Proximity Sports as a Sostenible Strategy for the Promotion of Physical Activity at an Early Age: The KIA Project

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Article

Proximity Sports as a Sostenible Strategy for the Promotion of Physical Activity at an Early Age: The KIA Project

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Abstract: This article presents the main results of the Kids in Action (KIA) project, which aimed to promote physical activity and sport among children aged 3 to 11, by linking the education, sports and family sectors. It applies the concepts of proximity consumption and the 15-minute city to sustainable and healthy habits. The aim of this study is to analyse the degree of success of this pilot experience by means of a survey for participant children, and interviews with the stakeholders involved in order to identify good practices in the promotion of physical activity at an early age. A total of 147 children and 10 adults (3 family members, 4 school managers or teachers and 3 sports managers) participated. As the most outstanding results, we found the role that introducing sport modalities, facilities and, above all, doing it in a guided way in the form of workshops, can have not only on the specific practice but also on the intention to continue with it. Children who are less inclined to mainstream sports particularly benefit from actions such as KIA. Among the main barriers, which cause inequality, is the availability and sporting culture of families.

Keywords: children; sport clubs; healthy habits; physical activity promotion

1. Introduction

Sedentary lifestyles and insufficient levels of physical activity (PA) are a global problem [1]. In Spain, only 63% of the school-age population engage in organised physical activity at least one day a week and 83% engage in unorganised PA; but only 43% can be considered active in terms of frequency and intensity. Between 20 and 30% of the school population is sedentary [2–4], with school age being a key period in the development of physical activity habits, since if these activities are consolidated in childhood, it increases the likelihood that young people will become active adults, benefiting from the full effects of PA throughout each of the stages of life [5].

In general, the level of practice decreases significantly around the age of 11-12 years, coinciding with the transition from primary to secondary education, as has been observed in other countries [1,6,7]. There is also a gender gap, most pronounced in organised physical activities, where it reaches 20 percentage points [2]. Most of the organised activities took place in facilities and spaces outside school. In the case of non-organised activities, they mainly take place in urban areas. When analysing the barriers to doing sport among Spanish schoolchildren, the reasons most often given are "because I don't have time" (25%) and "because I don't like it" (20%). Only 9% do not do it "because it costs money" and 5% "because it is far away".

Sport participation is a complex phenomenon, in which intrapersonal, interpersonal and social factors interact. In this sense, proximity to points of interest such as parks and trails has been studied as a key point to promote participation in PA [2,8]. In this cluster of factors, the main socialisation agents such as the family, the school and, later on, the peer group, seem to play a prominent role.

Regarding the family, parental sports culture and children's "physical literacy" [9], including parental encouragement of physical activity, parental support for physical activity or modelling [10];

time spent outdoors and proximity environment (social spaces for physical activity in the community and the number of physical activity facilities close to the child's home) were positively associated with children's physical activity in the transition from primary to secondary education [11].

Physical activity could be perceived as an opportunity to spend time with children to bond and develop shared interests. In addition, several studies have focused on shared practice between parents and children and found that children who engaged in the most physical activity with their father had the highest moderate to vigorous physical activity [12].

Kippe, Fossdal and Lagestad (2021) highlighted the role of preschool staff as organisers of children's activities, as well as their involvement in children's spontaneously initiated PA [13]. PA decreases with age, therefore, physical education should be included as early as possible so that children benefit from positive role models from an early age and can establish good PA habits, especially in a way that is perceived as fun and enjoyable. But not only in preschool, throughout their academic life, educators can be an important social factor influencing children's physical activity and sedentary behaviour [15].

There is a considerable amount of research on PA in adolescents but only a few studies of children from a socio-ecological model have focused on early childhood or on this critical moment of transition from primary to secondary school [11], considered by some authors as the great challenge to be faced [16].

From the socio-ecological model [17], the physical environment would be relevant for the levels and type of physical activity taking place in a city, neighbourhood or community [18]. Different studies have found that proximity to an exercise facility is positively associated with leisure-time physical activity, considering proximity as a 10-minute walking distance, 1 km from home, "the 15-minute city", 20-minute walking distance, or even asking about perceived proximity [19–25]. In adults, PA among women, younger adults, people with a higher education and urban residents appeared to have a stronger association with distance to an exercise facility [19]. Adolescents' perception of living in environments or dwellings that facilitate physical activity is associated with healthier BMI, more hours of physical activity and family time, and fewer hours of screen time [20], as well as greater intensity and duration of PA activities [24]. In children, there is a significant correlation between the spatial characteristics of an urban neighbourhood and general environmental cues on the duration and intensity of physical activity [21].

Proximity to sports facilities and venues is particularly important for the most vulnerable social groups, such as minorities [26], single-parent families [27] or the economically disadvantaged [28].

However, the concept of proximity is not only physical (distance from home or work to certain facilities and services), but has become a philosophy of life, framed within sustainability and "making city", in recent decades a whole current has spread that advocates local consumption, proximity trade and friendlier relations in the inhospitable neighbourhoods of modern cities. A look towards the neighbourhood as a place to "make life" and "make community" [29–31].

Millennials, the digital, hyper-connected generation with high ethical and moral values, are the ones who have led this change of resistance to market imbalances, something that has been exacerbated by the COVID-19 crisis [20,31], where the close and proximate has become a lifeline [29]. We speak of a more conscious consumption (of products and services), of proximity as a rising value and quality of life, of saving travel time, of public space as a space for social relations and with elements of urban sustainability [32].

This policy offers citizens a wider range of possibilities to efficiently navigate the large spaces of the metropolis in order to carry out the numerous daily activities imposed by increasingly overloaded agendas. To respond to the needs imposed by new lifestyles [32]. In this fast-paced world, the reconciliation of professional, personal and family life has become a puzzle to be solved constantly. Therefore, the availability of services in the vicinity, the fact that children gain autonomy in a safe area such as a friendly neighbourhood, are key factors in the aforementioned quality of life [33].

