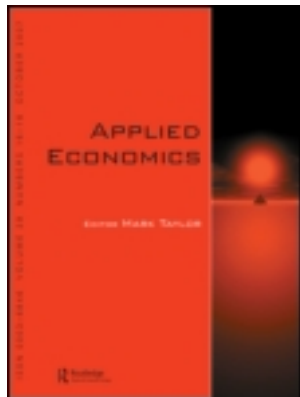


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Analysis of the determinants of sports participation in Spain and England

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This article investigates the role of sociodemographic characteristics, educational and economic variables on sports participation in a comparative way in two European countries: Spain and England. Adopting a broad concept of sport, as in the common European approach, we analyse the determinants of sports participation in 40 different professional and nonprofessional sports and recreational activities in both countries. The research involves a comparative analysis between the data of England and Spain based on two logistic regressions. The regression equation of every country tests the effect of 17 binary explanatory variables on a dependent binary variable for participation. Higher education level, professional occupation, younger age and being male are all factors associated with more sports participation. Although there is no difference in the direction of the factor effects on participation between England and Spain, there is considerable variation in their relative strength, which has sport policy implications in the two nations.

Keywords: sports participation; sports policy; logistic regression; England; Spain; sports economics

JEL Classification: I00

I. Introduction

Between the 1960s and the 1990s there was a significant increase in the number of people taking part in sports and in sports participation frequency in Europe (Gratton and Taylor, 2000). Nevertheless, over the past 10 years sports participation appears to have reached a stagnation point in many European countries (Spain, Finland, Belgium, Portugal and Austria), and has actually begun to decline in some countries such as The Netherlands, Italy and England (van Bottenburg, 2005). In England, sports

participation (at least once in 4 weeks, excluding walking) fell from 48% in 1990 to 43% in 2002. The decline was reversed 4 years later reaching 48% in 2006 (based on Active People Survey data, SIRC).

The stagnation in sports participation is a source of concern not only in European countries but also in other areas of the world. For example, sports participation figures for the adult population in Canada show a disconcerting decrease from 45% to 31% between 1992 and 2004 (Bloom *et al.*, 2005). Over the past decade, the US sports participation, as measured by American Sports Data, has either decreased or

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grew slower than the overall population (Sporting Goods Manufacturers Association; SGMA, 2004).

Consequently, the aforementioned decline has resulted in a strong interest in sports participation research in Europe (e.g. Downward, 2007; Lera-López and Rapún-Gárate, 2007; Downward *et al.*, 2009; Wicker *et al.*, 2009). Unfortunately, differences in datasets (size of sample, intervals of age included in the survey, etc.) and sports participation definitions have prevented consistent comparisons among countries.

This article investigates and compares the role of socio-demographic characteristics, educational and economic variables on forming sports participation in two European countries: Spain and England. Adopting a broad concept of sport, as in the common European approach, we analyse the determinants of sports participation based on 40 different professional and nonprofessional sports and recreational activities in both countries. Our aim is to compare the drivers of sports participation in England and Spain. As far as we know, it is the first article comparing through similar methodology sports participation in different European countries. It investigates how gender, age, education, occupational and professional status affect sports participation in Spain and England. It conducts a comparative analysis of the two countries' participation data based on two Logit regressions. This analysis may be of significant use to sports managers, sporting organizations and government and municipal authorities when selecting the most efficient strategies for increasing the number of sports participants.

The remainder of this article is structured as follows: The next section provides an overview of the level and evolution of sports participation in Europe. In Section III, we present a literature review about the most relevant determinants of sports participation. This is followed in Section IV by a description of the methodology adopted in this study, including both the model and the data sources employed in the estimations for Spain and England. Some basic statistics and the results of the model estimations are presented and interpreted in Section V. Section VI concludes with a summary of the main findings and an indication of the policy implications and opportunities for further research.

II. Sports Participation in Europe

Sports participation in the EU

The first attempt to measure consistently sports participation rates in Europe was made by Rodgers (1977). He examined sports participation in

Flemish Belgium, West Germany, the UK, the Netherlands, France, Norway and Spain. Unfortunately, the aforementioned country surveys shared no technical or survey design similarities, which made the interpretation very difficult. Several attempts to harmonize sport data have been made since then. The most recent attempt to put together EU's sports participation statistics was in the Eurobarometer 2004 publication 'The Citizens of the European Union and Sport' (European Commission, 2004). The methodology used was that of the Standard Eurobarometer polls. In the aforementioned poll, the definition of sport is not explicitly stated and it is dependent on the understanding of the interviewee.

