International REPORT

Comparative Study

sport sign

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Project:

Sportsign

O1. Comparative Study:

Physical Activity Habits of Deaf Students

Physical Education, an important role!

Physical Education plays an important role in school and in the promotion of physical activity and sports practice. Besides the benefits of its practice, it fosters sports culture in students and the community based on the knowledge and values of respect for human dignity. As a long-lasting practice, it promotes healthy lifestyles to combat sedentary lifestyles, obesity and deviant behaviors. Currently, the bilingual education that schools must provide to deaf students in the country's Sign Language and in the written and/or spoken language requires the existence of support materials that are appropriate to the contents of the subject and designed in a format that fit these students' characteristics. Studies in the field of Deafness are very revealing of the learning difficulties that these students have experienced over the years. These difficulties are experienced in almost all academic areas, as well as in the development of motor skills and can result from the insufficient instructions that are available to deaf students in their communication modes. When Sign Language is not the domain of teachers and deaf students do not master spoken and/or written language, teaching can become complex and segregating. Additionally, the lack of adequate resources or in this particular case, the lack of a bilingual glossary of comprehensive bilingual sports, which allows students to learn sports terminology and display the demonstration of their motor skills, can lead to the "full" exercise of the teaching and learning process. When the teacher does not master Sign Language, it must be supported by an interpreter. However, the lack of resources that make it possible to learn and update new terminology in Sign Language can also condition the interpreters' translation work. Such resources cover many linguistic niches of Sign Language and could be used as tools in the preparation of the translation process. Considering the identified needs, Sport Sign's main target groups are: Physical Education teachers, Interpreters and Deaf students. The set of gaps in the development of deaf students' sporting skills existing at school level has to be solved through a set of actions undertaken by the various professionals involved who are capable of ascertaining their causes and finding strategies and solutions, both within and outside national borders to ensure that education policies are as equitable as possible. Based on these premises, the main objective of this project is to promote physical activity and sports in a perspective of global development of deaf children and young people. We believe that the exchange and sharing of good practices developed in partnership with other countries involved in the education of deaf children and young people will result in the sharing of new strategies of action that could constitute a sporting model to be implemented in the future.

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Introduction

The changes that have taken place in recent years in the education of the Deaf (changes which are the outcome of the European Parliament's recommendations published in the A2-302/87 document, the United Nations 1994 Resolution, the 1994 Salamanca Declaration and the 2006 UN General Assembly) require new projects from public schools, as well as a new profile of teachers who are capable of acting in different areas and with sustained training in the development of studies within the field of Deaf education.

The education of deaf children and young people has followed various teaching models ranging from the pure oral method instituted after the Milan Congress in 1880 to several renovation proposals, namely the philosophy of total communication, some of which are still in use (Gomes, 2011) up to the current inclusion policies (Salamanca Declaration, 1994), which imply bilingual education.

The significant shift which has occurred in the prevailing paradigm is due to the contribution of important data resulting not only from the recognition of sign language (SL) as a natural language for the deaf community, evidenced by the numerous studies developed in the areas of linguistics and neurolinguistics, but also the recognition that deaf children's early exposure to SL is more easily acquired.

These factors strengthened deaf communities' demands in the second half of the 20th century, not only by appealing to the need for changes that have long been requested at a political, educational and social level, but also by the stressing the urgency of a new perspective on the Education of the Deaf. In recent decades, the struggle for a new frame of reference on deafness and for a bilingual education for the Deaf has been one of the objectives of the World Federation of the Deaf and the European Union of the Deaf. Despite these recommendations, "policies for deafness and education for the Deaf continue to emerge within the framework of action plans for people with disabilities" (Gomes, 2011, p. 109).

Education and social integration of deaf children necessarily involve taking into account the results obtained in research that focuses on this theme. These results show the correlation with the families' involvement in their children's educational path and in the opportunities offered to the children by the family and at school. The family context, which is responsible for the first communicative exchanges, shapes different groups: the group of deaf children born to deaf parents and the group of those who have hearing parents. Both groups have the same potential for learning, but here two clear linguistic scenarios are created, which can propel different linguistic acquisitions.

In regard to this, Lacerda (2006) (Dair et al., 2006) states that language delay can bring emotional, cognitive and social consequences even if a deaf child learns the language at a later stage. This learning usually takes place within a school context, where the child often comes into contact with SL for the first time.

According to the author, this linguistic delay causes a school gap, inevitably reflected in a state of development and

knowledge below what is expected for the child's age.

Besides language, there are several studies that also point out limitations in the development of deaf children's fundamental motor skills and in some psychomotor parameters.

Studies carried out with deaf students have shown that they have low levels of physical fitness, poor motor skills, balance difficulties and lower levels of physical activity when compared with their hearing peers (Dair et al., 2006; Ellis et al., 2005; Hopper, 2006). However, Hartman et al. (2011) demonstrate that deaf students' participation in organized sports tends to level out these differences with significant improvement in their performance, especially in terms of motor skills.

According to Dummer et al., (1996), the development of adequate levels of motor skills and abilities is a fundamental aspect for the child to feel motivated to participating in physical and sports activities. A low level of motor skills generally predisposes to lower sports participation and sedentary behavior. For example, balance - especially static balance - is a psychomotor parameter that when altered, is almost inseparably associated with the factor of deafness.

However, Crowe & Horak (1988) proved that the variation of this parameter was associated with changes in the peripheral vestibular function. In cases where there are no changes in this function, deaf children have the same level of development as their hearing peers, provided they receive equivalent stimuli.

In fact, in a comparative analysis carried out with the results of several studies, Goodman & Hopper (1992) also found that there are more similarities than differences between the results of deaf children's performance when compared with those of their hearing peers, as long as they have the same access to such learning conditions.

In the subjects taught in PE at schools, there is a space for learning language concepts and for the development of Sign Language for deaf students. Positive experiences and effective communication in PE teaching can form the basis for regular practice of physical activities that promote health and well-being. But when sign language is not mastered by teachers and deaf students are not proficient in spoken and/or written language, teaching can become complex and segregating. Additionally, the lack of adequate resources or in this specific case, the lack of a bilingual glossary of comprehensive bilingual sports which allows students to learn sports terminology and display their motor skill, can obstruct the "full" exercise of the teaching and learning process (Sarmento et al., 2020; Sarmento et al., 2016). Also Sarmento et al. (2013) and Barboza et al. (2019) draw attention to this situation, reporting that the factors that most compromise the teaching of PE are several teachers' lack of knowledge of Sign Language and the limited number of specific gestures of physical education and sports.

They also refer that "the presence of a bilingual teacher which may represent the better scenario is not only rare in physical education area but also in other

educational areas and sometimes, deaf students are limited to copy teacher demonstration in physical education classes" (Barboza et al., 2019, p. 718).

When the teacher does not master Sign Language, an interpreter must provide support. However, the lack of resources which make it possible to learn and update new terminology in Sign Language can also condition the interpreters' translation work. Such resources cover many linguistic niches of Sign Language and could be used as tools in the preparation of the translation process.

Considering these identified needs, we have developed three studies in each one of the project's partner country: i) with deaf students; ii) with physical education teachers who teach deaf students and, iii) sign language interpreters who translate in PE classes. The primary goal intended with these three studies is to discover how PE is approached in schools in partner countries and specifically, the needs of these three targets groups.

1.Deaf students' educational context in each country

Specific context of Physical Education classes

1.1. Germany

Compulsory school attendance for all children, including hearing impaired children, was implemented in Germany in 1911. At that time, there were special classes for deaf children but teachers and students were not allowed to use sign language due to the Milan Congress in 1880, which prohibited its use and as such, teachers had to focus on the oralism method (cf. Universität Hamburg).

Nevertheless, the use of sign language in deaf education in the U.S. and Russia had an impact on Germany. Hence, the use of the finger alphabet in German classrooms was again allowed in 1975. The importance of sign language for deaf education was slowly rediscovered. At a congress in Hamburg, in 1985, it was demonstrated that German Sign Language is a language with its own grammatical structure. As such, it was discussed that sign language had to play an important role in the education of hearing impaired students. Beginning in the 1980s, bilingual methods (using sign language and spoken language) were discussed and applied at some German schools.

At the same time, education opportunities for deaf students improved due to the opening of the Rheinisch Westfälisches Berufskolleg in 1980. This vocational college for students with hearing impairment gave deaf students their first opportunity to receive a general qualification to meet university admission requirements (cf. Universität Hamburg).

Nowadays, the duration of compulsory education is twelve years. Before starting elementary schools, deaf children usually attend a kindergarten for hearing impaired children where they receive early intervention by special education teachers. Early intervention is available in sign language and spoken language, depending on children's individual needs.

Parents can decide whether they send their hearing-impaired children to special-needs schools / kindergartens or if they opt for inclusive education only. If a deaf child is subject to inclusive education, a special education teacher will support both the child and the teachers for a few hours each week.

The curriculum at special-needs schools for hearing impaired students is the same as the one used at mainstream schools. Moreover, students can receive the same high school diploma and professional qualifications.

At special-needs schools for hearing impaired children, students are taught by teachers who use sign language. If a

deaf child goes to a mainstream school, it is possible to request a sign language interpreter for classes. At schools for the Deaf, teachers also use sign language in physical education classes and at mainstream schools, the interpreter is also present in the gym.

Physical education is taught for two or three hours a week at all grade levels. The curriculum consists of a variety of tasks and games that focus on body perception, experiencing traditional sports games and their rules. Sports such as gymnastics, swimming and track and field athletics are also part of the curriculum. Court sports or seasonal sports such as ice skating, rowing and cycling are taught in physical education classes, depending on the conditions (specific regional and organizational circumstances) of each school.

1.2. Italy

Today, deaf students find themselves in the same class as hearing students with hearing teachers. In most cases, they have to follow exactly the same curriculum, which also includes sports.

The state government promises to provide all schools – at all age levels and for all subjects – with a communication assistant, in addition to a special needs teacher (as foreseen by Law 104) and only in very rare cases, an interpreter. The role of the communication assistant is that of conveying the content of teaching modules by means that include not only sign language, but also different kinds of visual strategies. Their job is to facilitate the communication between teacher and students, and between deaf and hearing students with the ultimate goal of the deaf students' natural integration within the class. However, the number of weekly hours that the communication assistant is allocated per student varies considerably and is hardly ever enough to cover the total number of teaching hours that are compulsory for students. For this very reason, the tendency one may notice is that the presence of the communication assistant is guaranteed mostly for the number of hours and for the subjet areas that are considered to be "more important" which can vary between Italian, History, Geography or Mathematics. In the case of physical education classes that are either theoretical or more practical, deaf students are usually deprived of any support that facilitates communication between teacher and student, or between students enrolled in the PE subject and those who belong to a sports team. This explains why specific activities only reach the deaf student partially or in a very fragmented way and often result in the student not being able to fully understand or participate as he is not fully aware of the practice context. In most cases, they will simply imitate the behavior of their classmates and wait for the teacher's approval or disapproval.

A brief summary of the History of Deaf Education in Italy

(the following is taken from Dr Martin Watkins' PhD thesis – pp 3-9 - by kind concession of the author)

Italian Deaf Education: Pre-1880

In 1784, Tommaso Silvestri founded the first school for the Deaf in Rome (Radutzky, 1993; Rusciano, 2010) with the objective of teaching deaf children how to read and write Italian, very similar to Abbé Charles-Michel de l'Epée's motivations in founding the Paris School for the Deaf (Lane, 1984). Silvestre had travelled to Paris and learned from two Epée students, Abbé Sicard (hearing) and Jean Massieu (Deaf) how to employ manual methods.

Silvestri became known as the "father of Deaf education" in Italy and had a number of followers who were both hearing religious or privately interested persons, as well as deaf students from the schools he established (Rusciano, 2010).What followed was considered the "Golden Age" of Deaf education in Italy, similar to what happened following the foundation of the American School for the Deaf in 1817, with the creation of 49 new Deaf schools throughout Italy (Corazza, 1989, 1994; Radutzky, 1993).

Similarly to the U.S., most educators who founded the schools considered that the primary role of these institutions was to teach literacy rather than primarily focus on imparting a well-rounded education. Of course, literacy is a part of the European and Euro-influenced conceptualization of a well-rounded education, but the majority of hearing educators, who supported manual methods in the teaching of deaf children, considered students who could read, write and even speak Italian to be more successful. This is documented in Corazza's (1994) discussion of the history of Deaf Education, where the manual methods used by teachers is described. As in the Paris School for the Deaf, teachers used invented signs to mark specific parts of speech in Italian (i.e., verbs, infinitive mood of verbs, nouns, demonstratives, etc.) (p. 188). Corazza considers that this example of signed Italian does not correspond to the Italian sign language (LIS), since sign language acquires this linguistic and grammatical status within the Deaf community.

Instead, these signed systems followed the structure and syntax of spoken Italian and perpetuated the prestige of spoken language even though the manual methods were accessible.

Throughout the years, some educators in Milan noticed how some of the deaf students excelled at lip-reading and speech. Around 1860, more and more educators saw this as evidence that deaf children might be taught better speech by using oralist methods (Corazza, 1994). These methods were already strongly present and supported in Germany and in the U.K. The realization of the possible success in employing oralist methods led to an impromptu meeting of European educators of the deaf two years prior to the 1880 Milan Congress.

