson Chi squared test.

Significant gender differences were found in self-reported physical fitness. Boys reported higher levels of physical fitness across all indicators, except flexibility, where a higher percentage of girls reported good or very good levels. Furthermore, boys perceived themselves to have better overall physical fitness, cardiorespiratory fitness, muscular strength, speed/agility; however, a higher percentage of girls reported a good or very good flexibility compared to boys (Figure 5).

Main results:

Most of participants (62%) described their general physical fitness as high or very high. In general, boys and children indicated greater levels of physical fitness compared to girls and adolescents, respectively.

III.3. Other health-related behaviours (screen time, sleep time, and diet)

Participants reported their time spent on TV/videos, playing video games, and using social networks (via mobile or computer) separately for weekdays and weekends. Total screen time was calculated as the sum of these three sedentary activities. In the post-test, the entire sample reported an average (SD) screen time of 4.28 (3.85) hours per day on weekdays and 5.78 (4.35) hours per day on weekends. On weekdays, participants spent an average of 1.33 hours per day watching TV, 1.01 hours per day playing video games, and 1.94 hours per day using social networks. During weekends, the average time spent on these activities was 1.88 hours per day, 1.58 hours per day, and 2.32 hours per day, respectively (Table 4).

Table 4. Screen time in all sample and segmented by gender and age group.

	All	Boys	Girls	p1	Children (<13 years)	Adolescents (≥13 years)	p2
Total screen time* on weekdays (h/day)	4.28±3.85	4.67±4.21	3.86±3.35	**<0.001**	3.79±3.74	4.78±3.90	**<0.001**
Watching TV (h/day)	1.33±1.46	1.42±1.55	1.24±1.34	**0.002**	1.32±1.4	1.34±1.52	0.748
Playing videogames (h/day)	1.01±1.57	1.41±1.77	0.60±1.19	**<0.001**	0.98±1.50	1.05±1.64	0.224
Using social networks (h/day)	1.94±1.91	1.84±1.86	2.02±1.94	**0.015**	1.49±1.76	2.39±1.94	**<0.001**
Total screen time* on weekend days (h/day)	5.78±4.35	6.30±4.67	5.18±3.86	**<0.001**	5.27±4.29	6.29±4.36	**<0.001**
Watching TV (h/day)	1.88±1.70	1.93±1.75	1.82±1.63	0.106	1.89±1.63	1.87±1.77	0.819
Playing videogames (h/day)	1.58±1.92	2.20±2.03	0.91±1.51	**<0.001**	1.52±1.81	1.63±2.03	0.124
Using social networks (h/day)	2.32±2.08	2.17±2.02	2.45±2.11	**<0.001**	1.86±1.98	2.78±2.08	**<0.001**

Values are mean and standard deviation. *Total screen time was estimated as the sum of time spending watching TV, playing videogames and using social networks.

p1: p-value for differences between boys and girls estimated by non-paired T-test.

P2: p-value for differences between children (<13 years) and adolescents (≥13 years) estimated by non-paired T-test.

Abbreviations: TV=Television.

Boys accumulated more screen time than girls on both weekdays and weekends (all p <0.001). Boys also spent more time watching TV and playing video games than girls (all p <0.001), whereas girls reported significantly more time on social media than boys on both weekdays and weekends (p <0.001). Additionally, adolescents accumulated more screen time than children on both weekdays and weekends (all p <0.001) due to spending significantly more time on social networks (Table 4).

The WHO advises limiting sedentary behavior. Numerous health organizations recommend that children and adolescents spend no more than two hours per day watching TV. These guidelines often extend to other sedentary activities, suggesting that young people should not exceed a total of two hours of screen time daily. Participants were categorized based on their adherence to these recommendations. Those who reported watching TV for two hours or less per day were considered to meet the TV viewing guidelines. Similarly, participants who accumulated two hours or less of total screen time were considered to meet the overall screen time recommendations.

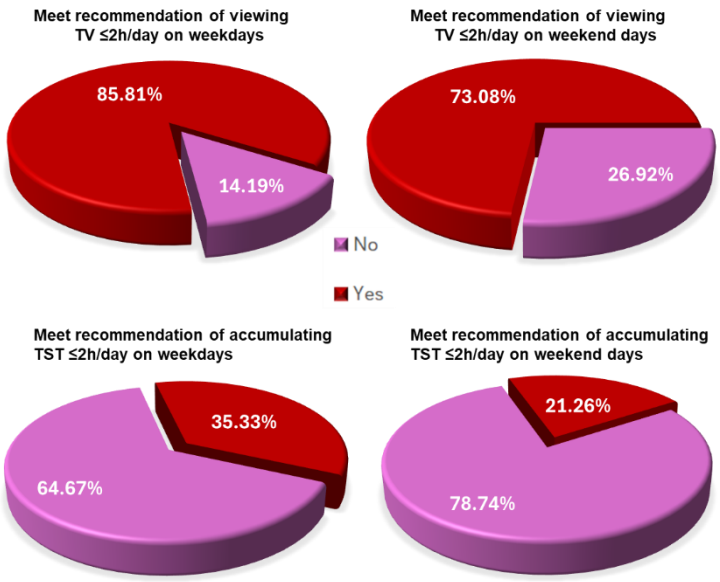


Figure 6. **Compliance with sedentary time recommendations (TV time and TST) in the total sample.** Abbreviations: TST=Total Screen Time (calculated as the sum of time watching TV, playing videogames and using social networks); TV=Television.

Approximately 85.81% of the participants met the maximum TV time recommendations on weekdays, and 73.08% did so on weekends. However, 64.67% accumulated two or more hours of screen time on weekdays, and 78.74% did so on weekends. Consequently, only 35.33% of the participants met the maximum total screen time recommendations on weekdays, and 22.36% met these recommendations on weekends. (Figure 6).

When analyzed by gender, no significant differences were found in the proportion of boys and girls meeting the TV recommendations (≤2 hours/day) on weekdays (p=0.147) or weekends (p=0.099). However, more girls than boys met the total screen time recommendations (≤2 hours/day) on both weekdays (p<0.001) and weekends (p<0.001).

Similarly, no significant differences were observed in the percentage of children and adolescents meeting the TV time recommendations on weekdays (p=0.075) or weekends (p=0.550). However, a significantly higher percentage of children met the total screen time (TST) recommendations compared to adolescents on both weekdays (p<0.001) and weekends (p<0.001). For instance, only 16.16% of adolescents met the ≤2 hours/day TST recommendation on weekends, while 26.40% of children achieved this goal (Table 5).

Table 5. Compliance with sedentary time recommendations (TV time and TST) by gender and age group.

	Boys	Girls	p1	Children (<13 years)	Adolescents (≥13 years)	p2
Meet TV recommendation (≤2h/day) on weekdays (n, %)	1103 (85.04)	1126 (87.02)	0.147	1134 (87.03)	1110 (84.60)	0.075
Meeting TST* recommendation (≤2h/day) on weekdays (n, %)	411 (31.69)	508 (39.26)	**<0.001**	580 (44.51)	344 (26.22)	**<0.001**
Meet TV recommendation (≤2h/day) on weekend days (n, %)	931 (71.78)	966 (74.65)	0.099	959 (73.60)	952 (72.56)	0.550
Meeting TST* recommendation (≤2h/day) on weekend days (n, %)	232 (17.89)	322 (24.88)	**<0.001**	344 (26.40)	212 (16.16)	**<0.001**

Values are frequency (n) and percentage of participants in all sample and by gender and age groups meeting recommendations.
*Total screen time was estimated as the sum of time spending watching TV, playing videogames and using social networks.
p1: p-value for differences between boys and girls estimated by Pearson $Chi^{2.}$
P2: p-value for differences between children (<13 years) and adolescents (≥13 years) estimated by Pearson Chi^2.
Abbreviations: TST=Screen Time; TV=Television SD=standard deviation.

The Sleep Foundation (https://www.sleepfoundation.org/) advises that children aged 6 to 12 years should achieve 9-12 hours of sleep per day, while adolescents aged 13 to 18 years should aim for 8-10 hours per day. In our study population, the mean (SD) sleep duration was 8.01 (1.38) hours on weekdays and 9.34 (1.70) hours on weekends. Notably, girls obtained significantly less sleep than boys on weekdays (p<0.001). Furthermore, adolescents reported significantly shorter sleep durations compared to children, both on weekdays and weekends (all p<0.001) (Table 6).

Table 6. Usual sleep time (h/day) on weekdays and weekend days in all sample and by gender and age group.

	All	Boys	Girls	P1	Children (<13 years)	Adolescents (≥13 years)	P2
Usual sleep time on weekdays (h/day)	8.01±1.38	8.04±1.47	7.77±1.56	**<0.001**	8.33±1.38	7.46±1.54	**<0.001**
Usual sleep time on weekend days (h/day)	9.34±1.70	9.19±1.83	9.31±1.83	0.119	9.37±1.78	9.14±1.89	**0.001**

Values are mean and standard deviation.
p1: p-value for differences between boys and girls estimated by non-paired T-test.
P2: p-value for differences between children (<13 years) and adolescents (≥13 years) estimated by non-paired T-test.

Consequently, slightly less than half (44.88%) of the participants met the sleep duration recommendations on weekdays (Figure 7), whereas 69.39% met these recommendations on weekends (Figure 8). A significantly higher proportion of boys than girls met the recommended sleep duration on weekdays (50.99% vs. 38.84%; p<0.001; Figure 7). Additionally, a greater percentage of adolescents (48.78%) compared to children (41.01%) achieved the sleep duration recommendations on weekdays (Figure 7). No significant differences were observed in the percentage meeting the sleep duration recommendations on weekends between boys and girls or between children and adolescents (Figure 7 and Figure 8).

