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# Selected Aspects of Sports: Recreational Activity of German School Students

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## Abstract

This work focuses on empirical research regarding the sports-recreational activities of school students living in the Alpine region of Germany. The main objective of the work is to examine the conditions of participation in sports activities depending on such criteria as: forms, intensity, motives, manners, places and possibilities for practicing sports, including the gender of the participants and their environmental conditions (large city, small town). 387 persons at the age of 18 ( $M = 18.48 \pm 0.31$  years) from technical colleges and high schools in Bavaria were surveyed. The following research tools were used in the study: - a scale of attitudes aimed at examining the motives for undertaking sports-recreational activity by the examined school students, - a questionnaire regarding attitudes and behavior towards free time sports-recreational activity. The collected material was subjected to mathematical and statistical analysis using the ROC method (Receiver Operating Characteristic). Own research has shown a high level of sport-recreational activity related mainly to such aspects as the frequency of practicing sports, the number of sports disciplines practiced and different places for practicing sports.

**Keywords:** sports-recreational activity, school students, Alpine region, Bavaria, Germany

## 1. Introduction

Sports-recreational activity plays a large role in the life of modern humans. It is directly related to leisure time, the rational use and management of which demands an appropriate level of not only required skills but also awareness. Nowadays, the dynamically growing popularity of passive leisure behaviors can be observed, especially among the young generation of highly developed countries, which in excessive numbers, may cause various psychophysical development dysfunctions in children and adolescents. In connection with such tendencies, it is necessary to permanently emphasize the importance of educational activities, thanks to which it is possible to encourage young individuals to take up active forms of free time activity. Sports-recreational activity, due to the wide range of its forms, is an important component of well-organized leisure time spent by young people, while sports and recreational behavior can be analyzed in the context of psychophysical development, personality, regeneration of vitality, contact with nature, active rest, relaxation, etc. The most important entities that can have significant impact on the

level of physical activity of children and adolescents include, first of all, family, school, peer groups, as well as educational organizations, sports-recreational associations, clubs and the media. A special role in the area of physical activity encouragement falls on the family, where a proportional development of free time activity in children who are not yet subject to the obligation of school education first occurs. A different but equally important place related to education of physical activity among students is school and especially physical education, which in its assumption, in addition to physical education classes, prepares young people for independent and systematic physical activity in their free time. This process consists primarily in shaping appropriate attitudes, habits and physical and fitness skills conditioning participation in physical culture, awareness of the broad health benefits of systematic physical activity, as well as equipping the youth with the ability to use sport and recreational opportunities offered at their place of residence. Recognition of these aspects can be very helpful not only in determining the general level of physical activity of adolescents but it can also be a guide to better plan and organize physical recreation of young people.

In the German-language literature, the term sports-recreational activity is associated with practicing sports in one's free time (the German: *Freizeitsport*). Unlike competitive and professional sports, low-level sports are targeted at people representing different age groups, who see the possibility of achieving primarily health-related goals in this activity [1]. Friedrich Ludwig Jahn was a pioneer of the free time sports movement called *Turnerism*. In 1811, at Turner square in Hasenheide near Berlin, he set about promoting gymnastics and motor games initially among schoolchildren and later representatives of the working class. In the course of further history, the typically gymnastic nature of motor activity ("the German model") was influenced by the so-called "English model" of sport based on the rules of sports competition and the pursuit of records. According to Dieckert [2] at the turn of the 19th and 20th century, two separate systems were in operation: gymnastics (*Turnerism*) for everyone, and sport - for those who preferred to obtain top sports results via ruthless rivalry. At present, the boundary between these systems is blurred and leisure sport in Germany includes both gymnastics and games as well as other forms of mild-mannered sports competition. This confirms the choice of these forms of sport activity undertaken by German recreational and amateur athletes belonging to different age groups. Prohl and Scheid [3] define leisure sport as a form of activity not related to competitive sport, characterized by volunteering and satisfaction, having its own rules and being for all age groups. Within free time sports, they identify such forms as:

- alternative sport,
- health sport,
- compensational sport,
- mass sport,
- holiday sport,
- family sport,
- lifetime sport,
- recreational sport,

- fitness sport,
- adventure sport,
- national sport.

Participation in sports-recreational activities is dependent on numerous factors that Nahas et al. [4] call the determinants of this activity. They include:

- demographic factors (e.g. gender, age, education level, socio-economic status),
- biological factors (e.g. height, weight, physical body constitution, motor-sports aptitude),
- psychological and cognitive factors,
- behavioral skills and attributes,
- social and cultural factors,
- physical environment factors (e.g. sports performance opportunities, time of the year, environmental pollution, access to sports-recreational infrastructure),
- features of physical activity (e.g. exercise attractiveness, intensity, volume, frequency, duration of physical activity).

The most important elements of physical recreation include various content which in practice reflect the actual activity of human sport and recreation [5–7]. These include:

- recreational and motor games (e.g., Frisbee, bowling),
- individual sports (e.g. tennis, table tennis, squash, golf),
- team sports (e.g. football, volleyball, basketball),
- water sports (e.g. swimming, canoeing, sailing),
- winter sports (e.g. skiing, sledding, skating),
- marches, walks, runs, lowland and mountain hiking,
- cycling,
- gymnastics,
- preventive health exercises,
- other (e.g. strength-fitness exercises, horse-riding).

This work focuses on empirical research regarding the sports-recreational activities of school students living in the Alpine region of Germany. The main objective

of the work is to examine the conditions of participation in sports activities depending on such criteria as: forms, intensity, motives, manners, places and possibilities for practicing sports, including the gender of the participants and their environmental conditions (large city, small town). The 18-year-old youth (387 people in total) were deliberately selected for the study, characterized by a relatively stable level of sports and sport-motor habits.

The following research questions were posed:

- What is the place of sports-recreational activity of school students from Germany compared to other free time activities?
- What are the motives for young people performing recreational sports?
- What is the frequency of performing recreational sports?
- In what places are sports performed?
- Which sports are most frequently performed by school students?
- How does the surveyed youth assess the possibilities for the performance of recreational sports at their place of residence?
- What are the predictions regarding the youths' sports performance after graduation?
- Do gender and environmental conditions of the studied youth diversify their participation in recreational sport?

The following research tools were used in the study:

- a scale of attitudes aimed at examining the motives for undertaking sports activity by the examined school students,
- a questionnaire regarding attitudes and behavior towards free time sports activity.