The 1880 Milan Congress

The Milan Congress came about by means of a fairly convoluted and "hasty" discussion among educators of deaf children from around Europe and the U.S. In 1878, 27 delegates from various European countries attending an exhibition of Deaf Education in France

met to quickly establish an International Convention that would take place two years later in Italy (Gallaudet, 1881). In September 1880, 164 delegates from around Europe and the U.S. gathered in Milan at the International Congress on the Education of the Deaf (an organization still active today) for their "second" congress to discuss the most effective method of teaching deaf children. However, the entire program was strongly biased in favor of oralists. Of the 164 delegates, 87 were Italian (predominantly from Milan), 56 were French, 8 were English and only 5 were from the U.S. This is an especially stark indication of bias considering that by 1880, there was a greater number of Deaf schools, students, and teachers in the U.S. than in any of the other countries represented at the Congress, yet the U.S. had only five delegates (Gallaudet, 1881). Also, and by far the most troubling fact of the demographics, from the 164 delegates, only one was Deaf (Jankowski, 1997).

In his own words, Edward Miner Gallaudet (the second president of Gallaudet College, as it was called at the time) stated, "In arranging for the Convention the promoters of articulation secured every possible advantage to themselves, imparting a partisan character to the whole affair from the very outset" (1881, p. 2). This was not only evident in the demographics of the delegation. While discussions in their meetings certainly leaned toward oralism, they still included strong discussion from those few advocating the continued use of manual methods. The external tours and teaching demonstrations for the attendees however, focused heavily on the results of oralist methods at the deaf school in Milan (ibid.) and people also noted that some of the so-called demonstrations might have been rehearsed, as some of the deaf students in the Milan school would answer a teacher's question before they had finished asking it (Jankowski, 1997). Despite these noted biases, it did little to deter the voting within the delegation meetings due to the overwhelming presence of oralist over manual method supporters.

The resolution the Milan Congress passed that day was a major blow to any proponent for using signed language or any form of signed system in a deaf classroom. The Congress adopted an eight-point resolution on their position toward deaf education, but the most troubling are the first three:

1. Il Congresso, considerando la non dubbia superiorità della parola sui gesti per restituire il sordomuto alla società e dargli una più perfetta conoscenza della lingua, dichiara che il metodo orale deve essere preferito a quello mimico per l'educazione e l'istruzione dei sordomuti.

   [The Congress, considering the undoubted superiority of speech over gestures as a means of returning the deaf-mute to society and giving him a more perfect knowledge of the language, declares that the oral method should be preferred to the mimic method in the education and instruction of deaf-mutes]

2. Il Congresso, considerando che l'uso simultaneo della parola e dei gesti

mimici ha lo svantaggio di nuocere alla parola, alla lettura sopra la labbra ed alla precisione delle idee, dichiara che il metodo orale deve essere preferito.

[The Congress, considering that the simultaneous use of speech and mimic gestures has the disadvantage of impairing speech, lip-reading, and accuracy of ideas, declares that the oral method should be preferred.]

3. Il Congresso, considerato che un gran numero di sordomuti non riceve il beneficio dell'istruzione, e che questo fatto proviene dall'impotenza delle famiglie e degli istituti, fa voti che i Governi prendano le necessarie disposizioni, affinché tutti i sordomuti possano essere istruiti.

   [The Congress, considering that a great number of deaf-mutes do not receive the benefit of education, and that this fact is the result of the impotence of families and institutes, votes that governments should take the necessary steps to ensure all deaf-mutes receive education.] (as cited in Rusciano, 2010).

These particular points are troubling for two reasons: (1) the blatant declaration of superiority of spoken language over signed language, and (2) the emphasis of governments to make this method of education mandatory for all deaf children.

Fallout: Deaf Schools

While not immediate, the repercussions of this resolution rippled around the world. Although not every country with systems of educating deaf children was present at the Milan Congress, the most influential countries in educational approaches to deaf students were. In Italy, the effects were rather complicated. While recognizing the right of deaf children to receive an education, the government "deemed it had accomplished enough by establishing a school for deaf students in Milan" (Corazza, 1994, p. 189). Therefore, it hardly played any role in enforcing any semblance of compulsory education for deaf students at the time. Without any governmental authority to enforce oralist methods, the use of language varied from school to school. While some schools would allow the use of sign language outside the classroom in the courtyard, others banned its use altogether. Notwithstanding, the commonality across the board was that signed language was not allowed in classrooms, which perpetuated the prestige of spoken language in academia.

However, according to Corazza, no one truly knows what the language practices were in specific schools due to the lack of documentation from Italian deaf authors of the time. In fact, Corazza (1989) states that the works of three known and influential deaf authors and educators (Paolo Basso, Giacomo Carbonieri, and Giuseppe Minoja) have disappeared. She conjectures that the disappearance of their work may have been the result of oralism supporters' interference due to their beliefs that the use of signed language was so influential at the time. This is clearly conjecture but without their work, we may never know the truth. There is, however, slightly more documentation on the impact of job availability for deaf

educators.

Prior to the Milan Congress, deaf teachers had jobs within deaf schools using signed language to teach other generations of Deaf in academia. Following the Congress, many deaf instructors maintained their jobs, while many were transferred to instruct vocational classes and hearing educators were left to teach the academic subjects (Corazza, 1989, 1994). Despite the limitations imposed on the Deaf community, the early 1900s also saw the establishment of deaf clubs and organizations, such as the national organization ENS (Enté Nazionale dei Sordi, National Institute for the Deaf), still active today. These organizations resulted from "deaf people's need to express in sign language all kinds of subjects and cultures, a need that had long been frustrated in the institutes, as well as to their need for autonomy and independence" (Corazza, 1994, p. 190). These organizations provided physical places for the community to gather for information sharing, cultural bonding and linguistic expression.

The strength of the community has grown and today it continues to be strong in advocating for Deaf rights. However, one thing is certain: the evidence of the prestige granted to spoken language over signed language in deaf education since the Milan Congress has remained to this day.

Deaf Education Today: Integrazione Scolastica

In the U.S., most States have state-run schools for the Deaf, including numerous mainstream programs. In Italy, this is not the case. The information provided by Italian scholars under study so far, have been inconsistent in the number of currently existing Deaf schools. While some refer to four or five, others mention only two (Geraci, 2012; D'Alessio, 2011, respectively). Although this information is dated from 1994, Corazza does not specify a number but simply states that "there are now fewer elementary and secondary schools – both public and private – for deaf students because families prefer to send their children to regular schools" (1994, p. 192). However, she does go on to mention that at that time there were three higher education schools for deaf students that are currently state-run but were founded by the ENS (p. 192).

What Corazza mentions regarding families sending their children to regular schools is the direct result of the current laws in place that promote integrazione scolastica or, as we often refer to here, mainstream education (D'Alessio, 2011). Three laws, legge 188/1971, 517/1977, and 104/1992 dictate the inclusive methods employed in educating students with disabilities. Much like in the U.S., segregating students based on their disability was seen as detrimental to the students' educational potential and to their cognitive and social development. However, similarly to what happens in the U.S., deaf students' language needs are not considered in this integration process. Specifically, legge 517/1977 led to the closing of many special schools for the Deaf not because it specifically ordered it, but because it gave parents the option to send their child to a special school or to a "regular" school (D'Alessio, 2011;

Rusciano, 2010). As the majority of deaf children's parents have normal hearing, they typically opted for integration.

This led to many issues in effective communication and support for deaf students within mainstream schools, considering that general education teachers were not prepared to meet deaf students´ language needs (Rusciano, 2010; Geraci, 2012), which then led to the inclusion of a "communication and accessibility" clause in legge 104/1992 (Rusciano, 2010). Although these resources technically allow for the provision of language support, they are still often unavailable, leaving deaf children placed in mainstream schools where they still have little to no exposure to signed language whatsoever (Corazza, 1994, p. 192).

This led to many issues in effective communication and support for Deaf students within the mainstream schools, as general education teachers were not prepared to meet the language needs of Deaf students (Rusciano, 2010; Geraci, 2012), which then led to the inclusion of a "communication and accessibility" clause in legge 104/1992 (Rusciano, 2010). While technically allowing for the provision of language support, these resources are still often unavailable, leaving deaf children placed in mainstream schools to still have little to no exposure to signed language whatsoever (Corazza, 1994, p. 192).

1.3. Portugal

The first school for the Deaf in Portugal appeared in Casa Pia de Lisboa in 1823 and went on to develop its methods through the teaching of writing and the sign alphabet until 1860, the year of its closure. In 1870, another school dedicated to deaf education was established in Lisbon, directed by Father Pedro Aguilar, who used the method of mimicking and writing (Brocardo, 2009).

After the Milan Congress in 1880, the use of sign language as a method of teaching and communication was prohibited and due to the influence of the Paris School, the oralist method resurfaced. That is how, thirteen years later, with the appearance of the Instituto de Surdos-Mudos de Araújo Porto (Institute of Deaf-mute of Araújo Porto), this method was introduced in Portugal, replacing the mimic method. In 1905, deaf schools were, once again, under the control of Casa Pia of Lisbon, which reorganized deaf education in Portugal.

At an International Congress in Groningen in 1950, the "provedor" (ombudsman) of Casa Pia de Lisboa knew the maternal-reflective method (learning oral language as native language) and sent a teacher, who was appointed director of the Jacob Rodrigues Pereira Institute (school of Deaf people of Casa Pia de Lisboa), to Manchester to specialize in the teaching of the Deaf. In addition to continuing to work with the maternal-reflective method, the natural method (hearing and speech training without the use of technology) and the verbotonal method (for a good articulation and memorization of longer

units of the sentence) were also promoted in 1963.

From 1965 onwards, public schools of the Ministry of Education became open to deaf students and thirteen years later, some of them became Support Centers for Hearing Impaired Children, and continued to use the maternal-reflective method. At the end of the 70s, discussion started to focus on sign language and in Portugal, full communication was adopted in the teaching of the Deaf.

Gomes (2014), who dedicated his studies to the development of deaf education, states that the situation of the Deaf in Portugal has been very similar to that of other countries. The use students' natural language in deaf education had been forbidden for almost a century and they were forced to learn the "artificial" spoken language (Sacks, 2002) as best they could.

It was in the 1980s that a new vision of deafness and sign language emerged in Portugal (Gomes, 2014) partly due to the Luso-Swedish Agreement, an exchange arrangement established between the central services of Ministry of Education with the Nordic Countries, especially with Sweden.

In 1981, the National Rehabilitation Secretariat supported the training of two deaf adults at Gallaudet University in the U.S. Upon completion of their training in teaching and research methodologies in sign languages, they began teaching Portuguese Sign Language (LGP) to hearing people and deaf people (Carvalho, 2007). It was the start of the interest in sign language and raising the schools and country's awareness of the importance of sign language (Brocardo, 2009).

This is how the bilingual model was designed in Portugal, along with a study carried out at the University of Lisbon, which constitutes one of the main scientific contributions to the recognition of LGP in the Constitution of the Portuguese Republic in 1997. With this recognition, LGP is now a subject at Jacob Rodrigues Pereira Institute.

A year later, by means of Order nº 7520/98, the Support Units for Deaf Students (UAAS) were created at a national level and officially assumed bilingual education for deaf students, which started by including LGP trainers in their teams.

In 2008, Decree-Law 3/2008 was published, creating Schools of Reference for Bilingual Education of Deaf Students (EREBAS). In Portugal, there are 17 EREBAS (6 are in the two main cities) which have become the core providers of public education for deaf students from early to secondary education. These regular schools started by having specialized human resources (special education teachers, speech therapists and LGP interpreters). After the Decree-Law was released, a Portuguese Sign Language Program was published. Not only did it include the teaching of how the language works, but also the teaching of deaf education, as well as references to Deaf culture and identity. The introduction of this subject in the curriculum of deaf students is of pivotal importance to deaf communities (Gomes, 2014). According to this author, with the introduction of LGP as the first language of deaf students

in bilingual education, the Portuguese Language became part of the curriculum as a second language, which implied having its own curriculum. This program only came into effect in the academic year 2011/2012.

Ten years later, Decree-Law nº 54/2018 entered into force. Based on the inclusive school paradigm, it changed the designation "EREBAS" to reference Schools for Bilingual Education (EREB). This network of schools is a specific organizational resource to support learning, schooling and social inclusion of deaf children and young people, guaranteeing their linguistic growth and access to the common national curriculum.

In Portugal, deaf or children with hearing loss can currently be taught at EREB, in regular schools offering bilingual education and in schools with specialized resources for deaf students (bilingual education).

The PE subject became compulsory in high schools in 1905 in Portugal (Faustino, 2019). It remained in the school curriculum assuming different designations and different objectives, reflecting changes of concept that mirror how the human body was perceived over time and the social changes that emerged. Currently, within the framework of the Portuguese education system, PE has a pivotal role in children and young people's development process and is part of all students' educational path throughout their compulsory schooling. This is defined by Decree-Law nº 85/2009, which establishes the compulsory schooling regime for children and young people aged between 6 to 18 years old and determines the pre-school education for children from 5 years of age.