From this perspective, travel time is not only a quantitative value, measured in minutes and hours, it is also an indicator of the structure of the city, and allows us to evaluate the levels of physical proximity that the urban reality can offer its citizens [31]. When we talk about sport and proximity in

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the city, we talk about the unequal distribution of sports facilities in the city's neighbourhoods, the promotion of minority sports, the possibility of varied and quality sports services to cater for all audiences and the access of citizens to them.... Moreover, in the city of Zaragoza (Spain), where this study takes place, the main reason for choosing a sports facility in the 2015 sports participation survey was proximity to the facility (39.2%) [34].

The socio-ecological model that advocates the promotion of physical activity in children and adolescents is usually within the Health Education framework, which states that for interventions to be effective, different environmental levels and subsystems must be influenced [35,36].

Within this model, the following theories are of interest for this work

- Bandura's social-cognitive theory and the interrelationship between significant others (not only the family), social influence and the influence of social support [37].
- The Structural Model of Environmental Influences on Behaviour, which structures the complex influences of the environment at micro, meso, exo and macro levels [38].
- The Ecological Model of Physical Activity - EMPA, which adds biological factors to the above models [39].
- The Determinants Model, which identifies five types of factors [40,41]:
    1. Biological and demographic variables such as gender, overweight, age or socio-economic status of the family.
    2. Psychological, cognitive and emotional variables such as self-efficacy and expected and expected benefits.
    3. Behavioural variables. For example, playing video games and surfing the Internet.
    4. Social and cultural variables, such as parental modelling and local traditions.
    5. Physical-environmental variables such as access to sports facilities; safe spaces, streets and parks.

1.1. The Kids in Action (KIA) Project and the Context of the Study

The aim of this study is to apply the concept of proximity to the provision of physical-sports activities from an early age, in order to reduce the drop-out rate of PA at the critical stage of moving from Primary to Secondary education, within the framework of the European project Kids in Action and in the city of Zaragoza (Spain), specifically in the area of the city known as Margen Izquierda del río Ebro (Left Bank of Ebro River).

The aim of the project was to get families to develop a healthier lifestyle and be aware that physical exercise has a real influence on health, mood and self-esteem, from an early age.

To carry out this European project, co-financed by the European Commission through the Erasmus+ Sport Programme, a group of Zaragoza schools and different entities that organise sports activities in the neighbourhoods, as well as Zaragoza Deporte Municipal, the municipal company managing the municipal sport, have collaborated.

Each month a different sport has been practised, most of them are activities that are not usually offered by schools, for example: BMX, parkour, climbing, Ultimate Frisbee or canoeing. Each of these events was organised by one of the sports organisations in the selected area of the city and are promoted by the participating schools (aimed at children aged 3-11 years).

The first time the children participate in one of these events, they are given a KIA passport which they fill in with the different workshops. When they complete a total of seven sports activities, they are given a gift kit for their commitment to sport.

The families were able to have direct contact with the different sports associations that collaborate in the project so that after this initiative they can continue practising sport in the activities that they liked the most, as well as getting to know other local sports modalities, facilities and spaces that allow them to broaden their non-organised PA options.

In this sense, one of the shortcomings detected in the diagnostic analysis of the Kids in Action project, from which this study draws, is the disconnection between schools, families and the city's sporting fabric (associations and sports clubs), which is fundamental for the implementation of local sports policies and which may be a factor in the failure of some of the strategies and programmes

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developed, being the main topic to be analysed and discussed in this paper.

2. Materials and Methods

A qualitative methodology based on observational participation, a survey, and semi-structured interviews, was used involving the different actors participating from in the European Project "Kids in Action" (622130-EPP-1-2020-1-PT-SPO-SSCP). The study involved girls and boys of Early Childhood and Primary Education from 7 different schools, parents, school leaders and sport managers.

The inclusion criteria for the children were studying in the schools participating in the project. As for the parents, the criterion for participation in the interviews was that their son or daughter had participated in at least two of the project's sporting events.

For school leaders, it was simply that their school participated in the project. Finally, sport managers participating in the project activities were involved.

2.1. Sample Description

There was a total of 147 children participating in this project (average age 7.77±2.22 years): 32 boys (21.76%) and 29 girls (19.72%) belonged to school 1. Eight boys (5.44%) and 5 (3.40%) were from the school 2. School 3 had 7 boys (4.76%) and 3 girls (2.04%). 17 boys (11.56%) and 22 girls (14.96) belonged to school 4. Only 1 boy (0.68%) participated from school 5. One boy (0.68%) and 3 girls (2.04%) were from the school 6. Finally, a total of 12 boys (8.16%) and 7 girls (5.44%) belonged to school 7 (Table 1).

Table 1. Participants description (children).

	Boys	Girls	Age boys (yr.) $\bar{x}$±SD	Age girls (yr.) $\bar{x}$±SD
School 1	32	29	7.96±2.29	6.5±3.53
School 2	8	5	7±2.44	7.33±2.54
School 3	7	3	8.37±1.68	9.33±1.52
School 4	17	22	8.23±1.92	6.68±2.80
School 5	1	0	8	-
School 6	1	3	7.3±1.2	10
School 7	12	7	8±1.70	8±2.58

SD: standard deviation

Ten semi structured interviews were conducted to a sample of the main decision-makers stakeholders in the content of school, education and sports: school leaders, sport managers and parents. The interviewees' profiles are described in Table 2.

Table 2. Participants description (adults).

	Code	Category	Sex	Profiles
Participant 1	P1	Family	Woman	Mother
Participant 2	P2	Family	Man	Father
Participant 3	P3	Family	Woman	Mother
Participant 4	D1	Schools	Man	Director
Participant 5	D2	Schools	Woman	PE Teacher
Participant 6	D3	Schools	Man	PE Teacher
Participant 7	D4	Schools	Woman	Primary Teacher
Participant 8	G1	Sports	Woman	Coach

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Participant 9	G2	Sports	Man	Manger
Participant 10	G3	Sports	Woman	Manager

The Ethics for Research Committee of Aragon Government (Spain) approved this study. All participants gave their written informed consent before participating in the study, which was optional.

