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THE IMPACT OF SPORTS ON HEALTH AND HEALTHCARE COSTS IN PORTUGAL – A WALKING FOOTBALL INITIATIVE

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Abstract

Portugal is one of the most physically inactive countries in the European Union. This work project aims at investigating if a sports initiative is needed in the country, which sport is most suitable, and if the initiative can be self-sufficient. To answer the research questions, benchmarking, PESTLE, and SWOT analyses were performed, showing the need for a sports initiative, namely walking football. Additionally, a break-even point analysis revealed that the initiative can be self-sufficient with at least 13 players per group and a total of 144,037 previously inactive older adults, which decreases to 6,148, with 20 players per session.

Keywords: sport, health, healthcare costs, Portugal, walking football, initiative, self-sufficient.

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1 Introduction

Physical activity is commonly seen as an integral part of a healthy lifestyle. According to the World Health Organization (WHO n.d.a), "Physical inactivity is one of the leading risk factors for noncommunicable diseases (NCDs) and death worldwide. (…) It is estimated that four to five million deaths per year could be averted if the global population was more active". Sports are one of the categories of physical activity (Caspersen, Powell and Christenson 1985), thus having the potential to contribute to a healthier population.

This work project aims to propose a sports initiative for the Portuguese population, to be paid for by the government, under the expectation that the investment can be returned through a positive impact on health and, consequently, on healthcare costs. It builds on the existing research on the impact of sports (and physical activity as a whole) on health and healthcare costs to help combat the lack of physical activity in Portugal, one of the worst in the EU (European Commission 2018).

Hence, this study has three research questions, to be answered sequentially. Firstly, is a sports initiative needed in Portugal? If so, which sport should be the focus of the initiative? Finally, can this initiative be self-sufficient? To answer them, the first step is to perform a literature review, where existing literature is acknowledged and assessed, to build upon it. Next, there is a methodology section, to present and explain the type of data and methods used.

To answer the first research question, the work project follows with a benchmarking analysis, comparing Portugal with other European countries, while the second research question is then answered with a PESTLE analysis, which is complemented by a SWOT analysis, to evaluate the chosen sport. Later, the study resorts to a break-even point analysis, where the third research question is answered. Lastly, there is a discussion section, where the results are exposed and debated, followed by a conclusion that wraps everything up.

2 Literature Review

2.1 Impact of Sports on Health

Sports are part of a broader term, physical activity (Caspersen, Powell and Christenson 1985), which has been extensively researched throughout the years. Lee, et al. (2012) analysed how it impacted NCDs worldwide, finding it to be associated with 5-10% of the burden of disease from coronary heart disease, type 2 diabetes, breast cancer, and colon cancer. Also, in 2008, 9% of premature mortality was attributable to inactivity. Half a million deaths could be prevented with a decrease of 10% in inactivity, and more than one million deaths could be avoided by decreasing it by 25%.

Overall, the study inferred an increase of 0.68 years of life expectancy worldwide from ending physical inactivity. In Portugal, this gain amounted to 0.86 years. Physical inactivity was linked to 13.6% of all-cause mortality. However, the uncertainty level appears to be high, not only for Portugal but also for other countries. For example, with 95% confidence, the Population Attributable Fraction (PAF) for Portugal's all-cause mortality is 5.2-22.6%.

Whilst physical activity has been shown to have a lot of benefits, which pass on to sports; the latter, especially as it approaches an elite level, also contributes to an increase in injuries, especially since "The modern-day athlete participating in elite sports is exposed to high training loads and increasingly saturated competition calendar" (Schwellnus, et al. 2016). This reflects one of the negative impacts of sports on health, which should also be addressed.

Choe, et al. (2021) recently studied the relationship between injuries and the intensity and duration of physical activity, as well as whether the participation was done with family, friends, club members, or alone, using a sample composed of thousands of Korean participants (9,000 at the start of the study). Using the alone group as a reference, it concluded that the individuals from the club members group faced a substantially higher risk of having injuries

(5.2 times more prone), and those from the friend group were 1.8 times more likely to face an injury than the reference one, which are the groups more probable to appear in a sports setting. No statistically significant difference was found for the family group.

Furthermore, while light-intensity and moderate-intensity physical activity had no significant statistical difference at a 5% significance level, vigorous intensity led to a 4.6 times higher chance of injury than light intensity. The duration of physical activity was not found to be associated with statistically significant differences.

Nevertheless, Hootman, et al. (2001) had previously looked at the duration of physical activity from a weekly perspective, and how it is associated with the risk of injury for men and women. In this study, both moderate and high durations showed an odds ratio above one against low duration, for both men and women, even for the lower threshold of the 95% Confidence Interval (CI), indicating a statistically significant difference in how duration is linked to the probability of injury.

Physical activity and, specifically, sports, have a physical side that is very prevalent, but their mental impact should not be disregarded. For instance, Schuch, et al. (2016) performed a meta-analysis on if exercise could act as a treatment for depression, whilst adjusting for publication bias, where a standardized mean difference between the exercise and control groups was found statistically significant at a 5% significance level.

Moreover, Stubbs, et al. (2017) conducted another meta-analysis (and systematic review), to examine the benefits of exercise on anxiety and stress disorders. The presence of publication bias was not found by the Begg and Muzandar tests, and the standardized mean difference between the exercise and control conditions was also found to be statistically significant at a 5% significance level. The effect of exercise was considered to be of moderate size.

Notwithstanding, there is also research specific to sports. Swann, et al. (2018) conducted focus groups with 55 Australian young males (12-17 years old) that participated in organized sports. The study found that participants viewed sports as a tool to support mental health, especially in teams. Furthermore, coaches and family were seen as vital in this process. Note that this type of research can be influenced by demand characteristics, where participants subconsciously answer following what they think is expected from them (Orne 2009).

Nonetheless, the systematic review of Sheridan, Coffee and Lavallee (2014) is in line with Swann, et al. (2018), namely by identifying that, among the 73 studies evaluated, coaches were the most important source of social support (in the youth sports context), followed by parents and peers. Additionally, Pluhar, et al. (2019) found that athletes who perform individual sports report anxiety or depression more than those performing team sports, at a 1% significance level. This may be linked to the fact that individual sports athletes were more prone to play with objectives in mind, as opposed to playing for fun, in comparison to team sports athletes, as the study found, at a 5% significance level. Although not investigated by the study, it is suggested as future research.

Even though physical activity and sports are known to have mental health benefits, "Athletes experience a range of stressors that can impact mental health ranging from typical life stress to sport-specific stress, such as performance demands, competitive failure, injury and retirement from sport" (Haugen 2022). This is supported by Biggin, Burns and Uphill (2017), who studied how 19 elite athletes and 16 coaches perceived mental health problems, using three-round Delphi surveys. For athletes, the main contributors to mental illness were the pressure they exerted on themselves, fear of failure, and injury, while coaches also emphasised below-expectation performance and the concern of disappointing others.

However, Gulliver, et al. (2015) performed a study with 224 Australian elite athletes, where the level of symptoms of mental health issues did not substantially differ from those observed in the community. The study asked for caution when interpreting these results, due to possible demographic differences in the databases, but also because of the possible existence of self-selection bias, which is "when behavioral processes sort individuals into nonrandom samples" (Cooke 2009). In other words, there may have been a tendency for athletes with "normal" levels of mental health problems to participate at a higher relative proportion. Nonetheless, Rice, et al. (2016) conducted a systematic review of 60 studies that also found a similar risk of common mental disorders for elite athletes, when compared to the general population, although the need for high-quality studies in this field was pointed out.