## **2. Selected aspects of sports: recreational activity of German school students**

### **2.1 Material and methods**

#### *2.1.1 Participants*

387 persons at the age of 18 ( $M = 18.48 \pm 0.31$  years) from technical colleges and high schools in Bavaria were surveyed, included 91 boys and 97 girls from a large city (more than 1 million inhabitants) as well as 93 boys and 106 girls from a small town (less than 15,000 inhabitants). The research was personally carried out by the author of this work. The youth included in the study was selected in accordance with the rules of random sampling, based on random selection of school classes [8].

#### **2.2 Research methods**

In the diagnostic survey method, a questionnaire technique was used, thanks to which it was possible to obtain written responses from respondents to the questions.

Two research tools were used in the study on the sports-recreational activity of school students. The first of them is the so-called Sport Activity Motive Questionnaire [9], based on the scale of attitudes towards physical activity [10, 11]. The aim of this part of the study was to check the quality of motives of sports-recreation activity in the studied pupils. The questionnaire used in the study consisted of 24 questions. 6 groups containing motivational elements of sports activity were specified. These were: esthetics, health, relaxation, ascetic, social aspects and risk. Each group contained four specific questionnaires for each of them, to which the respondents after giving affirmative answers, identified themselves with a given motive or in the case of negative answers, the given motive was rejected.

The second method used in the study is the so-called Questionnaire of Attitudes and Behaviors Towards Sports Activity (own elaboration, based on Baur and Burrmann [12]). It consists of 6 parts:

- Forms of free time activity (social gatherings, listening to music, practicing sports, computer/Internet, reading, music, art).
- Frequency of practicing sport in free time (lack of practicing, rarely, e.g. 1–2 times a month, often, e.g. 1–2 times a week, very often, e.g. 3 or more times a week).
- Place of practicing sports (sports club, extracurricular school-activities, open areas, public sports facilities, fitness clubs).
- Possibilities for practicing sport at the place of residence (large, average, small).
- Sports disciplines practiced regularly (ranking list of sport disciplines).
- Declarations regarding sports performance after graduation (confirming, denying, no decision).

### 2.3 Statistical analysis

The collected material was subjected to mathematical and statistical analysis using the ROC method (Receiver Operating Characteristic). This method aimed at determining the significance of differences among variables: gender and environmental conditions of the studied youth, as well as determining the value of the relative possibility for participation of respondents in a given activity, their occurrence of a certain behavior or motive, etc. This was determined via the Odds Ratio (OR) [13]. Furthermore, the level of significance was set at  $p < 0.05$ .

### 2.4 Results

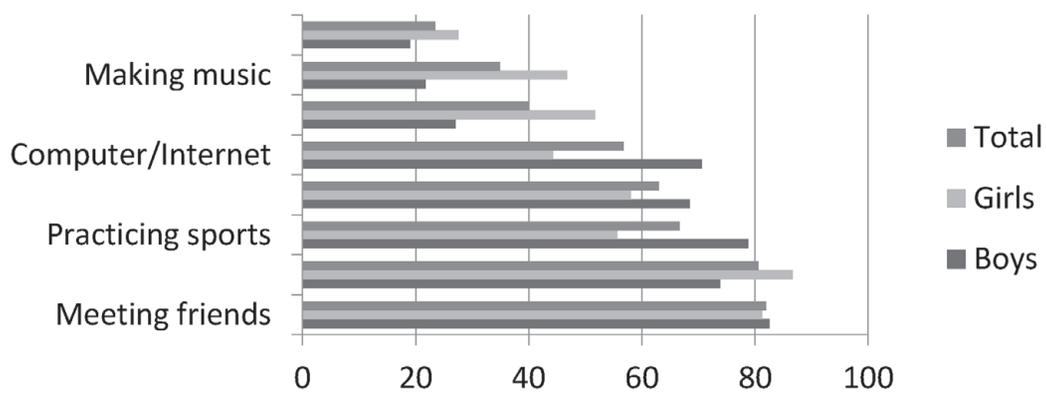
The significance of performing sports within the spectrum of other free time activities among German school students.

The aim of research was to present the most popular forms of free time activities among German school students. The place and importance of practicing sports in the context of other leisure activities was also taken into consideration.

The study results confirm (**Figure 1**) that the most important forms of utilizing free time among the studied German youth, regardless of gender or social origin, are meeting friends (82%), listening to music (81%) and practicing sports (66%).

Based on the results of the Receiver Operating Characteristic (ROC) statistical analysis presented in **Table 1**, it can be concluded that practicing sports is significantly more important for boys than girls ( $p < 0.0001$ ), while the relative possibility to actually participate in this activity, expressed as the Odds Ratio (OR), is almost 1 ½ times greater in boys (OR = 1.42). Similar dependencies are related to computer activities which are much more popular among boys ( $p < 0.0001$ ; OR = 1.59). The greater probability of watching television among the studied boys is also worth mentioning. Although there were no statistically significant differences in this category ( $p = 0.0786$ ), the relative odds of actual participation in this activity is almost 1 ½ times greater in boys than girls (OR = 1.41). The studied girls prefer listening to music ( $p = 0.0298$ ) more than their male colleagues, with the relative possibility of actual participation in this activity being almost twice as high as in the case of boys (OR = 1.96). Statistically significant differences in favor of the examined girls were found for such leisure activities as reading and music ( $p < 0.0001$ ), and the actual participation in these activities determined by the OR values is 1 ½ times higher in the studied girls than in boys (reading: OR = 1.51; music activities: OR = 1.47).