Table 1 presents some results of the latest Eurobarometer survey classifying participation in 'at least once a week' and 'at least three times a week' categories. In 2004, 38% of the European citizens (24 member states) participated in sport at least once a week. 40% of the EU citizens answered that they never play sport. Participation rates at least once a week fluctuate in a range of 22% (Portugal) to 76% (Finland). The Scandinavian countries are the most sporting countries, with participation rates in excess of 70% at least once per week. On the other hand, sports participation tends to be lower in some Southern countries (Portugal 22%, Greece 26% and Italy 27%) and new member states (Hungary 20%, Slovakia 24%). The participation rates (at least once per week) of the UK and Spain are 45% and 37%, correspondingly.

If the definition changes from participating 'at least once a week' to 'at least three times a week', the sports participation level of the 24 EU states reduces by more than half (from 38% to 17%). At this level of frequency, the lowest participation rate is recorded in Portugal (8%), followed by Italy (9%) and Austria (12%). The highest participation rates are still recorded in the Scandinavian countries with Finland leading the way at 45%, followed by Sweden at 40%. The 2004 participation rates (at least three times a week) for Spain and England are 21% and 23%, correspondingly.

It must be pointed out that the year 2004 was rich in sports events (prominent among them the Athens Olympics) which helped to boost sports participation among some European countries.

In terms of the socio-demographic characteristics, the poll of the EU citizens verifies results that are in agreement with our present analysis of the English and Spanish sports participation levels. Specifically, there is:

- (1) A significant gender inequality in EU sports participation, with 41% of men participating at

Table 1. Sports participation in the EU, selected countries, 2004

Country	Participating 'at least once a week' (%)	Participating 'at least three times a week' (%)
Portugal	22	8
Greece	26	16
Italy	27	9
Austria	34	12
Spain	37	21
UK	45	23
The Netherlands	52	17
Ireland	53	28
Sweden	72	40
Finland	76	45
EU	38	17

Source: European Commission (2004).

least once per week compared to 35% of women.

- (2) A negative relationship between age and sports participation, meaning that as age increases, the percentage of citizens participating at least once per week decreases.
- (3) A positive relation between sports participation and education; the participation rate increases significantly, as we switch from people that finished education at 15 years of age or earlier (20%), to people that finished education at the age of 20 or older (50%).

It is important to note that the poll shows the existence of a positive relationship between availability of free time and sports participation. In fact, the lack of free time is identified as the most significant factor for the absence of sport activities by 34% of interviewees. This was followed by personal dislike of sport (25%). It is extremely significant that 'supply of sport facilities' was not identified as a major factor preventing citizens to participate. Only 3% of the interviewees claimed this as a reason. The time effect hides a plethora of income effects that often contradict each other. Although this is not investigated in the Eurobarometer, the implication is that citizens with a lot of free time, such as students, part-time workers and short-term unemployed are going to have a time advantage over the rest. Similarly, citizens of high incomes can potentially put themselves in a position of indirectly purchasing free time through buying services from gardeners, house

Table 2. Compass sports participation 'at least once per week'

Country	1999 (%)
Finland	73
Sweden	61
Ireland	31
The Netherlands	36
UK	25
Spain	17
Italy	11

Source: Estimates are based on COMPASS statistics.

cleaners, tutors for children, etc. Time disadvantaged groups include the self-employed and citizens taking care of large families. The free-time significance brings about a further dimension in sports participation. Sports participation is in direct conflict with products of mass culture indoor games. A lot of time is spent on indoor electronic entertainment, e.g. television, DVDs, Internet, video games. In some age groups, this time is so extensive, that it is reasonable to say that indoor entertainment is a major factor that checks the growth of sports participation. In the poll, 86% of the interviewees agreed to the statement that sport is a genuine alternative to divert from interior activities, such as television, video games and the Internet.

Outside the Eurobarometer publication there have been three efforts promoting harmonization in the measurement of sports participation rates: Co-ordinated Monitoring of Participation in Sports (COMPASS), Harmonized European Time Use Survey (HETUS) and International Physical Activity Questionnaire (IPAQ).