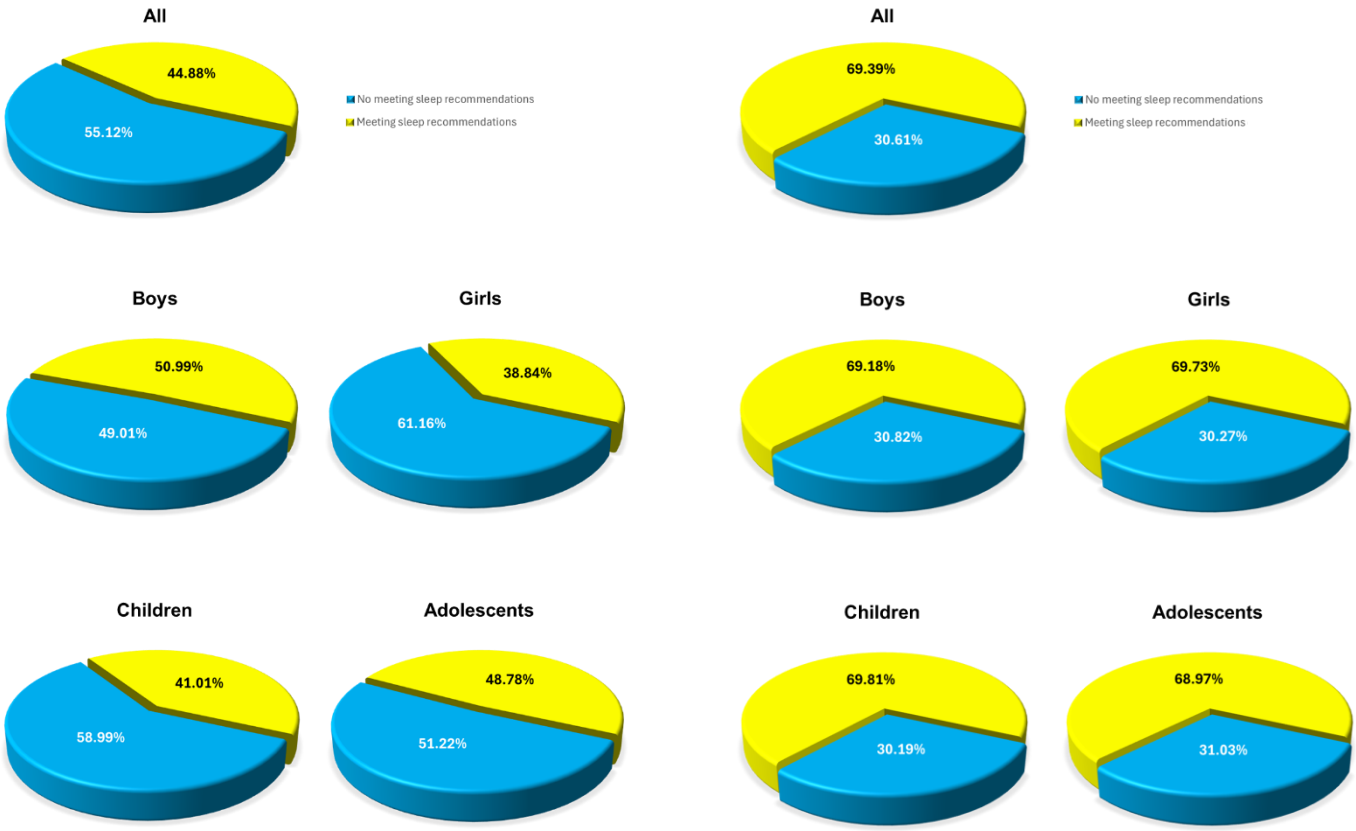


Figure 7. Compliance with sleep time recommendations on weekdays in the total sample and segmented by gender and age group. Significant differences were found in the percentage of compliance with sleep time recommendations on weekdays based on gender (Pearson Chi^2=37.86; p<0.001) and age group (Pearson Chi^2=15.63; p<0.001).

Figure 8. Compliance with sleep time recommendations on weekend days in the total sample and segmented by gender and age group. No differences were found in the percentage of compliance with sleep time recommendations on weekend days between genders (Pearson Chi^2=0.039 p=0.764) nor between age groups (Pearson Chi^2=0.21; p=0.645).

Regarding dietary habits, the highest percentages of affirmative responses were observed for daily consumption of a piece of fruit, fresh vegetables, use of olive oil for cooking at home, daily breakfast intake, and consumption of cereal products for breakfast (all exceeding 70% of the total sample). Conversely, 28.72% reported visiting fast-food restaurants one or more times per week, 23.24% did not have breakfast daily, 69.06% consumed commercially baked goods or pastries (e.g., cookies, cakes, croissants, donuts) for breakfast, and 44.55% consumed sweets and candies multiple times per day. Significant differences were noted between boys and girls and across different age groups for individual items (Table 7).

Table 7. KIDMED questionnaire (responses by question) for total sample and segmented by gender and age groups

	All	Boys	Girls	p1	Children (<13 years)	Adolescents (≥13 years)	p2
Do you eat a piece of fruit or drink fresh fruit juice every day?	2065 (78.97)	1004 (77.41)	1048 (80.99)	**0.025**	1071 (82.19)	994 (75.76)	**<0.001**
Do you eat a second piece of fruit every day?	1518 (58.05)	765 (58.98)	743 (57.42)	0.420	816 (62.62)	702 (53.51)	**<0.001**
Do you eat fresh vegetables (example: salads) or cooked vegetables (example: soup) regularly, one a day?	2021 (77.28)	979 (75.48)	1029 (79.52)	**0.014**	1005 (77.13)	1016 (77.44)	0.850
Do you eat fresh or cooked vegetables more than once a day?	1309 (50.06)	642 (49.5)	660 (51)	0.443	637 (48.89)	672 (51.22)	0.233
Do you eat fish/seafood (e.g., hake, sardines, octopus, shrimp) at least 2 to 3 times a week?	1273 (48.68)	683 (52.66)	577 (44.59)	**<0.001**	655 (50.27)	618 (47.1)	0.105
Do you go, once or more a week, to fast-food restaurants like hamburger places?	751 (28.72)	423 (32.61)	322 (24.88)	**<0.001**	334 (25.63)	417 (31.78)	**<0.001**
Do you like and eat pulses (e.g., beans, peas, chickpeas, broad beans, lentils) more than once a week?	1712 (65.47)	847 (65.3)	850 (65.69)	0.837	864 (66.31)	848 (64.63)	0.368
Do you eat pasta or rice almost every day (5 days or more a week)?	1323 (50.59)	677 (52.2)	631 (48.76)	0.080	602 (46.2)	721 (54.95)	**<0.001**
Do you eat nuts (e.g., walnuts, almonds, hazelnuts) regularly (at least 2-3 times a week)?	1212 (46.35)	634 (48.88)	568 (43.89)	**0.011**	592 (45.43)	620 (47.26)	0.350
Do you use olive oil at home?	1950 (74.57)	947 (73.01)	988 (76.35)	0.051	977 (74.98)	973 (74.16)	0.631
Do you take breakfast every day?	1989 (76.06)	1049 (80.88)	927 (71.64)	**<0.001**	1072 (82.27)	917 (69.89)	**<0.001**
Do you eat cereal or cereal products (e.g., oats, bread) for breakfast?	1911 (73.08)	945 (72.86)	952 (73.57)	0.683	979 (75.13)	932 (71.04)	**0.018**
Do you eat dairy products (yogurt, milk, cheese) for breakfast?	1748 (66.85)	858 (66.15)	882 (68.16)	0.277	893 (68.53)	855 (65.17)	0.068
Do you eat commercially baked goods or pastries (e.g., cookies, cakes, croissants, donuts) for breakfast?	1806 (69.06)	919 (70.86)	869 (67.16)	**0.042**	874 (67.08)	932 (71.04)	**0.028**
Do you eat 2 yogurts and/or some cheese (about 40 g) daily?	1418 (54.23)	741 (57.13)	664 (51.31)	**0.003**	714 (54.8)	704 (53.66)	0.559
Do you eat sweets and candies several times a day (e.g., chocolates, gums, sweets)?	1165 (44.55)	567 (43.72)	590 (45.6)	0.336	584 (44.82)	581 (44.28)	0.783

Values are frequency (n) and percentage of participants who responded affirmatively (yes) in each question of KIDMED questionnaire. All questions in the KIDMED questionnaire are binomial categorical (yes/no).

p1: p-value for differences between boys and girls estimated by Pearson Chi$^{2.}$

P2: p-value for differences between children (<13 years) and adolescents (≥13 years) estimated by Pearson Chi^{2}.

The mean total score (SD) on the KIDMED questionnaire, ranging from -4 to 12, was 5.78 (2.59) for the entire sample. There were no significant differences in the mean total KIDMED score between boys (5.83 ± 2.63) and girls (5.75 ± 2.53; p = 0.430). However, children achieved a significantly higher mean score on the Mediterranean diet (5.97 ± 2.52) compared to adolescents (5.59 ± 2.65; p < 0.001) (Figure 9).