As for the Portuguese educational system, it is divided into different levels of education, the first called Preschool Education, including children between 3 and 6 years of age, even though attendance is still optional, followed by Primary/ Elementary Education which is organized in 3 cycles. The first cycle corresponds to the first four years of schooling (children generally between the ages of 6 and 10), the second cycle corresponds to the next two years (children between the ages of 10 and 12) and finally, the third cycle lasts for three years (students from ages 12 to 15). Upon conclusion of these studies, there is Secondary Education which consists of a three-year cycle for students from ages 15 to 18. All these cycles are compulsory for all students.

There is no point in going over the framework of higher education institutions in Portugal considering that PE is not part of students' curriculum as a compulsory subject at this level of education.

PE is a compulsory curricular subject in schools in Portugal which takes place 3 times a week (each class lasts 45 or 50 minutes). Most schools combine classes in two weekly slots of 90 or 100 minutes each. For many students, it is the only place where they have opportunity to try and discover new sports and develop motor skills and knowledge of healthy living habits.

Physical education classes at EREB take place within a context of inclusion. Deaf students are placed in classes with hearing

students and hearing teachers.

The Soares dos Reis Artistic School is an EREB School, attended by both hearing and deaf students. As it is specialized in the arts, the school has a small number of deaf students, 6 in total (in the school year 2019-2020). When teachers are not proficient in LGP, interpreters carry out the translation work in all classes, including PE.

1.4. Slovenia

Before the establishment of the first Deaf Institute in Slovenian territory, deaf children of wealthy parents were educated at the Austrian Empire schools in Graz, Vienna, Klagenfurt and Linz. The access to the information about the successful Austrian experience on teaching deaf children alerted the public to the need of education and schooling of the deaf children within the Slovene school system and the need to create schools in some of their provinces.

On the basis of the modest data collected, there is the presumption (Prunč, 1991) that in 1830, the Austrian Emperor Franc I approved the proposal of local government for the education of deaf Slovenes in the ''Deaf-and-Dumb School'' mansion. In 1840, the first school or institute for Deaf Children was founded in Gorizia, where classes were held in the Slovenian language. At this school, deaf children were taught by the priest Valentin Stanič by means of a sign method, while students with minor hearing loss learned through the oral method. Following the adoption of the Milan decision prohibiting the use of sign language in deaf education, a second school was opened in 1886 for deaf girls, this time in Šmihel, near the Novo mesto. At this school, lessons were held only by oral method (Podboršek, Krajnc, 2006).

At the beginning of the 20th century, the need to ensure the education of deaf children had increased rapidly in Slovenia, so a new 'Deaf-and-Dumb' School was created (today the Institute for Deaf and Hard-of-Hearing) in Ljubljana, with the help of the priest Ignacij Holzapfl. The school accepted deaf girls and boys from all over Slovenia. There, teachers taught deaf children according to a voice-language (linguistic) method and focused on good writing skills all throughout their schooling. Gestures – natural signs – were used only as the first means of communication, an auxiliary means to deliver and explain new concepts and for questioning deaf children so as to ensure better understanding. Otherwise, sign language was completely excluded from classrooms. Classes were held in the Slovenian language even though the official language was German. From 1946 onwards, the Ljubljana school for the Deaf started educating young people at the level of high school (Dvorščak, 2004).

The second Institute for the Deaf was founded in Portorož in 1946 (today's Center for Hearing and Speech Correction) and accepted deaf children from the western part of Slovenia. In 1962, the third school (today the Hearing and Speech Center) was founded in Maribor and designed for deaf children from the eastern part of Slovenia. Only a small number of deaf/hard-of-hearing children and young people are educated in these three Slovenian schools for the Deaf. The

majority of these children are schooled in regular schools with appropriate adaptations. Schools in Maribor and Portorož are attended by children from kindergarten to elementary school. Ljubljana, on the other hand, not only has kindergarten and elementary schools, but also includes High School, vocational and technical secondary schools where deaf/hard-of-hearing students are educated for textile, woodworking, metalworking, graphic, computer, media, gardening and other vocational areas.

Since the beginning of Deaf education, sports have been an important ingredient in their development. The philosophy of speech was increasingly related to children's motor skills during the period it perfected its method. The idea was that the more the child engaged in physical activity, the better he/she would talk. Notwithstanding, deaf children have always proved to be good athletes. Schools for the Deaf and Hard-of-hearing included in their curriculum the same number of hours of sports education per week as in other regular schools - 3h/week. It is also true that the hours dedicated to sports education are among the subjects in which pupils hardly receive any information by means of SSL interpreting.

Author's notes

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1.5. Spain

Teaching students with hearing disabilities began with Fran Pedro Ponce de León in 1545, Spain, where the "art of teaching the dumb to speak" was taught. It was a teaching method that focused on dactylology, writing and speech even though people were forced to communicate by speaking. This work was carried on by people like Juan Pablo Bonet between the 16th and 17th centuries and later on, by Lorenzo Hervás and Panduro.

The official regulation on schools for the Deaf was established in 1857 and schools for the deaf were established throughout the country thereon.

During the 20th century, the leading role was assigned to education and schooling of deaf people in schools organized for and by hearing people. In fact, all schools for deaf people were closed or became "schools for the multi-handicapped" in Spain. Nevertheless, it was only after the publication of the General Law of Education in 1970 that education was proposed within classrooms of specialized centers, when the seriousness of the anomaly made it completely necessary. For this reason, many deaf people were enrolled in hearing schools with an oral teaching methodology.

Currently, cumulating the regulations defined by the General Organic Law of the Educational System (LOGSE) of 1990 and those defined by the Organic Education Law (LOE) of 2006 and the Organic Law for the Improvement of Educational Quality (LOMCE) of 2013, students in Spain are considered to display specific needs for educational support in the following cases: specific learning difficulties, attention deficit hyperactivity disorders, personal conditions or school history, late incorporation into the educational system, high intellectual abilities and special educational needs which, in turn, include students with disabilities (e.g. hearing disabilities) and students who present serious conduct disorders.

Taking into account the regulatory framework discussed above, the history of Physical Education in Spain had its origins in the 19th century with Francisco Amorós and his Teacher Training centers (he founded a Gymnastic Center in Madrid in 1800).

But it was not until 1900 that physical education became compulsory in schools. Between 1879 and the start of the Spanish Civil War (1936), gymnastics was proposed as a compulsory subject, considering this as the time of Institutionalization of Physical Education in Spain. However, from this period to the implantation of LOGSE in 1990, Physical Education maintained its marginalized position, without being the object of due attention.

With the arrival of the LOGSE in 1990, the areas of knowledge were presented by including physical education explicitly in the objectives of the different educational stages. This model continued in the different laws that were subsequently approved including the LOE in 2006, and the current LOMCE in 2013, where physical education appeared as a "specific subject" in each of the primary and secondary education courses.

Taking into account all of the above and

highlighting the data provided by the Ministry of Education and Vocational Training (statistical data carried out in cooperation with the Autonomous Communities through the Statistical Commission of the Sectoral Conference on Education) referring to the 2018 - 2019 academic year, where it is indicated that 80% of the students with specific needs and educational support (among which are students with hearing disabilities) have inclusive schooling, we may conclude that a very high percentage of students with hearing disabilities goes to conventional centers where physical education classes are the same for all students. The physical education area in the Spanish educational system establishes the following criteria:

Primary Education (ages 6-12) has a total of 2 physical education sessions per week. At this stage, the area of physical education holds students' motor competence as its main objective, which is always consistent and in accordance with their level of psychomotor development, paying special attention to students´ diversity (ordinary and extraordinary measures of attention to diversity) and the search for the integration of knowledge, procedures, attitudes, and feelings related to motor behavior. Among the 6 key learning areas ("blocks") that the physical education covers, the following contents are addressed:

- The body: its image and perception;
- Motor skills, games, and sports activities (speaking at this stage of initiation to pre-sports);
- Physical activity and health;
- And contents common to all areas.

Compulsory Secondary Education (ages between 12 to 16 years old) and 1st of Baccalaureate (16-17 years old), as in the previous stage, has a total of 2 physical education sessions per week. The strategic purpose of physical education at this stage is to introduce students to the practice of physical-sports and artistic-expressive activities in which students can maintain a habit of active practice throughout life, taking into account new forms of motor practices that are emerging in today's society. The contents to work both in Compulsory Secondary Education and in 1st of Baccalaureate are:

- Block 1: Common contents;
- Block 2: Artistic-expressive physical activities;
- Block 3: Physical activity and health;
- Block 4: Games and sports activities.

Physical activity habits of hard hearing and deaf students

Understanding the factors which affect children and young people's behavior is essential to develop health-oriented activity programs. Adolescence is a critical development stage where generally the adoption of some behaviors related to health, diet and physical activity begin and tend to remain throughout adult life (Aaron et al., 2002). Physical activity not only has a favorable impact on young people's biological development and physical skills, but it is also important for their personal and social development.

Over the last decade, research and its concern regarding deaf students' participation in sports has also been directed to other fields of interest, namely issues regarding physical activity and health, sedentarism and obesity, which assigns school with an important role in promoting and assessing healthy lifestyles (Stewart & Ellis, 2005).

Physical Education is a school subject that contributes to students' motor, cognitive and socio-emotional skills development. It sets a learning space and it is often the place where most children and young people first come into contact with sports, skills from different sports, learning sports rules or experience a series of sports situations, recreational games, cooperation, competition, among others which, subsequently, enhances their motor, cognitive and physical skills repertoire. Additionally, it aims to develop students' knowledge skills that will allow them to understand the benefits associated with the regular practice of physical activity in terms of health, self-esteem and academic performance. School is the place where this practice should be emphasized by setting-up learning and reflection spaces in order to foster students' appreciation towards understanding the effects and more importantly, the benefits of adopting a healthy lifestyle. In turn, this will affect decision-making and the understanding of the effects of their behavior on their own health (Chen et al., 2018).

Physical Education must contribute to promoting inclusion in schools. An inclusive school must accept, welcome and educate all students, including those with support and learning support needs. It is necessary to understand each of the students' participation and appreciation. In regards to this matter, the teacher must understand the limitations, difficulties, as well as the qualities and abilities of each student in the various applied activities (Barboza et al., 2019).

Stewart & Ellis (2005) highlight the role of sports in the Deaf community and

the benefits associated with it, giving schools the responsibility of preparing students for the social opportunities they will be provided with as adults, including participation in sporting events. The authors report that the absence of physical implications associated with deafness leads PE teachers to assume that the programs of the subject are sufficient and that there is no need to increase strategies to improve deaf students' participation in sports. Moreover, they refer to the concern that regular PE programs are not sufficient to ensure that deaf students develop the fundamental motor skills to feel physically fit and motivated to participate and practice various sports activities outside school.

Stewart & Ellis (1999) defend that an ideal PE program is the one that focuses on dimensions that promote participation in physical activities, supported by the development of skills levels and by the pleasure it provides in order to make its practice a regular one. The authors mention that students must be significantly engaged considering that, in most cases, PE classes are the only physical activity they are provided with throughout the day and that without them, an even larger number of children, including Deaf ones, would be submitted to the effects of a sedentary lifestyle.

Concurrently to these concerns, others have arisen regarding the communication means used by Physical Education teachers in their inclusive class attended by deaf and hearing students. Most deaf individuals (about 90% to 95%) have hearing parents and do not frequently have the opportunity of developing sign language as their primary/native language. Most of the time, they start school without efficiently mastering any form of communication. Barboza et al. (2019) suggest that the many teachers' lack of knowledge in sign language is one of the most significant factors compromising the teaching and learning process in Physical Education. Reference is also made to the existence of a reduced and limited number of gestures for physical education and sports. According to the authors, it is therefore difficult to ensure that deaf students have access to sports events and develop their athletic talents. Furthermore, the theoretical-practical knowledge of this subject, sports culture and its relation to health are also compromised.

For many, the PE class is the only place where students can experience and develop physical activities and current problems related to inadequate lifestyles to human genesis are becoming common to all humanity, including deaf students. Sedentary lifestyles, unbalanced diets, demotivation, and lack of stimulation for the practice of physical activities bring students to schools presenting low levels of physical fitness and as Zaccagnini (2005) points out, with deficient motor skills often associated with obesity problems which, consequently, generate new sedentary cycles.

According to the World Health Organization:

> "Physical activity is defined as any bodily movement produced by skeletal muscle that requires energy expenditure. It can be undertaken in many different ways: walking, cycling, sports and active forms of recreation (such as dance, yoga, tai chi). Physical activity can also be undertaken as part of work (lifting, carrying or other active tasks), and as part of paid or unpaid domestic tasks around the home (cleaning, carrying and care duties). While some activities are done by choice and can provide enjoyment, other work or domestic-related physical activities may be necessary, or even mandatory, and may not provide the same mental or social health benefits compared with, for example, active recreation. However, all forms of physical activity can provide health benefits if undertaken regularly and of sufficient duration and intensity" (WHO, 2018, p. 14).
>
> "The WHO global recommendation on physical activity for health for adults is 150 minutes of moderate-intensity activity (or equivalent) per week, measured as a composite of physical activity undertaken across multiple domains: for work (paid and unpaid, including domestic work); for travel (walking and cycling); and for recreation (including sports). For adolescents, the recommendation is 60 minutes of moderate- to vigorous-intensity activity daily" (WHO, 2018, p. 15)
>
> Yet, current global estimates show one in four adults and 81% of adolescents do not do enough physical activity. Furthermore, as countries develop economically, levels of inactivity increase and can be as high as 70%, due to changing transport patterns, increased use of technology for work and recreation, cultural values and increasing sedentary behaviors.