2.2. Instruments

Three data collection instruments were used for this study. The first, a graphical rating survey composed of three items simulating facial expressions with the scale "I liked it", "Indifferent" and "I didn't like it", with the aim of finding out the level of satisfaction with the activities among the youngest participants in the project.

This satisfaction questionnaire was inserted in an individual 'passport' where children stamped their participation in the sport events programmed in the project (10 in total), with the objective of motivating them (Figure 1).

Figure 1. Passport.

The second, semi-structured interviews were articulated based on: 1) results from the activities; 2) project objectives; and 3) variables. The questions inquired about the link between the educational and sports system, the benefits of practising closeness, prevention of early sports abandonment, and strategies to promote the practice of healthy physical activity in childhood.

Finally, the project's researchers actively participated in each of the meetings, noting down in their field notebooks everything relevant to this research, as well as comments from parents, monitors, managers or educators regarding the meetings, their merits and proposals for improvement. At the end of each of the meetings, the two researchers shared their notes, made conceptual maps of the variables and identified the aspects of interest when drawing up the interview scripts. This process of participant observation was carried out following the guidelines set out in the guide by Lofland and collaborators [42].

2.3. Data Collection Procedure

The above-mentioned qualitative data were collected between October 2021 and July 2022 in parallel with the implementation of the Kids In Action project. Prior to this, informed consent was requested from the participants. The data collection process was carried out by the same group of researchers.

At the end of each of the sporting events within the framework of the project, participants (children) were asked to fill in the satisfaction survey on the activity carried out (faces' satisfaction questionnaire- see Figure 2).

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Figure 2. Face's satisfaction questionnaire.

As for the interviews with adults they were carried out once the sporting events were over, after requesting informed consent. The interviews were carried out online, recorded and transcribed to be analyzed. A thematic analysis was done [43,44] by three experts with different profiles: a sports science researcher, a sociologist and an expert in qualitative methods, guaranteeing quality and reliability with complementary perspectives. Written informed consent was obtained from all parties.

2.4. Data Analysis

Data regarding children were analysed with Microsoft Excel 2019. Interview data were analyzed using R software (version 4.3.0) and the packages RQDA (0.3-1), tm (variance 0.7-11) and ggplot2 (version 3.4.2). For each question, type responses were determined (framing theme and response sentiment) and relative and absolute frequencies were counted for each category. In addition, the transcribed text of all the interviews was cleaned by removing nexus words and joining words in the singular with words in the plural to obtain the frequencies of occurrence of the most used words throughout the 10 interviews. The result was represented in a bar chart showing the 20 most frequently used words, as well as the distribution of the most mentioned by category to extract conclusions about the different concepts highlighted by each one.

3. Results

This section displays the main results of the study. It is structured in 1) Children's assessment of the program; 2) Interviews results.

3.1. Children's Assessment of the Programme.

The 10 activities carried out during the project from September to June 2022 were rated by an average of 26 participants. The best rated activities were Bmx, climbing and rugby (with 100% I like it), followed by parkour and canoeing (Figure 3).

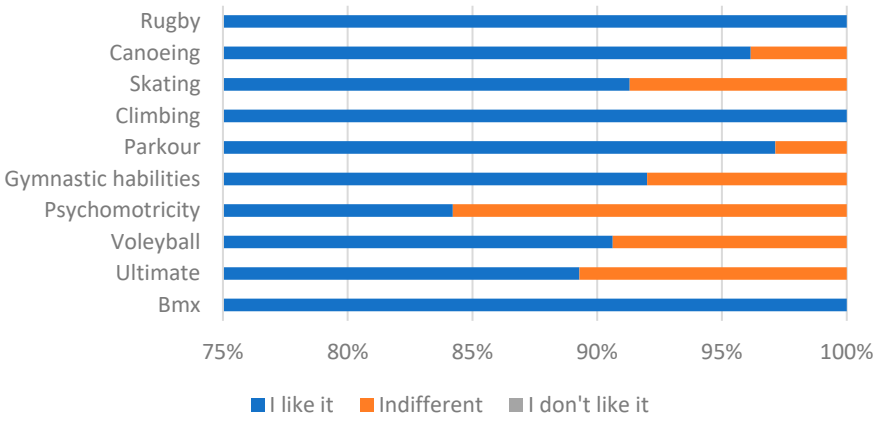

Figure 3. Satisfaction with the act.ivities.

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The activity that the participants were most indifferent to was ultimate, with 33.33%, followed by psychomotricity and gymnastic abilities, with 21.4% and 16.6% respectively. None of the activities carried out was rated negatively by the participants.

If we analyse the evaluations of the activities taking into account the gender of the participants, an average of 12.8 boys and 13.2 girls completed the satisfaction survey. The activities best rated by the girls with 100% I like it were BMX, psychomotricity, gymnastic abilities, parkour, climbing, and rugby. However, one of the activities most highly rated by the boys was canoeing, coinciding with their satisfaction with rugby, climbing and BMX.

The activities that were most disliked by the boys were psychomotor skills (21.4%), gymnastic abilities (16.6%), volleyball and skating with 12.5% respectively. For girls, on the other hand, the activity with the highest percentage of indifferent votes was ultimate (10.5%), canoeing (7.7%) and skating (6.6%).

3.2. Interviews' results.

3.2.1. Thematic analysis

Firstly, four dimensions of analysis were established in relation to the project's objectives, which were:

1. Links between the education system and the sport system.

During school hours, and due to the compulsory nature of the subject of Physical Education, pupils' participation in physical and sporting activities is 100%. Participation outside the school is more variable, although educational leaders point out that it is precisely those schools interested in participating in this type of project that also have pupils who participate to a large extent in activities outside the school.

Thus, it is considered, both by the families and the teachers interviewed, that there is a relationship between the school's participation in this type of activities and projects and a greater participation of pupils outside the school. This is due to the following factors:

- They encourage greater interest in sport in general.
- They have a certain transfer towards organised sport. For example, several of the participants showed an interest in joining associations and clubs in the sports they practise.
- Families also highlight their interest in continuing to practice in an unorganised way.
- However, some families *show a low appreciation of sport as a form of family leisure* (D4), which leads to a low participation in this type of activity.

