

Mobility and Sport: Who Can and Who Can't?

RESEARCH STUDY

Santos^{1A-E} , Peneda^{2A-E} , Pemas^{3A-E} , Henriques^{3B-D} ,
Jegen^{3B-D} , Riller^{3C-E} ,

¹ Transdisciplinary Research Center in Education and Development (CITE-D),
Bragança Polytechnic University, IPB, Portugal ² Municipality of Vila Nova de
Poaires, Portugal, ³ Mato Grosso State University (UNEMAT), Brazil

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ABSTRACT

In recent decades there has been growing concern about physical inactivity and the problems associated with it, namely diabetes, hypertension and obesity. Practising federated sport and using soft mobility (walking and cycling) to commute between home and work can contribute to physical activity. The aim of this study was to find out the differences on the practice of federated sport and the type of home-school mobility according to age group, gender and socioeconomic status, in the municipality of Vila Nova de Poaires, Portugal. A total of 266 people (Male = 138; Female = 125) took part in the study (age = 14.37), answering a sociodemographic questionnaire in 2016. A descriptive and frequency analysis was carried out, as well as ANOVA and MANOVA. The data show that there are only differences in adherence to federated sport according to gender. There were no differences according to age group, gender or socioeconomic status in the mobility variable. Despite the short distance (<5km), the use of soft means of transport is quite low (18.4%). There is a high percentage of participants who say they don't practise sport (68%). The data reinforces the concern about physical activity levels and the risk of disease due to physical inactivity.

Key Words: Physical Activity; Bicycle; Policies; Municipality

Hareketlilik ve Spor: Kim Yapabilir ve Kim Yapamaz?

ÖZET

Son yıllarda fiziksel hareketsizlik ve bununla bağlantılı diyabet, hipertansiyon ve obezite gibi sorunlar hakkında artan bir endişe söz konusudur. Birleştirilmiş spor yapmak ve ev ile iş arasında gidip gelmek için yumuşak hareketliliği (yürüme ve bisiklete binme) kullanmak fiziksel aktiviteye katkıda bulunabilir. Bu çalışmanın amacı, Portekiz'in Vila Nova de Poaires belediyesinde yaş grubu, cinsiyet ve sosyoekonomik durumun birleştirilmiş spor uygulaması ve ev-okul hareketliliği türü üzerindeki etkisini tespit etmektir. Çalışmaya 2016 yılında sosyodemografik bir anketi yanıtlayan toplam 266 kişi (Erkek = 138; Kadın = 125) katılmıştır (yaş = 14.37). Tanımlayıcı ve frekans analizinin yanı sıra ANOVA ve MANOVA da yapılmıştır. Veriler, federe spora bağlılıkta sadece cinsiyete göre farklılıklar olduğunu göstermektedir. Hareketlilik değişkeninde yaş grubu, cinsiyet veya sosyoekonomik duruma göre herhangi bir farklılık bulunmamıştır. Kısa mesafeye rağmen (<5 km), yumuşak ulaşım araçlarının kullanımı oldukça düşüktür (%18,4). Spor yapmadığını söyleyen katılımcıların oranı oldukça yüksektir (%68). Veriler, fiziksel aktivite seviyeleri ve fiziksel hareketsizliğe bağlı hastalık riski konusundaki endişeleri güçlendirmektedir.

Anahtar Kelimeler: Fiziksel Aktivite; Bisiklet; Politikalar; Belediye

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Introduction

Concern about increasing levels of physical activity and sport among the population has grown due to health issues, as this is related to sedentary lifestyles and changes in nutrition. The practice of sport is fostered and encouraged due to its formative virtues - character, discipline, will, preparation for life and pro-social (Gonçalves et al., 2007). The United Nations Organisation (UNO) has integrated the promotion of physical activity into the Sustainable Development Goals (SDGs) as a way of achieving various objectives, presenting it as a cross-cutting societal and educational means.