Current lifestyles are contributing to the severe decrease of physical activity levels of a large portion of the population. This includes the time young people spend on studying, watching tv and/or using their mobile phone, as well as the increased frequent use of motorized transports. Hickman et al (2002) estimate that almost half the European young people between the ages of 11 and 13 spend approximately 4 hours a day watching television.

Sedentary behaviors are a complex phenomenon which can be related not only to the time that can limit the practice of physical activity, but also to the more or less active choices that can be made during that time period. Nowadays, the reduced levels of physical activity are partly due to the sedentary behaviors adopted during leisure periods. Sedentary behavior includes all activities performed in a sitting or lying position such as watching tv, using mobile phone or playing on the computer, all of which are examples of recreational sedentary behaviors. Steeves et al. (2012) mention that this kind of behavior is also often associated to unhealthy eating habits. The American Academy of Pediatrics (AAP, 2001) has expressed its concern stating that children and young people should

not spend more than 2 hours a day in these behaviors since they are negatively associated to several parameters related to health, diet, physical skills and cognitive performance. Throughout growth and development stages, sedentary behavior tends to increase, especially girls. Sedentary behavior habits in childhood are associated to obesity, poor physical fitness, smoking and high levels of cholesterol in adulthood (Hancox et al., 2004).

Tudor-Locke et al. (2001) advocate that active commuting is a potencial source of continuous moderate activity and should not be ignored from research on physical activity even though most times, the choices made depend on other factors such as the distance from home to school, the safety of the route, the child's age, among others.

Li et al. (2019) compare levels of physical activity and sedentary behavior between deaf adolescents and their hearing peers in order to verify if gender and social inclusion were predictive of physical activity among deaf adolescents. These adolescents presented a significant involvement in sedentary activities (632.54±81.31min/day) and lower levels of physical activity than their hearing peers. Additionally, only 4% of deaf people met the WHO physical activity guidelines of 60 minutes/day against 24% of Hearing people, who followed such recommendations. They also verified that social inclusion is a predictor that positively influences the practice of physical activity among deaf young people, and that participation in after school activities is an important way to help students to meet WHO recommendations. It was also determined that girls are less active than boys.

Given the number of factors (personal attributes, social systems and engagement) that limit and influence the practice of physical activity, the main goal of this report was to portray the physical activity habits of deaf students from the countries taking part in this project, in order to identify: i) sedentary behaviors; ii) the physical activity index and iii) the usual leisure activities of deaf and hard hearing students from different countries.

Methodology 

In order to complete this study at the schools of the partner countries, a questionnaire was presented during a face-to-face meeting where the purpose of its application was introduced, including an analysis of the terminology to be used for sample characterization. The terms and concepts included in the questionnaire were also clarified to avoid the existence of any remaining doubts and to standardize the test application protocol. The meeting was attended by experts in Deaf education research, PE teachers for deaf students and interpreters. After validating the questions and terminology to be used, all partners were involved in the following tasks: sample selection; translating the questionnaire into their country's language and test application.

Before proceeding with the administration of the questionnaire, approval was requested and obtained from the Ethics Committee of University Institute of Maia.

After being translated into the 5 languages of the partner countries, the questionnaire was converted into a Google form to be completed online. All procedures for administering the questionnaire were standardized so that the interference was as low as possible. Students could be assisted by a teacher or an interpreter who knew how students communicated; this help was limited only to clarifying doubts without influencing their answers. It was important for students to clearly understand all questions before answering.

In order to carry out this study at schools of the partner countries, all information was shared with school representatives so that the parents were informed about the project. Once written consent was obtained, a questionnaire was made available to be answered by deaf students.

The inclusion criteria were as follows: i) deaf/hard of hearing students, ii) between 12 and 20 years of age or born between 2000 and 2008 (age informed on 31st of December, 2020), iii) PE class participants.

The questionnaire was anonymous and consisted of five parts. In the first part, personal information was collected to characterize the sample, students were asked about their year of birth, gender, level of deafness, hearing aid devices and preferred type of communication.

2.1 Time allocation – Sedentary behaviors

A questionnaire was used to measure the time spent watching television (TV/ Mobile Time), using computer (PC Time) and studying. Participants were asked how many hours and minutes they usually watched television/mobile or used a computer for work and leisure every day (weekdays): (i) How much time do you spend watching TV/mobile per day? (ii) How much time do you spend working or studying on your computer per day? (iii) How much time do you spend on your computer for recreation per day? iv) How much time do you usually spend sitting around reading or studying? v) Minutes were converted in hours.

2.2 Commuting to and from school

Participants were asked if they went to school by car, bus, train, bike or walked to and from school, and how much time it took. Based on their answers, the respondents were categorized as using active (walking, bicycling) or passive (bus, train, car) commuting (Tudor-Locke et al, 2001). Time spent commuting to and from school was categorized as: (1) five minutes or less; (2) between 5 and 15 min; (3) between 15 and 30 min; (4) between 30 and 60 min; (5) more than 60 min, according to an established protocol (Tudor-Locke et al, 2001).

2.3 Physical Activity Index

Physical activity was assessed by using a questionnaire that had been previously determined to have good reliability with inter-correlation coefficients (ICC: 0.92 - 0.96) (Mota & Esculcas, 2002). The questionnaire had five questions with four or five answer options (four or five point scale): i) Do you participate in organized sports outside of school? ii) Do you participate in unorganized sports outside of school? iii) How many times per week do you practice sports or physical activity for at least 20 minutes out of school? iv) How many hours a week do you usually participate in physical activities out of school so much that you run out of breath or sweat? v) Do you participate in competitive sports? The overall maximum number of possible points was 22. A PA index (PAI) was obtained according to the total sum of points with increasing levels of activity, from the sedentary level (1 point) to the level of greater participation (4 or 5 points).

2.4 Leisure activities

Leisure activities were evaluated through the submission of a list with 21 hypotheses of response in which students indicated their participation. Additionally, Cloes et al. (1997) carried out a study in 5 European countries with the objective of identifying the leisure activities of young hearing people aged between 12 and 15 years.

In our study, we intended i) to identify the leisure activities selected by deaf/hard of hearing students, ii) to verify that the sport (organized / non-organized) is among their preferences, iii) to identify the preferred sports.

Participants and data collection

The questionnaire was answered by 187 deaf/hard of hearing students, 71 were excluded for not meeting the sample inclusion criteria, or for presenting incomplete answers.

Table 1 – Questionnaires answered and valid by country.

	Germany	Italy	Portugal	Slovenia	Spain
questionnaires answered	39	45	37	22	39
valid questionnaires	25	23	23	15	22

The sample of this study comprised 108 deaf/hard of hearing students, aged between 12 and 20 years, from schools in partner countries. Table 1 represents the distribution by country and by gender.

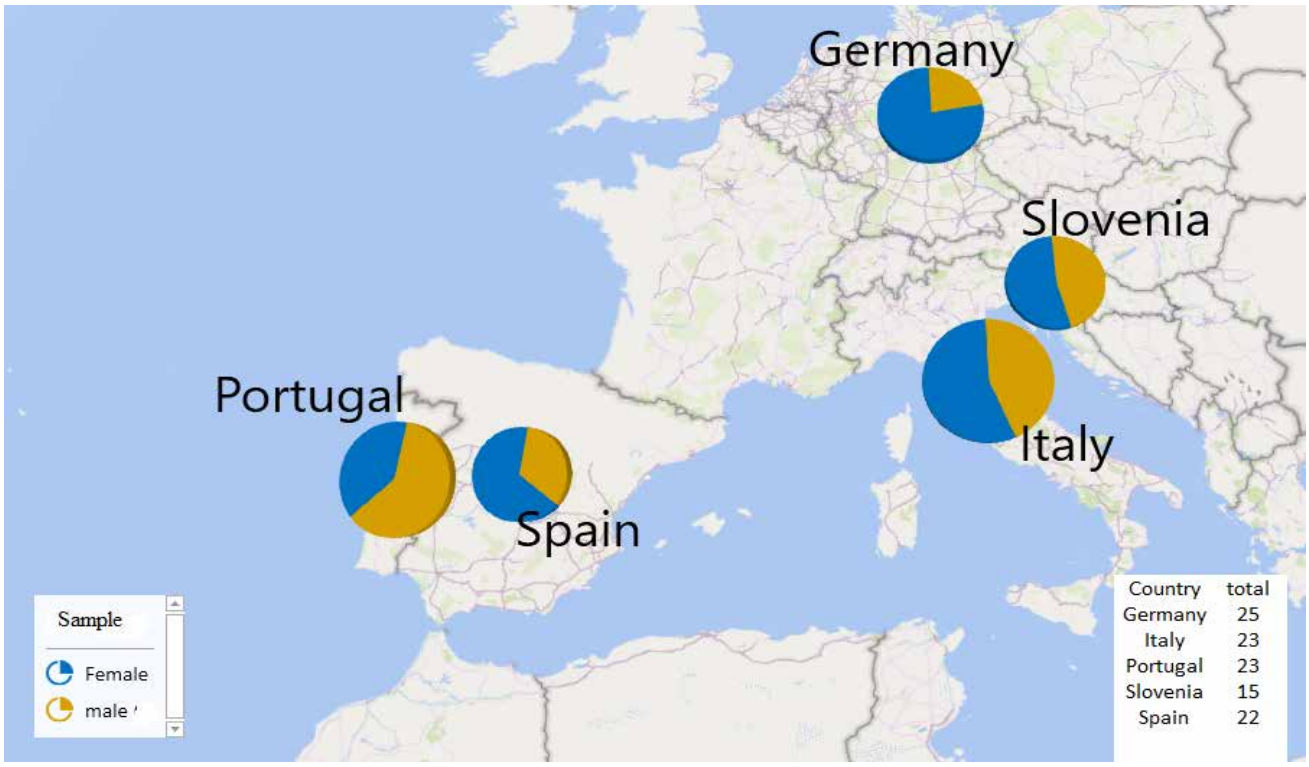


Figure 1 – Partner countries and sample distribution.

Germany

A total of 25 students participated in this study (39 students answered the questionnaire but 14 were not included because they did not meet the age criterion). Of the respondents considered, one did not want to express gender; 4 are male, with an average age of 19±0.7 years, and 20 are female, with an average age of 19.7 ±0.5 years. Respondents are aged between 18 and 20 years, with an average age of 19.6 ± 0.7 years. More than half (52%) of the students have deep deafness or are total deafness.

Italy

A total of 23 students participated in this study (45 students answered the questionnaire but 22 were not included because they did not meet the age criterion). Of the 23 respondents considered, 11 are male, with an average age of 16.9±2.3, and 12 are female, with an average age of 18.2±2.9 years (age was reported on 31 December, 2020). Respondents are aged between 14 and 20 years old, with an average age of 17.6 years. Nearly half (39.13%) of the students have deep deafness, approximately 17.39% of the students have moderate deafness and another 17.39% have total hearing loss.

Portugal

A total of 23 students participated in this study (37 students answered the questionnaire but 14 were not included because they did not meet the age criterion). Of the 23 respondents considered, 14 are male, with an average age of 17.4±2.2 years, and 9 are female, with an average age of 16.4 ±2.8 years. Respondents are aged on average 17.04 ± 2.5 years. Nearly half (56.5%) of the students have deep deafness or total deafness.

Slovenia

A total of 15 students participated in this study (21 students answered the questionnaire but 6 were not included because they did not meet the age criterion). Of the respondents considered, 7 are male, with an average age of 13.57±2.8 years and 8 are female, with an average age of 16.75 ±2.4 years. The average age of the group is 15.16±2.6 years. Nearly half (53.4%) of the students have deep deafness or total deafness.

Spain

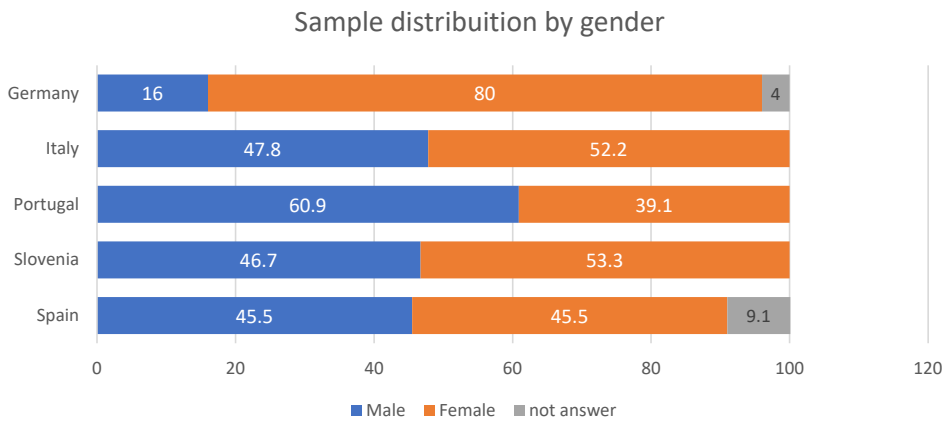
In this study, 22 target group students answered (37 students answered the questionnaire but 14 were not included because they did not meet the age criterion). Of the 22 students considered, 10 are male, with an average age of 16±2 years, 10 are female, with average age of 16.4±2 years, and 2 students did not state their gender, with 15±2.8 years. The average age of the group was 16±2.5 years.