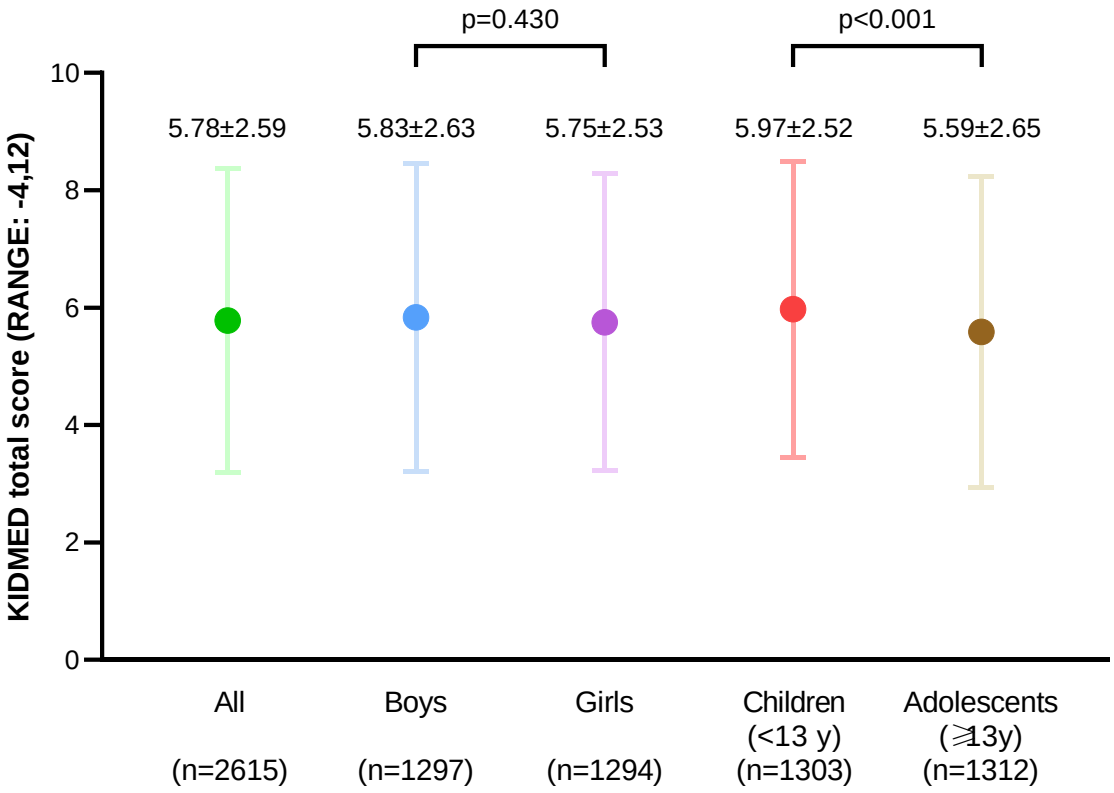


Figure 9. KIDMED total score for all sample and segmented by gender (boys and girls) and age group (children and adolescents). The circular symbols represent the mean, and the lines the standard deviation in each group. p-values for differences (unpaired T-test) by gender and age group are shown. Slight variations are observed in the total number of participants (n) included in the gender and age groups, due to missing or impossible data in grouping variables.

Based on the KIDMED questionnaire score, the quality of adherence to the Mediterranean diet was categorized as low (≥3 points), medium (4-7 points), and high (≤8 points). The distribution among participants showed that 19%, 56%, and 25% had low, medium, and high-quality diets, respectively (Figure 10). There were no significant differences between boys (28%) and girls (26%) in achieving a high-quality diet (p=0.381). However, a slightly higher percentage of children (29%) compared to adolescents (24%) reported adhering to a high-quality Mediterranean diet (p<0.001).

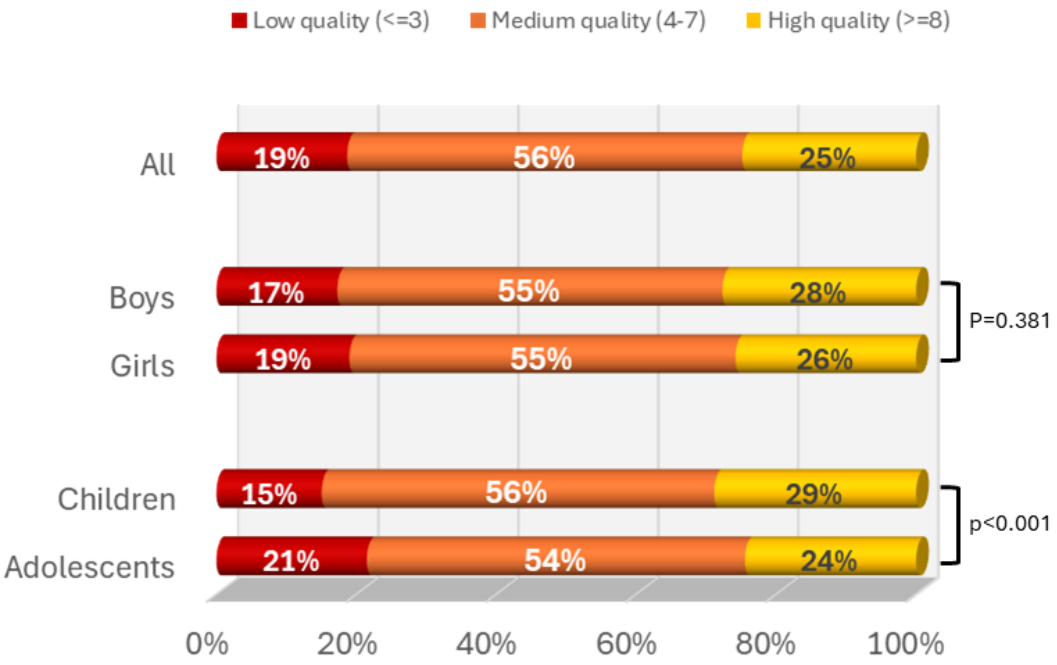


Figure 10. **Percentage of participants with low, medium and high quality of diet (KIDMED) in all sample and by gender and group age.** Differences in percentage distribution between groups were calculated by Pearson Chi squared. test.

Main results:

Only 35.33% and 21.26% of participants adhered to the recommendation of limiting screen time to ≤2 hours per day on weekdays and weekends, respectively. A higher proportion of girls and children met screen time guidelines on weekdays compared to boys and adolescents, respectively.

Less than half of the participants (44.88%) met the recommended sleep duration. Boys were significantly more likely to meet sleep recommendations on weekdays (49.01%) than girls (38.84%; $p<0.001$). Similarly, a significantly higher percentage of children (41.01%) met sleep recommendations on weekdays compared to adolescents (48.78%).

The mean total score on the KIDMED questionnaire for diet quality (ranging from -4 to 12) was 5.678 for the entire sample, with 24.9% classified as having a high-quality diet. There were no significant differences in KIDMED scores between boys and girls (5.83±2.63 vs. 5.75±2.53). However, children obtained a higher mean score than adolescents (5.97±2.52 vs. 5.59±2.65) on the KIDMED questionnaire. Consequently, a higher percentage of children (29%) than adolescents (24%) were classified with high Mediterranean diet quality ($p<0.001$). Moreover, a larger proportion of children (56%) than adolescents (54%) achieved medium Mediterranean diet quality ($p<0.001$).

III.4. Perceptions, interests and opinions about physical activity and other related factors.

Participants were surveyed on their perceptions, interests, and opinions regarding physical activity and related factors, such as the school sports environment (Table 8). Most students reported complete agreement with statements that they enjoy participating in sports at school (62.1%), have access to a large gymnasium (60.3%), and that their school provides the necessary materials and equipment for sports (64.3%). Additionally, 60.3% expressed a desire to increase Physical Education hours during school. A high percentage of participants also fully agreed that engaging in sports improves their physical (66.5%) and mental (59.5%) well-being, helps them make new friends (61.5%), and teaches them the basic values of fair play (61.0%). The lowest levels of complete agreement were observed for statements related to the school organizing numerous sports activities (45.8%), teachers valuing school sports highly (52.8%), and sports contributing to personality development (55.4%).

Gender differences in perceptions and opinions were evident (Table 8). While 68.2% of boys fully agreed that playing sports enhances their physical well-being and 58.0% believed it aids in personality development, only 64.6% and 52.9% of girls, respectively, shared these views (all $p<0.003$). The most significant gender difference pertained to enjoying sports at school, with 67.2% of boys versus 57.5% of girls fully agreeing ($p<0.001$), and to increasing Physical Education hours, with 66.2% of boys versus 54.4% of girls fully supporting this ($p<0.001$).

Larger differences were observed when comparing the attitudes and perceptions of children versus adolescents (Table 8). A significantly higher percentage of children than adolescents fully agreed with all statements. Notably, 69.7% of children reported enjoying sports at school compared to 54.6% of adolescents ($p<0.001$). Furthermore, more children than adolescents fully agreed on the desire to increase Physical Education hours (67.0% vs. 53.7%; $p<0.001$), the role of sports in teaching fair play (68.2% vs. 53.8%; $p<0.001$), and the availability of sports materials and equipment at their school (70.5% vs. 58.2%; $p<0.001$).

Main results:

A significant proportion of participants displayed positive attitudes towards physical activity and acknowledged the presence of school facilities that facilitate sports engagement. Generally, boys and younger children were more likely to express favorable opinions compared to girls and adolescents.

Table 8. Percentage of participants responded "completely agree", "no attitude" and "completely disagree" in the questions about interest and opinions about physical activity and related factors, for all sample and by gender and age group.