Concern about physical inactivity is high, with the World Health Organisation (2020a) estimating that globally 27.5% of adults and 81% of adolescents do not meet the 2010 WHO recommendations for physical activity levels. Despite extensive research on the health benefits of physical activity and structured sports, there is limited understanding of how intersecting factors such as socioeconomic status, gender, and age influence participation in federated sports and soft mobility. This study addresses this gap by analyzing these factors within the Portuguese context, highlighting barriers to access and opportunities for promoting equitable engagement in these activities. Females and people of lower economic status are the groups with the least opportunities to be active (Guthold et al., 2019). At the European level, the percentage of the population that never or rarely takes part in exercise or sport has been increasing (European Commission, 2022). Despite the quality of life in European countries, chronic non-communicable diseases also affect this continent, including Portugal. Therefore, the need for innovative models, projects and

solutions to promote healthy living and ageing is recognised.

There is, consequently, a recognised need for innovative models, projects and solutions that promote healthy living and active ageing in order to provide an important stimulus for a healthy and sustainable economy (Reis et al., 2019). The benefits of regular physical activity are recognised, considering the possibility of preventing and treating non-communicable diseases such as cardiovascular disease, stroke, diabetes and cancer (WHO, 2020).

Despite the importance of physical activity, it has been neglected by the population, making it relevant to continually analyse different forms of physical activity, such as federated sports practice or mobility between home and work/study, providing information for the development of public policies aimed at complying with international guidelines, with benefits for their populations.

The possibility of taking advantage of the commute between home/work/school as a way of increasing physical activity levels through walking or cycling is increasingly present, and there have been some policy measures in this area. The use of soft means of travelling can also contribute to the environmental benefits created by such forms of travel. The fight against climate change and the reduction of CO2 emissions (Vale, 2017) can be combined with physical activity in terms of mobility and travelling by foot or bicycle. In addition, gentle modes of travel contribute to less road degradation and the corresponding maintenance and repair costs, since the weight of the vehicles and the levels of friction on the ground will be reduced (Pucher et al., 2010). Cycling has an effect on physical activity levels, obesity, cardiovascular health and morbidity (Bassett et al., 2008; Huy et al., 2008; Matthews et al.,

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2007). This research distinguishes itself by simultaneously addressing federated sports and soft mobility as complementary dimensions of physical activity. It employs a multidimensional framework to explore participation patterns and their determinants, setting a foundation for integrated health and sustainability policies.

Like cycling, a form of physical activity, federated sports practice has health benefits. Some studies have positively associated sport with life satisfaction, both in children and young people and in adults (Lucas et al., 2012; Moraes et al., 2009). In fact, it has been pointed out that the benefits of cycling far outweigh the risks associated with health problems arising from cycling accidents, largely contradicting the perception that cycling is dangerous, especially in urban centres. On the contrary, as cycling levels increase, the number of falls decreases (Elvik, 2009; Jacobsen, 2003).

Mullan (2003) used a cross-sectional study of bicycle use to verify the effects of a sense of community identity, health and well-being and the need for environmental design and urban development. In this study he concluded that young people who grow up in areas with less traffic and parked cars experience a better, more pleasant, supportive and friendly environment, resulting in mental health benefits for young people.

Pucher et al. (2010), in their review of the literature on cycling, found that cyclists prefer roads dedicated to this mode of transport, reinforcing their sense of safety and that this need is more prevalent among women than men. There are other needs for bicycle mobility, such as good parking areas that are safe and capable of sheltering bicycles from the weather. Another aspect is the possibility of integrating/interconnecting bicycles with other

means of public transport so that journeys can be made partly using both means. Bike hire for short journeys, or bike sharing, is a successful system (Martens, 2007) and is increasingly present in cities, but not in towns or rural areas.

Mobility is also a social and dynamic process, as well as a physical process that marks out space and narratives. The gender issue regarding the means of mobility, i.e. the difference between men and women, is influenced by societal dynamics in a complex way, with the space, distance and duration of the journey becoming the object of contemplation and discursive construction (Boyer et al., 2017).

Although Portuguese school insurance currently covers liability in the event of an accident when cycling to and from school, this was not the case until 2020. This revealed one of the limitations and conflicts between health promotion messages, the need to be physically active and the reality of everyday life. Added to this is the prospect of fear that traffic will restrict recreational activities and means of soft mobility (Davis & Jones, 1997). So, it's important to analyse and understand the factors that determine the choice of mode of travel between home/work/school, as well as the opportunities and limitations associated with different modes of travel (Bishop et al., 2023).