The results of the Receiver Operating Characteristic (ROC) statistical analysis presented in **Table 2** indicate that both boys from large cities and small towns have a similar preference for free time activities, as shown by the absence of statistically significant differences as well as similar opportunities for actual participation in all diagnosed forms of leisure time activities (OR from 1.02 to 1.13). Similarly as in the case of the boys, the tested girls from both backgrounds (**Table 3**) also show similar



**Figure 1.** Preferred leisure activities among German school students (in percentages).

Activity	AUC	SE	95% CI	<i>p</i>	OR
Meeting friends	0.5066	0.02941	0.4490 to 0.5643	0.82150	1.02
Listening to music	0.5639	0.02929	0.5065 to 0.6214	0.02983	1.96
Practicing sports	0.6157	0.02850	0.5598 to 0.6716	0.00000	1.42
TV	0.5518	0.02922	0.4945 to 0.6090	0.07865	1.18
Computer/Internet	0.6316	0.02833	0.5761 to 0.6871	0.00000	1.59
Reading	0.6228	0.02844	0.5670 to 0.6785	0.00000	1.51
Making music	0.6253	0.02837	0.5697 to 0.6809	0.00000	1.47
Doing handicrafts	0.5428	0.02925	0.4855 to 0.6002	0.14560	1.12

**Table 1.** Preferred leisure activities among German school students (boys:  $n = 184$ ; girls:  $n = 203$ ).

Activity	AUC	SE	95% CI	p	OR
Meeting friends	0.5090	0.04267	0.4253 to 0.5926	0.83340	1.02
Listening to music	0.5189	0.04264	0.4353 to 0.6025	0.65780	1.05
Practicing sports	0.5077	0.04268	0.4241 to 0.5914	0.85610	1.08
TV	0.5034	0.04268	0.4198 to 0.5871	0.93610	1.02
Computer/Internet	0.5077	0.04267	0.4240 to 0.5913	0.85720	1.02
Reading	0.5138	0.04267	0.4302 to 0.5975	0.74610	1.11
Making music	0.5132	0.04267	0.4296 to 0.5969	0.75650	1.13
Doing handicrafts	0.5251	0.04261	0.4416 to 0.6086	0.55640	1.06

**Table 2.**  
*Preferred leisure activities among German male school students (large city: n = 91; small town: n = 93).*

Activity	AUC	SE	95% CI	p	OR
Meeting friends	0.5114	0.04063	0.4318 to 0.5911	0.77870	1.03
Listening to music	0.5089	0.04063	0.4292 to 0.5886	0.82680	1.02
Practicing sports	0.5198	0.04062	0.4402 to 0.5994	0.62650	1.07
TV	0.5061	0.04066	0.4264 to 0.5858	0.88120	1.02
Computer/Internet	0.5197	0.04064	0.4400 to 0.5994	0.62820	1.09
Reading	0.5082	0.04066	0.4285 to 0.5879	0.84080	1.03
Making music	0.5159	0.04064	0.4362 to 0.5955	0.69660	1.07
Doing handicrafts	0.5174	0.04061	0.4377 to 0.5970	0.66940	1.05

**Table 3.**  
*Preferred leisure activities among German female school students (large city: n = 97; small town: n = 106).*

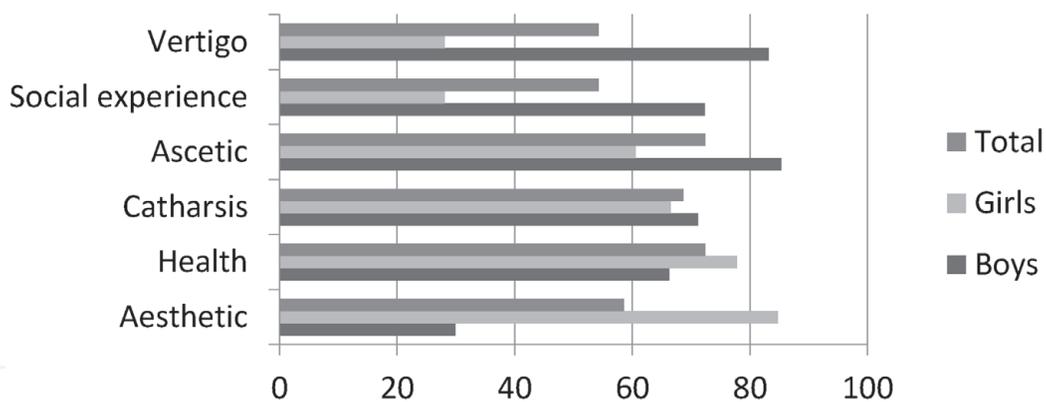
preferences for free time activities, as indicated by  $p > 0.05$  and the OR values (1.02–1.09).

In conclusion, due to sports activity performance, the studied boys are more physically active than their female peers who primarily prefer passive forms of free time activities such as listening to music, socializing or watching television, while the environmental conditions do not influence the preferences for selection of free time activities by the respondents.

### 3. Motives for undertaking sports-recreational activity of German school students

The study also included the motives of young people living in the alpine region for undertaking sports-recreational activities, taking their environmental and gender characteristics into account. The division of motives proposed by Steffgen et al. [9], which combines six elements: esthetics, health, relaxation, physical fitness, social aspects and risk, was used.

The results of the study presented in **Figure 2** show that the most important motives for performing recreational sport by German school students, regardless of gender or environmental conditions, are health, physical fitness and social aspects, understood as the willingness and the possibility for collective sports performance and human interaction.



**Figure 2.** Motives for undertaking sports-recreational activities of German school students (in percentages).

Motive	AUC	SE	95% CI	<i>p</i>	OR
Esthetic	0.7742	0.02474	0.7257 to 0.8227	0.00000	4.59
Health	0.5576	0.02930	0.5002 to 0.6151	0.05015	1.52
Catharsis	0.5235	0.02936	0.4659 to 0.5810	0.42520	1.07
Ascetic	0.6237	0.02834	0.5681 to 0.6792	0.00000	1.41
Social experience	0.5166	0.02939	0.4590 to 0.5742	0.57310	1.05
Vertigo	0.7754	0.02445	0.7277 to 0.8233	0.00000	2.96

**Table 4.** Motives for undertaking sports-recreational activities of German school students (boys: *n* = 184; girls: *n* = 203).

Motive	AUC	SE	95% CI	<i>p</i>	OR
Esthetic	0.5131	0.04266	0.4294 to 0.5967	0.75970	1.04
Health	0.5181	0.04265	0.4345 to 0.6017	0.67190	1.06
Catharsis	0.5240	0.04262	0.4405 to 0.6076	0.57320	1.07
Ascetic	0.5038	0.04268	0.4202 to 0.5875	0.92830	1.01
Social experience	0.5133	0.04266	0.4297 to 0.5969	0.75550	1.04
Vertigo	0.5145	0.04265	0.4309 to 0.5981	0.73450	1.04

**Table 5.** Motives for undertaking sports-recreational activities of German male school students (large city: *n* = 91; small town: *n* = 93).