	All (agree/no attitude/ disagree, %)	**Boys** (agree/no attitude/ disagree, %)	**Girls** (agree/no attitude/ disagree, %)	**P1**	**Children** (<13 years) (agree/no attitude/ disagree, %)	**Adolescents** (≥13 years) (agree/no attitude/ disagree, %)	**P2**
Do you like play sports in school?	62.10/23.44/14.46	67.15/18.12/14.73	57.5/28.36/14.14	**<0.001**	69.69/16.12/14.2	54.57/30.72/14.71	**<0.001**
Does your school organize lots of sport activities?	45.81/33.50/20.69	43.64/34.23/22.13	48.22/32.46/19.32	**0.049**	52.57/27.94/19.49	39.1/39.02/21.88	**<0.001**
Do you have a big gym where to play sports in school?	60.34/18.89/20.76	58.60/19.35/22.05	62.36/18.32/19.32	0.121	64.62/14.89/20.49	56.1/22.87/21.04	**<0.001**
Does your school have lots of sport materials/ equipment (balls, cones, racquets, nets...)	64.32/17.32/18.36	64.07/16.19/19.74	64.84/18.08/17.08	0.142	70.45/12.36/17.19	58.23/22.26/19.51	**<0.001**
In your opinion, does your school teachers give high values to school sports?	52.85/28.99/18.16	50.96/29.14/19.89	55.02/28.44/16.54	**0.047**	56.56/26.4/17.04	49.16/31.55/19.28	**<0.001**
Playing sports in and outside school time helps you to fell in better physical conditions?	66.46/16.33/17.21	68.23/13.11/18.66	64.61/19.63/15.77	**<0.001**	72.06/12.74/15.2	60.9/19.89/19.21	**<0.001**
Playing sports in and outside school time helps you to feel in better mental conditions?	59.50/23.02/17.48	61.45/20.97/17.58	57.73/24.88/17.39	0.054	64.16/19.57/16.27	54.88/26.45/18.67	**<0.001**
Playing sports in and outside school time helps you in the development of your personality?	55.37/26.77/17.86	57.98/23.82/18.2	52.86/29.75/17.39	**0.003**	60.25/22.72/17.04	50.53/30.79/18.67	**<0.001**
Playing sports in and outside school time helps you to socialize with people and make new friends?	61.49/22.03/16.48	62.45/20.97/16.58	60.74/23.18/16.07	0.398	66.69/18.34/14.97	56.33/25.69/17.99	**<0.001**
Playing sports in and outside school time helps you to learn the basic values of fair play (such as respect rules, do not cheat, helps others?	60.99/22.79/16.21	60.68/21.36/17.96	61.9/23.65/14.45	**0.037**	68.23/16.42/15.35	53.81/29.12/17.07	**<0.001**
Would you like to increase the hours of Physical Education during the school time?	60.31/19.39/20.31	66.23/14.88/18.89	54.4/23.88/21.72	**<0.001**	67.00/15.04/17.96	53.66/23.7/22.64	**<0.001**

P1: p-value for differences between boys and girls estimated by Pearson $Chi^{2.}$

P2: p-value for differences between children (<13 years) and adolescents (≥13 years) estimated by Pearson Chi^{2}.

IV. COMPARISION COMPARISON OF PRE- AND POST-INTERVENTION PA QUESTIONNAIRE

In this section, a comparison of the responses obtained from the PA Questionnaire for students during the pre-intervention and post-intervention administrations is provided.

IV.1. Physical activity level

The total score on the PAQ-A/C questionnaire (ranging from 1 to 5) for the entire sample that completed the pre-intervention questionnaire was 2.72±0.71, while the students who completed the questionnaire after the implementation of the MsC Program scored 2.88±0.75. Therefore, a slight improvement in physical activity levels was detected among the participants. This improvement was observed in both boys (pre: 2.90±0.71; post: 3.05±0.76) and girls (pre: 2.54±0.65; post: 2.72±0.71), as well as in children (pre: 2.89±0.70; post: 3.05±0.72) and adolescents (pre: 2.54±0.67; post: 2.71±0.75) (Figure 11).

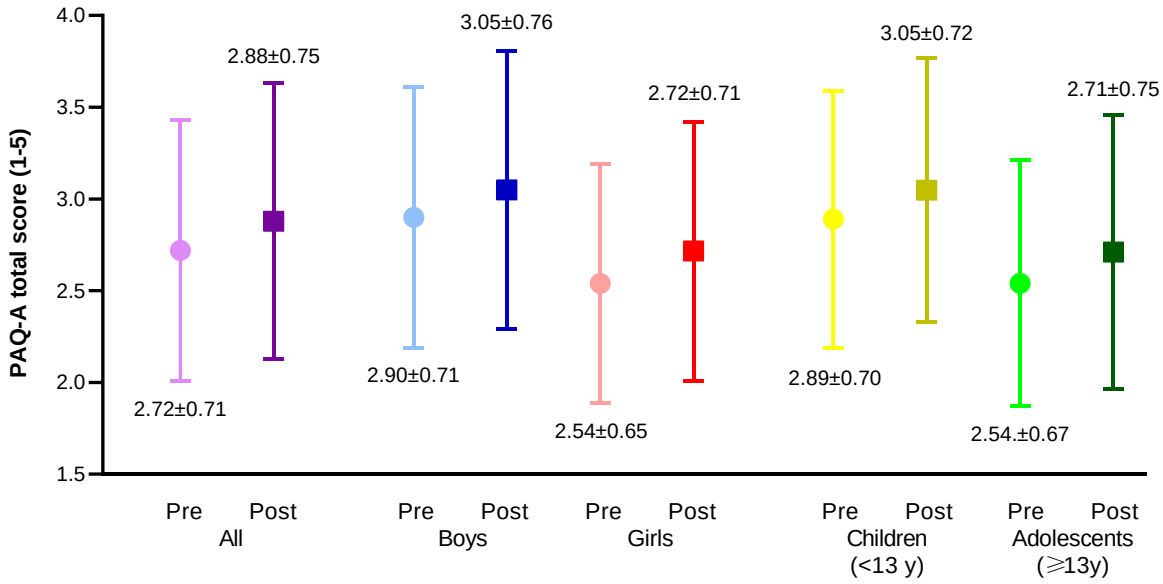


Figure 11. PAQ-C/A total score in pre- and post-intervention for all sample and segmented by gender (boys and girls) and age group (children and adolescents). The circular symbols represent the mean, and the lines the standard deviation in each group.

IV.2. Self-reported physical fitness

Regarding self-reported physical fitness, evaluated before and after the implementation of the MsC program using the IFIS questionnaire, it was observed that 53% of students reported having good or very good general physical fitness before the intervention; the percentage increased to 62% after the intervention. This indicates that students have a better perception of their general physical fitness after completing the program, suggesting that the MsC program may help improve young people's perception of their physical fitness. Similar or even greater increases were observed in self-

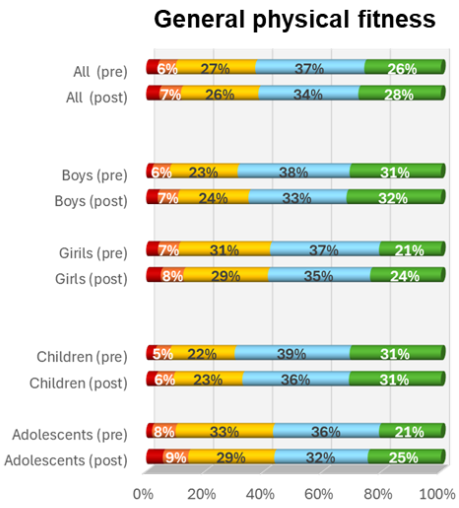
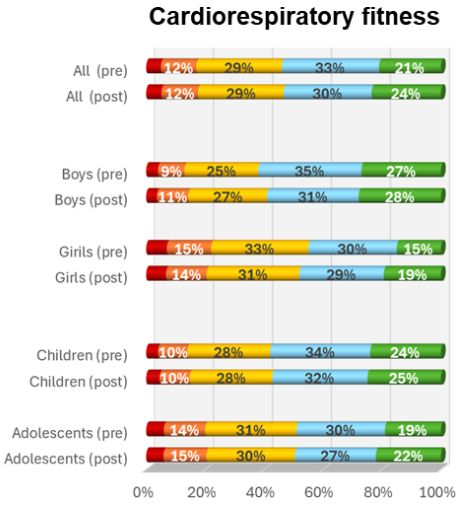
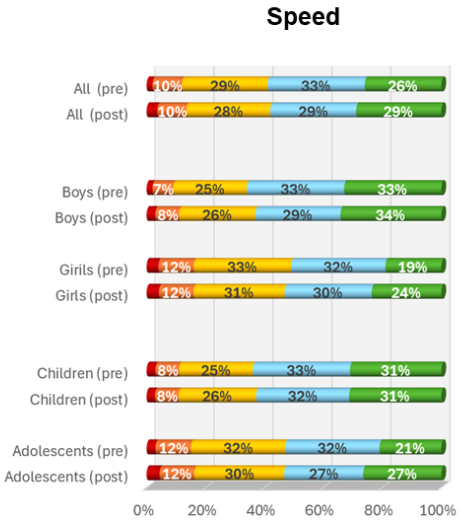
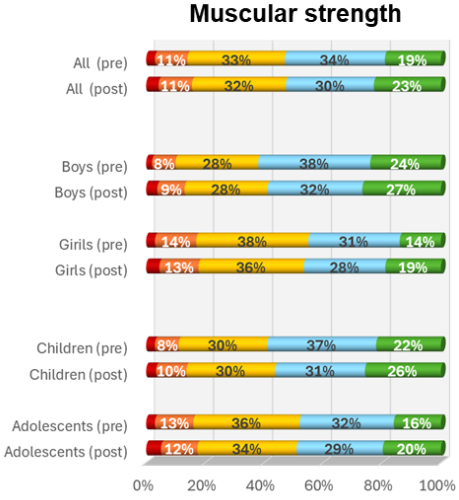
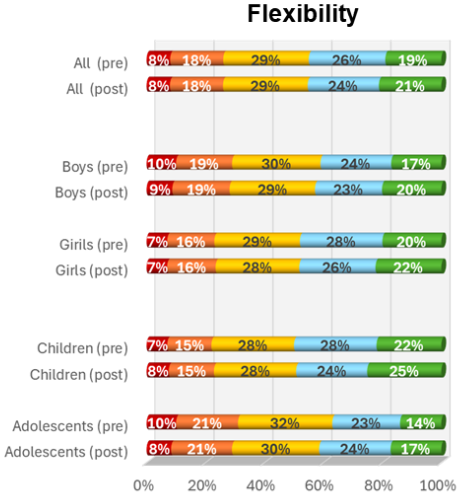


Figure 12. Self-reported physical fitness level in pre- and post-intervention for all sample and segmented by gender (boys and girls) and age group (children and adolescents).









perception of cardiorespiratory fitness, muscular strength, speed, and flexibility. In all cases, the improvement in perception of different components of physical fitness following the MsC program was evident in both boys and girls, as well as in children and adolescents (Figure 12).