Table 2 - Descriptive statistics for students, by country

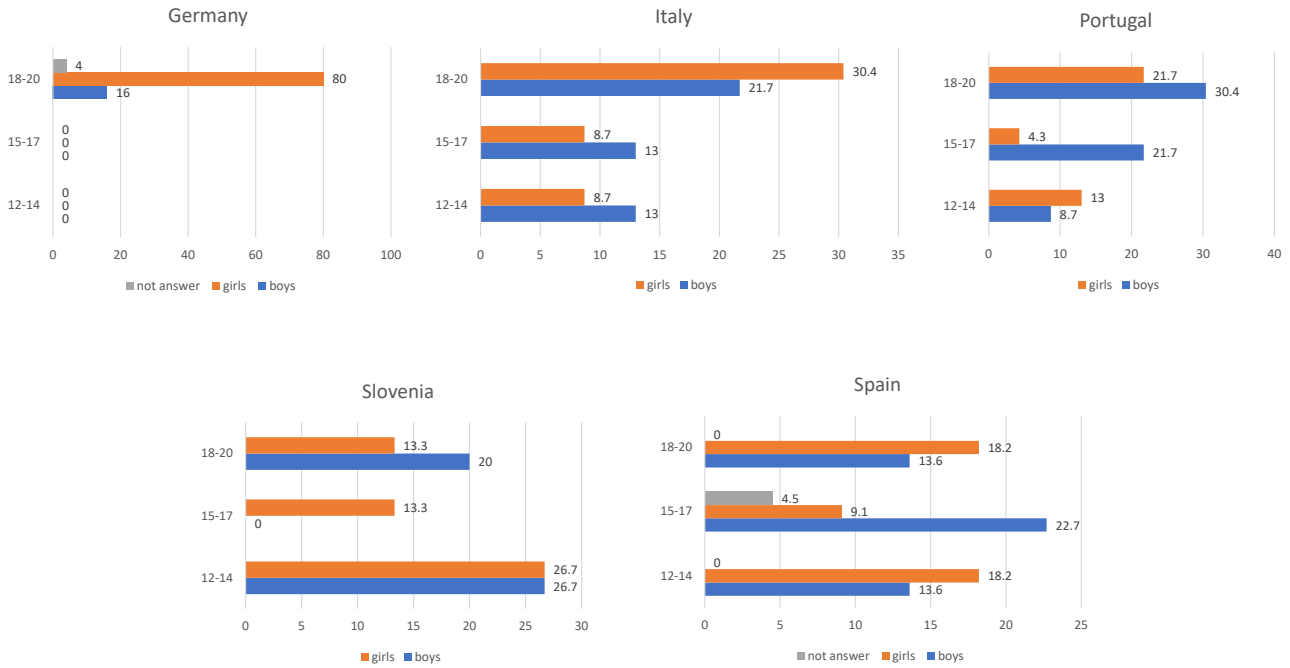
		Germany (n=25)			Italy (n=23)		Portugal (n=23)		Slovenia (n=15)		Spain (n=22)		
		boys (n)%	girls (n)%	not answer (n)%	boys (n)%	girls (n)%	boys (n)%	girls (n)%	boys (n)%	girls (n)%	boys (n)%	girls (n)%	not answer (n)%
Gender		(4)16	(20)80	(1)4	(11)47.8	(12)52.2	(14)60.9	(9)39.1	(8)46.7	(7)53.3	(10)45.5	(10)45.5	(2)9.1
Age x±sd)		19±0.7	19.6±0.7	20±0	16.9±2.3	18.2± 2.9	16.4 ±2.8	17 ± 2.5	13.6±2.8	16.8±2.4	16±2.9	16.4 ±2	15±2.8
Age group	Dec-14	---	---	---	13	8.7	8.7	13	26.7	26.7	13.6	18.2	--
	15-17	---	---	---	13	8.7	21.7	4.3	---	13.3	22.7	9.1	4.5
	18-20	16	80	4	21.7	30.4	30.4	21.7	20	13.3	13.6	18.2	---
Level of deafness	Mild	4	20	4	8.7	4.3	--	--	13.3	6.7	13.6	18.2	9.1
	Mod.	4	16	--	4.3	13	4.3	4.3	6.7	6.7	18.2	18.2	--
	Sev.	--	--	--	13	--	26.1	8.7	13.3	--	9.1	4.5	--
	Deep	--	24	--	17.4	21.7	26.1	26.1	6.7	26.7	--	4.5	4.5
	TLoss	8	20	--	4.3	13	4.3	--	6.7	13.3	4.5	--	--
Hearing aid devices	N	8	8	--	4.3	13	--	8.7	20	6.7	9.1	18.2	4.5
	CI	4	36	4	17.4	17.4	17.4	21.7	13.3	26.7	13.6	4.5	4.5
	HP	4	36	--	26.1	21.7	43.2	8.7	13.3	20	22.7	22.7	--
Preferred communication	SL	4	--	--	--	8.7	26.1	26.1	13.3	--	4.5	--	--
	SpL	--	40	--	39.1	34.8	4,3	4.3	13.3	--	31.8	22.7	9.1
	Both	16	40	--	8.7	8.7	30.4	8.7	20	53.3	9.1	22.7	--

MILD; MOD (moderate), SEV (severe), DEEP, TLoss (total loss); Hearing aid devices – N (none), CI (coclear implant), HP (hearing prothesis); Preferred communication – SL (sign language), SpL (spoken language), BOTH.

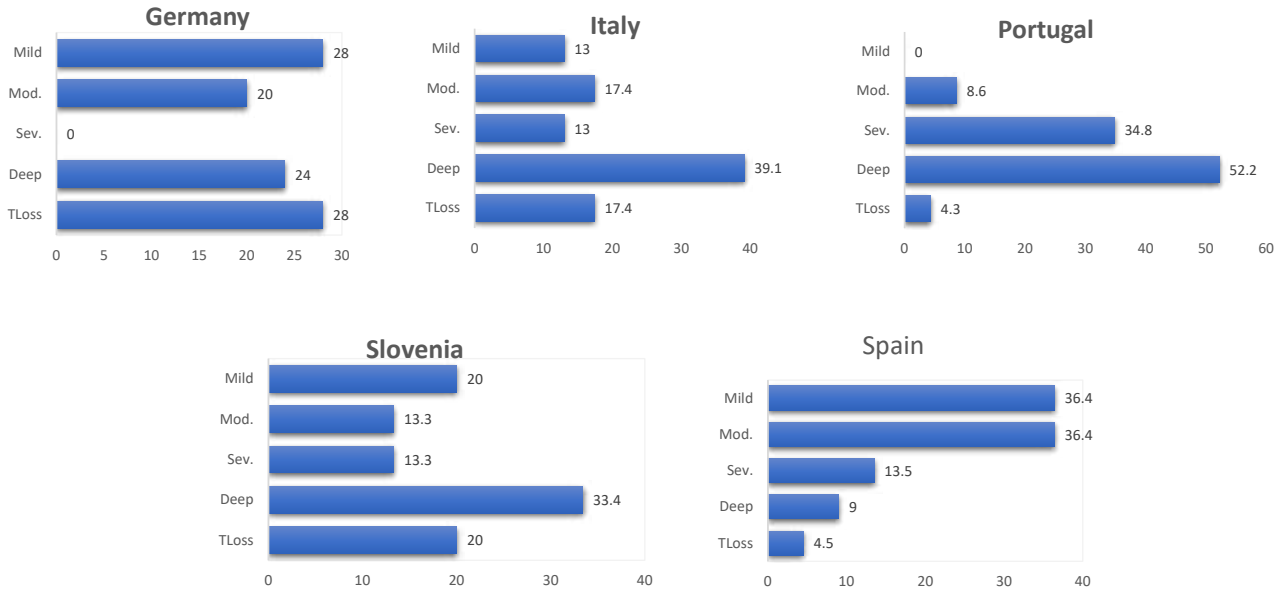
Sample distribution by gender



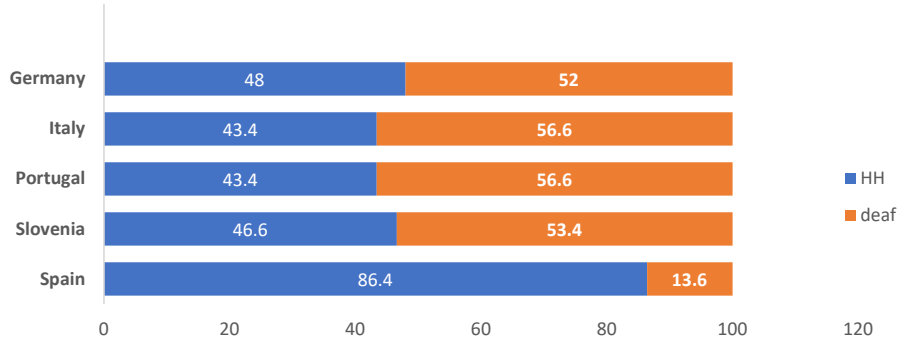
Sample distribution by age group (%)



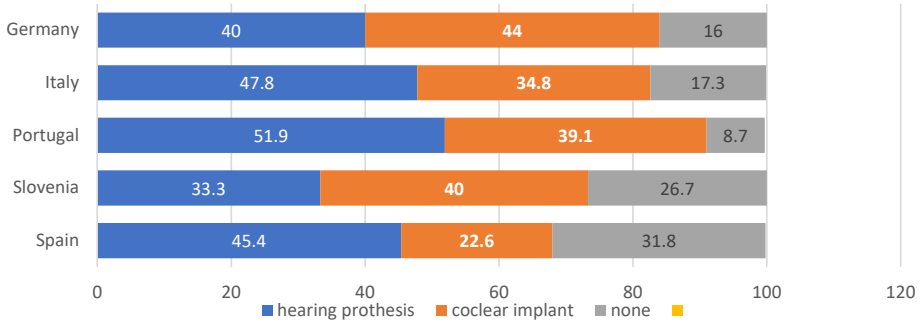
Sample distribution by level of deafness (%)



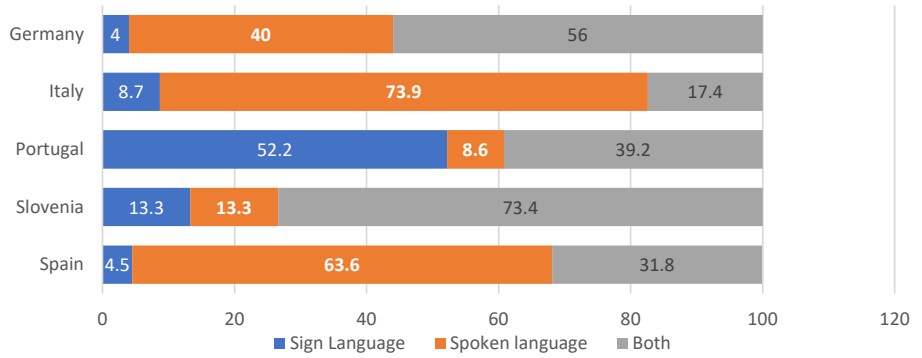
Sample distribution by hard hearing (HH) and deaf (%)



Sample distribution by hearing aid devices



Sample distribution by preferred communication



Test application procedures

Germany

The questionnaires were made available online (February 2020) and consent was requested from the School Directors so that they could be completed. The students who answered the questionnaires (with parental consent) live in Germany.

The students who have answered the questionnaire are from different departments of the RWB: there are A-level students as well as vocational, B- and C- level pupils. All of them take part in PE lessons. They have all kinds of hearing impairments, a variety of hardness of hearing, deafness, auditory processing disorders, etc. It depends on the group of students if signs are used during PE lessons. Some hard of hearing students may not need or want sign language, while others and the deaf students use and need it.

Italy

The questionnaires were emailed to schools at national and regional levels. However, most of the results have come in from the sports world since we also requested the help of FSSI – the Deaf Italian Sport Federation. The content and objectives of the study were explained to the Directors through telephone conversation and/or in person so that the questionnaires were completed only by deaf students.

The questionnaires were made available online (Google Forms) and most students answered them (with parental consent) in October 2020.

Portugal

The questionnaires were sent by email to schools in Porto, Braga, Coimbra and Lisbon (Reference Schools for Bilingual Education). Consent was requested from the School Principals so that they could be completed. The content and objectives of the study were explained to the Principals, through telephone conversation and/ or in person so that the questionnaires were filled out only by deaf students. The collaboration of interpreters with links to the students was also requested to assist them with the interpretation of the questions, or in the event of other difficulties. Most students needed this support.

The questionnaires were made available online (Google forms) and students answered them (with parental consent) between February and June 2020.

Slovenia

The questionnaire was conducted without major complications. We had previously sent a letter to sports teachers and SL interpreters and detailed information about the project, the content and the meaning of the questionnaire was presented to all participants (pupils included) during a joint meeting. The students (majority) needed a SL interpreter whose services was provided by us. The survey was conducted with students one-by-one on a computer along with a sign language interpreter. We expected a higher number of participants but unfortunately, not all of them were able to complete the survey since the senior students of the vocational programme were having practical training during this period.