2.2 Impact of Sports on Healthcare Costs

Sport's impact on healthcare costs is mostly a consequence of its impact on health. Once again, even if sports are only a portion of physical activity (Caspersen, Powell and Christenson 1985), there is relevant research on that topic that should not be disregarded. The WHO (n.d.a) noted that "Estimates from 2016 show that physical inactivity cost the health system US$ 54 billion, and resulted in US$ 14 billion in economic losses. Estimates from both high-income, as well as low as and middle-income countries (LMICs) indicate that between 1-3% of national health care expenditures are attributable to physical inactivity".

The estimates from 2016 likely come from Ding, et al. (2016), which computed total healthcare costs for 93% of the world population. These costs referred to 2013 and reflected estimates of direct healthcare costs, such as cardiovascular diseases; Disability-Adjusted Life Years (DALYs); and indirect costs, particularly losses in productivity. In Portugal, total healthcare costs were projected to correspond to INT$ 326,658,000, of which 98% were direct costs.

Again, the uncertainty level seems high, with Portugal's total healthcare costs expected to be $40,019,000-1,068,298,000. For Deloitte (2022), physical inactivity negatively impacted Portugal's healthcare services by $1 billion, which is closer to the upper threshold for Ding, et al. (2016), although inflation may play a role in that scenario.

Carlson, et al. (2015) had previously estimated how inadequate physical activity influences healthcare costs in the United States (US), using an econometric model. It concluded that 11.1% of healthcare costs were linked to inadequate physical activity, or 8.7% if adults with difficulties walking were not included. Nevertheless, Colditz (1999) used an epidemiologic approach, which yielded substantially lower results, estimating that the direct costs of physical activity were 2.4% of the total US healthcare costs. It is important to note that the studies are more than a decade apart.

Sato, et al. (2020) captured lagged associations between physical activity and healthcare costs in older adults, by using variables lagged 1-3 years. Whilst no association was found for the current (year 0) and subsequent years, an increase in physical activity by 10 percentage points (pp) led to a 0.4% decrease in costs in year 2, and 1% in year 3, which may also suggest an increasingly inverse relation, as time passes.

Regarding injury and its impact on these costs, Polinder, et al. (2016) conducted a study beyond sports, looking at all injuries in the Netherlands, more precisely those that visited the Emergency Department in 2012. Still, the study specified sports-related injuries, which accounted for approximately 19% of total visits but only for about 9% of total admissions.

Mortality from sports injuries was less than 1% (around 0.23%) of mortality from all injuries, and direct healthcare costs were approximately 8%. Yet, productivity costs of sports injuries accounted for about 17% of the total, possibly indicating that these injuries were more capable of incapacitating work, which is reasonable, especially in sports athletes. Overall,

sports injuries cost around €413 million, which corresponded to approximately 12% of the total costs with injuries. Note that not practicing sports would not necessarily decrease total costs by the full cost of sports injuries, because other injuries could occur in that period.

The author did not find studies that looked at mental healthcare costs related to sports. Even so, if the risk of mental illness in sports is comparable to the general population, as for elite athletes (Rice, et al. 2016), there may not be an impact of sports on mental healthcare costs, or its impact may be positive, namely when it comes to its role in treating depression (Schuch, et al. 2016), as well as reducing anxiety and stress symptoms (Stubbs, et al. 2017).

3 Methodology

To answer the research questions, both primary and secondary data were used. Primary data was collected through emails and an online meeting[1] with Luis Jacob, a national coordinator of Walking Football Portugal (WFP n.d.a). Secondary data was gathered from various online databases, including Google Scholar, Scopus, ScienceDirect, Statista, PORDATA, INE, Eurostat, and World Bank Open Data, as well as the Walking Football Portugal website.

The first part of the work project involved both qualitative and quantitative data, although this section of the research was mostly qualitative. Firstly, a benchmarking analysis was performed, to analyse sports and sports-related health in Portugal, by comparison with other European countries. Even though this analysis is usually used to compare businesses and their practices, in this context, the goal was to evaluate Portugal with concrete references, to assess the degree of opportunity that exists for sports-related initiatives, according to the relative scenario that the country presents.

[1] Conducted in Portuguese and available upon request.

The second step of this part was to characterize the environment around sports in Portugal, specifically in the aspects that may influence its impact on the population's health and healthcare costs. The author performed a PESTLE analysis, derived from the PEST analysis (Aguilar 1967). This step enabled the choice of a sport for the initiative.

After the PESTLE analysis, the research was narrowed down to walking football. The sport was analysed with a SWOT analysis (frequently attributed to Albert Humphrey but with an uncertain origin), which allowed for a full analysis of the sport, and how internal and external factors could influence the impact of an initiative in Portugal.

The second part of the work project was to quantify the costs and gains a government initiative for the spread of walking football around the country would have. An estimate of the number of people expected to adhere to the program would be too subjective, although Luis Jacob implicitly mentioned an adherence level of 10% in senior universities[2], in the online meeting with the author. Nonetheless, the decision was to focus on estimating the break-even point (BEP) of the project, whose feasibility could then be discussed.

4 Benchmarking Analysis

4.1 Physical Activity Level

The 2018 European Commission's Special Eurobarometer 472 reported that Portugal's respondents were the most likely not to exercise or play sports, along with Bulgaria and Greece's (see Figure A.1), at a percentage of 68% (European Commission 2018). Portugal is very far from the European Union[3] (EU) average, standing at 46%, which still indicates that almost half of the respondents never practice sports. Nonetheless, on the opposite end of the

[2] Teams of 15-20 players in senior universities with around 150 people.
[3] The EU had 28 members at the time of the report.

spectrum, in Denmark, Sweden, and Finland only 20% or less of the respondents never practice sports, which is a clear distinction from the 68% of Portugal.

4.2 Body Mass Index

Generally, countries where the population exercises less are expected to be the ones where it has a higher Body Mass Index (BMI), not necessarily because of the lower level of physical activity, but because individuals that exercise more tend to have other healthy habits (Blair, Jacobs and Powell 1985). Looking at the percentage of the adult population that is considered overweight in the EU countries (plus Norway, Serbia, and Turkey), in 2019 (Eurostat 2021a), this appears to be the case, namely in eastern European countries (see Figure A.2). Note that Portugal is also above the EU in this indicator, with 56% of its adult population being overweight, compared to 53% in the EU.

4.3 Blood Pressure

When it comes to health, being overweight can lead to NCDs, like hypertension (Eurostat 2021a), and there seems to be a positive correlation between physical activity levels and BMI. Looking directly at blood pressure, the positive correlation with physical activity also appears to be present (see Figures A.1 and A.3), and its positive correlation with BMI looks even stronger (see Figures A.2 and A.3), with eastern European countries having a higher average percentage of people with high blood pressure. Nonetheless, Portugal is the country with the highest percentage in western Europe, parallel to the percentage of overweight individuals. In this case, 26.6% of its population reports high blood pressure, compared to 21.9% in the EU (Eurostat 2021b).

4.4 Mental Health

Finally, when assessing the impact of sports on health, one of the discussed topics was mental health, which can have both positive and negative effects. However, the impact of sports

on mental health and healthcare costs depends on the starting point it faces. Thus, comparing Portugal with other European countries is advisable.

Data from a study about the Global Burden of Disease (IHME 2019) paints the inverse picture of the previous ones (see Figure A.4), as eastern European countries display fewer mental health disorders than western European ones. Regardless, Portugal has below-average results, being the country in Europe that has the highest share of the population with mental disorders, in 2019 – 18.45%, almost 5 pp above the European Region[4] average of 13.66%.

4.5 Comments

According to the benchmarking analysis, Portugal can be characterized as a country with substantially low physical levels, high levels of BMI, and high blood pressure, when compared to similar countries. Besides, when it comes to mental health, the overall picture does not improve, with the worst results in Europe.