Health as one of the most important motives for athletic activity is dominantly preferred by the studied girls, which according to the OR = 1.52 value of the Receiver Operating Characteristic statistical analysis, declare this motive more than 1 ½ times more often than the studied boys (Table 4). Even more distinct differences in favor of the esthetic motive (*p* < 0.0001), occurring in girls more than 4 times more often than boys, are evidenced by the OR = 4.59. For the studied boys, physical fitness and risk were very important motives for undertaking sport. The results show that there are greatly significant differences in the dominance of these motives when considering gender of the studied youth. Physical fitness as a motive for sport is more prevalent in boys than girls (*p* < 0.0001, OR = 1.41) These differences are even greater when considering risk, which is 3 times more likely to motivate boys than girls (*p* < 0.0001, OR = 2.96) Another important motive for

Motive	AUC	SE	95% CI	<i>p</i>	OR
Esthetic	0.5117	0.04068	0.4320 to 0.5915	0.77320	1.17
Health	0.5050	0.04065	0.4253 to 0.5847	0.90290	1.01
Catharsis	0.5147	0.04063	0.4351 to 0.5944	0.71710	1.05
Ascetic	0.5175	0.04265	0.4378 to 0.5972	0.66680	1.09
Social experience	0.5089	0.04067	0.4291 to 0.5886	0.82770	1.06
Vertigo	0.5075	0.04067	0.4278 to 0.5873	0.85290	1.06

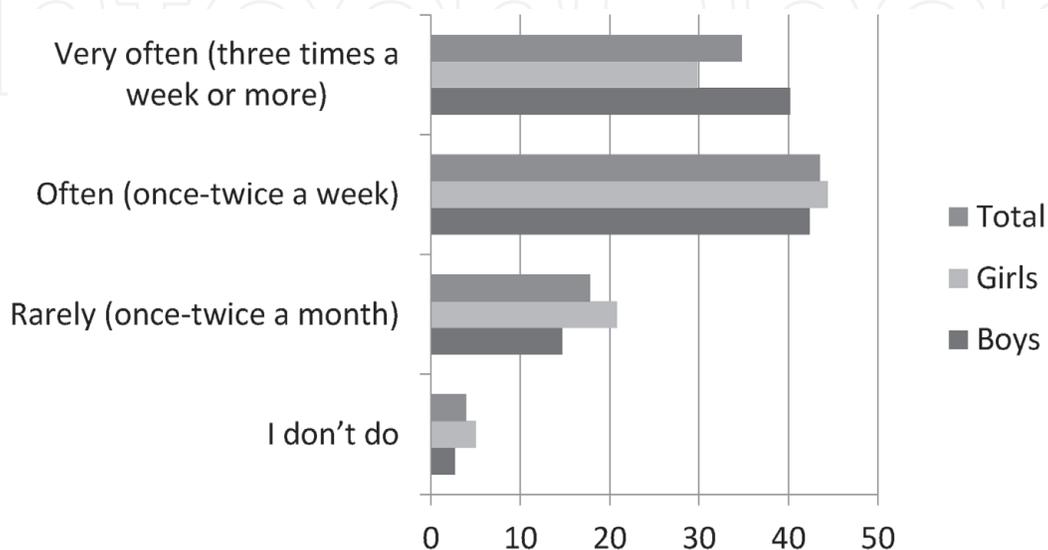
**Table 6.** Motives for undertaking sports-recreational activities of German female school students (large city: *n* = 97; small town: *n* = 106).

sport activity turns out to be relaxation, by which  $\frac{2}{3}$  of all the respondents were guided.

Based on the analysis of the statistical results of the Receiver Operating Characteristic (ROC) on the intensity of boys' (Table 5) and girls' (Table 6) motives from large cities and small towns, environmental conditions have no influence on the intensification of diagnosed motives for taking up sport activity among the respondents (no statistically significant differences and similar values of chance of occurrence of examined motives).

#### 4. Frequency of practicing sports of German school students

One of the most important aspects of sport and recreational activities is the frequency with which sports are practiced in free time. Based upon the results in Figure 3, it can be ascertained that the young German people tested, regardless of the gender and milieu, are generally very involved in practicing sport. A total of 43% of them declare that they practice sport once or twice a week, and almost 35% practice it very often (three times a week or more). Instead, the percentage of German school students who do not practice recreational sports at all (4%) is of marginal significance.



**Figure 3.** Frequency of practicing sports of German school students (in percentages).

Cut-off	AUC	SE	95% CI	<i>p</i>	OR
Overall	0.5239	0.02946	0.4661 to 0.5816	0.4168	
>0.500					0.97
>1.500					1.34
>2.500					1.02
>3.500					1.33

Answer categories: 1. I do not practice, 2. Rarely, 3. Often, 4. Very often.

**Table 7.**  
Frequency of practicing sports German school students (boys:  $n = 184$ ; girls:  $n = 203$ ).

Cut-off	AUC	SE	95% CI	<i>p</i>	OR
Overall	0.5036	0.04270	0.4199 to 0.5873	0.9377	
>0.500					1.03
>1.500					1.01
>2.500					1.05
>3.500					0.93

Answer categories: 1. I do not practice, 2. Rarely, 3. Often, 4. Very often.

**Table 8.**  
Frequency of practicing sports of German male school students (large city:  $n = 91$ ; small town:  $n = 93$ ).

Cut-off	AUC	SE	95% CI	<i>p</i>	OR
Overall	0.5132	0.04061	0.4336 to 0.5928	0.7450	
>0.500					1.12
>1.500					1.02
>2.500					1.03
>3.500					1.03

Answer categories: 1. I do not practice, 2. Rarely, 3. Often, 4. Very often.

**Table 9.**  
Frequency of practicing sports of German female school students (large city:  $n = 97$ ; small town:  $n = 106$ ).

The results of ROC statistical analysis regarding the frequency of sports performance by boys and girls living in the Alpine region of Germany (**Table 7**) allow to conclude that the gender of respondents generally has no substantial impact on preferences in this area because no statistically significant differences were noted ( $p > 0.05$ ), and the relative odds of choosing the analyzed categories regarding the frequency of practicing sports turned out to be similar in both the male and female population groups, except for the relatively higher preferences of girls in the category “I rarely perform sports” (OR = 1.34) and the relatively greater preferences of boys regarding the “I perform sports very often” category (OR = 1.33).