COMPASS was an initiative of the Italian National Olympic Committee, UK Sport and Sport England. The objective was to 'examine existing systems for the collection and analysis of sports participation data in European countries with a view to identifying ways in which harmonization may be achieved, so that greater comparability of data from different European countries will become possible' (COMPASS, 1999). Table 2 presents indicative statistics for seven EU countries using 1999 COMPASS data. COMPASS statistics, although not comparable with the polls, have been adjusted on the basis of participating once per week.¹ The percentage rates between 1999 and 2004 divert more in the cases of Italy and Spain than in countries with high-sports

¹ The COMPASS participation rates were adjusted proportionately to convert the class of participating at least 60 times per year to participating at least 52 times per year. The numbers here are indicative of the evolution of sports participation over the examined period.

Table 3. Participation and time use statistics, 2007

Countries	Participation rates		Minutes per day	
	Walking and hiking (%)	Other sports, outdoor activities (%)	Walking and hiking	Other sports, outdoor activities
Belgium	13	10	00:12	00:10
Bulgaria	15	4	00:15	00:06
Estonia	15	12	00:10	00:09
Finland	19	23	00:12	00:20
France	18	9	00:18	00:11
Germany	17	16	00:14	00:13
Italy	21	10	00:20	00:10
Latvia	14	12	00:13	00:12
Lithuania	11	9	00:08	00:08
Norway	17	17	00:13	00:17
Poland	17	9	00:13	00:08
Slovenia	20	14	00:18	00:12
Spain	32	10	00:36	00:10
Sweden	18	18	00:11	00:18
UK	5	11	00:04	00:11

Source: HETUS (2007).

participation, such as Finland and Sweden. This reflects the definition of sport under the COMPASS methodology (in particular the treatment of walking) rather than changes in actual participation rates. In the COMPASS study, people that took part in walking and no other activity were classified as nonparticipants. This definition was not a problem in the case of Finland, yet it excluded a larger proportion of people in countries with small sports participation rates, such as Italy.

The Harmonized European Time Use Survey (HETUS) provides an alternative way of examining European sports participation. Since the 1990s, this was supported by Eurostat, in order to harmonize European Time Use Surveys. Most European countries that conducted Time Use Surveys since the late 1990s, have considered the Eurostat guidelines.

Table 3 illustrates some 2007 results in terms of participation and time used in walking/hiking and sport in general. In the case of Spain, the time spent on walking and hiking is very considerable, at 36 min per day.

Finally, the purpose of IPAQ is to derive a set of instruments that can help us estimate international indices for Physical Activity.

The case of the UK and Spain

In Great Britain, historically, sports participation figures were derived from the General Household Survey (GHS). The latter surveys over 20 000 people aged 16+. It has been carried out annually since 1971 by the Office of Population, Censuses and Surveys

and provided sports participation estimates up to the year 2002. In 2005, Sport England started commissioning the Active People Survey, a major annual survey of the sports behaviour of the English population. It was conducted by Ipsos MORI, and its sample size for the first year was 363 724 adults (aged 16+).

For the period 2005 to 2006, in England, according to the Active People Survey, 21% of adults participated on average at least three times a week and 40% on average at least once a week. These figures are close to the 2004 Eurobarometer statistics of 23% and 45%, respectively (European Commission, 2004). Table 4 shows the development of sports participation in England during the period 1987 to 2006. Figures are consistent with General Household Survey definitions.

According to Table 4, there has been a decline throughout the 1990s. In the case of 'at least one activity' sports participation declined from 64.5% in 1990 to 58.5% in 2002. Similarly, in the more restrictive definition (excluding walking), sports participation declined from 47.8% in 1990 to 43.2% in 2002. The last two observations in 2005 and 2006 are based on the Active Peoples Survey. The former is an estimate based on the actual 2006 figures and previous trends. In 2006, we have a reversal of the 10 year decline, with sports participation rising to 48% (excluding walking) and 68% (in general).

Switching from the General Household questionnaire to the Active People Survey despite the consistency of the definition, may have contributed to the sudden rise in sports participation. It is possible that

Table 4. Sports participation (at least once every 4 weeks) in England 1987 to 2006

	1987	1990	1993	1996	1999	2002	2005	2006
At least one activity (excluding walking, %)	44.7	47.8	47.3	45.6	44.4	43.2	47.0	48.3
At least one activity (%)	60.7	64.5	63.7	63.6	61.1	58.5	65.8	68.2

Source: General Household Survey, Active People Survey, SIRC.

the Active People Survey questionnaire in its detail helps people recall more information than GHS.