All in all, the opportunity for sports to impact health and healthcare costs is clear and needed, in line with the studies previously examined. Since mental health problems are also an issue in the country, the author would advise sports to be incentivised in a social setting, as a more competitive environment may exacerbate the stressors faced by athletes, which were mentioned in the study by Haugen (2022), discussed in the literature review.

5 PESTLE Analysis

5.1 Political

In 2022, the main centre-left political party of Portugal, *Partido Socialista* (PS), won the legislative elections, to maintain itself governing the country. This time, though, it did so with an absolute majority, guaranteeing 120 of the 230 seats on the plenary (Secretaria Geral

[4] As defined by the WHO (n.d.b).

do MAI 2022). Since 1979, Portugal has had a National Health Service (Portuguese Government 2019) – *Serviço Nacional de Saúde* (SNS) - with universal access to health as one of its core values (DGS n.d.).

In 2019, approximately 61% of current health expenditure was financed from domestic public sources, albeit this value was the lowest of the century so far, as opposed to 2002, where there was a century peak of about 72% (WHO n.d.c). The investment in sports can be partly seen through the total funding of sports federations in Portugal. As expected, at constant prices (see Figure B.1), investment decreased during the 2008 Great Recession, and recovered in the following years, although there was a decrease in 2020, when the COVID-19 pandemic started.

5.2 Economical

The global economy has faced many challenges in the last few years, namely, the COVID-19 pandemic, which "sent shock waves through the world economy and triggered the largest global economic crisis in more than a century" (World Bank Group 2022). In Portugal, Sequeira, Manteu and Monteiro (2020) pointed out the containment measures that the Portuguese government implemented to protect public health, which led to supply and demand-side shocks. The former can be attributed to the interruption of the normal operations of businesses, while the latter was linked, inter alia, to the mandatory nature of the confinement.

Moreover, at the beginning of 2022, Russia invaded Ukraine, which "triggered a massive human displacement crisis" (World Bank Group 2022). The same source also estimated output in Europe and Central Asia (ECA) to reduce by 0.2%, attributable to negative spillovers from the war, as well as to an energy crisis in Europe, because of increasing geopolitical tensions.

Both these events contributed to an increase in inflation in the EU and the euro area, hitting record high rates and not expected to return to the inflation target of 2%, "due to

continued geopolitical uncertainty and persistent supply bottlenecks" (Höflmayr 2022). In Portugal, in October 2022, Banco de Portugal (2022) reported that inflation is expected to increase to 7.8%, compared to the projection made in July of the same year (5.9%).

Hence, the economic scenario in Portugal does not seem favourable, as in the rest of the world. Nevertheless, Portugal already has a population with lower-than-average income levels. In 2019, before the start of the pandemic, the adjusted gross disposable income of households per capita in Purchasing Power Standard (PPS) was 18,855 PPS, a figure approximately 17% lower than the EU[5] average of 22,738 PPS (Eurostat 2022).

5.3 Societal

In Portugal, Census - *Censos* - takes place every ten years, and there are provisional data for 2021 when 10,344,802 citizens were living in the country (INE 2021a). The age distribution of the population can be seen by looking at the Ageing Index, which had a provisional value of 182.1, in 2021. This means that there are 82.1% more elderly persons than young individuals, reflecting an inverted pyramid that can be used to represent the Portuguese age distribution (INE and PORDATA 2022).

This ratio has been increasing every decade, since 1960, and became higher than 100 (inversion of the pyramid) in the 2001 *Censos*. Furthermore, the Old-Age Dependency Ratio has followed a similar path, having had a provisional value of 36.8 in 2021. In other words, elderly persons correspond to 36.8% of the active population (INE and PORDATA 2022).

In an ageing country, it is important to note that Kallinen and Markku (1995) suggested that most elderly individuals that actively practice exercise are the exception, rather than the norm, usually linked with better health and physical capacity. Nonetheless, they are more prone

[5] Excluding the United Kingdom

to potential injuries than younger individuals, especially as they approach physical overloading, because the safety margin decreases, due to the lower ability of body systems to adapt.

5.4 Technological

According to the Portuguese Trade & Investment Agency (AICEP 2021), "Portugal, a top tech destination (…) is a multicultural country, which attracts companies from all over the world to establish or expand their investments in the country, even in the context of the pandemic". Although this assessment may be biased since AICEP is a public entity, the International Trade Association (2021) noted that, in 2019, multiple initiatives were launched by the government "to promote the digitalization of businesses".

Regarding digital skills (see Figure B.2), Portugal is aligned with the EU median in terms of the Digital Economy and Society Index (DESI), but it falls behind when it comes to Human Capital and the Use of Internet. This may be connected to the demographics of the population (inverted pyramid), discussed in the societal component.

Nevertheless, it is above the EU median in terms of Connectivity, Integration of Digital Technology, and Digital Public Services, in part because of government incentives, such as the National Digital Competences Initiative e.2030 (Portugal INCoDe.2030), which "has a broad scope in this drive towards digital development, starting with the promotion of digital inclusion and literacy, educating the young generations from an early age, qualifying the active population and specialising its graduates for advanced digital jobs, and to turn the country into a net contributor for the new digital developments" (Portugal INCoDe.2030 n.d.).

Technology is becoming increasingly important in the sports world. For elite athletes and professional teams, it is a way to gain a competitive edge, during training and on the field (Giblin, Tor and Parrington 2016). For non-professional athletes, its use grew during the COVID-19 pandemic lockdowns, with the increase of digital fitness (Sonnen 2021),

accompanied by a rise in the popularity of fitness tracking devices, specifically wrist-wear (see Figure B.3), which was already a tendency before (Statista Research Department 2022).

5.5 Legal

When it comes to sports legislation, the responsibility for the promotion of sports is explicit (Portuguese Parliament 2007), and compensation for athletes that suffer work-related damage that permanently incapacitates them from continuing their work as professional athletes is established (Portuguese Parliament 2011). This is essential to assure health and stability, namely for those that depend on their body to perform at an elite level.

According to the *Lei de Bases de Atividade Física e do Desporto* (Portuguese Parliament 2007), the promotion and generalization of sports is the responsibility of the State, autonomous regions, and municipalities, specifically through the creation of public spaces for sports activities, incentives to have an active lifestyle, with physical activity included in the daily routine, and the promotion of a balance of physical activity with personal, familiar, and professional lives.

Furthermore, public administration is responsible for helping and developing the regular and high-performance practice of sports, by making technical, human, and financial means available. Physical Education and school sports should also be promoted, within the curricular scope. In terms of federated sports, there must be a certification of aptitude, through medical examination (Portuguese Parliament 2007).

In case of work-related damages that permanently incapacitate professional athletes from continuing their jobs, the person has the right to receive 14 times the amount corresponding to eight times the minimum monthly remuneration, until completing 35 years. After that birthday, the individual is entitled to 14 times the amount corresponding to five times the minimum monthly remuneration (Portuguese Parliament 2011).

5.6 Environmental

Lastly, sports are also dependent on environmental factors. According to the Köppen classification (Köppen 1900a, Köppen 1900b), Portugal has a temperate climate, with a rainy winter, as well as a dry and slightly hot (or hot) summer (IPMA n.d.). Notwithstanding, Ramos, Trigo and Santo (2011) documented "statistically significant increments of extreme heat events for spring and summer, and a decrease of cold extremes in winter", whilst Santos, et al. (2019) reported that "climate change projections revealed a decrease in precipitation, mainly over northwestern Portugal, whereas the contribution of extreme precipitation to total precipitation is expected to increase, mostly in southern Portugal". In other words, it is expected to rain less, and in a more concentrated period, which is supported by their projection of the maximum number of consecutive dry days to increase in the country.