Spain

The questionnaires were sent by email to schools in Galicia (Reference Schools for Bilingual Education). Consent was requested from the School Directors so that the questionnaires could be answered. The content and objectives of the study were explained to the Directors, through telephone conversation so that the questionnaires were filled out only by deaf students. We also sent the surveys to the Associations of Deaf People in Galicia. The questionnaires were made available online (Google Forms) and the students answered them (with parental consent) between February and October 2020.

All countries were invited to collect their questionnaire results, which then resulted in a National Report containing the analysis of the most important data (attached).

The results are presented following the sequence of questions in the questionnaire by means of descriptive statistics. Reading the data allows us to have an idea of the time spent on sedentary study activities and the options taken by students in occupying their free time. Table 3 shows the average hours spent by students on recreation and study tasks on a daily basis. Average values are between a minimum of 6.33 hours for students in Slovenia and a maximum of 8.64 hours spent by students in Germany.

4.1 Sedentary behaviors

Table 3 – Time allocation (TA)

Time spent (Hours)	Germany (n=25)	Italy (n=23)	Portugal (n=23)	Slovenia (n=15)	Spain (n=22)
watching TV/mobile per day	3.86	2.78	2.35	1.93	2.42
using the computer to work or study	0.91	2.00	1.51	1.14	2.32
using the computer for recreation	1.26	0.74	1.86	2.28	1.57
sitting around reading or studying	2.51	2.50	1.29	0.98	1.75
TA sedentary behaviors	8.64	8.02	7.01	6.33	8.06

The average values spent on these tasks are between a minimum of 0.74 hours for students in Italy who use the computer for recreation and a maximum of 3.86 hours spent by students in Germany watching television or using mobile phone. The figure shows the recreation screen time (RST), and it can be noted that all sample groups are engaged in sedentary activities for a period longer than 3.52 hours. The figure shows the total RST spent by the sample on sedentary behaviors and that all groups have sedentary recreational behaviors which exceed 2 hours daily, not respecting WHO recommendations.

Activities were then grouped into recreational activities (time spent watching TV/mobile per day and time spent using the computer for recreation) and study activities time (SAT) (time spent using the computer to work or study and time usually spent sitting around reading or studying).

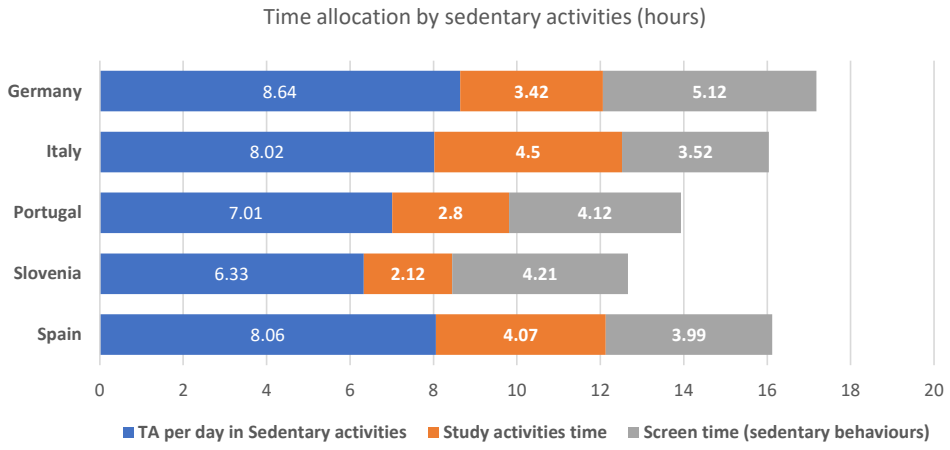


Figure 4 – Allocation of time in sedentary activities. Time spent on study activities. Time spent on screen activities

- The sample groups spend on average 7.6 hours per day on sedentary activities (minimum 7.01 hours and maximum 8.64 hours).
- The sample groups spend on average between 2.12 and 4.5 hours per day on study activities.
- the sample groups spend on average between 3.52 and 5.12 hours per day on screen time (sedentary behaviors).

4.2 Commuting to and from school

It was considered important to know the kind of transport used by students on their way from home to school.

It is known that in most cases, these options do not depend directly on the students but on a set of factors of family organization, the students' age, distance to be covered, access to public transport, among others. However, the options chosen allow us to divide them into 3 categories, according to students' participation: passive, combined and active participation. Passive commuting (car or motorcycle) combined commuting (bus, underground or train), and active commuting (to walk or ride a bike).

The combined commuting depends on several factors, such as the distance from home to the bus stop which may require a longer or shorter walk, or whether the bicycle is used to complement the distance, and / or also the number of transports used.

Table 4 – Commuting to and from school

	Germany %	Italy %	Portugal %	Slovenia %	Spain %
Car	---	29.7	56.5	33.3	13.6
Motorcycle	---	2.7	---	---	---
Passive commuting	---	32.4	56.5	33,3	13,6
Bus or underground	8	35.1	34.8	46.7	31.8
Train	64	13.5	---	---	---
Combined commuting	72	44.6	34.8	46.7	31.8
Bicycle	---	10.8	---	---	4,5
Walking	28	8.1	8.7	6.7	50
Active commuting	28	18.8	8.7	6.7	54.5

More than half of Spanish students (54.5%) travel to school by foot or on a bicycle. Students from Slovenia and Portugal are the ones who make less use of this active way of going to school, respectively 6.7% and 8.7%.

On the other hand, Portuguese students are the ones who most use private transport, more than half the sample (56.5%) uses passive commuting (car or motorcycle). Public transport is used by 72% of students in Germany, 64% use the train in their journeys and 8% the bus or subway.

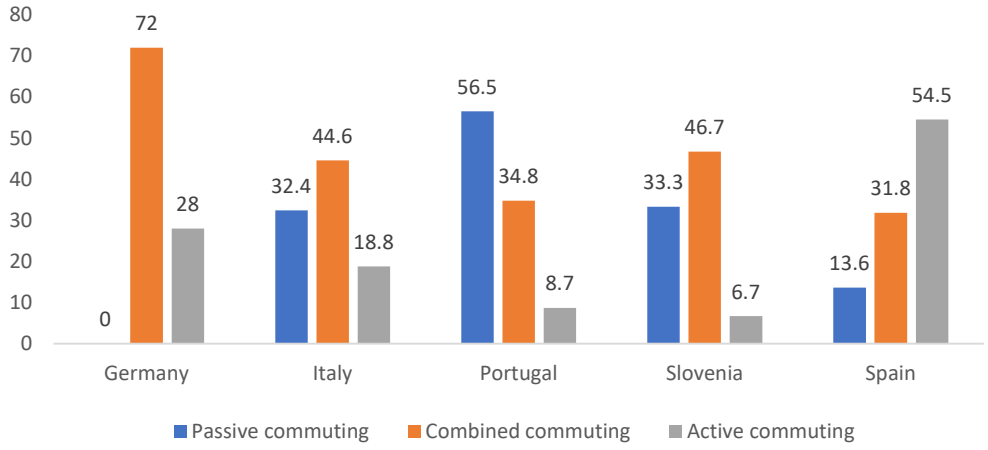


Figure 5 - Commuting to and from school.

4.3 Time spent commuting to and from school

Time spent travelling was considered to include students' transport options.

We can see that 95.5% of Spanish students and 73.3% of Slovenian students spend up to 30 minutes on their way to school. German students (28%) take up to five minutes on this route and as many as 28% take over 60 minutes.

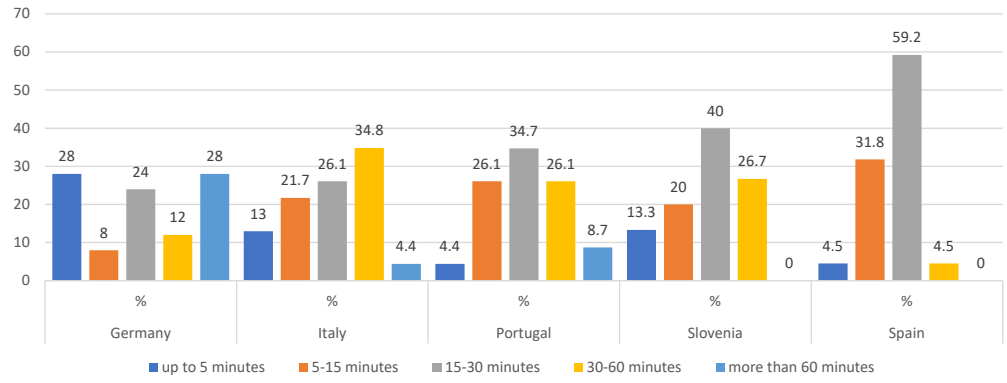


Figure 6 - Time spent commuting

- Students from Germany use the combined commuting and active transport.
- More than half of Spanish students use active commuting.
- Portuguese students are the ones who use the most passive commuting.
- Almost half of Slovenian and Italian students use combined commuting and passive commuting.

4.4 Physical Activity Index

To obtain the physical activity index, questions concerning participation in organized and non-organized sports activities outside of school, the frequency and intensity of this practice, and participation in sports competitions were presented. These questions allowed answers on a Likert scale of 1 to 4 (3 questions) and on a scale of 1 to 5 (2 questions). An index was formed from the sum of the score obtained in each of the answers of the questionnaire, which had the maximum value of 22 points.

The physical activity index (PAI) was obtained by the total sum of points with increasing levels of activity (Ledent et al., 1997). To express these levels, tercis were used in which the sample was divided into different activity groups according to the total sum. Three categories were

used: low activity - ≤ 7.3; moderate activity [7.4 – 14.5]; higth activity - index ≥ 14.6 (maximum 22).

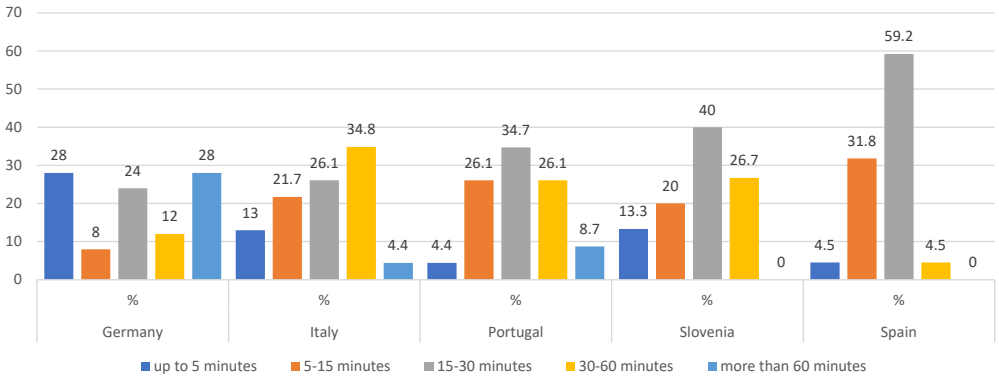
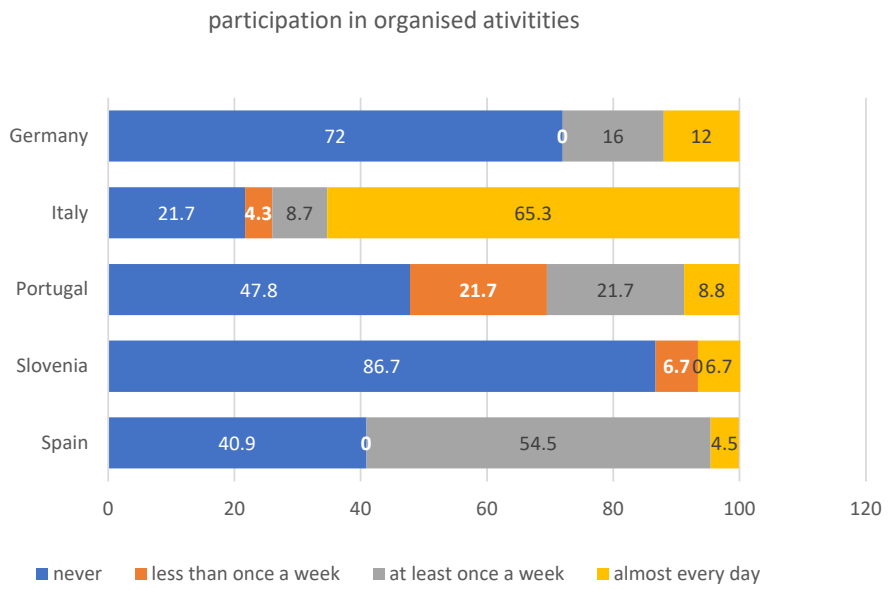


Figure 7 – Physical activity index by country.

Table 6 shows the relative frequencies of students who participated in organized sports outside of school. We can see that 65.3% of Italian students, 56.5% of which present deep deafness and total hearing loss, participate in this type of activities almost every day. The answer “never” was selected by 86.7% of Slovenians and 72% of Germans.

Table 6 - Outside-school organised sports activities (club, gym, etc.)