Federated sports practice is another means of promoting physical and mental health and human development. Given that it is in childhood and youth that individuals are most likely to be influenced by education, the practice of sports by children and young people should be fostered and encouraged (Gonçalves et al., 2007). Federated sport is the most structured model of physical activity, as an organised system of training and competition on a regular basis. However, access to federated

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sport also raises questions of accessibility for different socio-economic groups, due to the different types of associated costs (tuition and equipment), just as mobility assumes costs (purchasing and maintaining a car or even a bicycle). It is recognised that socioeconomic status refers to "the relative position or order of an individual in a hierarchy based on social and economic attributes, which are expressed in differential access to valued resources and amenities." (Cardoso, 2006, pg.251). Previous research has established links between socioeconomic status and levels of physical activity (Cerin & Leslie, 2008). Studies have also explored the influence of age on mobility choices (Toker, 2015).

This study aims to investigate the differences between individuals' participation in healthy activities such as federated sports and soft mobility according to socioeconomic status, gender, and age groups. The research considers two primary dependent variables: a) Participation in Federated Sports, which measures whether an individual is actively involved in organized sports leagues or clubs, and b) Use of Soft Mobility, which examines the frequency and mode of transportation individuals use, focusing on environmentally friendly options like cycling, walking, or public transportation. By exploring the relationships between these variables and socioeconomic status, gender, and age, the study can provide insights into potential inequalities in access and participation in these healthy pursuits. By identifying demographic and socioeconomic disparities, this study aims to contribute to the development of inclusive policies that align with the Sustainable Development Goals (SDGs), fostering healthier, more equitable, and sustainable communities. This information could inform the development of targeted interventions and policies to promote healthier

lifestyles and address the barriers to engagement in such activities.

Method

Sample

This is a descriptive, analytical, cross-sectional field study with a sample of 266 people (M= 138; F= 125) aged between 12 and 19 (M= 14.37,SD=2.17), residents of Vila Nova de Poiares and users of the Municipal Sports Complex. The data was collected in June 2016 through the in-person administration of a questionnaire by the researchers. Some participants did not provide complete data, leading to differences in the total responses for each variable in the analysis.

A sociodemographic questionnaire to collect data about socio-economic status (through parental qualification) age, gender, participation in federated sports, type of sport, home-school-work mobility, distance travel, and reasons to for such mean of travelling. It was define 3 groups for socioeconomic status (lower, medium and high), two groups for gender (female/male) and sport practice (non-practitioner/practioner), and for the mobility (1- automobile, 2-bus, 3- motorcycle, 4 - bicycle, 5- walking).

Procedures

The instruments were applied in such a way as to preserve the confidentiality of the research. The researchers presented the questionnaires and the study, ensuring compliance with ethical standards and safeguarding the protection of the data and information provided. The study is part of a large study concerning to the Local Strategic Plan for Sport and Physical Activity, and it was approved by the ethical committee of the Faculty of Sport Sciences and Physical Education of the University of Coimbra, with the reference CE/FCDEF-UC/00242016.

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Data analysis

Frequencies and descriptive statistics were analysed. ANOVA statistics were used to check the effects of gender (male - female) and age (between 12-15 and 16-19 years) and MANOVA to analyse the effects according to the socio-economic status of the father or mother (according to their level of education - 4th year, 6th year, 12th year, bachelor's, master's or doctorate), after checking the assumptions of normality and homogeneity of variances (Tabachnick & Fidell, 2007). The SPSS 19.0 programme was used to carry out the statistical analysis.

Findings and Discussion

Given the analysis of a sample of schoolchildren aged between 12 and 19, it was considered some limitations in terms of mobility. Table 1 shows the descriptive statistics as a percentage of the location of residence, method, time and distance travelled. Travelling by car accounts for 58.3% of respondents, so a large proportion will be dependent on third parties for this type of means of travel, given that they are not old enough to have a car licence (18 in Portugal). Also, these values are higher than those identified for cities with fewer than 10,000 inhabitants in the Portuguese national strategy document - Ciclando (Instituto da Mobilidade e dos Transportes, 2012), which points to 51.1% of transport by car. And even though 40.6% of young people live in the parish where the school cluster is based (the school they attend) and 65% live less than 3km away, only 18.4% use soft modes of transport, walking and cycling, compared to 36.6% on foot and 3.7% by bicycle or motorbike at national level for a municipality of this size (<10,000 inhabitants). Raising additional questions regarding physical activity and mobility in small cities and rural area.