Climate change's impact on sports has been subject to various studies. Nowak, et al. (2022) conducted a narrative review which, albeit focusing on endurance athletes, highlighted that "climate change contributes to extreme weather, which can result in heat illness; pulmonary disease secondary to air pollution; and an increased risk of infections (i.e., tick-borne and mosquito-borne illness) due to habitat alterations". This is most harmful to individuals that practice sports outdoors (such as part of endurance athletes), which is a common practice in Portugal, because of the previously noted climate characteristics.

5.7 Comments

Throughout the PESTLE analysis, several external factors that can affect sports were outlined. In Portugal, given the public nature of most of the current health expenditure, a sports initiative would probably interest the government, even beyond a moral standpoint, as it could reduce (public) healthcare costs. Moreover, due to the current state of the world economy, the focus should be on relatively inexpensive sports, for both the participants and the State.

Since Portugal has an ageing population, it would also make sense to focus on older individuals. Beyond the larger target audience, they are also the ones whose net difference between healthcare costs avoided and incurred as a consequence of sports and exercise is greater (Nicholl, Coleman and Brazier 1994).

6 Walking Football

All things considered, a sport that connects the dots created by the PESTLE analysis is walking football. It appeared in England, in 2011, and came to Portugal in 2017 (Tarita 2022). According to Luis Jacob, in the meeting with the author, there are currently around 30 teams, but the number is even higher on the website, likely due to the inclusion of teams from the Madeira archipelago, amounting to a total of 41, mostly from senior universities (WFP n.d.b).

The sport is an adaptation of football, with the major difference being the inability to run. In Portugal, teams are mixed and composed of six players with more than 50 years. They can be ludic or competitive, depending on athletes' capabilities and experience (WFP n.d.a). In terms of rules, it is also important to highlight that there are no goalkeepers, with goals having a height of one meter. Goals can only be scored in the offensive half of the field, and there are no offsides. Physical contact is prohibited, as well as sliding tackles (WFP n.d.c).

In the online meeting with Luis Jacob, the social component of walking football was strongly highlighted. Even in the competitive side of the sport, Portuguese tournaments do not award prizes for winning, to combat the increasingly competitive nature that was naturally built, as teams faced each other multiple times. For Luis Jacob, the sport is inclusive, regardless of gender and skill (Tarita 2022).

Even though the sport is still relatively new, there are already studies about its effects on health. For example, Arnold, Bruce-Low and Sammut (2015) conducted a 12-week walking football program, with 10 older adults, which found statistically significant reductions in body

fat mass and percentage body fat, as well as a "significant increase in time to volitional exhaustion during incremental exercise". Furthermore, Mendes, et al. (2020) found the sport to be safe for participants with type 2 diabetes, with low-to-moderate intensity and low injury rate.

7 SWOT Analysis

7.1 Strengths

The first strength of walking football is its connection to football. Although different rules must be learned, the similarity between both sports is a major force, since football is the most popular sport in Portugal, with 71% of the population being interested or very interested in it (COP 2021). Moreover, it is a relatively cheap sport, especially at a recreational level, since it only requires a ball and a field. If there is no access to a goal, the sport can still be played without many inconveniences, especially in Portugal, where the rules forbid goalkeepers, with the possibility of using various objects as goalposts.

Indeed, another strength of walking football is its set of rules. Aiello, Canalella and Altieri (2016) mentioned that it allows one to "avoid sudden movements and reduce the risk of injury", contributing to a sport with low risk and minimum cardiovascular effort. In Portugal, the rules are even softer, without goalkeepers, contact, and balls above the waist, compared to the original model, built for former players, according to Luis Jacob (Tarita 2022).

Finally, the social aspect of walking football is also a factor that strengthens the sport. For instance, Cholerton, et al. (2020) performed a qualitative study, interviewing 17 walking football players, where the "mental development and social connections" were highlighted. Furthermore, as discussed in the literature review, the team component of the sport is a point in its favour, given that team sports athletes are less likely to have anxiety or depression, compared to individual sports athletes (Pluhar, et al. 2019). Also, in Portugal, the sport is very inclusive, with most teams being mixed, as underlined in the article with Luis Jacob (Tarita 2022).

7.2 Weaknesses

Walking football is still a relatively new sport, which consequently has the weakness of not being well known, nor very popular, in comparison with other sports. For example, in Portugal, one of the objectives Luis Jacob mentions is to expand teams beyond senior universities (Tarita 2022), which would help bring the sport to the general population.

Moreover, likely due to its relatively low player base, the Portuguese rules do not mandate different age groups, which may lead to significant age gaps in teams, albeit the need to have more than 50 years. Naturally, younger players will have a competitive advantage, since there is a linear performance decline until the age of 70, which may become even steeper afterward, depending on the sport (Bergita, Urs, et al. 2018).

Lastly, even though its set of rules is considered a strength, the tendency to go to its limits can be seen as another weakness. In particular, despite running not being allowed, walking as fast as possible is still possible (Carr, Langworthy and Davies 2021), which may undermine the initial goal of the rule, for instance, by developing race walking techniques that may accentuate age differences and increase the risk of injury.

7.3 Opportunities

As commented after the PESTLE analysis, a sports initiative would be of financial interest to the Portuguese government, since it could reduce public healthcare costs, in line with the studies about the impact of sports on healthcare costs mentioned in the literature review. This is important because it is an opportunity for walking football projects to be funded by the government, which, beyond the monetary support, can also facilitate reaching older individuals from all parts of the country, even if they cannot access the internet, for example.

Additionally, there are a lot of football fields in Portugal, many of them of free access. At the time of this study, there were 884 registered sports facilities for the practice of football

in the country (SNID n.d.), mainly in Lisbon and Porto, but also spread throughout the rest of the territory (see Figure C.1). Thus, accessing suitable fields is not expected to be a problem, and neither is having to travel very far to practice if there are more people interested in the area.

Finally, the ageing population of Portugal, introduced in the societal component of the PESTLE analysis, can also be seen as an opportunity. If walking football in the country can only be played by individuals older than 50 years, having approximately 45% of the resident population (4,621,047 persons, according to 2021 provisional data) with at least 50 years old (INE 2021b) generates a relatively large target audience for the sport to grow and to have a positive impact on health and the reduction of healthcare costs in Portugal.

7.4 Threats

In terms of threats, the economical component of the PESTLE analysis showed a country with disposable incomes per capita below the EU average, whilst also facing the problems associated with the COVID-19 pandemic and the Russian invasion. This can create a threat associated with older individuals that are still employed not having much availability to practice walking football, as well as the government focusing its budget on other areas.

Furthermore, Eurostat (2022) reported that, in Portugal, in 2020, 83% of individuals aged 45 to 54 years old had used the internet in the last three months, which decreases to 65% for 55-64 years old, and to only 39% for 65-74 years old. Therefore, it may be more difficult to reach an older audience through online marketing, which is a threat to the success of a possible initiative, especially if not supported by the government.

Lastly, as mentioned in the environmental component of the PESTLE analysis, climate change can also be a threat to the practice of outdoor sports, in which walking football is included. For older adults, the problem can be exacerbated, as evidenced, for instance, by their

higher storage of heat "during short exposures to dry and humid heat, suggesting that they may experience increased levels of thermal strain in such conditions" (Stapleton, et al. 2014).