Based on statistical analysis of the Receiver Operating Characteristic (ROC) results presented in **Table 8**, it can be concluded that boys from both large cities and small towns in Germany have a similar preference for frequency of sports performance, as indicated by the absence of statistically significant differences ( $p > 0.05$ ), as well as similar values of odds for all categories of sports performance

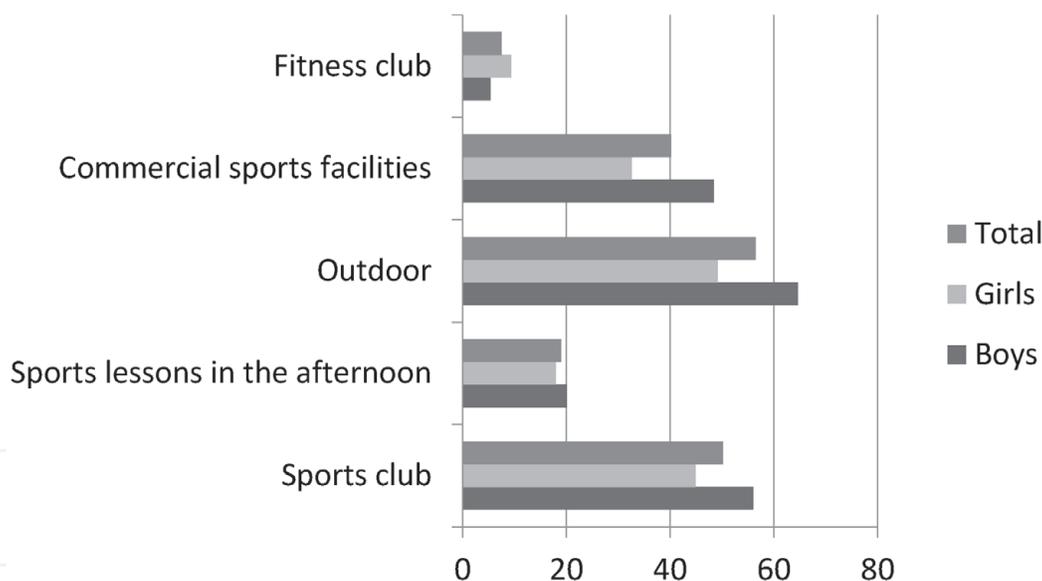
intensity (OR from 0.93 to 1.05). Similarly to boys, the studied girls from both environments (**Table 9**) also demonstrate similar preferences regarding particular categories of sports performance frequency, as indicated by  $p > 0.05$  and OR values (1.02–1.12).

## 5. Place of performing sports of German school students

**Figure 4** shows the results of research regarding the various places for sport performance by the studied youth. The most popular areas are outdoors (56.5%), sports clubs, to which more than half of the studied respondents belonged, and commercial sports facilities (40.2%). Every  $\frac{1}{5}$  subject participates in extra-curricular sports organized by the school. The least popular place in the opinion of German school youth is fitness club, declared only by 7.5% of the respondents.

Receiver Operating Characteristic (ROC) statistical analysis, as shown in **Table 10**, showed that outdoor areas ( $p = 0.00883$ , OR = 1.31) and commercial sports facilities ( $p = 0.00706$ ; OR = 1.49) are significantly more popular places for performing sports among boys. Sports clubs are also more popular among the male youth (OR = 1.25) although there are no significant statistical differences ( $p = 0.05815$ ) regarding this category.

Based on the analysis of the ROC statistical results on the popularity of places for performing sports by boys (**Table 11**) and girls (**Table 12**) from large cities and small towns, it can be concluded that environmental conditions do not significantly



**Figure 4.**  
 Places of practicing sports declared by German school students (in percentages).

Place of practicing sport	AUC	SE	95% CI	$p$	OR
Sports club	0.5558	0.02924	0.4984 to 0.6131	0.05815	1.25
Sports lessons in the afternoon	0.5094	0.02943	0.4517 to 0.5671	0.74910	1.10
Outdoor	0.5771	0.02904	0.5201 to 0.6340	0.00883	1.31
Commercial sports facilities	0.5793	0.02909	0.5222 to 0.6363	0.00706	1.49
Fitness club	0.5196	0.02935	0.4621 to 0.5772	0.50480	1.04

**Table 10.**  
 Places of practicing sports declared by German school students (boys:  $n = 184$ ; girls:  $n = 203$ ).

Place of practicing sport	AUC	SE	95% CI	<i>p</i>	OR
Sports club	0.5333	0.04258	0.4498 to 0.6167	0.43580	1.13
Sports lessons in the afternoon	0.5576	0.04236	0.4746 to 0.6407	0.17720	1.16
Outdoor	0.5310	0.04261	0.4475 to 0.6145	0.46740	1.19
Commercial sports facilities	0.5542	0.04243	0.4710 to 0.6374	0.20440	1.25
Fitness club	0.5115	0.04268	0.4278 to 0.5951	0.78830	1.53

**Table 11.**  
Places of practicing sports declared by German male school students (large city: *n* = 91; small town: *n* = 93).

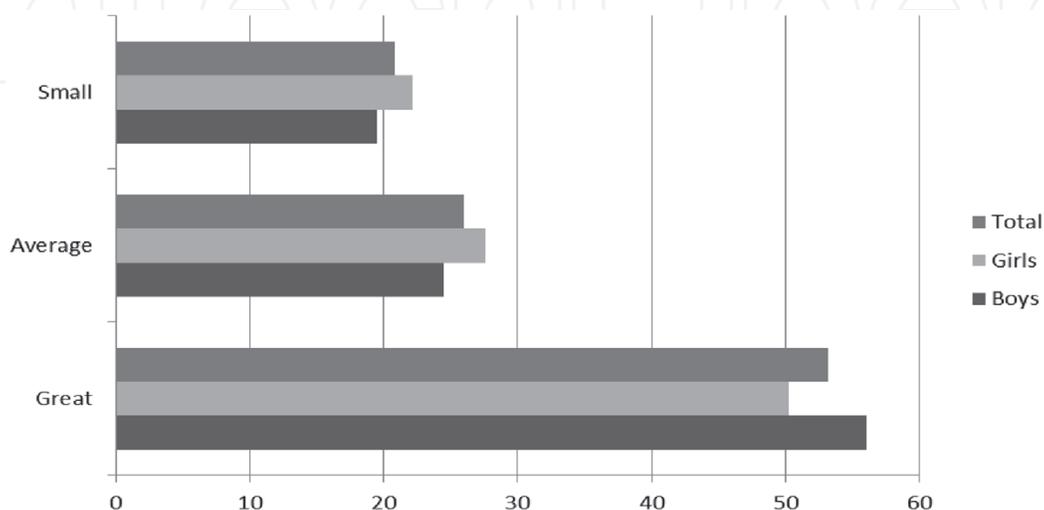
Place of practicing sport	AUC	SE	95% CI	<i>p</i>	OR
Sports club	0.5150	0.04065	0.4353 to 0.5947	0.71260	1.07
Sports lessons in the afternoon	0.5462	0.04038	0.4670 to 0.6254	0.25610	1.12
Outdoor	0.5275	0.04060	0.4479 to 0.6071	0.49930	1.11
Commercial sports facilities	0.5539	0.04049	0.4745 to 0.6333	0.1848	1.39
Fitness club	0.5190	0.04069	0.4392 to 0.5987	0.64090	1.50