In Spain, there are no time series data about sports participation developed by the Spanish Office for National Statistics (INE). The only information is provided by the Spanish Time-Use Survey conducted by the INE in the period 2002 to 2003 collecting information about 176 different activities, including sporting activities and walking only for the 2002 year.

Nevertheless, from 1975, the Centre for Sociological Research (CIS) has applied a questionnaire to analyse the Spanish sports behaviour. CIS is an independent entity established to study Spanish society, mainly through public opinion polls. CIS, together with the National Sports Council (CSD), has given special attention to sports participation in Spain developing a national survey every 5 years. The last survey was made in 2005 with a sample of 8170 adults (aged 15+) (García Ferrando, 2006). It is a nationally representative individual survey, the only one of its kind carried out in Spain, and contains economic and socio-demographic information.

Table 5 presents the evolution of sports participation in Spain during the period 1975 to 2005. According to this evolution, there has been a stagnation point in sports participation in Spain in 1995. From 1975 to 1985 sports participation increased significantly. In the case of 'at least one activity', sports participation grew constantly until 1995, although participation in more than one sporting activities was in the doldrums since 1990.

III. Literature Review About Determinants of Sports Participation

In this section, we present an outline of the theoretical models that underpin current research on sport demand and empirical research about factors affecting the level of sports participation. According to Downward (2007), economic decision-making theories in relation to sports can be broken down into two main types: neoclassical and heterodox approaches. Neoclassical approaches employ a rational-choice framework to model individual sports participation.

The idea is to maximize subjective utility subject to certain constraints, mainly relating to budget and time. Implicitly, sport uses 'noneconomic' and 'non-obligated' time, the demand for which reflects the trade-off between the utility derived from consumption of goods and the opportunity cost of an hour of sport. More recent variants, following Becker's (1965) theories, have integrated time allocation into the consumption decisions faced by households. Consequently, individual time allocation can be modelled in terms of the allocation of activities between household members, revealing the influence of household member preferences (Downward, 2004). Overall, the neoclassical demand model would consider the price of a sport activity, income and prices of other goods. In addition, a time element is also considered, as sport involves consumption of time. In fact, most often (51% participate outside official channels), it involves only consumption of time, rather than money (European Commission, 2004).

Gratton and Taylor (2000) point out that the neoclassical analysis has become too restrictive for an analysis of sport participation. That leads towards multidisciplinary heterodox methodologies and a more complex perception of sports motivations.

Heterodox economic theories consider a wider set of methodological and theoretical principles than neoclassical theory (Downward, 2007). These theories involve economic, sociological and psychological approaches. The post-Keynesian approach emphasizes that individual behaviour is linked to broader aspects of social behaviour such as the importance of social values, while the consumption of sport involves learning-by-doing and spillover effects (Lavoie, 2004). The sociological analysis of sports focuses on explaining sporting activities in terms of concrete social situations and the construction of identities by individuals in choice situations. According to this theory, sporting styles and individual preferences are linked not only to individual feelings, but also to social pressure and the influence of habits (Bourdieu, 1984). Bourdieu presented two different factors to explain divergent tastes in sports: economic capital (income) and cultural capital (education). Finally, the psychological approach argues that the individual's preferences and tastes are not given (Scitovsky, 1976);

Table 5. Sports participation in Spain, 1975 to 2005

	1975	1980	1985	1990	1995	2000	2005
Practising one sport	15	16	17	18	23	22	24
Practising more than one sport	7	9	17	17	16	16	16
Nonpractising	78	75	66	65	61	62	60

Source: García Ferrando (2006).

they evolve and change over the life-span. Sensation-seeking, awakening, concern, pleasure or anxiety can be potential sources of demand for sport and leisure activities. Additionally, Lipscombe (1999) discussed the influence of 'peak experience' within the psychological framework.