7.5 Comments

The SWOT analysis shows that walking football is a sport with high potential to be successful in Portugal. Most of its weaknesses and threats are likely to be overcome with time, as the sport becomes more established in the country, even though climate change poses a long-term threat. Nonetheless, its strengths and opportunities are clear and well suited to Portugal's characteristics. If funded by the government, there can be a focus on developing a team for each civil parish, along with creating tax incentives for companies that start a squad. Nursing homes can be another possibility since senior universities are already familiarised with the game.

When compared to other sports that could be the centre of an initiative in the country, walking football can generate curiosity by being a relative novelty, and its choice is supported by the comparatively low cost and high availability of public spaces for its practice, as well as the fact that it is a team sport based on football. Its inclusivity may also reinforce its appeal when considering gender equality policies, an interest of the current government (PS 2022).

8 Initiative's Self-Sufficiency

8.1 Projected Annual Costs

In terms of costs, the estimates are mostly based on primary data collected with Luis Jacob (see Figure D.1), as well as the prices practiced in Decathlon (2022a, 2022b, 2022c, 2022d, 2022e, 2022f); the Portuguese Red Cross (Cruz Vermelha Portuguesa 2019); Zaask (n.d.a, n.d.b, n.d.c); Staples (2022); *Correios, Telégrafos e Telefones* (CTT n.d.); *Rádio e Televisão de Portugal* (RTP 2021); and *Público* (2022). The goal of this initiative is not necessarily to create an "official" team, hence, the annual variable costs for a group include a coach and training/safety material (see Table D.1), assuming two one-hour sessions per week.

Note that, according to the email sent by Luis Jacob, coaches are currently volunteers. Notwithstanding, it is more appropriate to consider payment of 15€ per hour (see Figure D.1), presuming that they would need to have first aid training and formation on the use of an Automated External Defibrillator (AED). In total, each group[6] is projected to have variable costs of 4,109-4,373€ per year, at least in the first, because some material could be used for multiple years, although there may also be the need to substitute it during the same year.

Fixed costs only include marketing and distribution costs, which predominantly account for traditional marketing (specifically, flyers and advertisements on the radio and newspapers) since older adults have a relatively low online presence (Eurostat 2022), even if there is also an investment in digital marketing (see Table D.2). The total marketing costs are estimated at around 573,267.05€ per year.

8.2 Projected Annual Gains

In terms of gains, Deloitte (2022) recently inferred that the national health service could avoid an annual cost of 218€ per inactive worker, part of the total 336€, measured as healthcare costs because of diseases linked with physical inactivity. In addition, 180€ per inactive worker was potential annual government revenue, associated with the 806€ that was determined as the Gross Domestic Product (GDP) that could be generated per inactive worker but is not, due to absenteeism and loss of productivity (S. S. Pereira 2022).

Assuming that the adherence rate would be constant, regardless of age group, and that the national health services per inactive worker can be generalized, one may use the INE (2021b) provisional data to infer that, among residents in Portugal with at least 50 years, approximately 47.54% have less than 65 years, and 52.46% have more. Even though the retirement age in Portugal is slightly higher than 65 years (C. A. Pereira 2022), it is reasonable

[6] Assuming 15-20 individuals per group.

to assume that the latter group only avoids healthcare costs (218€ in the public sector), while the former also generates potential gains in government revenue (397€[7]). Thus, the projected annual gains are roughly 311.90€ per player for the government.

8.3 Break-Even Point

The BEP per player depends on the number of players per group. For instance, with 12 players, the variable costs per player would amount to 329.05€ per year, which would be higher than the potential gains, leading to the inexistence of a BEP. Therefore, computations were made for different group sizes, using the formula[8] in Figure D.2 (see Table D.3).

To have a self-sufficient project, groups should have at least 13 players (BEP of 144,037 participants). Assuming the 10% adherence rate in senior universities and the 68% inactivity rate (European Commission 2018) can be generalized, there would be about 314,231 physically inactive older adults interested, which would be sufficient, even for the 13 players. However, it is not expected for the adherence rate to be the same as in those universities, where individuals may already be predisposed to try initiatives like this. Nevertheless, only approximately 0.48% of the physically inactive population with at least 50 years is needed to break even, with 15 players per group, which decreases to around 0.20%, with 20 players per session.

9 Discussion

This work project had three research questions, to be answered sequentially. Firstly, is a sports initiative needed in Portugal? If so, which sport should be the focus of the initiative? Finally, can this initiative be self-sufficient? It was concluded that a sports initiative was needed in the country, in particular, a walking football project. This initiative has the potential to be self-sufficient, depending on the number of players per group. To have the possibility of

[7] The difference between this value and summing 218€ and 180€ is likely a consequence of approximations.
[8] In this case, the unit price corresponds to the potential gains per player. The BEP was always rounded up, to show the minimum number of players necessary to at least break even.

breaking even, there would have to be a minimum of 13 players per session, in which case the BEP corresponds to about 4.58% of the physically inactive adults with 50 years or more, lower than the 10% adherence rate estimated for senior universities.

The results were in line with the expectations of the author, namely the fact that the initiative could be self-sufficient. Nevertheless, in 2018, when the walking football project started in Portugal, 10 senior universities were participating (WFP n.d.a). Using the 15-20 elements per team that Luis Jacob mentioned in the online meeting with the author, this would mean there were 150-200 participants from the start, likely more by the end of the first year. Currently, with 41 teams (WFP n.d.b), the total can be assumed to rise to 615-820 players.

This number is very different from the 6,148-15,098 players needed to break even (see Table D.3), also noting that these values would not account for existing players, as they are already ripping the benefits from walking football. Furthermore, the BEP analysis did not account, for example, for the fact that not all players will play right from the start, which means their gains will not be equivalent to a full year of activity.

However, even though the analysis used costs for the first year, it is important to realize that the goal is to be sustainable in the long term, even if the costs outweigh the gains in the short run, which is emphasised by the possible existence of lagged benefits (Sato, et al. 2020). In the long term, with fewer costs, the initiative is expected to be self-sufficient and sustainable.

The theoretical approach of this work project is one of its limitations, since putting the initiative into practice could reveal the need for changes. Also, its potential gains were based on estimates not specific to walking football. Future research should consider investigating the impact of the sport on healthcare costs, as well as measuring the success of active initiatives. Regarding the proposed initiative, the author would suggest a national survey to assess interest. With positive results, a pitch to the government and a trial period could follow.

10 Conclusion

This work project aimed at sequentially responding to three research questions. Firstly, to the question of whether a sports initiative is needed in Portugal, the answer is affirmative, according to a benchmarking analysis that showed Portugal as one of the worst countries in the EU in terms of physical activity, but also in what regards physical and mental health.

Secondly, given the first affirmative answer, the following question regarded the choice of a sport to be the focus of the initiative, to which the answer is walking football. A PESTLE analysis revealed a country with an ageing population, where the government has a financial interest in having sports projects that can contribute to the reduction of healthcare costs, beyond a moral interest in improving the health of its citizens. Next, a SWOT analysis proved the potential of a walking football initiative by itself and when compared to other sports.

Lastly, given both previous answers, the subsequent question focused on whether this project can be self-sufficient, to which the answer is once again positive. With the help of a BEP analysis, it was found that the initiative could be self-sufficient from the first year onwards, with at least 13 players per group, and 144,037 previously inactive older adults. Even if these thresholds were not met, costs in the following years are expected to be lower, meaning the project has the potential to be self-sufficient in the long run.

Limitations of this study included the inability to try the initiative, as well as the use of data that was not specific to walking football. Future research should consider quantifying the impact of walking football on healthcare costs, building upon the existing literature regarding the impact of the sport on health. It could also think about putting this project into practice, which contributed to the sports management field by generating a scenario where the studied impact of sports (and physical activity as a whole) could create a self-sufficient public initiative.