IV.3. Other health-related behaviours (screen time, sleep time, and diet)

Regarding sedentary time, participants reported a slight increase in time spent watching television (1.33±1.46), playing video games (1.01±1.57), and using social networks (1.94±1.91) on weekdays after the intervention compared to pre-intervention responses (1.36±1.37, 0.84±1.36, and 1.82±1.83, respectively; Table 9). However, screen time during weekends decreased after the intervention (6.09±4.21) compared to before the intervention (5.78±4.35), with a notable reduction in time spent watching television on these days (2.14±1.75 pre-intervention vs. 1.88±1.70 post-intervention). This pattern was observed in both boys and girls, as well as in children and adolescents. In fact, the reduction in screen time among adolescents during weekends was particularly notable (approximately one hour; from 7.24±4.37 pre-intervention to 6.29±4.36 post-intervention) (Table 9).

Thus, the percentage of youths meeting the recommendations of not spending more than two hours per day watching TV on weekends increased from 62.46% to 73.78% in the total sample (Table 10). The increase in compliance was more pronounced among girls, rising from 65.72% pre-intervention to 74.65% post-intervention (boys: from 62.46% to 71.78%). When segmented by age, this percentage increased from 65.36% to 73.60% in children and, notably, from 62.36% to 72.56% in adolescents. This suggests that the MsC program may encourage a reduction in sedentary time on weekends, the days when children and adolescents have more free time. The program may have promoted a shift towards engaging in more physical activities during weekends, thereby reducing screen time.

No notable differences were observed in the percentage of students meeting sleep recommendations before and after the intervention (Figure 13 and Figure 14). However, slight increases were noted in the KIDMED questionnaire score, which assesses Mediterranean diet quality. Specifically, the total sample score increased from 5.65±2.45 to 5.78±2.59 before and after the implementation of the MsC program (Figure 15). The most notable increase was observed among adolescents, progressing from a score of 5.37±2.43 to 5.97±2.52; however, there was also an increase among children (from 2.89±2.43 to 5.97±2.52). Both boys (pre: 5.70±2.50; post: 5.83±2.63) and girls (pre: 5.60±2.38; post: 5.75±2.53) showed a slight improvement in diet quality after participating in the MsC program.

Furthermore, the percentage of boys classified with a high-quality diet increased by two percentage points; girls showed an even greater increase of 3.4% (from 22.4% to 25.8%) (Figure 16). When analyzing by age, a higher percentage of adolescents (4.1%; from 20.4% to 24.5%) than children (1.5%; from 27.4% to 28.9%) shifted to a high-quality diet after the intervention. This finding is noteworthy as it aligns with previous studies indicating that adolescents typically exhibit poorer dietary profiles than children. The challenges proposed through the MsC program not only include initiatives aimed at providing opportunities for physical activity but also at improving other lifestyle patterns, such as nutrition (e.g., promoting healthy lunches). The results comparing diet quality before and after participating in the MsC program suggest that the program may effectively encourage students to adopt healthier dietary patterns.

Table 9. Screen time in pre- and post-intervention for all sample and segmented by gender (boys and girls) and age group (children and adolescents).

	All (pre)	All (post)	Boys (pre)	Boys (post)	Girls (pre)	Girls (post)	Children (pre)	Children (post)	Adolescents (pre)	Adolescents (post)
Total screen time* on weekdays (h/day)	4.02±3.43	4.28±3.85	4.30±3.61	4.67±4.21	3.67±3.08	3.86±3.35	3.32±3.06	3.79±3.74	4.81±3.64	4.78±3.90
Watching TV (h/day)	1.36±1.37	1.33±1.46	1.42±1.39	1.42±1.55	1.28±1.31	1.24±1.34	1.29±1.23	1.32±1.40	1.44±1.51	1.34±1.52
Playing videogames (h/day)	0.84±1.36	1.01±1.57	1.18±1.51	1.41±1.77	0.46±1.01	0.60±1.19	0.79±1.23	0.98±1.50	0.90±1.48	1.05±1.64
Using social networks (h/day)	1.82±1.83	1.94±1.91	1.70±1.78	1.84±1.86	1.92±1.85	2.02±1.94	1.24±1.49	1.49±1.76	2.48±1.94	2.39±1.94
Total screen time* on weekend days (h/day)	6.09±4.21	5.78±4.35	6.70±4.45	6.30±4.67	5.39±3.76	5.18±3.86	5.07±3.79	5.27±4.29	7.24±4.37	6.29±4.36
Watching TV (h/day)	2.14±1.75	1.88±1.70	2.22±1.78	1.93±1.75	2.06±1.70	1.82±1.63	2.06±1.59	1.89±1.63	2.24±1.91	1.87±1.77
Playing videogames (h/day)	1.59±1.88	1.58±1.92	2.31±1.97	2.20±2.03	0.80±1.37	0.91±1.51	1.39±1.64	1.52±1.81	1.80±2.09	1.63±2.03
Using social networks (h/day)	2.36±2.07	2.32±2.08	2.17±2.00	2.17±2.02	2.54±2.11	2.45±2.11	1.62±1.71	1.86±1.98	3.20±2.12	2.78±2.08

Values are mean and standard deviation. *Total screen time was estimated as the sum of time spending watching TV, playing videogames and using social networks.
Abbreviations: TV=Television.

Table 10. Compliance with sedentary time recommendations (TV time and TST) in pre- and post-intervention for all sample and segmented by gender (boys and girls) and age group (children and adolescents).

	All (pre)	All (post)	Boys (pre)	Boys (post)	Girls (pre)	Girls (post)	Children (pre)	Children (post)	Adolescents (pre)	Adolescents (post)
Meet TV recommendation (≤2h/day) on weekdays (n, %)	5788 (85.14)	2244 (85.81)	2896 (84.48)	1103 (85.04)	2848 (86.09)	1126 (87.02)	3160 (88.07)	1134 (87.03)	2619 (81.87)	1110 (84.60)
Meeting TST* recommendation (≤2h/day) on weekdays (n, %)	2522 (37.1)	924 (35.33)	1151 (33.58)	411 (31.69)	1360 (41.11)	508 (39.26)	1683 (46.91)	580 (44.51)	833 (26.04)	344 (26.22)
Meet TV recommendation (≤2h/day) on weekend days (n, %)	4246 (62.46)	1929 (73.78)	2141 (62.46)	931 (71.78)	2174 (65.72)	966 (74.65)	2345 (65.36)	959 (73.60)	1995 (62.36)	952 (72.56)
Meeting TST* recommendation (≤2h/day) on weekend days (n, %)	1180 (17.36)	556 (21.26)	489 (14.26)	232 (17.89)	685 (20.71)	322 (24.88)	853 (23.77)	344 (26.40)	322 (10.07)	212 (16.16)

Values are frequency (n) and percentage of participants in all sample and by gender and age groups meeting recommendations. *Total screen time was estimated as the sum of time spending watching TV, playing videogames and using social networks. Abbreviations: TST=Screen Time; TV=Television SD=standard deviation.

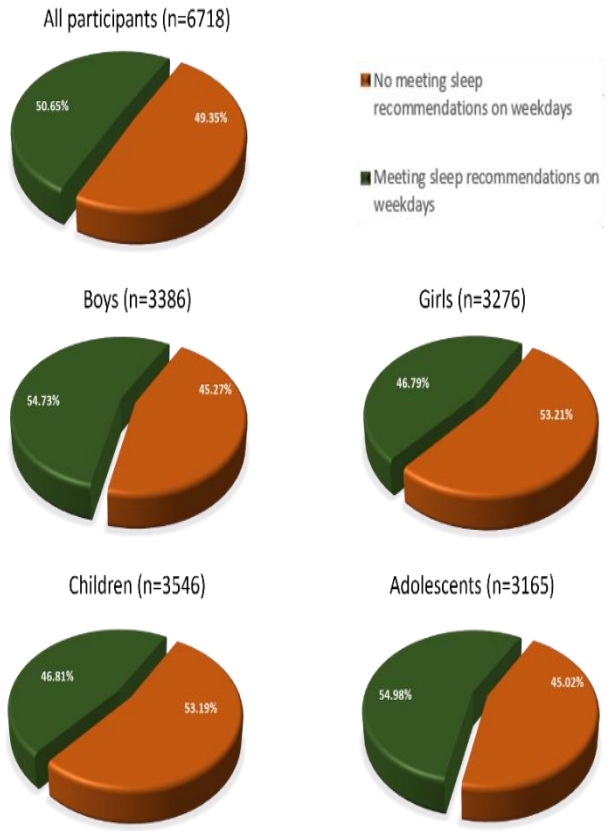


Figure 13a. Compliance with sleep time recommendations on weekdays in the total sample and segmented by gender and age group, in the pre-intervention assessment.

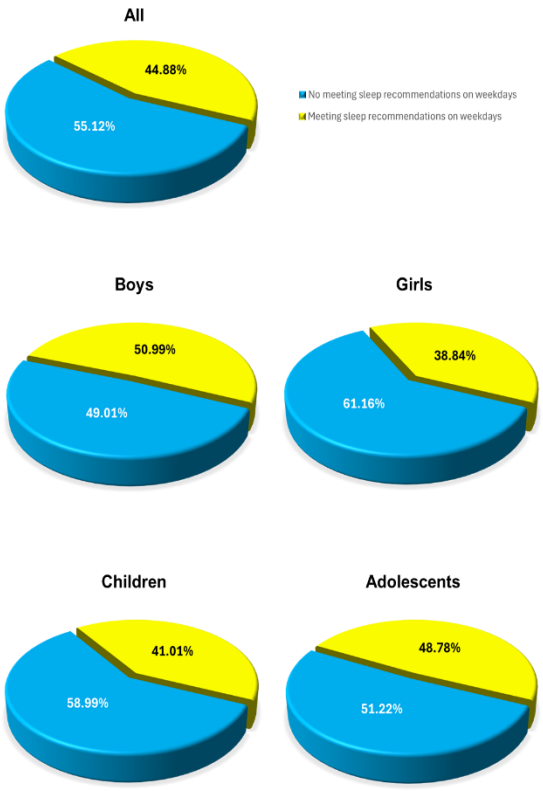


Figure 13b. Compliance with sleep time recommendations on weekdays in the total sample and segmented by gender and age group. in the post-intervention assessment.