	Germany %	Italy %	Portugal %	Slovenia %	Spain %
Never	72	21.7	47.8	86.7	40.9
Less than once a week	0	4.3	21.7	6.7	0
At least once a week	16	8.7	21.7	0	54.5
Almost every day	12	65.3	8.8	6.7	4.5

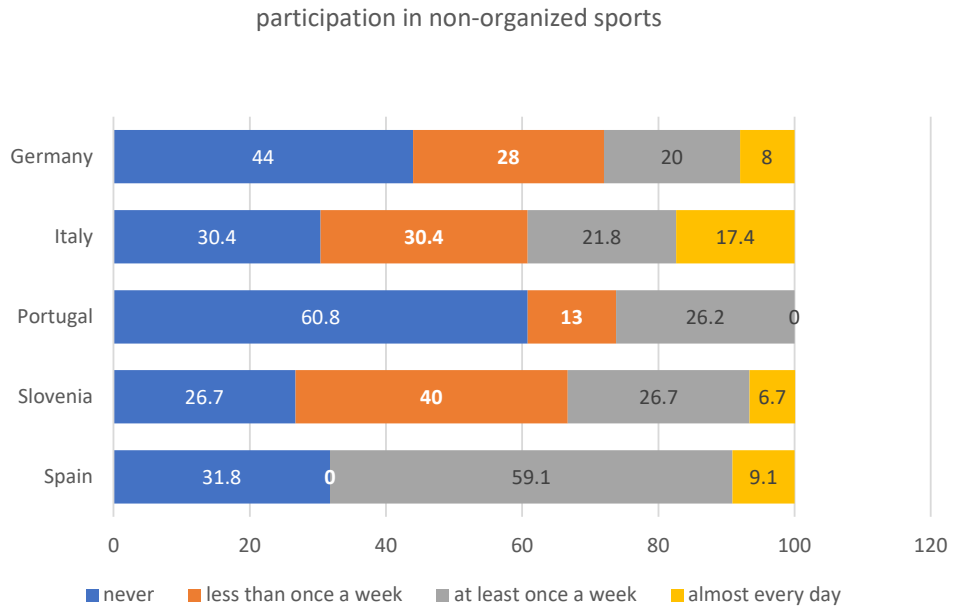


- The groups from Germany and Slovenia have a high percentage (more than 70%) of students who have never participated in organized sports activities outside of school.
- Only the group from Italy, with more than 65% of students, participates in sports activities organized outside of school almost every day.
- All other groups have a very small participation, between 4.5% for Spain and 12% for Germany.

By participating in non-organized activities outside of school, it was verified that 60.8% of Portuguese and 44% of German students answered that they had “never” participated in those type of activities. Only 17.4% of Italians participate almost every day, while 59.1% of Spanish students participate once a week.

Table 7 - Outside-school sports activities in non-organised sport (without joining a club or similar)

	Germany %	Italy %	Portugal %	Slovenia %	Spain %
Never	44	30.4	60.8	26.7	31.8
Less than once a week	28	30.4	13	40	0
At least once a week	20	21.8	26.2	26.7	59.1
Almost every day	8	17.4	0	6.7	9.1

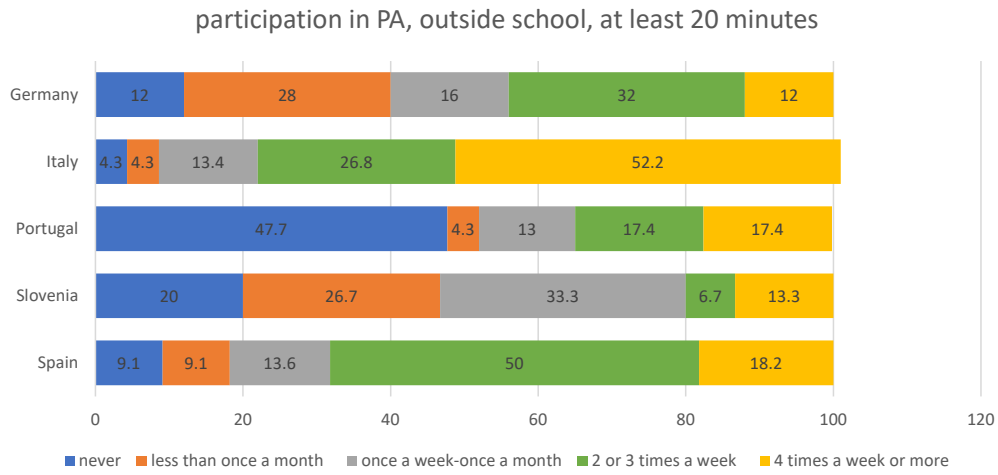


- Portugal presents the group with the highest percentage of students who have never participated in non-organized sports activities outside of school.
- Students from all countries participate in non-organized sports activities outside of school at least once a week.
- All groups have a very small daily participation, between 6.7% of students from Slovenia and 17.4% of students from Italy.

For these ages, the WHO recommends an average of at least 60 minutes per day of moderate to vigorous physical activity. Table 8 shows that only 52.2% of Italian students comply with a practice of at least 20 minutes, 4 or more times a week. Portuguese students (47.7%) "never" take part in sports or physical activity outside of school.

Table 8 - Time spent per week in sport or physical activity, outside school, for at least 20 minutes

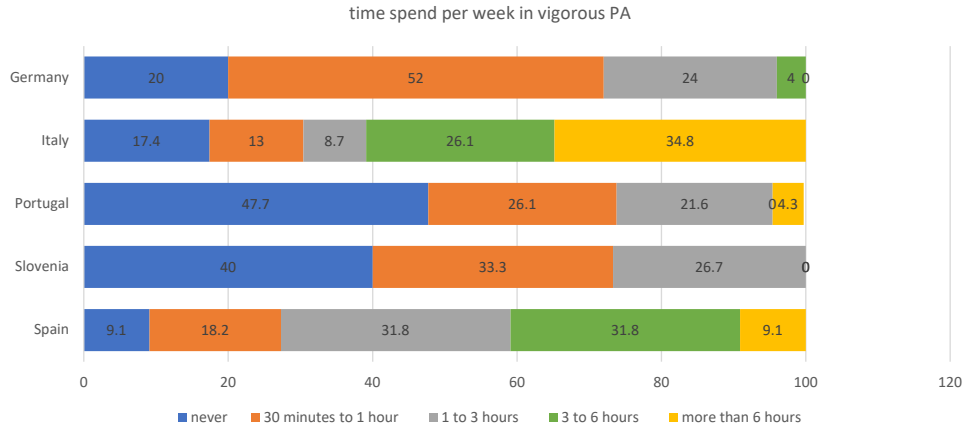
	Germany %	Italy %	Portugal %	Slovenia %	Spain %
Never	12	4.3	47.7	20	9.1
Less than once a month	28	0	4.3	26.7	9.1
Between once a week and once a month (once a week-once a month)	16	13.4	13	33.3	13.6
2 or 3 times a week	32	26.8	17.4	6.7	50
4 times a week or more	12	52.2	17.4	13.3	18.2



- Almost half of the sample (47.7%) of Portuguese students never participate in PA, at least 20 minutes outside school.
- Half of Spanish students participate in PA outside school, 2 or 3 times a week for at least 20 minutes.

Table 9 - Time spent per week taking part in physical activity, outside school, until running out of breath or sweating

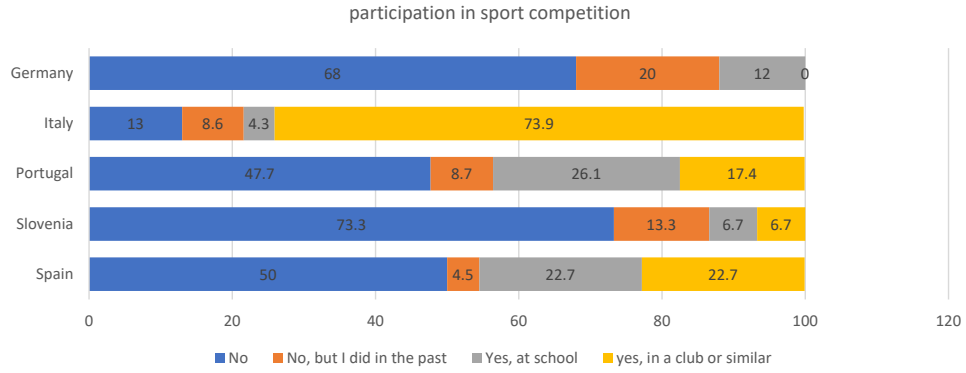
	Germany %	Italy %	Portugal %	Slovenia %	Spain %
Never	20	13.4	47.7	40	9.1
30 minutes to 1 hour	52	21.7	26.1	33.3	18.2
1 to 3 hours	24	17.4	21.7	26.7	31.8
3 to 6 hours	4	8.6	0	0	31.8
More than 6 hours	0	30.4	4.3	0	9.1



- Only students from Italy (60.9%) and students from Spain (40.9%), spend more than 3 hours per week practicing vigorous PA.
- Half of students from Germany (52%) perform vigorous PA only between 30 minutes to 1 hour per week.
- The results show that 73.8% of Portuguese students and 73.8% of Slovenian students practice less than 1 hour of PA weekly.

Table 10 – Participation in sport competitions

	Germany %	Italy %	Portugal %	Slovenia %	Spain %
No	68	13	47.7	73.3	50
No, but I did it in the past	20	8.6	8.7	13.3	4,5
Yes, at school	12	4.3	26.1	6.7	22.7
Yes, in a club or similar	0	73.9	17.4	6.7	22.7



- From the responses obtained, we concluded that 50.4% of the total sample never participated in sport competitions.
- However, 14.36% of the total sample participated in sports competitions at school.
- Italian students participate the most (73.9%) in sports competitions in clubs or similar.

There is a very low participation in organized and non-organized PA outside of school by the majority of the sample.

If we analyze the answers obtained by each country, it is noticeable that the Italian group stands out from the others in what concerns PAI. All the answers obtained show that the Italian students practice organized sport regularly (more than 4 times a week), and participate in sports competitions.

4.5 Leisure activities

To present the leisure activities selected by students, we used the percentage categories suggested by Cloes et al., (1997) in the table 11, where the leisure activities selected by the entire sample are grouped.

Overall, students reported occupying their free time in activities ranging from using "Instagram / Facebook / Twitter / Snapchat / Whatsapp" (85.5%), to "Participating in art or other cultural events" (8.8%). The use of social networks and screen time are activities most selected by students. Others, such as "chatting with friends", "watching TV", "doing homework or supplementary schoolwork", "helping with house chores (at home)", and "being alone (relaxing, thinking)" were selected by more than 60% of the sample. "Playing sports with a coach /teacher" and "playing sports without a coach / teacher" were selected in 13th and 15th position.

Table 11 - Distribution of leisure categories according to the average percentages of the students who answered to practice them.

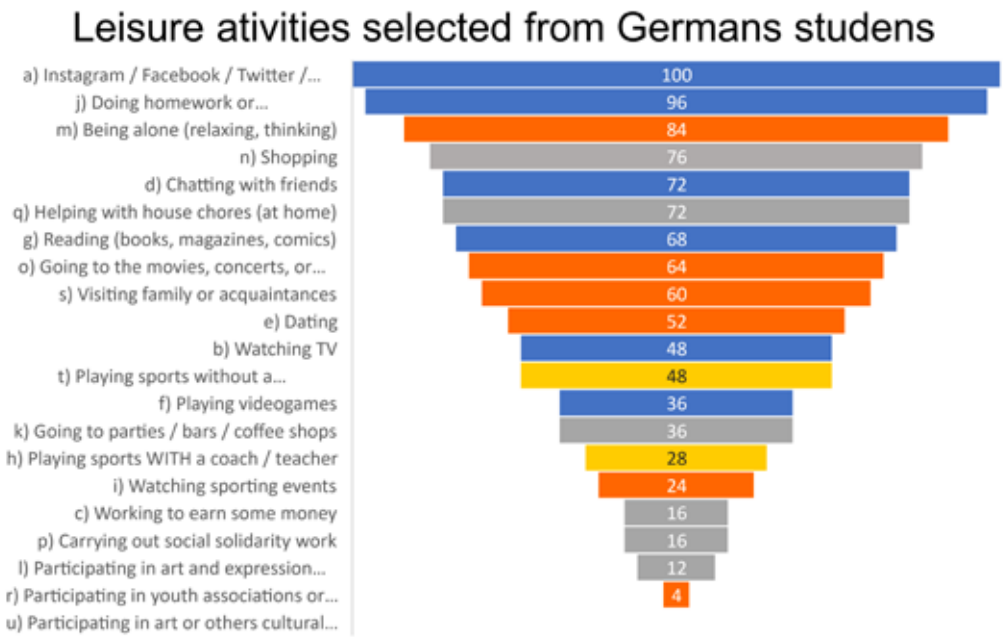
Activities	Selected by all sample (%)
between 81 and 100%	
a) Instagram / Facebook / Twitter / Snapchat / WhatsApp	85.54
between 61 and 80%	
d) Chatting with friends	78.58
b) Watching TV	74.62
j) Doing homework or supplementary schoolwork	70.92
q) Helping with house chores (at home)	62.54
m) Being alone (relaxing, thinking)	60.52
between 41 and 60%	
s) Visiting family or acquaintances	57.04
g) Reading (books, magazines, comics)	51.34
n) Shopping	49.48
f) Playing videogames	45.76
k) Going to parties / bars / coffee shops	45
o) Going to the movies, concerts, or theatre	43.72
between 21 and 40%	
t) Playing sports without a coach / teacher	37
i) Watching sporting events	36.88
h) Playing sports WITH a coach / teacher	36.16
e) Dating	35.34
between 0 and 20%	
p) Carrying out social solidarity work	13.68
r) Participating in youth associations or movements	11.74
c) Working to earn some money	9.42
l) Participating in art and expression activities	9.38
u) Participate in art or others cultural events	8.78