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12 Appendix

12.1 Appendix A – Benchmarking Analysis

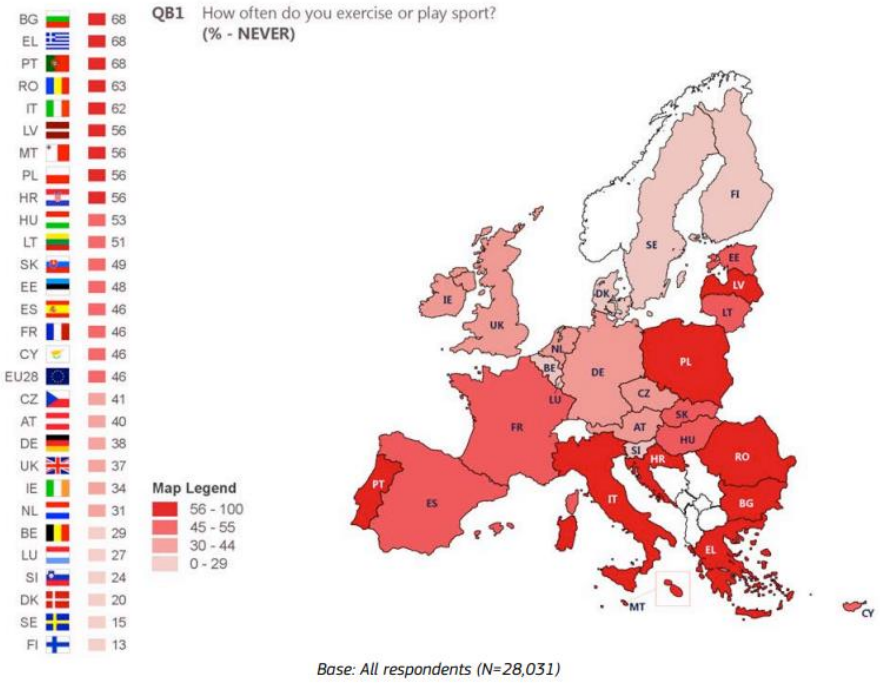


Figure A.1 – Percentage of Respondents that Never Practice Sports (Source: European Commission 2018)

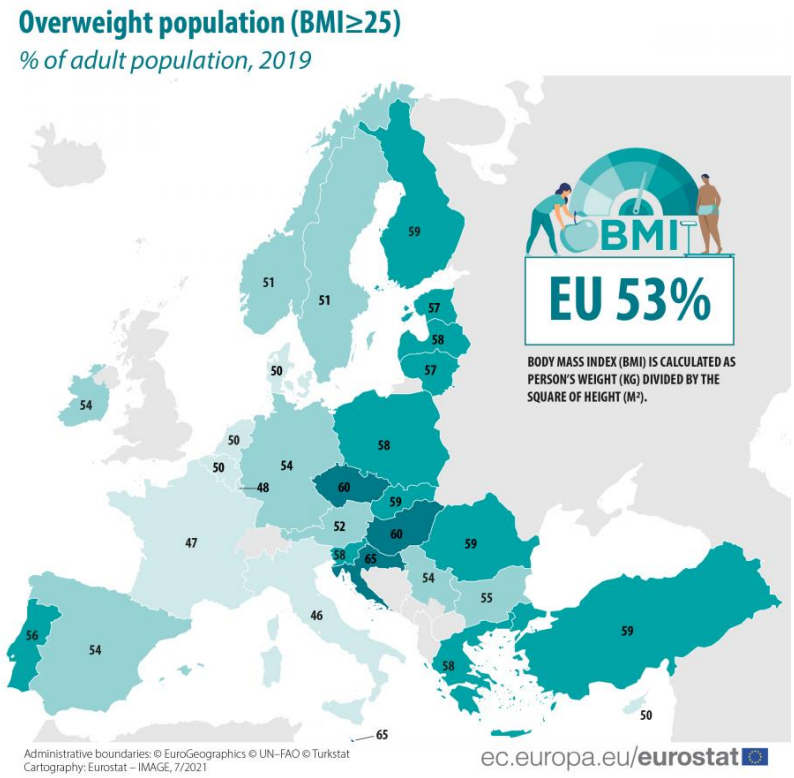


Figure A.2 – Overweight Population as a Percentage of the Adult Population (Source: Eurostat 2021a)

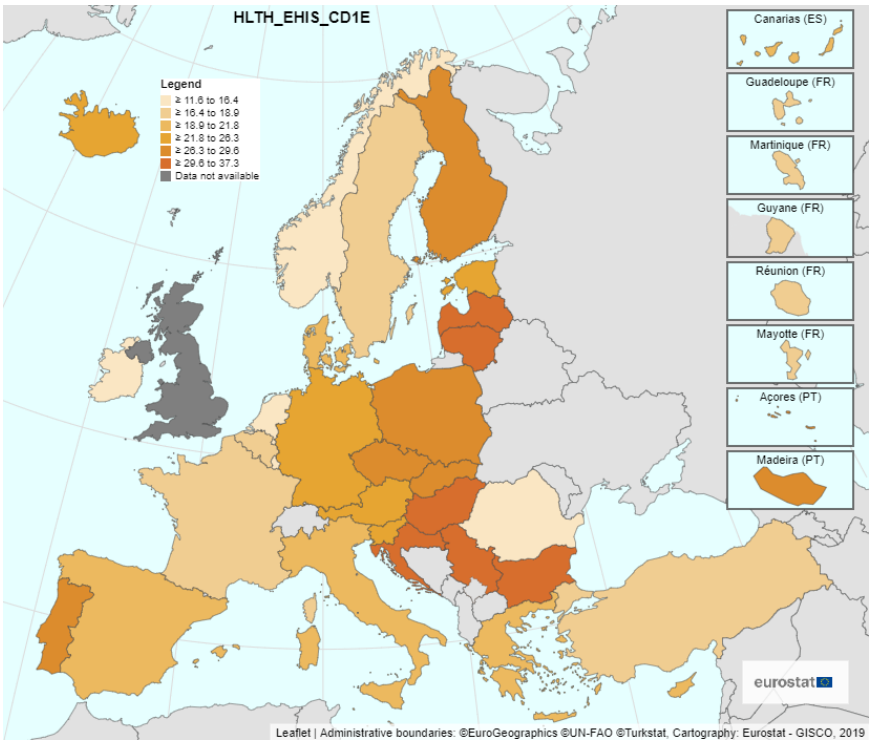


Figure A.3 – Percentage of People (15+) with High Blood Pressure (Source: Eurostat 2021b)