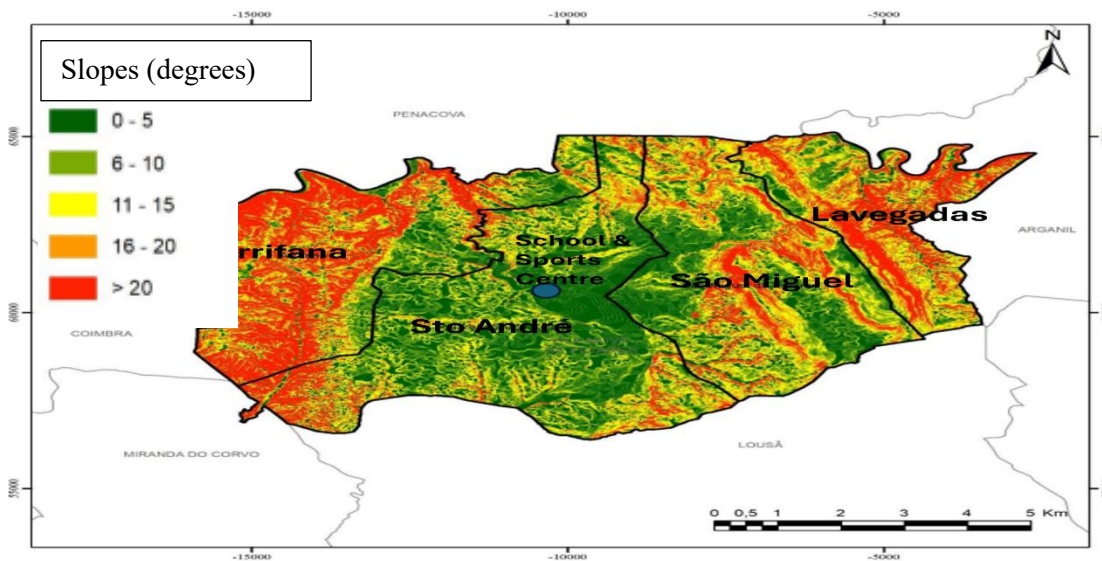


Figure 1 Slopes Map of Vila Nova de Poiares by Parish: Insights from the Municipal Forest Fire Defense Plan (p. 51, 2020).

It is worth noting the differences with other Organisation for Economic Co-operation and Development (OECD) countries in terms of mobility for short journeys (up to 5km), where the use of bicycles is high, namely the Netherlands, Denmark and Sweden (Vale, 2017). Despite the short travelling distance of the participants in the present study, and the low gradients within 3km (from the School), which do not exceed 15% in the central area of the municipality and with the highest population density, there is a residual amount of cycling or walking (Figure 19).

Despite being asked the reason for using the means of transport, only 97 participants answered this question, with most respondents (31.2%) mentioning other reasons, ranging from the convenience of a lift with their parents, the distance to school being too far or even not wanting to walk. Noteworthy were the 19.2 per cent who mentioned that their parents wouldn't let them walk or cycle and the 13.5 per cent who considered that there was poor access to walking.

Most young people say that it takes them less than 15 minutes to get to school, as is the case with the distance travelled under 5km, given the size of the municipality itself (83 km²). It's worth noting that in general, in flat areas most of the population will cycle between 15-25 km/h. And although this commuting speed is low (15km/h), a 5km journey will take around 20 minutes (Vale, 2017).

At the time of the study, the municipality under analysis lacked dedicated cycle paths or lanes, which may have impacted traffic safety and thus influenced cycling participation. Additionally, the presence of two national roads (EN2 and EN17) traversing main residential areas likely heightened safety concerns. However, the study does not delve into why these specific local factors—such as the absence of bike lanes, traffic safety, or political measures like educational programs promoting cycling—were not measured or considered in greater detail. Although previous studies have found various factors associated with cycling, including gender, with more men than women using bicycles on a daily basis (Plaut, 2005; Pucher et al., 2010; Vale, 2017), this difference was not found in this study (Table 2). This was likely due to the dependency level of the participants, as they were school-aged children.