The schools point out that, although most families are aware of the benefits of physical activity and are interested in their children doing it, when it comes to putting it into practice in many cases, there is no collaboration with the schools to be able to implement this type of project or activity. However, when it comes to proposing improvements, they demand more programmes. Moreover, teachers add that not only physical health benefits, but also *coexistence* (D4), through *the establishment of habits, values and education* (G2).

When defining the roles of each of the agents in the promotion of physical and sporting activity, the following have been considered, in addition to the shared role of motivating students:

a. The educational centre:
   - To promote physical and emotional well-being.
   - Inclusion.
   - Diversity of activities (get to know)
   - 4 FE sessions per week
   - Achieving long-term effects
   - Providing information on projects and activities
   - Involvement of the FE department.
   - Dissemination of activities and projects.
   - Involvement *with neighbourhood associations* (D3).
   - Organising, managing and facilitating activities.
   - Ensuring compatibility *with schooling and different economic levels* (D4).

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b. Families:
- Initiation into practice.
- Accompany your children to activities.
- Logistical support.
- Facilitator.
- Role model: On the one hand, you have *to be a role model for the children, on the other hand, you have to help them to discover the range of possibilities and facilitate them on the path of physical activity* (P3).

c. Sports associations:
- *Ease of scheduling, good technicians* (D3).
- *The centres have the possibility to show them the wide variety of sporting activities and their benefits. It is a field of experimentation that in turn can bring them closer to the nearest clubs or sports in the area where they are* (P3).
- To transmit the values associated with the sport.

d. Local government:
- *Grants to clubs, continuous training for technicians* (D3).
- *Intelligent resource management* (D4).
- *Opportunity enablers* (G1).
- *Decent sports areas* (G2).

In summary, *the centres have the possibility to show them the wide variety of sporting activities and their benefits. It is a field of experimentation that in turn can bring them closer to the nearest clubs or sports in the area where they are located* (P3).

2. Local sports practice.

The fact that all the modalities practised have been carried out in the neighbourhood implies an increase in the children's interest in continuing to practise them in an unorganised way, favouring informal practice and highlighting the possibility of this being a family practice. Moreover, the children and their families state:

- The children's desire to continue practising.
- The desire to show their friends and colleagues what they have learned in the workshop.
- The desire to repeat similar experiences.

I have tried to find any time in the park or wherever to repeat what they have learnt. With friends, at school... they are looking to see how to develop a little bit more what they learnt in that hour, hour and a half of practice (P1)

Families highlight the fact that they have discovered sports modalities and facilities and places to practice in their neighbourhood that they did not know about, which has had a positive effect.

...because even though we lived very close, we didn't know that you could, that you could do particular activities. We also discovered that we knew that it was there... (P2)

In many cases, and speaking of the experience shared between the interviewees and other parents who attended the sporting events, they say that the project has been useful for them to get to know the sports on offer in the neighbourhood, which is much wider and more varied than they thought, and this has a positive effect on their assessment of municipal management.

The fact that it is a neighbourhood practice makes it possible to adapt the sport itself to the real context of each individual, by means of:

- Self-practice (affordable and easily accessible materials, or practice without materials or adapted materials).
- Taking advantage of "time-outs" to continue practising.
- The families also highlight the "recovery" of Saturdays that the project has meant for them to accompany their children to the workshops, something they consider very valuable, especially in the post-COVID-19 period, due to:
- Less screen time for children when they leave the house for a morning of sport.
- Discovering new playful and healthy ways to spend a Saturday morning.

...because in my daughter's case, at least, she has discovered that on Saturday mornings you can do

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other activities than drinking vermouth and playing computer games at home (P2)

Regarding to proximity physical activities

- *Known environment* (G1)
- Facilitates activity
- Family reconciliation: *Facilitates adherence, close social relations, independence of children (facilitates reconciliation between siblings if they can go alone to train for example)* (D3).
- Weekends
- Lower *investment of time and money* (G1)
- School hours
- Prioritising PA as health and well-being
- Change of habits:
    - More alternatives.
    - Practice at your own risk.
    - Practice of new, less popular sports.

3. Prevention of physical activity drop-out in the transition from primary to secondary education.

One of the problems pointed out by the teachers is the fact of who benefits from this type of project, since according to them, it is the children and families who are more involved in themselves (children who are more active, who like sport more, a group who usually practice sport outside school) who enrol in this type of non-compulsory activities, so that the mobilisation of those who are more sedentary, or those whose families do not value physical and sporting activity highly, is much more limited.

In this sense, for many families, participation in this type of activities is an extra effort, which they may or may not be willing to make. In fact, one of the participants stresses that this closeness *is the key for middle-class families* (D4).

Family participation is considered irregular to very high depending on the school and depending on the following factors:

- Prioritisation of activities. One of the teachers points out that, for the first time in decades, at her school they have noticed a decrease in extracurricular sports activities and an increase in cultural and scientific activities.

...And then obviously the increase in the use of screens, that is clear, but it is true that we have started to notice that from the third year of primary school onwards there is a greater sedentary lifestyle, mainly for this reason. And perhaps also because of an excess of complementary activities that are not physical, such as English, music theory, Chinese...I mean, this overload sometimes leads to what is not there, in other words, there is much more cultural activity but less sporting activity (D2).

- Time availability.

...because you have to take them to places, you don't play mainly in the street like you used to (D2).

- Possibility of accompaniment.

...the promotion of family activities far from generating greater involvement I believe that it excludes pupils who cannot be accompanied (D1).

- Possibility of collaboration with other families.

It is clear that it is inherent, i.e. if a child cannot be accompanied by his or her family, it is difficult to carry out the activity (D2).

A critical moment is the transition from primary to secondary education, in many cases involving a change of school, timetables and classmates. At this point, key factors in the transition have been considered:

- AFD facility in the same centre. *Also families sometimes see sport as incompatible with studies* (D4).
- Increased academic burden/demands:
- This is not the only reason for the increase in sedentary lifestyles.
- Change in interests.

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The changes experienced in adolescence. Especially in girls who take on female cultural roles in which sport is left out (D4).