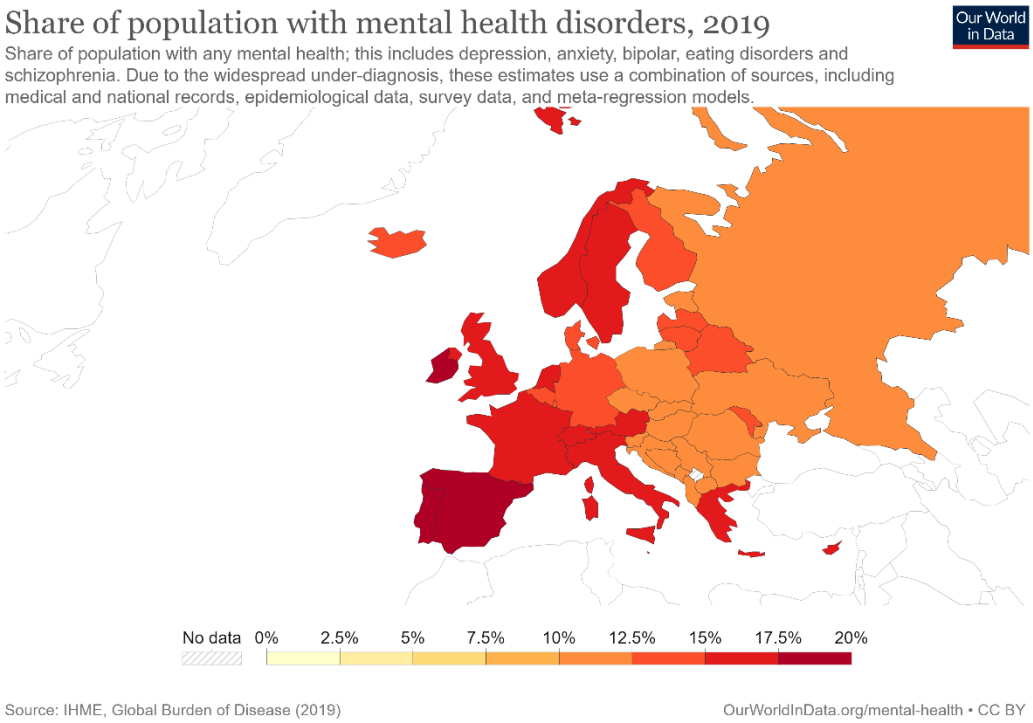


Figure A.4 – Share of Population with Mental Health Disorders, 2019 (Source: Dattani, Ritchie and Roser 2021)

12.2 Appendix B – PESTLE Analysis

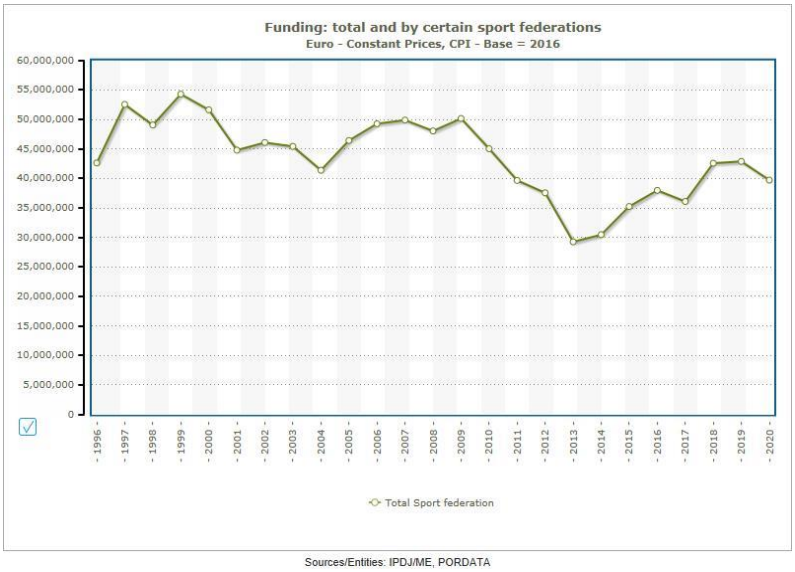


Figure B.1 – Funding: Total and by Certain Sport Federations (Source: IPDJ/ME and PORDATA 2021)

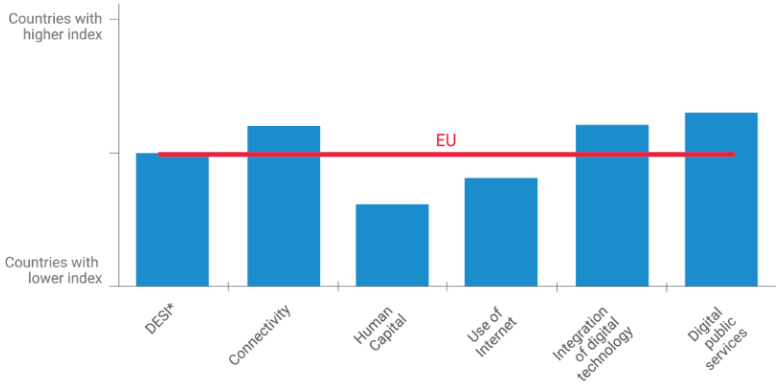


Figure B.2 – Portugal's Digital Skills (Source: Portugal INCoDe.2030 n.d.)

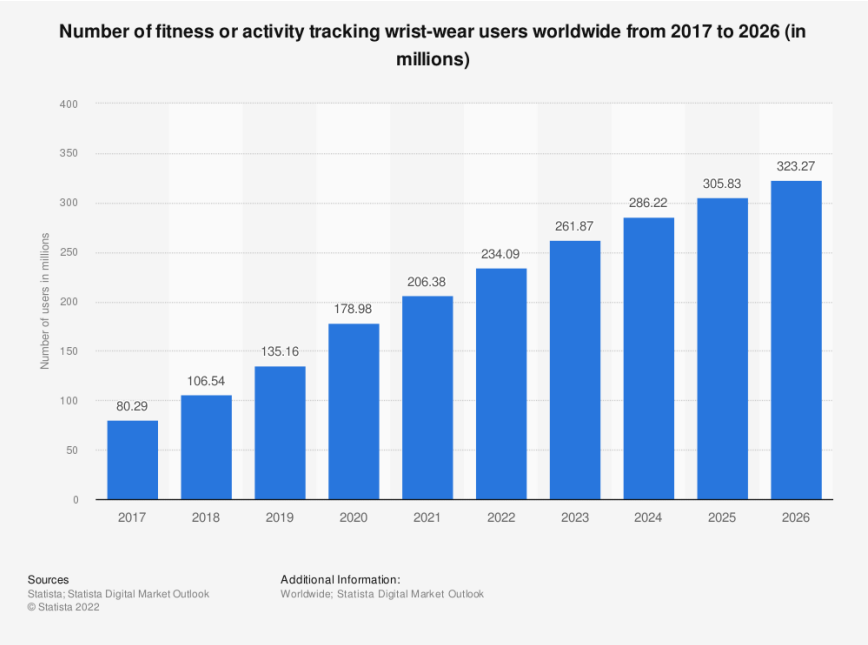


Figure B.3 – Number of Fitness or Activity Tracking Wrist-Wear Users Worldwide from 2017 to 2026 (Source: Statista Research Department 2022)