**Table 12.**  
Places of practicing sports declared by German female school students (large city: *n* = 97; small town: *n* = 106).

affect the choice of places to practice sports both among boys and girls. There were no statistically significant differences in these declarations, and the relative odds of choosing the locations were similar in both the male and female populations, with the exception of the relatively larger participation of boys (OR = 1.53) and girls (OR = 1.50) coming from large cities in fitness club classes.

## 6. Possibilities for performing sports in the town of residence in the opinion of German school students

The studied German students had the opportunity to comment on the possibility of practicing recreational sport at their place of residence (Figure 5). More than 1/2 of the surveyed youth considered them as large and about 1/4 as average.



**Figure 5.**  
Possibilities for performing sports in the town of residence in the opinion of German school students (in percentages).

ROC statistical analysis on the assessment of German youth regarding the possibility for practicing sports at the place of residence has shown that both boys and girls generally perceive these opportunities in a similar way (**Table 13**). This is confirmed by the lack of statistically significant differences, as well as the value of the Odds Ratio (1.03–1.11).

Statistical analysis of assessment related to the possibility for practicing sport at the place of residence has shown that boys from both large cities and small towns generally regard them in a similar way (**Table 14**). In none of the categories of responses were there statistically significant differences, while boys from a small town 1.39 times more often than boys from a big city were of the opinion that the opportunities to practice sports are small in their city, and in turn, boys from a big city declared 1.22 times more often that these possibilities are large. Analogous relations concerning the opinions of girls about the possibilities of practicing sports in both environments are shown via the results presented in **Table 15**.

Cut-off	AUC	SE	95% CI	<i>p</i>	OR
Overall	0.5288	0.02937	0.4712 to 0.5864	0.32810	
>0.500					1.11
>1.500					1.03
>2.500					1.05

*Answer categories: 1. Good, 2. Average, 3. Poor.*

**Table 13.**  
*Possibilities for performing sports in the town of residence in the opinion of German school students (boys: n = 184; girls: n = 203).*

Cut-off	AUC	SE	95% CI	<i>p</i>	OR
Overall	0.5624	0.04230	0.4795 to 0.6454	0.14350	
>0.500					1.22
>1.500					1.11
>2.500					1.39

*Answer categories: 1. Good 2. Average 3. Poor.*

**Table 14.**  
*Possibilities for performing sports in the town of residence in the opinion of German male school students (large city: n = 91; small town: n = 93).*

Cut-off	AUC	SE	95% CI	<i>p</i>	OR
Overall	0.5730	0.04021	0.4942 to 0.6518	0.07270	
>0.500					1.33
>1.500					1.09
>2.500					1.31

*Answer categories: 1. Good, 2. Average, 3. Poor.*

**Table 15.**  
*Possibilities for performing sports in the town of residence in the opinion of German female school students (large city: n = 97; small town: n = 106).*

## 7. Sports disciplines performed regularly by German school students

This part of the study focused on the most popular sports disciplines regularly performed by German school students in their free time. **Table 16** shows a list of the ten most popular types of sports performed by boys from large cities and small towns. As expected, the results of the research confirm the greatest popularity of football and cycling among boys regardless of their environment. Swimming and running are also common in both environments. Other popular sports also include skiing and snowboarding, individual and team sports as well as bodybuilding.

The results of ROC statistical analysis, presented in **Table 17**, refer to the comparison of preferences for regularly performed sports by boys from large cities and small towns. On the basis of these results, it can be concluded that the male youth from both backgrounds exhibit similar interests in sports ( $p > 0.05$ ). However, it is important to note that in the case of boys from large cities, participation in basketball is more than two times greater (OR = 2.17) and 1.6 times greater in the case of tennis (OR = 1.61).

Kind of sport	Boys large city	Kind of sport	Boys small town
1. Football	51	1. Football	59
2. Cycling	33	2. Cycling	37
3. Basketball	19	3. Swimming	22
4. Swimming	16	4. Skiing/Snowboarding	19
5. Jogging	15	5. Jogging	17
6. Tennis	12	6. Bodybuilding	14
7. Skiing/Snowboarding	11	7. Table tennis	12
8. Bodybuilding	10	8. Basketball	9
9. Table tennis	8	9. Handball	8
10. Volleyball	5	10. Tennis	8

**Table 16.**

*Sports regularly practiced by German male school students in their free time (in percentages).*

Kind of sport	AUC	SE	95% CI	<i>p</i>	OR
Football	0.5268	0.04262	0.4433 to 0.6104	0.52970	1.12
Cycling	0.5180	0.04265	0.4344 to 0.6016	0.67390	1.06
Basketball	0.5504	0.04251	0.4671 to 0.6337	0.23780	2.17
Swimming	0.5251	0.04261	0.4416 to 0.6086	0.55640	1.06
Jogging	0.5036	0.04268	0.4199 to 0.5873	0.93270	1.01
Tennis	0.5228	0.04265	0.4392 to 0.6064	0.59310	1.61
Skiing/Snowboarding	0.5418	0.04250	0.4585 to 0.6252	0.32710	1.10
Bodybuilding	0.5204	0.04263	0.4369 to 0.6040	0.63210	1.05
Table tennis	0.5207	0.04263	0.4371 to 0.6043	0.62810	1.05
Handball	0.5376	0.04253	0.4543 to 0.6210	0.37790	1.08

**Table 17.**

*Sports regularly practiced by German male school students in their free time (large town:  $n = 91$ ; small town:  $n = 93$ ).*

The most popular sport practiced by all the girls studied is cycling (**Table 18**). Swimming and horse riding were also at the top of the ranking, which among the surveyed boys turned out to be completely unpopular. It is worth emphasizing, as in the case of boys, the similar popularity of skiing. Girls generally do not prefer sports activities that require high endurance, strength or fierce competition. This is reflected in the results of research regarding their favorite sports, which include typical female forms of activity such as aerobics and dancing. Team sports such as volleyball, handball or basketball are of smaller importance for girls from small towns.