IV.4. Perceptions, interests and opinions about physical activity and other related factors

Contrary to expectations, the student perceptions questionnaire yielded less favorable results in the post-test compared to the pre-test (Table 11). Several collaborators and coordinators from participating centers reported in the center questionnaire that students are requesting a greater number of monthly challenges. Therefore, it is possible that participation in the program influences students to become more demanding of their schools regarding the activities and materials they should provide.

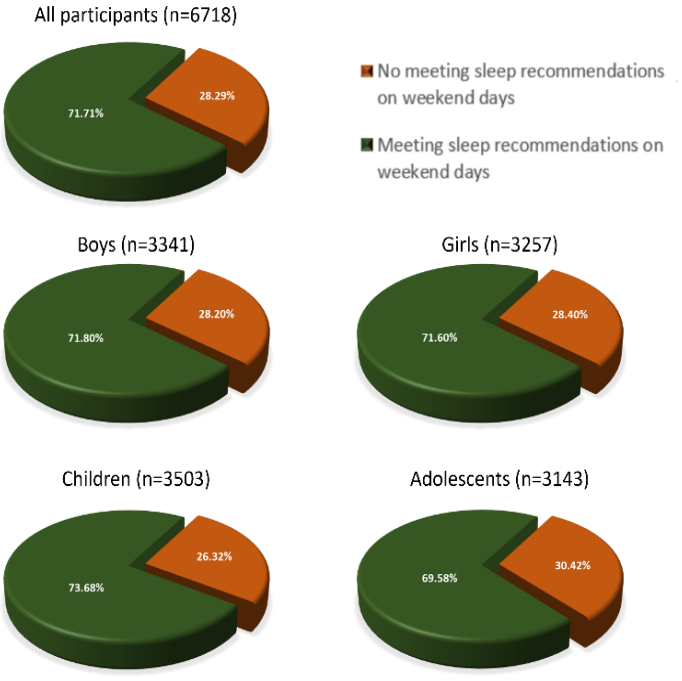


Figure 14a. Compliance with sleep time recommendations on weekend days in the total sample and segmented by gender and age group. in the pre-intervention assessment.

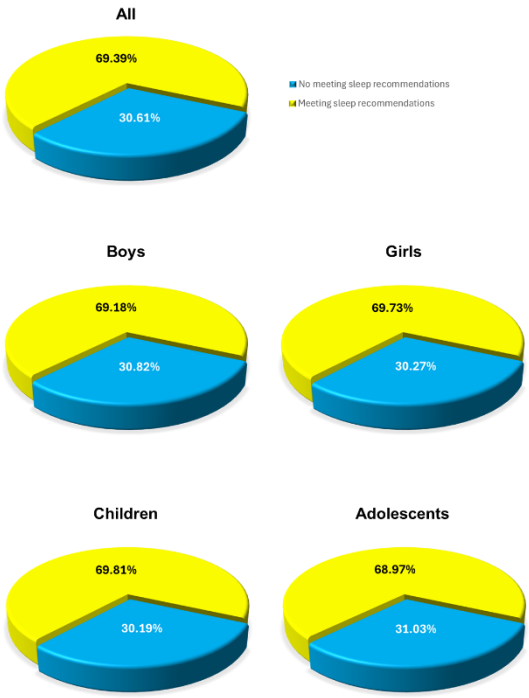


Figure 14b. Compliance with sleep time recommendations on weekend days in the total sample and segmented by gender and age group. in the post-intervention assessment.

V. CONCLUSIONS

As outlined in the scientific proposal submitted to the European "Erasmus+ Sport" call, package 2 includes the development and administration of a questionnaire designed to assess physical activity and other health-related factors, including physical fitness, sedentary behavior, sleep duration, and diet, as well as to evaluate student perceptions. We consider the developed questionnaire to be comprehensive and highly valuable. As scheduled, the same questionnaire was administered twice: initially at the outset of the intervention and subsequently afterward. This deliverable provides a detailed account of the results derived from analyzing the questionnaire data during its second administration. However, due to one of the strengths of the research design is the scheduling of pre- and post-intervention assessments, we have also provided the overall results from comparing responses between both questionnaires. This could allow to determine the extent to which the intervention may have produced noteworthy changes in student behaviors and habits.

The main findings indicate that students have increased their levels of physical activity while reducing screen time (mainly during weekends). Additionally, our results suggest that students enhanced their self-perception of general physical fitness and all specific physical fitness components such as cardiorespiratory capacity, muscular strength, speed, and flexibility. Furthermore, we observed slight improvements in diet quality after the intervention, suggesting that the MsC program may not only improve active behavior profiles but also students' dietary patterns.

It is worth noting that some challenges arose at the beginning of the project, and the initial questionnaire (pre-intervention) was administered, in some centers, after the intervention had already started and some initial challenges had been proposed. This may have caused students to report higher levels of physical activity or other indicators than they had initially, as the intervention's influence may have already begun. Additionally, the timing of the second questionnaire administration (post-intervention) coincided with the end of the academic year, potentially affecting participation in physical activities (e.g., due to final exams). Both situations may have influenced the comparative results, possibly underestimating the actual effectiveness of the MsC program, despite our generally positive findings. These aspects will be addressed in detail to resolve them in the next phase of the project (second pilot study involving a much larger number of countries and schools).

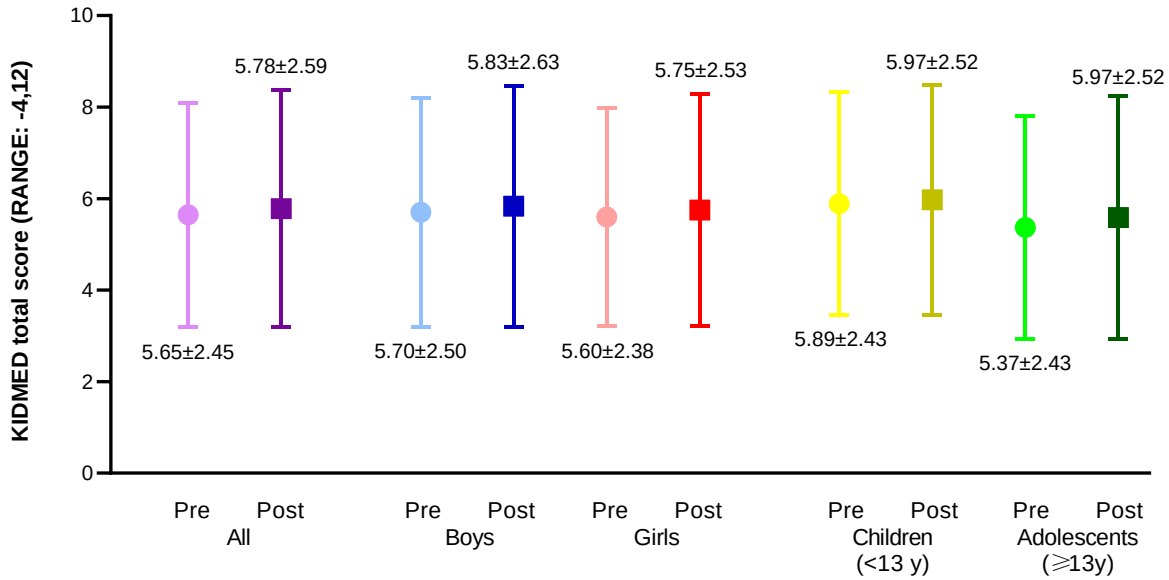


Figure 15. **KIDMED total score in pre- and post-intervention, for all sample and segmented by gender (boys and girls) and age group (children and adolescents).** The circular symbols represent the mean, and the lines the standard deviation in each group.