- Need for advice, "guidance".
- Need for socio-educational support
- Loss of healthy PA habits.
- Motivation on the part of families. *For children with very sporty parents or who value sport a lot, perhaps not so much .... or for those who excel early, then the family is normally willing to make the effort... especially if it is in sports such as tennis or football... but with those who are there, in the average, it depends a lot on the culture and the value they give to sport. Or to their own comfort because of course you have to take them, go and pick them up... wait there, matches...* (G4)
- Also the predominance of competitive sport, as *I believe that there is too much early specialisation, which leads to the abandonment of sport as early as the second stage of school* (G1). *Children either do competitive sport or they don't do it at all. Playing in the street, in the park, etc., is being lost* (G4).
- Lack of financial resources.
- Peer group.

4. Strategies to promote healthy physical activity in childhood.

Participation in sports promotion projects is considered to be one of the key elements in favouring the practice of sports in and outside the school. Thus, for example, among the participants, the role played by having a sports club at the school, participating in regional government programmes such as PIBA (Active Life Impulse Programme), the Sports Activities Bank or *Active School Citizens and Health Promoting Schools* (D4) is highlighted.

A physical education teacher is not enough. I think there is a lack of personal and material support. If there were neighbourhood coordinators, I mean, that is one thing that could benefit the link that we could have between families, students, teachers, children and sport (D2).

The main barriers to the practice of sport were identified among the different participants:

- Scarcity of resources: *Yes, but each family must adapt the resources to their characteristics. There is a lot of variety to choose from and every family can get adequate physical activity* (D4).
- Inequalities in the possibility of accompaniment and lack of family support.
- Peer group.
- Family overprotection.
- "Need" to take them to facilities instead of playing in the street
- Lack of nearby sports facilities
- Increased screen time
- COVID standstill
- Increasing sedentary behaviour at younger ages (from 3rd grade onwards): *Children should play and move much more* (P3)
- Increase in non-physical cultural extracurricular activities.
- Activity overload.
- Lack of staff in the centres.

...support of some kind, socio-educational, I don't know exactly how it could be, but what is important is that what is achieved in primary school, because obviously children in primary school are a movement in themselves. But it is a pity that those habits, especially health habits, are lost in a significant percentage (D2).

- Lack of material in the centres.
- "Loneliness" of the teacher with an interest in promotion.
- Possibility of neighbourhood coordinators.
- Complex communication between families, pupils, teachers, children and sport.
- Established routines that make it difficult for families to change.
- Little offer of minority sports.
- Limited choice of opening hours and facilities, as well as *inequalities between neighbourhoods* (G1).

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- Time:

...the biggest barrier is often time, so there are those who are very much in favour of and seek the time, but those who don't have the time don't bother to make time for it either (D1).

3.2.2. Highlihted concepts

The thematic analysis identified the following "typical responses", obtaining absolute and relative frequency counts in order to summarise the results of the questions to these questions. With respect to the results of the bar chart, the following words stand out for their high frequency compared to the rest of the words: sport, activities, families, centre, and children. All with significantly higher frequencies than the rest of the words. Figure 4 represents the 10 most cited words.

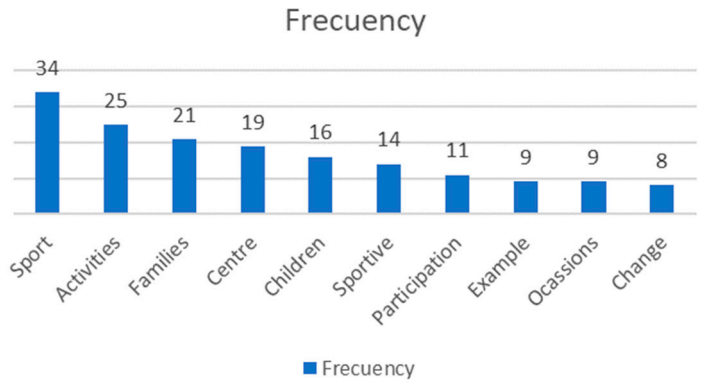
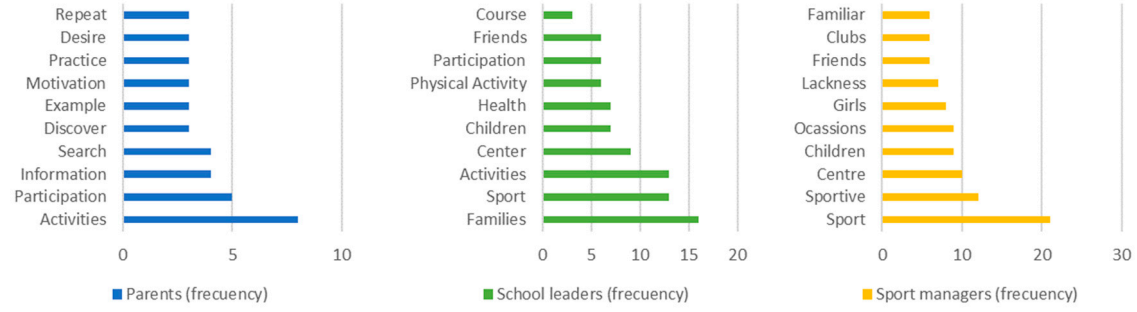


Figure 4. The 10 most cited words by the interviewees.

When analysing the most cited words by category, we found that, while for parents the most important concepts are related to action (activities, participation, repeat, practice) and knowledge (information, search, discover), as reflected in Figure 5a, school leaders identify families, activities and sport as key elements, with the concepts of health and physical activity appearing, which do not appear in any other category (Figure 5b). Finally, sport managers highlight sport and sport, centres and children, with the concept of lackness also having relevance, which only appears in this category (Figure 5c).



(a) (b) (c)

Figure 5. Word frequency per category.