The results of ROC statistical analysis (**Table 19**) refer to the comparison of preferences related to the regular practice of sports by girls from large cities and small cities. On their basis, it can be stated that girls from both backgrounds exhibit similar interests in sports disciplines. The exception is running, which is chosen twice more often by girls from large cities (OR = 2.01). Significant differences were also noted within this category ( $p = 0.02561$ ). In addition, girls from large cities take part in handball more than 2 1/2 times more often than the studied girls from small towns (OR = 2.6).

Kind of sport	Girls large city	Kind of sport	Girls small town
1. Cycling	46	1. Cycling	41
2. Swimming	39	2. Horse riding	37
3. Jogging	36	3. Swimming	32
4. Horse riding	24	4. Aerobic	21
5. Aerobic	21	5. Jogging	18
6. Handball	20	6. Skiing/Snowboarding	16
7. Volleyball	12	7. Dance	10
8. Dance	9	8. Volleyball	9
9. Skiing/Snowboarding	7	9. Handball	8
10. Basketball	6	10. Basketball	5

**Table 18.**  
*Sports regularly practiced by German female school students in their free time (in percentages).*

Kind of sport	AUC	SE	95% CI	<i>p</i>	OR
Cycling	0.5291	0.04061	0.4495 to 0.6087	0.47380	1.14
Basketball	0.5236	0.04054	0.4441 to 0.6031	0.56190	1.05
Swimming	0.5355	0.04060	0.4559 to 0.6151	0.38270	1.22
Jogging	0.5908	0.04014	0.5121 to 0.6695	0.02561	2.01
Skiing/Snowboarding	0.5036	0.04268	0.4199 to 0.5873	0.27810	1.11
Horse riding	0.5654	0.04022	0.4866 to 0.6443	0.10780	1.21
Aerobic	0.5007	0.04066	0.4210 to 0.5804	0.98660	1.00
Volleyball	0.5147	0.04069	0.4349 to 0.5944	0.71810	1.31
Dance	0.5055	0.04064	0.4258 to 0.5852	0.89250	1.01
Handball	0.5602	0.04052	0.4808 to 0.6396	0.13880	2.60

**Table 19.**  
*Sports regularly practiced by German female school students in their free time (large city:  $n = 97$ ; small town:  $n = 106$ ).*

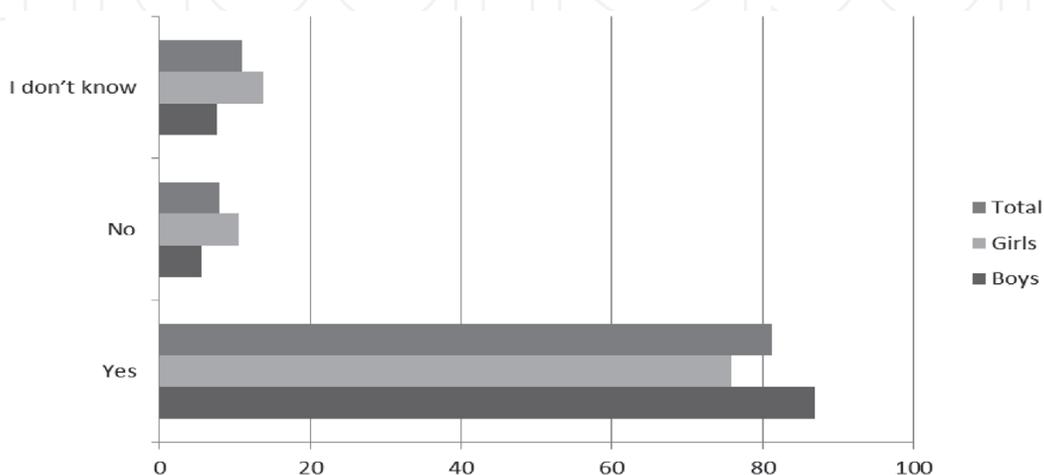
Referring to the results of regularly performed sports by boys and girls (Tables 17 and 19), it should be noted that the following disciplines commonly practiced are:

- cycling,
- running.
- swimming,
- skiing/snowboarding,
- basketball,
- volleyball,
- handball.

ROC statistical analysis showed that for most sports, both boys and girls report similar preferences because no statistically significant differences were found with regard to the gender of the respondents. The exception is swimming, which is much more preferred by the studied girls ( $p = 0.00521$ ; OR = 1.25) and basketball, which is statistically chosen over 5 ½ times more frequently by boys than girls (OR = 5.52). However, no statistically significant differences were noted in this category ( $p = 0.05876$ ).

## 8. The declarations of German school students on practicing sports after graduating from school

The study also examined the opinions of German school students regarding their intended sport activity after completing school education. The vast majority of respondents (81%) declare their intention to practice sport after finishing school (Figure 6). At the same time, the very low percentage of the respondents who do not intend to be active in sports in the future (8%) deserves to be emphasized.



**Figure 6.** The declarations of German school students on practicing sports after graduating from school (in percentages).

Cut-off	AUC	SE	95% CI	<i>p</i>	OR
Overall	0.5553	0.02914	0.4982 to 0.6124	0.06030	
>0.500					1.15
>1.500					1.80
>2.500					1.98

*Answer categories: 1. Yes, 2. No, 3. I do not know.*

**Table 20.**  
 The declarations of German school students on practicing sports after finishing school (boys: *n* = 184; girls: *n* = 203).

Cut-off	AUC	SE	95% CI	<i>p</i>	OR
Overall	0.5243	0.04265	0.4407 to 0.6080	0.56850	
>0.500					1.15
>1.500					1.01
>2.500					1.84

*Answer categories: 1. Yes, 2. No, 3. I do not know.*

**Table 21.**  
 The declarations of German male school students on practicing sports after finishing school (large city: *n* = 91; small town: *n* = 93).