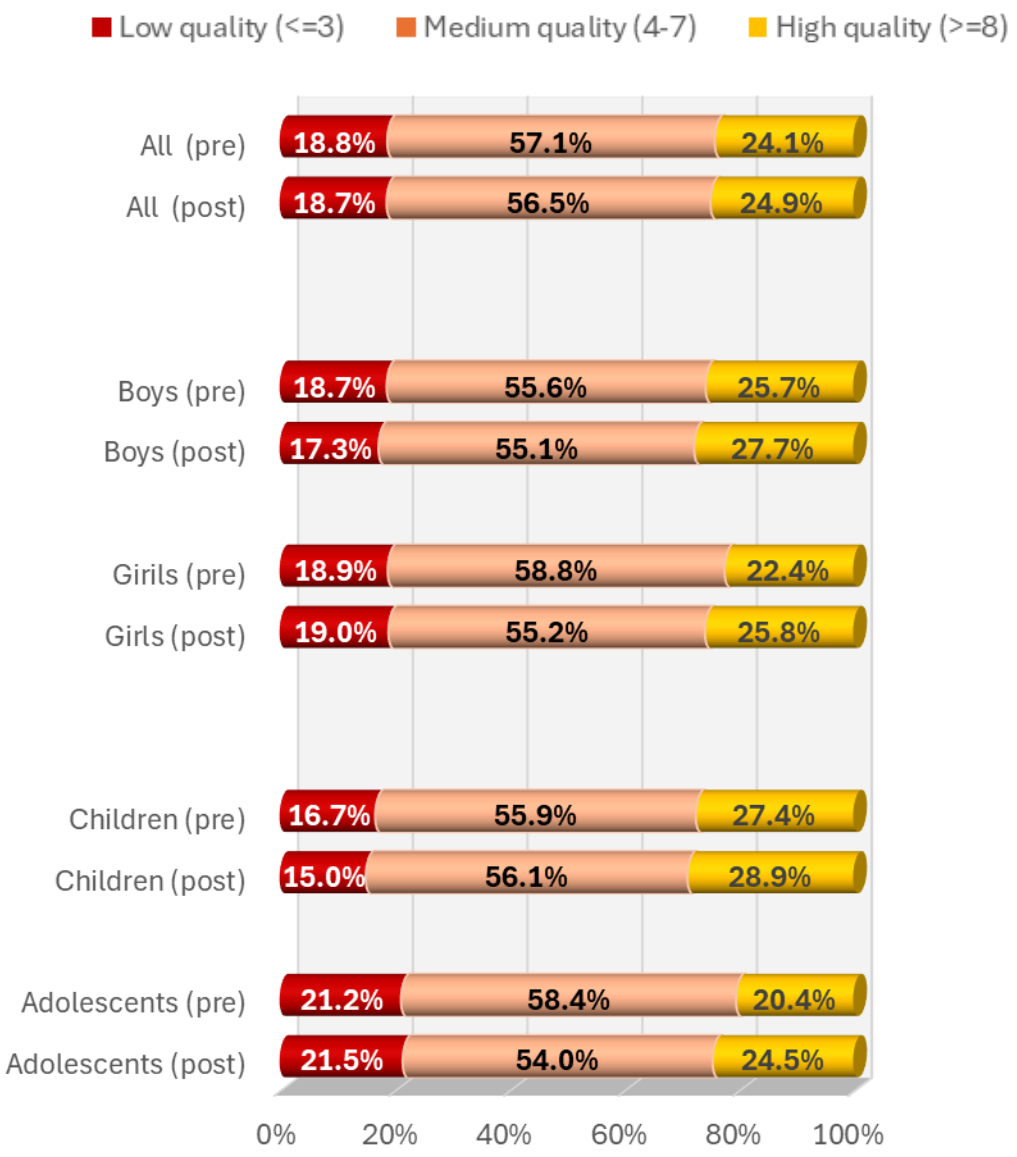


Figure 16. Percentage of participants with low, medium and high quality of diet (KIDMED) in pre- and post-intervention , in all sample and by gender and group age.

Table 11. Percentage of participants responded "completely agree", "no attitude" and "completely disagree" in the questions about interest and opinions about physical activity and related factors in pre- and post-intervention, for all sample and by gender.

	All		Boys		Girls	
	(agree/ no attitude/ disagree, %) (pre)	(agree/ no attitude/ disagree, %) (post)	(agree/ no attitude/ disagree, %) (pre)	(agree /no attitude/ disagree, %) (post)	(agree/ no attitude/ disagree, %) (pre)	(agree/ no attitude/ disagree, %) (post)
Do you like play sports in school?	73.0 / 22.5 / 4.5	62.1 / 23.44 / 14.46	80.6 / 16.2 / 3.1	67.15 / 18.12 / 14.73	65.4 / 29.0 / 5.7	57.5 / 28.36 / 14.14
Does your school organize lots of sport activities?	57.1 / 33.1 / 9.8	45.81 / 33.5 / 20.69	54.7 / 33.9 / 11.5	43.64 / 34.23 / 22.13	59.9 / 32.1 / 8.0	48.22 / 32.46 / 19.32
Do you have a big gym where to play sports in school?	71.8 / 18.1 / 10.2	60.34 / 18.89 / 20.76	70.0 / 18.7 / 11.3	58.60 / 19.35 / 22.05	73.9 / 17.2 / 8.9	62.36 / 18.32 / 19.32
Does your school have lots of sport materials/ equipment (balls, cones, racquets, nets...)	78.1 / 16.6 / 5.3	64.32 / 17.32 / 18.36	77.5 / 17.1 / 5.4	64.07 / 16.19 / 19.74	78.9 / 16.0 / 5.1	64.84 / 18.08 / 17.08
In your opinion, does your school teachers give high values to school sports?	63.8 / 29.5 / 6.8	52.85 / 28.99 / 18.16	63.4 / 28.9 / 7.8	50.96 / 29.14 / 19.89	64.5 / 29.9 / 5.6	55.02 / 28.44 / 16.54
Playing sports in and outside school time helps you to feel in better physical conditions?	82.4 / 13.7 / 3.9	66.46 / 16.33 / 17.21	85.2 / 11.5 / 3.3	68.23 / 13.11 / 18.66	79.8 / 15.7 / 4.5	64.61 / 19.63 / 15.77
Playing sports in and outside school time helps you to fell in better mental conditions?	73.3 / 20.8 / 5.9	59.5 / 23.02 / 17.48	76.7 / 18.3 / 5.0	61.45 / 20.97 / 17.58	70.1 / 23.2 / 6.8	57.73 / 24.88 / 17.39
Playing sports in and outside school time helps you in the development of your personality?	63.8 / 27.1 / 9.2	55.37 / 26.77 / 17.86	67.9 / 24.6 / 7.6	57.98 / 23.82 / 18.20	59.8 / 29.6 / 10.6	52.86 / 29.75 / 17.39
Playing sports in and outside school time helps you to socialize with people and make new friends?	72.9 / 19.7 / 7.4	61.49 / 22.03 / 16.48	75.3 / 18.2 / 6.5	62.45 / 20.97 / 16.58	70.8 / 20.9 / 8.3	60.74 / 23.18 / 16.07
Playing sports in and outside school time helps you to learn the basic values of fair play (such as respect rules, do not cheat, helps others?	75.3 / 18.9 / 5.8	60.99 / 22.79 / 16.21	77.2 / 17.6 / 5.1	60.68 / 21.36 / 17.96	73.7 / 20.1 / 6.2	61.9 / 23.65 / 14.45
Would you like to increase the hours of Physical Education during the school time?	68.1 / 18.1 / 13.8	60.31 / 19.39 / 20.31	79.2 / 13.5 / 7.2	66.23 / 14.88 / 18.89	56.9 / 22.7 / 20.4	54.4 / 23.88 / 21.72

Table 11 (cont). Percentage of participants responded "completely agree", "no attitude" and "completely disagree" in the questions about interest and opinions about physical activity and related factors in pre- and post-intervention, by age group.

	Children		Adolescents	
	(agree/ no attitude/ disagree, %) (pre)	(agree/ no attitude/ disagree, %) (post)	(agree/ no attitude/ disagree, %) (pre)	(agree/ no attitude/ disagree, %) (post)
Do you like play sports in school?	84.5 / 13.3 / 2.2	69.69 / 16.12 / 14.20	60.0 / 32.9 / 7.1	54.57 / 30.72 / 14.71
Does your school organize lots of sport activities?	61.7 / 29.0 / 9.4	52.57 / 27.94 / 19.49	52.2 / 37.6 / 10.3	39.1 / 39.02 / 21.88
Do you have a big gym where to play sports in school?	76.8 / 13.7 / 9.5	64.62 / 14.89 / 20.49	66.1 / 22.9 / 10.9	56.1 / 22.87 / 21.04
Does your school have lots of sport materials/ equipment (balls, cones, racquets, nets...)	81.7 / 13.3 / 5.0	70.45 / 12.36 / 17.19	74.3 / 20.3 / 5.5	58.23 / 22.26 / 19.51
In your opinion, does your school teachers give high values to school sports?	69.5 / 25.3 / 5.2	56.56 / 26.4 / 17.04	57.4 / 34.1 / 8.5	49.16 / 31.55 / 19.28
Playing sports in and outside school time helps you to fell in better physical conditions?	86.2 / 10.9 / 2.9	72.06 / 12.74 / 15.20	78.1 / 16.9 / 5.1	60.9 / 19.89 / 19.21
Playing sports in and outside school time helps you to fell in better mental conditions?	77.8 / 18.2 / 4.0	64.16 / 19.57 / 16.27	68.3 / 23.7 / 8.1	54.88 / 26.45 / 18.67
Playing sports in and outside school time helps you in the development of your personality?	69.7 / 23.2 / 7.1	60.25 / 22.72 / 17.04	57.1 / 31.4 / 11.5	50.53 / 30.79 / 18.67
Playing sports in and outside school time helps you to socialize with people and make new friends?	77.6 / 16.4 / 6.0	66.69 / 18.34 / 14.97	67.8 / 23.2 / 9.0	56.33 / 25.69 / 17.99
Playing sports in and outside school time helps you to learn the basic values of fair play (such as respect rules, do not cheat, helps others?	82.6 / 13.5 / 4.0	68.23 / 16.42 / 15.35	67.2 / 25.1 / 7.8	53.81 / 29.12 / 17.07
Would you like to increase the hours of Physical Education during the school time?	76.5 / 14.1 / 9.4	67.00 / 15.04 / 17.96	58.8 / 22.5 / 18.7	53.66 / 23.7 / 22.64

VI. ANNEX: MsC STUDENTS' QUESTIONNAIRE (IN ENGLISH)

MSC Questionnaire for students (6-18 years)

Some general questions…

1. What is the name of your school? (dropdown options)

2. What grade are you in? (drop-down options according to each country's system)

3. What class are you in? Indicates the exact class (e.g., 3ºA, 3-1, etc.) _____

4. What is your list number? Indicate the number you are assigned within your class. If you do not have an assigned number, ask your teacher to tell you the number you should indicate here_____

5. What is your gender?
   - (1) ☐ Boy
   - (2) ☐ Girl
   - (3) ☐ Other: _____

6. How old are you? _____ years

7. Where is…

… your school located?	(1) ☐ In the city	(1) ☐ In the countryside
… your usual home located?	(1) ☐ In the city	(1) ☐ In the countryside

Physical activity is any activity that increases your heart rate and makes you get out of breath some of the time. Physical activity can be done in sports, school activities, playing with friends, or walking to school. Some examples of physical activity are running, brisk walking, rollerblading, biking, dancing, skateboarding, swimming, soccer, basketball, football, or surfing.

8. Think about the last 7 days. Did you do at least **60 minutes a day** of physical activity across the week?

☐ (0) No ☐ (1) Yes

9. Over the past 7 days, on how many days did you exercise in your free time so much that you **get out of breath or sweat**?

☐ 0 days ☐ 1 day ☐ 2 days ☐ 3 days ☐ 4 days ☐ 5 days ☐ 6 days ☐ 7 days

10. Over the past 7 days, on how many days did you do activities for **strengthening** muscles and bones (such as weight-lifting, sit-ups, knee-flexion, jumping, hopping, skipping, etc.)?