12.3 Appendix C – SWOT Analysis

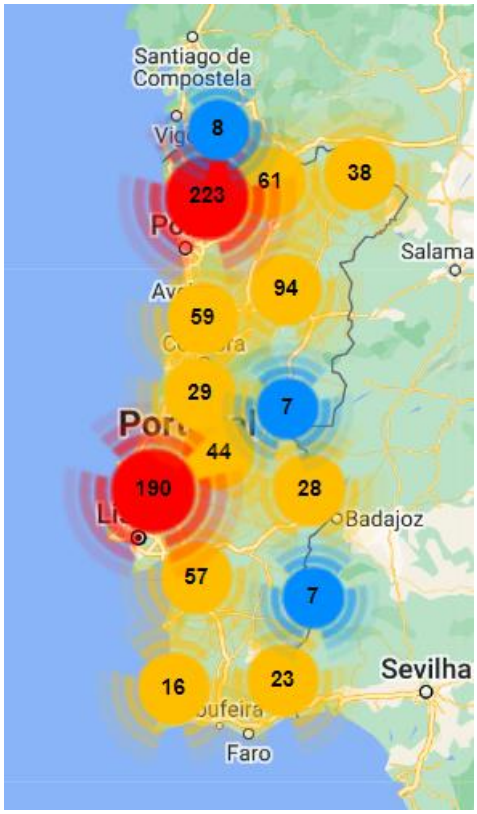
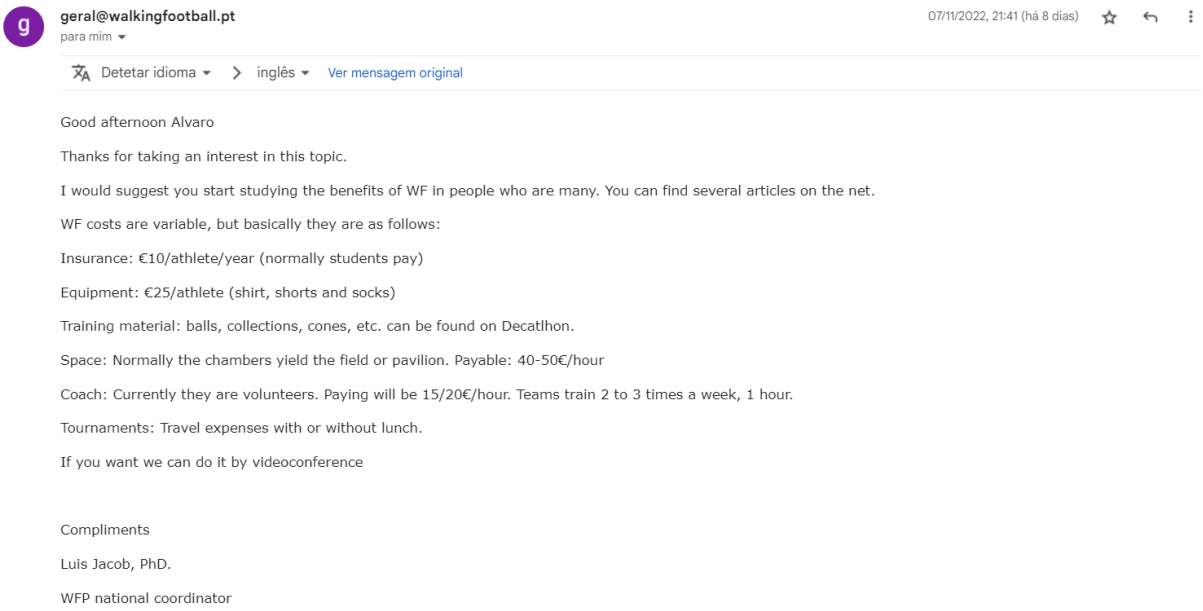


Figure C.1 – Sports Facilities for the Practice of Football in Portugal (Source: SNID n.d.)

12.4 Appendix D – Initiative's Self-Sufficiency



geral@walkingfootball.pt
para mim
07/11/2022, 21:41 (há 8 dias)

Detetar idioma > inglês Ver mensagem original

Good afternoon Alvaro

Thanks for taking an interest in this topic.

I would suggest you start studying the benefits of WF in people who are many. You can find several articles on the net.

WF costs are variable, but basically they are as follows:

Insurance: €10/athlete/year (normally students pay)

Equipment: €25/athlete (shirt, shorts and socks)

Training material: balls, collections, cones, etc. can be found on Decatlhon.

Space: Normally the chambers yield the field or pavilion. Payable: 40-50€/hour

Coach: Currently they are volunteers. Paying will be 15/20€/hour. Teams train 2 to 3 times a week, 1 hour.

Tournaments: Travel expenses with or without lunch.

If you want we can do it by videoconference

Compliments

Luis Jacob, PhD.

WFP national coordinator

Figure D.1 – Luis Jacob's Translated Email about the Costs of Walking Football (Source: Own 2022)

Description	***Amount per Group[9]***	***Unit Price (€)***
Coach (104 Hours)	1	1,560
Balls	n	10
Ball Bag	1	9
Bibs	0.5n	2.50
Cones (Package of 40)	1	15
Rope (4 Meters)	2	6
Insurance	n	10
First Aid Kit	1	20
AED	1	1,696
AED Maintenance	n	31.80

Table D.1 – Projected Annual Variable Costs (Source: Own 2022)

[9] The letter "n" means that the amount per group depends on the number of players. The number of bibs was rounded up, when necessary.

Description	*Amount*	*Unit Price (€)*
Flyer Designer	1	275
Flyer Printing[10]	2,310,524	0.203
Flyer Distribution (Sets of 1,000)	2,311	32.88[11]
Social Media Manager (12 Months)	1	6,600
Radio Advertising (20'')	5	450
Newspaper Publicity[12] *(Junior Odd Page)*	5	3,744
Teaser Video	2	200

Table D.2 – Projected Annual Marketing and Distribution Costs (Source: Own 2022)

$$Break - Even\ Point = \frac{Fixed\ Costs}{Unit\ Price - Unit\ Variable\ Cost}$$

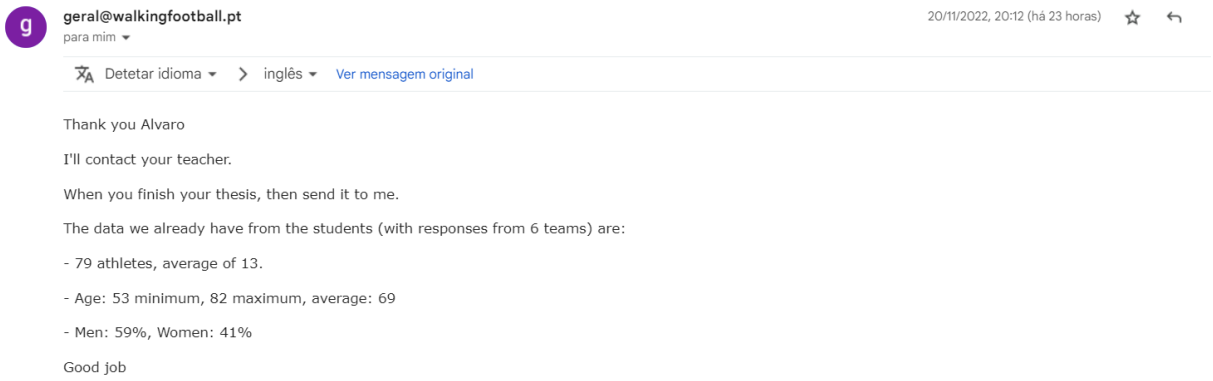
Figure D.2 – Break-Even Point Formula

Group Size (n)	*Variable Cost per Player (€)*	*BEP*
15	273.93	15,098
16	260.05	11,057
17	247.95	8,965
18	237.05	7,659
19	227.43	6,787
20	218.65	6,148

Table D.3 – Break-Even Point Analysis for Different Group Sizes (Source: Own 2022)

[10] Approximately half of the residents in Portugal with at least 50 years (INE 2021b), assuming each household has an average of two older adults.
[11] According to a weighted average (INE 2021b) of the Standard Eco Prices for occasional customers.
[12] Both the North and South Editions.

12.5 Appendix E – Unused Information



geral@walkingfootball.pt
para mim
20/11/2022, 20:12 (há 23 horas)

Detetar idioma > inglês Ver mensagem original

Thank you Alvaro

I'll contact your teacher.

When you finish your thesis, then send it to me.

The data we already have from the students (with responses from 6 teams) are:

- 79 athletes, average of 13.

- Age: 53 minimum, 82 maximum, average: 69

- Men: 59%, Women: 41%

Good job

Figure E.1 – Luis Jacob's Translated Email Regarding the Collection of Data in Senior Universities (Source: Own 2022)

This information was disregarded from the work project because it only accounted for six out of the 41 walking football teams (WFP n.d.b). Nonetheless, the estimate of 150 students per senior university that Luis Jacob provided in the online meeting with the author would lead to an adherence rate of approximately 9%, which would not change any of the main results of this study.