In the present study, there were revealed no differences between the under-15 and under-19 age groups, possibly because the age differences are not that significant or because of the local culture of mobility itself. Neither were observed significant differences in the results between the under-15 and under-19 age groups. This may be due to the relatively small age gap between these groups or the established local culture of mobility.

Table 1. Descriptive statistics in percentage of location of residence, form, time and distance travelled

		N	%
Parish	Arrifana	36	13.5
	Lavegadas	44	16.5
	Sto André	108	40.6
	São Miguel	40	15.0
	Other	28	10.5
Means of travelling	Car	155	58.3
	Motorbike	55	20.7
	Motorbike	2	0.8
	Bicycle	21	7.9
	On foot	28	10.5
Travelling time	<15min	220	82.7
	15-30min	27	10.2
	31-60min	9	3.4
	+60min	2	0.8
Distance travelled	<1km	79	29.7
	1-3km	94	35.3
	3-5km	42	15.8
	6-8km	25	9.4
	9-12km	10	3.8
	13-16km	1	0.4
	+16km	3	1.1

Another explanatory factor would be family income, but this is not the case here (table 3), neither contradicting nor reinforcing previous studies that have found a negative relationship between cycling and income or a positive relationship, such as no relationship (Plaut, 2005; Pucher et al., 2010; Pucher & Buehler, 2006); Pucher & Buehler, 2006). Vale (2017) also points out that fewer bicycle users can be found with higher incomes, mainly due to issues of status and culture linked to the country in question. Another factor is car ownership, with car-owning households having lower bicycle use and bicycle-owning households having higher bicycle use (Heinen et al., 2010). Or it could be a reflection of the cost of cycling, lack of safe parking spaces, car ownership, household size (Heinen et al., 2010; Vale, 2017) or the feeling of safety when cycling or sharing car transport, as answered by the respondents.

About federated competition, the difference between those who practise federated sport (29.7%) and those who don't (68%) in this study is noteworthy, showing a big difference in regular, structured and competitive physical activity. This figure is worrying, given that a large part of the municipality's school-

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age population is represented here. Of those who practice, 88.6 per cent do it in local clubs, and only 11.4 per cent practise outside the municipality. This lack of sports practice follows the trend of low levels of sports involvement in the Portuguese population (European Commission, 2022).

To compare the levels of federated sports practice and the type of mobility according to gender and age group, an ANOVA analysis was carried out (Table 2). The results show that there are differences between males and females in the practice of federated sport ($p=.000$), with boys showing more time to join federated sport. The reasons for joining and staying in sport are well known, namely satisfaction (Santos & Gonçalves, 2016; Santos & Manoel, 2010), as well as a number of factors for giving up sport, namely dropout and burnout (Goodger et al., 2007; Siesmaa et al., 2011) or even conflict between family/school/work and sport (Dixon & Bruening, 2005). It should be borne in mind that the offer available locally for girls is restricted to football, judo, karate, athletics, table tennis and figure skating. Some of these sports are still considered to be for men, such as wrestling and football, so there are still low levels of female participation. However, the number of young men who do not regularly take part in sport (41.4 per cent) is also noteworthy. This study reinforces concerns about the differences in levels of engagement in sport setting between the sexes, namely that males have higher levels of physical activity and sport participation (Gordia et al., 2009; Nogueira et al., 2020; Virginia-Añez et al., 2020). These authors point out the contextual mismatch between the interests and needs of young people and the existing local offer. From the data collected through the sociodemographic questionnaire, many answers were for sports that are not offered in the municipality, namely swimming, volleyball, rugby, basketball, mountain biking or cycling.

Table 2 Descriptive statistics (mean and standard deviation) and ANOVA results for the variables federated sports practice and mobility according to gender and age group

		N	M \pm SD	F	p
Federated Sports	Male	136	1.57 \pm .48	24.77	.000**
	Female	124	1.84 \pm .37		
	U15	169	1.72 \pm .45	.774	.380
	U19	89	1.66 \pm .48		
Mobility	Male	137	1.88 \pm 1.37	.019	.892
	Female	124	1.91 \pm 1.38		
	Under 15	167	1.84 \pm 1.35	.703	.403
	U19	93	1.99 \pm 1.42		