☐ 0 days ☐ 1 day ☐ 2 days ☐ 3 days ☐ 4 days ☐ 5 days ☐ 6 days ☐ 7 days

11. Over the past 7 days, on how many days did you do **stretching** exercises to lengthen or relax your muscles?

☐ 0 days ☐ 1 day ☐ 2 days ☐ 3 days ☐ 4 days ☐ 5 days ☐ 6 days ☐ 7 days

We are trying to know more about your level of **physical activity** from ***the last 7 days*** (in the last week). This includes sports or dance that make you sweat or make your legs feel tired, or games that make you breathe hard, like tag, skipping, running, climbing, and others.
Remember:
1. There are no right and wrong answers — this is not a test.
2. Please answer all the questions as honestly and accurately as you can — this is very important.

12. **Physical activity in your spare time**: Have you done any of the following activities in the past 7 days (last week)? If yes, how many times? (Mark only one option per row.).

	No (1)	1-2 (2)	3-4 (3)	5-6 (4)	7 times or more (5)
Skipping	☐	☐	☐	☐	☐
Rowing/canoeing	☐	☐	☐	☐	☐
In-line skating	☐	☐	☐	☐	☐
Tag	☐	☐	☐	☐	☐
Walking for exercise	☐	☐	☐	☐	☐
Bicycling	☐	☐	☐	☐	☐
Jogging or running	☐	☐	☐	☐	☐
Aerobics	☐	☐	☐	☐	☐
Swimming	☐	☐	☐	☐	☐
Baseball, softball	☐	☐	☐	☐	☐
Dance	☐	☐	☐	☐	☐
Football	☐	☐	☐	☐	☐
Badminton	☐	☐	☐	☐	☐
Skateboarding	☐	☐	☐	☐	☐
Soccer	☐	☐	☐	☐	☐
Street hockey	☐	☐	☐	☐	☐
Volleyball	☐	☐	☐	☐	☐
Floor hockey	☐	☐	☐	☐	☐
Basketball	☐	☐	☐	☐	☐
Ice skating	☐	☐	☐	☐	☐
Cross-country skiing	☐	☐	☐	☐	☐
Ice hockey/ringette	☐	☐	☐	☐	☐
Other: _____	☐	☐	☐	☐	☐
Other: _____	☐	☐	☐	☐	☐

13. In the last 7 days, during your **physical education (PE) classes**, how often were you very active (playing hard, running, jumping, throwing)? (Check one only.)

(1) ☐ I don't do PE
(2) ☐ Hardly ever
(3) ☐ Sometimes
(4) ☐ Quite often
(5) ☐ Always

14. In the last 7 days, what did you do most of the time **at recess**? (Check one only.)

(1) ☐ Sat down (talking, reading, doing schoolwork)
(2) ☐ Stood around or walked around
(3) ☐ Ran or played a little bit
(4) ☐ Ran around and played quite a bit
(5) ☐ Ran and played hard most of the time

15. In the last 7 days, what did you normally do **at lunch time** (besides eating lunch)? (Check one only)

(1) ☐ Sat down (talking, reading, doing schoolwork)
(2) ☐ Stood around or walked around
(3) ☐ Ran or played a little bit
(4) ☐ Ran around and played quite a bit
(5) ☐ Ran and played hard most of the time

16. In the last 7 days, on how many days **right after school**, did you do sports, dance, or play games in which you were very active? (Check one only.)

(1) ☐ None
(2) ☐ 1 time last week
(3) ☐ 2 or 3 times last week
(4) ☐ 4 times last week
(5) ☐ 5 times last week

17. In the last 7 days, on how many **evenings** did you do sports, dance, or play games in which you were very active? (Check one only.)

(1) ☐ None
(2) ☐ 1 time last week
(3) ☐ 2 or 3 times last week
(4) ☐ 4 or 5 last week
(5) ☐ 6 or 7 times last week

18. *On the* **last weekend**, how many times did you do sports, dance, or play games in which you were very active? (Check one only.)

(1) ☐ None
(2) ☐ 1 time
(3) ☐ 2 - 3 times
(4) ☐ 4 - 5 times
(5) ☐ 6 or more times

19. Which **one** of the following describes you best for the last 7 days? Read *all five* statements before deciding on the *one* answer that describes you.

(1) ☐ A. All or most of my free time was spent doing things that involve little physical effort
(2) ☐ B. I sometimes (1 — 2 times last week) did physical things in my free time
(3) ☐ C. I often (3 — 4 times last week) did physical things in my free time
(4) ☐ D. I quite often (5 — 6 times last week) did physical things in my free time
(5) ☐ E. I very often (7 or more times last week) did physical things in my free time

20. Mark how often you did physical activity (like playing sports, games, doing dance, or any other physical activity) for each day last week.

	None (1)	Little bit (2)	Medium (3)	Often (4)	Very often (5)
Monday	☐	☐	☐	☐	☐
Tuesday	☐	☐	☐	☐	☐
Wednesday	☐	☐	☐	☐	☐
Thursday	☐	☐	☐	☐	☐
Friday	☐	☐	☐	☐	☐
Saturday	☐	☐	☐	☐	☐
Sunday	☐	☐	☐	☐	☐

21. Were you sick last week, or did anything prevent you from doing your normal physical activities? (Check one.)

(1) ☐ Yes. What prevented you? _____
(2) ☐ No

What do you think about your current level of **physical fitness**?

22. Please, think about your current level of **physical fitness** (compared with your friends) and choose the most appropriate answer.

	(1) Very poor	(2) Poor	(3) Average	(4) Good	(5) Very Good
My **general physical fitness** is…	O	O	O	O	O
My **cardiorespiratory fitness** (capacity to do exercise, for instance long running) is…	O	O	O	O	O
My **muscular strength** is…	O	O	O	O	O
My **speed/agility** is…	O	O	O	O	O
My **flexibility** is…	O	O	O	O	O

Now, we are going to ask you about some **sedentary behaviors** in your **leisure time**.

23. About how many hours a day do you usually…

	None at all (1)	About half h/day (2)	About 1 h/day (3)	About 2 h/day (4)	About 3 h/day (5)	About 4 h/day (6)	About 5 h/day (7)	About 6 h/day (8)	About 7 or more hours a day (9)
…watch television (including videos and DVDs)									
on weekdays?	O	O	O	O	O	O	O	O	O
on weekend days?	O	O	O	O	O	O	O	O	O
…play games on a computer or games console (Playstation, Xbox, GameCube, etc.)									
on weekdays?	O	O	O	O	O	O	O	O	O
on weekend days?	O	O	O	O	O	O	O	O	O
…use a computer or other electronic device (e.g., telephone or tablet) for chatting on-line, internet, social networks (e.g., Twitter, Instagram, TikTok, etc.) or similar									
on weekdays?	O	O	O	O	O	O	O	O	O
on weekend days?	O	O	O	O	O	O	O	O	O

Sleep time

24. About how many hours a day do you usually sleep at night…

…on weekdays? _____ hours/day

…on weekend days? _____ hours/day

What about the quality of your **diet**?

25. Please, answer the following questions in relation to your diet.

	Yes	No
Do you eat a piece of fruit or drink fresh fruit juice every day?	(1) ☐	(0) ☐
Do you eat a second piece of fruit every day?	(1) ☐	(0) ☐
Do you eat fresh vegetables (example: salads) or cooked vegetables (example: soup) regularly, one a day?	(1) ☐	(0) ☐
Do you eat fresh or cooked vegetables more than once a day?	(1) ☐	(0) ☐
Do you eat fish/seafood (e.g., hake, sardines, octopus, shrimp) at least 2 to 3 times a week?	(1) ☐	(0) ☐
Do you go, once or more a week, to fast-food restaurants like hamburger places?	(1) ☐	(0) ☐
Do you like and eat pulses (e.g., beans, peas, chickpeas, broad beans, lentils) more than once a week?	(1) ☐	(0) ☐
Do you eat pasta or rice almost every day (5 days or more a week)?	(1) ☐	(0) ☐
Do you eat nuts (e.g., walnuts, almonds, hazelnuts) regularly (at least 2-3 times a week)?	(1) ☐	(0) ☐
Do you use olive oil at home?	(1) ☐	(0) ☐
Do you take breakfast every day?	(1) ☐	(0) ☐
Do you eat cereal or cereal products (e.g., oats, bread) for breakfast?	(1) ☐	(0) ☐
Do you eat dairy products (yogurt, milk, cheese) for breakfast?	(1) ☐	(0) ☐
Do you eat commercially baked goods or pastries (e.g., cookies, cakes, croissants, donuts) for breakfast?	(1) ☐	(0) ☐
Do you eat 2 yogurts and/or some cheese (about 40 g) daily?	(1) ☐	(0) ☐
Do you eat sweets and candies several times a day (e.g., chocolates, gums, sweets)?	(1) ☐	(0) ☐

26. Please, select the option that best suits your interests or opinions on the following statements

	I completely agree (3)	I have no attitude (2)	I completely disagree (1)
Do you like play sport in school?	😀	😐	☹
Does your school organize lots of sport activities?	😀	😐	☹
Do you have a big gym where to play sport in school?	😀	😐	☹
Does your school have lots of sport materials/equipment (balls, cones, racquets, nets...)	😀	😐	☹
In your opinion, does your school teachers give high values to school sports?	😀	😐	☹
Playing sport in and outside school time helps you to fell in better physical conditions?	😀	😐	☹
Playing sport in and outside school time helps you to fell in better mental conditions?	😀	😐	☹
Playing sport in and outside school time helps you in the development of your personality?	😀	😐	☹
Playing sport in and outside school time helps you to socialize with people and make new friends?	😀	😐	☹
Playing sport in and outside school time helps you to learn he basic values of fair play (such as respect rules, do not cheat, helps others?	😀	😐	☹
Would you like to increase the hours of Physical Education during the school time?	😀	😐	☹

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