4. Discussion

This paper aimed on how proximity could be a relevant factor to understand sport participation in early years. The results found show that schools can play a key role in showing pupils the wide variety of sporting activities and their benefits, which in turn can bring them closer to local sports clubs. Practising sport at local level has positive effects on children's continued interest, encouraging family participation, discovering new sports and places to practice, and promoting a change of habits towards a more active and healthy life [45,46]. However, several factors were also identified as

influencing physical activity drop-out during the transition from primary to secondary education, such as lack of participation of less involved families, academic burden, changes in adolescents' interests, and economic and social barriers. To promote healthy physical activity in childhood, it is crucial to address these challenges and barriers by ensuring adequate resources, family support and accompaniment possibilities, and fostering effective communication between all actors and stakeholders.

This study shows that sport practice in close environments is shown to be a key element [18,19,25] to mitigate existing barriers, including socio-economic ones [45]. Sport practice in close environments encourages the adoption of healthy habits and allows children and young people to establish relationships with adults who transmit values, lifestyles and positive attitudes, such as teachers, instructors and sports managers [46].

Close sports practice encourages the adoption of healthy habits and allows children and young people to establish relationships with adults who transmit values, lifestyles and positive attitudes, such as teachers, monitors and sports managers [46]. Percy-Smith showed that stress is a widespread problem for young people and it is important to address it. However, adult engagement is needed to help address it [46]. Therefore, the active involvement of adults is essential to guide children and young people towards a healthy and sustainable path. These positive aspects counterbalance the barriers identified by KIA project participants, who have highlighted lack of time on the part of families, limited diversity in sport provision and safety concerns in facilities considered to be minority or 'diverse'. In a similar vein, other studies have pointed to the cost of activities, accessibility and lack of local facilities as barriers [47]. Therefore, there is a need to address these barriers and promote the creation of inclusive and accessible sport environments for all through strategies that facilitate equitable access to sport opportunities.

It is essential to focus on children and young people by prioritising their needs and motivations and placing their needs and motivations at the centre of actions, strategies and programmes [47]. Rather than focusing exclusively on a specific sport modality, the well-being and holistic development of young people should be prioritised, tailoring sport initiatives to their individual interests and motivations [47]. Involving young people in the design and implementation of initiatives to increase physical activity seems to have a positive influence [46]. Furthermore, for these initiatives to be successful, effective linkages between schools, local sports associations and sports authorities are essential [48]. Schools have untapped potential, as they could play a more active role beyond school physical education [15] and out-of-school activities by fostering the creation of active communities, promoting activities outside school hours and cultivating an active culture within educational establishments.

This study highlights the key role of families in promoting a healthy and sustainable quality of life for children and young people. To ensure the success of initiatives aimed at this population, it is necessary to establish strong links between educational establishments, the sports associations in the neighbourhood and the sports authorities. Furthermore, the active participation and availability of families are indispensable elements for the success of these initiatives [47], although they can also represent a challenge for children who are vulnerable in other aspects of their lives. It is therefore necessary that public policies [46–48], such as the KIA project, are implemented in an institutionalised way and supported by neighbourhood and local government bodies, to ensure a holistic approach and provide the necessary support to these families and communities. In this sense, families play a crucial role not only as accompaniers and motivators, but also as role models [9] by transmitting the philosophy of "moving and interacting in the neighbourhood" and an active lifestyle that promotes interaction and participation in the community environment. In addition, it is recognised that there is a heavy reliance on the availability and willingness of families [47], which can be a barrier for children who are already in vulnerable situations in other aspects of their lives. In this sense, families play a crucial role as companions and motivators, but also as role models [9], transmitting an active lifestyle and a philosophy of "moving and socialising in the neighbourhood".

It is therefore necessary to implement institutionalised public policies, backed by local government bodies, that provide adequate support, as evidenced by the KIA programme.

Several limitations are important to mention from the current study. The sample of participants in this study was limited, so it would be appropriate to extend the project to a larger number of schools in order to obtain evidence of greater reliability and validity. In addition, it is important to note that we worked with primary school children, in compliance with the requirements of the project. However, the inclusion of participants from the first years of Secondary Education is significant for a more complete understanding of the reality of the issue under study.

The findings from our study have a few practical applications. To address these challenges and barriers and promote healthy physical activity in childhood, it is essential to allocate adequate resources, provide family support and opportunities for companionship, and foster effective communication among all stakeholders. In addition, the importance of close sport practice should be emphasized to mitigate barriers, including socioeconomic ones, and promote the adoption of healthy habits. The involvement of adults is also of interest to address stress-related problems in young people. Finally, to overcome barriers and create inclusive and accessible sport environments, strategies must be implemented to ensure equitable access to sport opportunities. Effective connections between schools, local sports associations and sports authorities are crucial to the success of sports initiatives. Public policies must be implemented in an institutionalized manner, through the KIA program, and supported by local government agencies to provide comprehensive support to families and communities.

5. Conclusions

The current research revealed that proximity plays an important role in sports participation during early childhood. Practicing sport at the local level has positive effects on children's continued interest, encourages family participation, discovering new sports and places to practice, and promotes a change in habits towards a more active and healthy life. However, several factors were identified as influencing the abandonment of physical activity during the transition from primary to secondary education, such as the lack of participation of less involved families, academic burden, changes in adolescent interests, and economic and social barriers. To promote healthy physical activity in childhood, it is crucial to address these challenges and barriers by ensuring adequate resources, family support, mentoring opportunities, and fostering effective communication among all stakeholders. Finally, families play a crucial role as peers and motivators, but also as role models, transmitting an active and sustainable lifestyle and a philosophy of "moving and socializing in the neighborhood." It is therefore necessary to implement institutionalized public policies, backed by local government agencies, that provide adequate support, as demonstrated by the KIA program.

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Data Availability Statement: The datasets generated and analyzed for this study can be requested by correspondence from the author at had vbarrachina@usj.es.