It lacked control over the disparities in socioeconomic status, which could influence the results, i.e. socioeconomic status with mothers and fathers with different levels of education could lead to different contextual influences on young people, as the results show. The discussion of categorising status either by professional occupation, level of education or based on income and property/wealth is broad and complex in the sense of categorisation and more precise data collection. Professional occupation can

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lead to children and young people having different names for their parents' occupation, and income data can be considered invasive when analysing the household (Cardoso, 2006). Also, the household constitution (e.g., single parent or wider family) can influence the socioeconomic status in the way it was analysed. Previous studies have found that socioeconomic status is associated with levels of physical activity and sports practice (Seabra et al., 2004), with lower socioeconomic status having lower levels. Jiménez-Pavón et al. (2010) found the effects of socioeconomic status on muscle strength and total and central body fat, with different associations according to the socioeconomic status of fathers or mothers. The present work did not consider differences between parental and maternal status, so it's not possible to make any inferences in this regard, which is more in line with studies that do not find differences between genders in terms of physical activity (Virginia-Añez et al., 2020). However, there are benefits to incorporating non-intrusive and easy-to-use means of obtaining data on physical activity and active ageing, to support innovation and business aimed at citizens, and in the various local socio-economic ecosystems (Reis et al., 2019), such as rural/urban ecosystems, or low/middle/high socio-economic brackets.

Table 3 Descriptive statistics (mean and standard deviation) and MANOVA results for the variables federated sports practice and mobility according to the socio-economic status of the father and mother.

	SESFather	SESMother	N	M ± SD	Sum of Squares	F	p
Federated Sports	Low	Low	38	1.84 ± .37	.082	.387	.680
		Middle	86	1.67 ± .47			
		Higher	13	1.62 ± .51			
	Medium	Lower	28	1.71 ± .46			
		Middle	67	1.66 ± .48			
		Upper	11	1.64 ± .51			
Mobility	Low	Lower	38	2.32 ± 1.47	.065	.35	.966
		Middle	86	1.78 ± 1.37			
		Upper	13	1.31 ± 1.11			
	Medium	Lower	28	2.29 ± 1.47			
		Middle	67	1.85 ± 1.35			
		Higher	11	1.40 ± 1.20			

Conclusion

The findings from the context analysed, though limited to a specific municipality, are concerning. The data indicates that most participants display unhealthy and/or environmentally unfriendly mobility habits, along with low levels of federated sports practice. Specifically, the predominant mode of transportation between home and school is by car, resulting in diminished physical activity levels, unnecessary car traffic, and consequent air pollution through increased CO2 emissions.

The differences between boys and girls practising federated sport are clearly present, with the former showing greater involvement in this type of activity. This should reinforce the concerns about the gender equality policies for the sport sector.

The school should serve as an educator both in terms of physical activity and in terms of mobility and environmental issues. However, this intervention will have to be systemic, with the local authority's involvement through local policies in education, sport, building works and town planning. The possibility of strengthening policies to support the purchase of bicycles and the development of cycle paths and liveable urban spaces.

A limitation of the study is the reliance on the socioeconomic status of the participants' qualifications rather than evaluating each parent's status individually, their income or professional occupation, or even the households composition. Additionally, the sample is restricted to youth from a single school setting. Moreover, at the time, bike lanes were non-existent and did not measure traffic safety (real and perceived).

The results of this study provide useful

insights for developing public policies and targeted interventions to promote healthier lifestyles and more sustainable mobility practices among youth in this community. While the sample is specific to a particular setting, the patterns and challenges identified could inform similar interventions in other communities, particularly those with comparable demographic or urban characteristics.

Future studies should explore sports supply and demand and levels of physical activity, as well as mobility options (e.g., bikes lanes, bike sharing systems) and constraints (e.g., traffic safety). Intervention, investment and return policy measures aimed at increasing federated sports practice, specifically for women, should be analysed, in addition to promoting mobility on foot or by bicycle for short distances. Longitudinal studies tracking changes in behaviour over time would be particularly valuable.

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Corresponding Author Information

Author Name Surname: Artur Santos

Organisation: Transdisciplinary Research Center in Education and Development (CITeD), Bragança Polytechnic University (IPB), Portugal

Address: Campus De Santa Apolónia, 5300 - 253 BRAGANÇA, Portugal

Orcid Number: <https://orcid.org/0000-0001-8425-6836>



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