Cut-off	AUC	SE	95% CI	<i>p</i>	OR
Overall	0.5150	0.04067	0.4353 to 0.5947	0.7126	
>0.500					1.04
>1.500					1.14
>2.500					1.09

*Answer categories: 1. Yes, 2. No, 3. I do not know.*

**Table 22.**  
 The declarations of German female school students on practicing sports after finishing school (large city: *n* = 97; small town: *n* = 106).

Taking into account all the opinions of the surveyed youth, it is possible to positively forecast their participation in sporting activities in the future.

ROC statistical analysis regarding German youth declaration on practicing sports after graduation (**Table 20**) did not show statistically significant differences between boys and girls ( $p > 0.05$ ). It should be emphasized that the surveyed girls 1.8 times more often than boys declare that they do not intend to do sports after graduation and almost twice as often, that they have not yet decided whether they will practice sports in the future (OR = 1.98).

The results of ROC statistical analysis included in **Tables 21** and **22**, relate to declarations of German boys and girls from various residential environments about the intention to practice recreational sport after graduating from school. Based on the results of analysis, it can be concluded that both boys and girls report similar predictions because no response categories showed statistically significant differences ( $p > 0.05$ ). It is worth emphasizing that boys from large cities almost twice as often as boys from small towns declare that they do not yet know whether they will play sports after graduating from school (OR = 1.84).

## **9. Discussion**

The subject of this study was selected elements of the free time sports - recreational activity of youth coming from a large and small agglomeration of the Alpine region in Germany.

The author's research has shown that among the free time activities of the German youth, the most important are social gatherings, preferred by the majority of respondents, while practicing sports is in second place, which for boys, turned out to be much more important than for girls. In addition, computer-related activities are significantly more important for boys, while girls appreciate reading and music more. Based on the results of research related to the preferences of leisure activities, it can be stated that boys are more physically active than girls who prefer primarily passive forms of use such as listening to music, meeting friends or watching television, while sports, in fourth place on the list of the most popular free-time activities, play a far-reaching role in their lives. Similar results regarding free time forms of activity of German youth are presented by Henkel [14], Kurz and Tietjens [15], Urbutt [16], Tietjens [17], Maaz and Burrmann, [18]; Sonnenwald [19], Sawicki [20], Sawicki and Suchy [21], Schmidt [22], where the greater preferences of active forms of spending free time among male youth are underlined and greater preferences of physically passive forms of free time activity among the female youth.

Examining the motives for undertaking sports activity, it was shown that the strongest motivating factors for German school students are health, physical fitness and social aspects. Health and esthetics as motives of sports-recreational activity are valued more by girls, while for the studied boys, physical fitness and risk are significantly more important motives for practicing sports. These results are also confirmed by numerous research studies conducted by Steffgen and Schwenkmezger [23], Alfermann [24], Opper [25], Digel [26], Burrmann [27], Opaschowski [28], Sawicki and Suchy [21] and Wezyk et al. [29], which emphasize the dominance of similar motives of sports activity among German school students.

The level of sports-recreational activity is largely determined by the frequency of practicing sports in free time. The results of the author's research confirm the high level of youth involvement in its performance, regardless of sex or environmental conditions (large city, small town). Almost  $\frac{1}{2}$  of the respondents declared that they practice sports 1–2 times a week and  $\frac{1}{3}$  perform it 3 times a week or more often. The results of research by Steffgen and Schwenkmezger [23], Opper [25], Leyk et al. [30], Burrmann and Mutz [31] point to a similar level of sports activity among German school students in previous studies on the subject.

The assessed German school students, and in particular the boys, usually prefer open areas for sports activity. More than  $\frac{1}{2}$  of the respondents declare their membership at sports clubs. In addition, another place for practicing sport often visited by the young people under investigation are public sports facilities, enjoying considerably higher popularity among boys. German school students also attend extra-curricular sporting activities at schools, attended slightly more often by boys than girls. Comparative results on this matter are also presented by Digel [26], Opper [25], Kurz and Tietjens [15], Brettschneider and Kleine [32], Burrmann [27], Sawicki and Suchy [21] and Mutz [33].

The respondents had the opportunity to comment on the assessment of the possibility for practicing recreational sports at their place of residence. According to  $\frac{1}{2}$  of the surveyed youth, these possibilities are large,  $\frac{1}{4}$  of respondents considered them to be average, and only  $\frac{1}{5}$  of respondents considered them as small, but in the comments, one can notice the tendency of higher assessment of these possibilities for the large agglomeration.

Among the regularly performed sports, the most popular among boys regardless of environment are football and cycling. Swimming and running are also very popular in both environmental groups. In addition, boys from a small town more often practice skiing/snowboarding than their colleagues from a large agglomeration. Other popular sports played by boys include individual and team sports games. The most popular sports practiced by the examined girls were cycling, swimming and horse-riding. The popularity of ski sports, especially among girls from a small town, deserves to be emphasized, as in the case of boys. In addition, as expected, typically female forms of activity such as aerobics or dance are popular among the surveyed girls. In many research works, the general dominance of football, cycling, swimming, running and other sports games is emphasized in the case of boys, while among girls, dominance regards horse-riding, swimming and gymnastics, dance and music as well as running [12, 20, 21, 29, 33–41].

Positive attitudes towards practicing sports by the examined German school students can be demonstrated by the results of the author's research on their opinions regarding their intended sport activity after finishing school education. The vast majority of respondents (81%) declare their intention to practice sport after finishing school. Taking into account these opinions of the surveyed students, it is possible to positively forecast their participation in sporting activities in the future.

## 10. Conclusions

Based on the analysis of the results of the author's research, the following conclusions can be formulated:

1. Regardless of environmental conditions (large city, small town), the examined German girls practicing recreational sport are guided mainly by esthetic and health reasons, while boys prefer physical fitness and willingness to take risks.
2. German school students, especially girls, prefer more passive activities while sports activities occupy further positions in the hierarchy of favorite free time activities.
3. The gender of the respondents differentiates forms of sports - recreational activity and the place where sports are practiced, such as open areas and public sports facilities, while for the frequency of practicing sports, there are no differences according to gender.

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