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References

1. MacKenzie, J., Brunet, J., Boudreau, J., Iancu, H.D., Bélanger, M. Does proximity to physical activity infrastructures predict maintenance of organized and unorganized physical activities in youth? *Preventive Medicine Reports* **2015**, 2, 777-782. doi: http://dx.doi.org/10.1016/j.pmedr.2015.09.005.
2. Consejo Superior de Deportes. Los hábitos deportivos de la población escolar en España **2011**, Retrieved from https://redined.educacion.gob.es/xmlui/bitstream/handle/11162/66767/00820122017247.pdf?sequence=1&isAllowed=y
3. Soler-Lanagrán, A.; Castañeda-Vázquez, C. Estilo de vida sedentario y consecuencias en la salud de los niños. Una revisión sobre el estado de la cuestión. *Journal of Sport and Health Research*, **2017**, *9(2)*, 187-198.
4. Whiting S. et. al. Physical Activity, Screen Time, and Sleep Duration of Children Aged 6–9 Years in 25 Countries: An Analysis within the WHO European Childhood Obesity Surveillance Initiative (COSI) 2015–2017. *Obesity Facts* **2021**, *14*, 32–44. doi: https://doi.org/10.1159/000511263.
5. Calzada, J.L.; Cachón, J.; Lara, A.; Zagalaz, M.L. (2016). Influence of physical activity in the quality of life of children 10 and 11 years. *Journal of Sport and Health Research* **2016** *8(3)*, 231-244.
6. Babey, S.H.; Wolstein, J.; Diamant, A.L. Few California Children and Adolescents Meet Physical Activity Guidelines. *Policy Brief* **2018**, *8*, 1-8.
7. Hobbs, M., Stewart, T., Marek, L., Duncan, S., Campbell, M., Kingham, S. Health-promoting and health-constraining environmental features and physical activity and sedentary behaviour in adolescence: a geospatial cross-sectional study. *Health & Place* **2022**, *77*. doi: https://doi.org/10.1016/j.healthplace.
8. McCormack, G.R., Giles-Corti, B., Bulsara, M. The relationship between destination proximity, destination mix and physical activity behaviors. *Preventive Medicine* **2008**, *46*, 33–40. doi:10.1016/j.ypmed.2007.01.013.
9. Casado-Robles, C.; Viciana, J.; Guijarro-Romero, S.; Mayorga-Vega, D. Conocimiento del entorno para la práctica de actividad física en escolares (CEPAF): Desarrollo y validación de una prueba escrita objetiva de elección múltiple. *Journal of Sport and Health Research* **2021**, *13(2)*, 223-244.
10. Neshteruk, C.D., Jones, D.J., Skinner, A., Ammerman, A., Tate, D.F. and Ward, D.S. Understanding the Role of Fathers in Children's Physical Activity: A Qualitative Study. *Journal of Physical Activity and Health* **2020**, *17*(5), 540–547. doi: https://doi.org/10.1123/jpah.2019-0386.
11. Pate, R.R., Dowda, M., Dishman, R.K., Colabianchi, N., Saunders, R.P., McIver, K.L. Change in Children's Physical Activity: Predictors in the Transition From Elementary to Middle School. *Am J Prev Med* **2018**, *56*(3):e65–e73. doi: https://doi.org/10.1016/j.amepre.2018.10.012.
12. Dlugonski, D., DuBose, K.D., Habeeb, C.M., and Rider, P. Physical Activity Coparticipation Among Parent–Young-Child Dyads, *Pediatric Exercise Science* **2020**, *32*(3), 132–139.
13. Kippe KO, Fossdal TS and Lagestad PA. An Exploration of Child–Staff Interactions That Promote Physical Activity in Pre-School. *Front. Public Health* **2021**, *9*, 607012. DOI: 10.3389/fpubh.2021.607012.
14. Cooper AR, Goodman A, Page AS, Sherar LB, Esliger DW, van Sluijs EM, et al. Objectively measured physical activity and sedentary time in youth: the International Children's Accelerometry Database (ICAD). *Int J Behav Nutr Phys Activity* **2015**, *12*, 113. doi: 10.1186/s12966-015-0274-5.
15. Tonge, K.L., Jones, R.A., Okely, A.D. The relationship between educators' and children's physical activity and sedentary behaviour in early childhood education and care. *Journal of Science and Medicine in Sport* **2021**, *24*, 580–584. doi: https://doi.org/10.1016/j.jsams.2021.02.003.
16. Moss, S., & Gu, X. Home- and Community-Based Interventions for Physical Activity and Early Child Development: A Systematic Review of Effective Strategies. *International Journal of Environmental Research and Public Health* **2022**, *19*(19), 11968. MDPI AG. Retrieved from http://dx.doi.org/10.3390/ijerph191911968.
17. Sallis, J. F., Cervero, R. B., Ascher, W., Henderson, K. A., Kraft, M. K. y Kerr, J. An Ecological Approach to Creating More Physically Active Communities. *Annual Review of Public Health* **2006**, *27*, 297–322.
18. Pedersen, M. R. L., Bredahl, T. V. G., Elmose-Østerlund, K., & Hansen, A. F. Motives and Barriers Related to Physical Activity within Different Types of Built Environments: Implications for Health Promotion. *International Journal of Environmental Research and Public Health* **2022**, *19*(15), 9000. MDPI AG. Retrieved from http://dx.doi.org/10.3390/ijerph19159000.
19. An, RP; Zheng, JK. Proximity to an exercise facility and physical activity in China. *Southeast Asian J Trop Med Public Health* **2014**, *45*(6),1483-91.
20. Bennàsser, M.; Vidal-Conti, J. Relación entre actividad física y características de la vivienda y su entorno en jóvenes. *Journal of Sport and Health Research* **2021**, *13*(2), 281-294.