4.6 Leisure activities selected by country

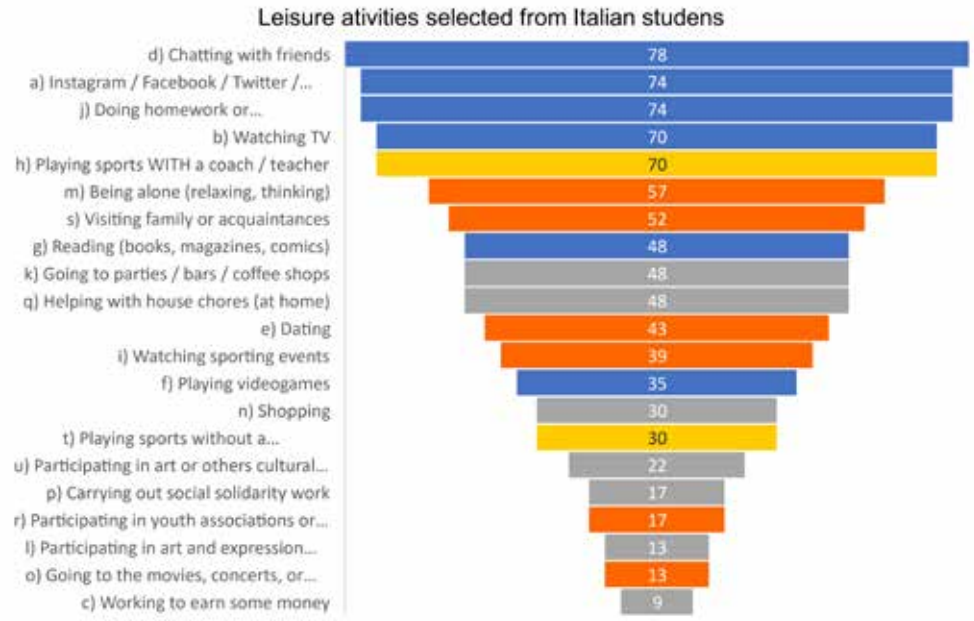
To facilitate reading, leisure activities were classified using a 4-color scale, ranging from

1	2	3	4
Sedentary activity	Low activity	Moderate activity	High activity

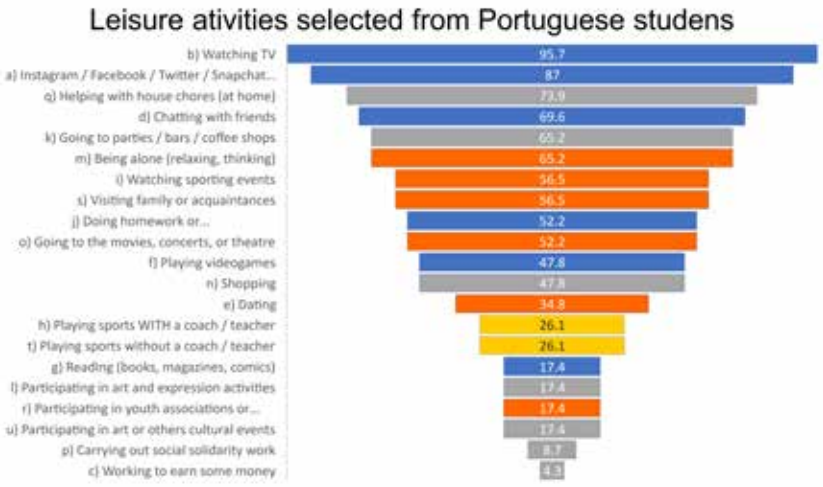
Germany



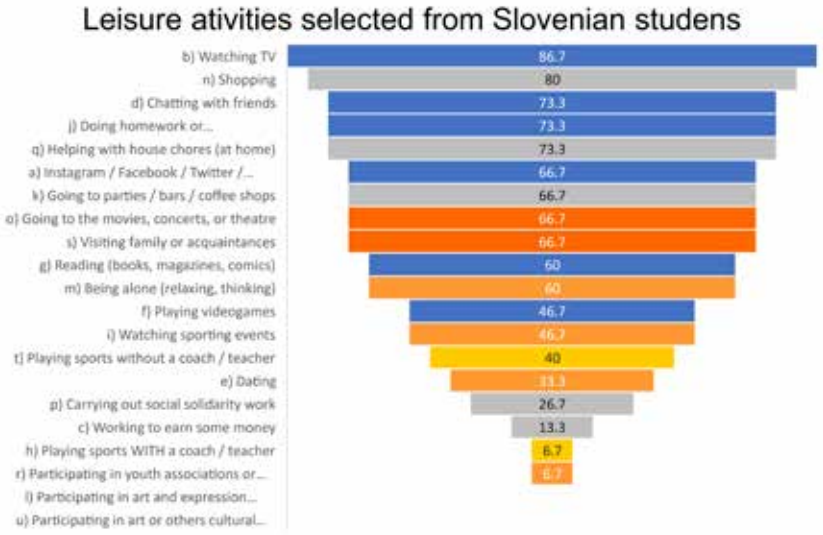
Italy



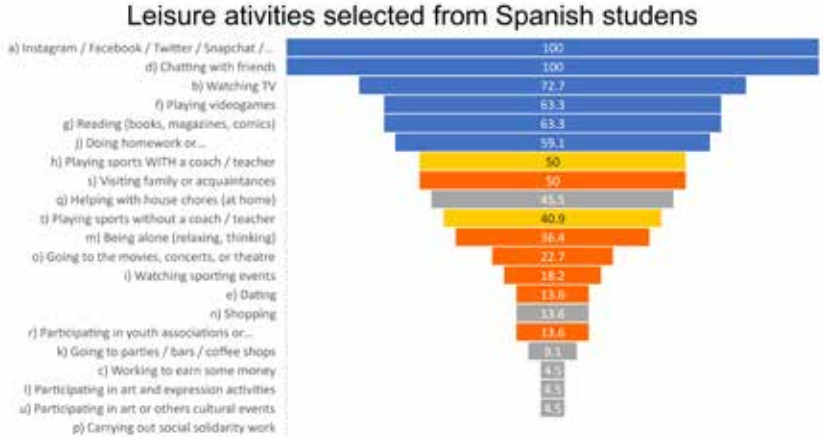
Portugal



Slovenia



Spain



4.7 Identification of preferred sports

Country	With coach /teacher (n)		Without coach /teacher (n)	
Germany	basketball	1	Fitness	2
	Fitness	2	Gym	2
	Gym	1	Run	2
			Run and trainning	1
			athletics	1
			Dancing and walking	1
			Trainning swimming	1
			walking	1
Total		4		11
Italy	Athletics and volleyball	1	autonomous physical training	1
	basketball	1	climbing	2
	martial arts and volleyball	1	football	1
	rugby	1	volleyball	1
	volleyball	11	yoga	1
Total		15		6
Portugal	Dance	1	Running or walking	1
	football	1	football	2
	Futsal	2	autonomous physical training	1
	Rugby	1	Rugby and volleyball	1
Total		5		5
Slovenia	Soccer	1	fitness	1
	handball	1	Cycling, tennis and badminton	1
			soccer	2
			walking	1
			shotting	1
Total		2		6
Spain	Ballet	1	basketball	1
	Basketball	1	cycling	1
	Dance	2	running	3
	elliptical, spining, boxing ..	1	football	1
	football	2	swimming	1
	HIPICA	1	surf	1
	judo	1	tennis	1
	ping pong	1	yoga	3
	tennis	1		
Total		11		12

Conclusion

This report resulted in the gathering of information based on data collection by the project partners. The intention was that of carrying out a research study to identify the physical activity habits of deaf and hard of hearing students from different countries in the consortium. The information was collected through the administration of a questionnaire that aimed to collect information about a set of aspects related to sports habits that have an important impact on the health of humanity. Physical activity and health have attracted the attention of important international organizations including the WHO which presented an action plan in 2018 to be completed by 2030 with a view to increasing sports practice and reducing physical inactivity by 10% until 2025 and by 15% until 2030. This plan contains a set of initiatives to be developed at various levels to create active societies through the implementation of social norms; active environments by developing and maintaining safe and equitable spaces and places; active people through the development and promotion of programs and opportunities for practice and finally, active systems, through the development and strengthening of political action with the aim of mobilizing resources and implementing local, national and international actions, as well as increasing physical activity and reducing sedentary behavior.

This organization provides guidelines on a regular basis for the practice of physical activity with beneficial effects on health and also explains the harmful effects that sedentary behavior has on our health. The intention of the study carried out was that of obtaining a description of a set of aspects related to physical activity habits and mainly to confirm behaviors and attitudes that are visible in our daily life. Various aspects of sedentary activities and behavior were studied. Results showed that all groups in the sample spent an average of 7.6 hours per day on sedentary activities, of which between 2.12 and 4.5 hours were spent on activities of study. The remaining time, between 3.52 and 5.12 hours on average, was spent on screen time activities, that is, on sedentary activities. If we cross these results with the leisure activities selected by the students, we can see that 74.6% occupy their free time “Watching TV”, 78.58% “Chatting with friends” and 85.54% “Using Instagram / Facebook / Twitter / Snapchat / WhatsApp”. In addition to the concerns related to the significant amount of time spent by young people on sedentary activities, we find that the sedentary behavior of many young people who prefer to occupy their free time on recreational and leisure activities even more worrying considering that these activities are also sedentary and often performed in isolation without face-to-face social interaction. As this report was written, the importance of school became very noteworthy to us, as it plays a crucial role in the implementation and modification of these behaviors through the creation and development of transdisciplinary initiatives capable of transmitting the necessary knowledge to change attitudes and life habits. The transportation means used to go to school and the implementation of active transport, walking and/or moving by

bicycle comprise some of the initiatives and behaviors that can be learned so as to become a habit. Additionally, combined forms of transportation such as using the subway, the bus, combined with the use of the bicycle or even walking could be adopted to cover the rest of the route. In regards to the use of private transport, we found that the use of the car is still very rooted in habits, mainly in the sample of students from Portugal (56.5%). Students in Spain (54.4%) are the most active, as they walk to school, while students in Germany (72%) travel using public transport, the train and 28% travel on foot. It seems important to remember that the sample from Germany was made up mostly (80%) of girls with an average age of 19.6 years. This factor must also be taken into account when studying the type of transport, as well as the safety of the route, the distance to the school, among other factors that have not been controlled.

Physical activity habits were then studied, and the BP index was calculated through the sum of the points obtained in the questions presented in a Likert scale of 4 and 5 points. After performing the calculation, it was found that the sample from Italy was the one that obtained the highest index of 15.4 points out of a total of 22 possible points. Spain came in second place with 13.6 points, Germany in third with 10.5 points, followed by Portugal with 10 points and Slovenia with 9.6 points. Participation in organized or unorganized sports activities outside of school, the time spent weekly on the practice of sports activities and the intensity of that practice were answered in a Likert scale, where 1 corresponded to “never” or “no” and was represented on the charts in blue. The use of tables with answers and colored graphs was intentional in order to facilitate analysis and reading. In most of the graphs, the color blue which represents “sedentary activities or sedentary behaviors” is clearly dominant. This means that a high percentage of students from different countries do not participate in organized or non-organized activities outside of school. Only the responses obtained from Italian students contradict the tendency of the responses from students of other countries. This leads us to believe that they are mostly volleyball players, as can be seen in the table on page 45. Non-participation in sports activities outside of school comes against the opinion of some authors when they state that physical education classes represent the only place where many students actually perform sports activities. Hence, the need for the school and professionals in this field of study to recognize the real importance of the role it plays in the lives of many young people. In addition to a place of practice, it must be a place of learning, where everyone must have access to information and knowledge, regardless of their form of expression or communication. Only this way can they become active, responsible and knowledgeable citizens who are aware of the effects that their decisions have on their lives.

Finally, we sought to identify the activities taken up by young people to occupy their leisure time. A list was presented with 21 options to choose from, where students could check more than one answer.

Here, we dared to select activities on an increasing scale ranging from sedentary activity (blue) to vigorous activity (yellow) with the aim of analysis and possible cataloging of activities. The criteria used in this series were simple: the activity was considered sedentary if it was performed in a sitting or lying position, as understood for example, “being on social media’’, “watching TV”, “playing video games”. Those requiring little activity were considered Low activity (orange). Next, moderate activity (gray) was considered, as it implies movement and mobility. Finally, sports practice was considered, with or without a trainer / teacher (yellow). By observing the funnel graphs, the blue color prevails in the top positions. And that the gray and yellow colors in the bottom positions of the funny other words, the activities most selected by the various groups fell mostly under sedentary activities. Young people privilege the use of social media as the main form of occupying their free time. We found that most activities carried out by students involve little social contact. It remains to be seen whether or not the selection of activities was influenced by the pandemic situation that was imminent at the time the questionnaires were released for completion. The partner countries that are part of this project will certainly find here relevant information that should be disclosed and analyzed in schools by teachers and students.

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