21. Ramírez Saiz, A., Alonso, A., Jiménez Martín, D., & Lamíquiz, P. Can Proximal Environments Prevent Social Inequalities Amongst People of All Ages and Abilities? An Integrative Literature Review Approach. *Sustainability* **2022**, *14*(19), 12911. MDPI AG. Retrieved from http://dx.doi.org/10.3390/su141912911.
22. Bao Y, Gao M, Luo D and Zhou X. Effects of Children's Outdoor Physical Activity in the Urban Neighborhood Activity Space Environment. *Front. Public Health* **2021**, *9*, 631492. DOI: 10.3389/fpubh.2021.631492.
23. Gavand, K.A., Cain, K.L., Conway, T.L., Saelens, B.E., Frank, L.D., Kerr, J., Glanz, K., and Sallis, J.F. Associations Between Neighborhood Recreation Environments and Adolescent Physical Activity. *J Phys Act Health* **2019**, *16*(10),880-885. doi: 10.1123/jpah.2018-0556.
24. Reed, J.A. & Phillips, D.A. Relationships Between Physical Activity and the Proximity of Exercise Facilities and Home Exercise Equipment Used by Undergraduate University Students. *Journal of American College Health* **2005**, *53*:6, 285-29., doi: 10.3200/JACH.53.6.285-290.
25. Kaufman, T.K., Rundle, A., Neckerman, K.M. et al. Neighborhood Recreation Facilities and Facility Membership Are Jointly Associated with Objectively Measured Physical Activity. *J Urban Health* **2019**, *96*, 570–582. doi: https://doi.org/10.1007/s11524-019-00357-1.
26. Deka, D., & Connelly, M. Does Proximity to Activity-Inducing Facilities Explain Lower Rates of Physical Activity by Low-Income and Minority Populations? *Transportation Research Record* **2011**, *2264*(1), 83–91. https://doi.org/10.3141/2264-10.
27. Zehl, R., Thiel, A. & Nagel, S. Children's sport opportunities and parental support in single-parent families with a lower socio-economic status. An ecological perspective, *European Journal for Sport and Society* **2022**, doi: 10.1080/16138171.2022.2121248.
28. Sánchez-Valdivia, N., Pérez-del-Pulgar, C., de Bont, J., Anguelovski, I., López-Gay, A., Pistillo, A., Triguero-Mas, M., et al. Residential Proximity to Urban Play Spaces and Childhood Overweight and Obesity in Barcelona, Spain: A Population-Based Longitudinal Study. *International Journal of Environmental Research and Public Health* **2022**, *19*(20), 13676. MDPI AG. Retrieved from http://dx.doi.org/10.3390/ijerph192013676.
29. Delgadillo-Macias, J. Agro-food production and consumption in perimetropolitan areas. A typological approach from the proximity approach. Estudios Sociales. *Revista de Alimentación Contemporánea y Desarrollo Regional* **2019**, *29*(53). doi: https://dx.doi.org/10.24836/es.v29i53.701.
30. Gomà R. and Ubasart G. *Vidas en transición. (Re)construir la ciudadanía social.* 2021.Tecnos, Madrid.
31. Resa, S. La fuerza de lo local y el ciclo corto refuerzan la atracción hacia los productos de proximidad. *Distribución y Consumo* **2021**, *1*, 94-101.
32. Miralles-Guasch, C. & Marquet Sardà, O. Dinámicas de proximidad en ciudades multifuncionales. *CyTET* **2013**, *XLV* (177), 501-510.
33. Lavandinho, S. *Monográfico Ciudades* **2014**, 17. doi: https://doi.org/10.24197/ciudades.17.2014.21-39.
34. Zaragoza Deporte Municipal. *Análisis de los hábitos, demandas y tendencias deportivas de la población zaragozana 2015.* **2016**. Retrieved from https://www.zaragozadeporte.com/Noticia.asp?id=3232.
35. Bronfenbrenner, U. Ecological models of human development. En M. Gauvain y M. Cole (eds.), *Reading on the development of children* (pp. 37-43) **1993.** New York: Freeman.
36. Moral. L. Theories and models that explain and promote physical activity in children and adolescents. *Educación y Futuro* **2017**, *36*, 177-208.
37. Bandura, A. Health promotion from the perspective of social cognitive theory. *Psychology and Health* **1998**, *13*(4), 623–649.
38. Wachs, T. D. *The nature of nurture.* 1992. Sage Publications.
39. Spence, J. C. y Lee, R. E. Toward a comprehensive model of physical activity. *Psychology of Sport and Exercise* **2003**, *4*(1), 7–24.
40. Sallis, J. F., Prochaska, J. J. y Taylor, W. C. A review of correlates of physical activity of children and adolescents. *Medicine y Science in Sports y Exercise* **2000**, *32*(5), 963–975.
41. Sallis, J. F. y Owen, N. Ecological models of health behavior. *Health Behavior: Theory, Research, and Practice* **2015**, *5*, 43–64.
42. Lofland, John, et al. Analyzing social settings: A guide to qualitative observation and analysis. Waveland Press, 2022.
43. Braun, Virginia, and Victoria Clarke. Reflecting on reflexive thematic analysis. *Qualitative research in sport, exercise and health* **2019**, 11.4, 589-597.

44. Terry, Gareth, and Nikki Hayfield. *Essentials of thematic analysis*. American Psychological Association, **2021**.
45. Faulkner, Guy E.J, Buliung, Ron N., Flora, Parminder K., and Fusco, Caroline. Active school transport, physical activity levels and body weight of children and youth: A systematic review. *Preventive Medicine* **2009**, *48, 1*, 3-8, https://doi.org/10.1016/j.ypmed.2008.10.017
46. Aranda-Balboa, María Jesús., Huertas-Delgado, Francisco Javier, Herrador-Colmenero, Manuel. et al. Parental barriers to active transport to school: a systematic review. *Int J Public Health* **2020**, *65, 87–98*. https://doi.org/10.1007/s00038-019-01313-1
47. Vaquero-Solís, Mikel; Iglesias-Gallego, Damián; Tapia-Serrano, Miguel Ángel; Pulido, Juan J.; Sánchez-Miguel, Pedro Antonio. School-based Physical Activity Interventions in Children and Adolescents: A Systematic Review. *Int. J. Environ. Res. Public Health* **2020**, *17*, 999. https://doi.org/10.3390/ijerph17030999
48. Strandbu, Åse , Bakken, Anders and Stefansen, Kari. The continued importance of family sport culture for sport participation during the teenage years *Sport, Education and Society* **2020**, *25:8*, 931-945, DOI: 10.1080/13573322.2019.1676221
49. Masini, Alice, et al. Erasmus+ sport let's move Europa: learning units for health promotion among children and adolescents: Giulia Longo. *European Journal of Public Health*, 2022, *vol. 32, no Supplement_3*, p. ckac131. 463.