Despite a lack of consensus in the definition of sport, it is possible to make general assessments of the roles played by economic, individual and social variables. The empirical evidence has shown that sports participation decreases with age (Farrell and Shields, 2002; European Commission, 2004; Downward, 2007; Downward and Riordan, 2007; Breuer and Wicker, 2008; Wicker *et al.*, 2009). Nevertheless, longitudinal analyses show that the assumption of decreasing sports activity with increasing age is only correct for men (Breuer and Wicker, 2009). Differences in sports participation can be attributed to biological and physical limitations and to changes in activity preferences as people grow older (Barber and Havitz, 2001). Against this mainstream view, Rodgers (1977) argued that it is habit rather than age on its own that adversely affects sports participation.

Gender roles have been found to be a major form of social pressure and, correspondingly, a source of constraint in leisure participation (Culp, 1998). There is a consensus about the fact that men, in general, participate more in sport (Gratton and Taylor, 2000; Wilson, 2002; Humphreys and Ruseski, 2006, 2007; Lera-López and Rapún-Gárate, 2007; Downward, 2007; Downward *et al.*, 2009). Gender differences can be attributed to biological factors, and cultural and social influences, reflecting differences in family responsibilities as well as differences regarding behaviour, social expectations and work.

Traditionally, the economic perspective emphasizes the relevance of economic variables in sports participation. Variables used to measure financial status include income level, occupation and professional status. The literature provides evidence that lower income may act as a barrier to sports participation (Wilson, 2002; Stempel, 2005; Humphreys and Ruseski, 2007; Lera-López and Rapún-Gárate, 2007; Breuer and Wicker, 2008; Wicker *et al.*, 2009). In general, smaller sports participation rates are

present among occupational segments in the lower socio-economic groups (García Ferrando, 2006; Lera-López and Rapún-Gárate, 2007). Other studies have looked at work-time, which is negatively associated with sports participation (Downward, 2007; Breuer and Wicker, 2008). The factor of free time is rarely addressed directly in sport surveys. Since time is finite, any increase in the time devoted to sport will always be constrained by competing demands for time from leisure, work and other uses. Time-related constraints have been perceived as one of the most relevant barriers to physical activity and sports participation (Alexandris and Carroll, 1999). Webber and Mearman (2009), examining the university student participation patterns concluded that there is an inverse relationship between participation and hours of work, and a positive one between participation and sports literacy (familiarity) or sports investment.

The sociological perspective highlights the role of education in explaining sports participation. A higher level of education might lead to a greater awareness of the benefits and importance of sport. Education also implies habits acquired in the student environment, where access to facilities is easy and relatively inexpensive. In turn, a sports culture brings about higher number of sports-related roles in the social structure, increasing its direct economic importance. Thus, education is expected to be positively related to sports participation. This is supported by empirical evidence (Desbordes *et al.*, 1999; Stempel, 2005; Downward, 2007; Humphreys and Ruseski, 2007; Breuer and Wicker, 2008; García *et al.*, forthcoming). In a similar way, ethnic cultures may have a significant effect on sports participation (Thompson *et al.*, 2002).

IV. Definition of Sports Participation, Description of Data and Methodology

Definition of sports participation used

In this article, participation in sports is broadly defined by two criteria: (1) it must involve physical

activity lasting at least 30 min; (2) it must be practiced for recreational purposes and/or as a competitive activity. It includes 40 different activities considered as sport in Spain and England, following the Council of Europe's definition (Council of Europe, 1992). Table 6 lists the number of sports included in the analysis. Note that walking is omitted, because of a definitional incompatibility in this activity between the two countries.

The Spanish data were collected in 2005 based on a face-to-face questionnaire survey designed on a stratified random sample of people 16–74 years old, in the 17 regions of Spain. The sample (7078 valid respondents) is stratified by gender and age. Table 7 presents the percentage distribution of respondents by socio-demographic characteristic. The sampling error based on a 95% confidence level and a 50/50 split ($p/1 - p$) is $\pm 1.11\%$.

The English dataset comes from the Active People 2005 to 2006 Survey. The survey was conducted through a telephone questionnaire. Approximately 1000 random interviews were conducted per local authority, across a 12-month period starting in October 2005. The valid sample size used in this analysis is 319 131. This emanates from filtering out people of age 75 or higher (like in the Spanish dataset) and respondents who refused to answer or stated 'don't know' in questions of interest. The sampling error, based on a 95% confidence level and a 50/50 split ($p/1 - p$), is $\pm 0.16\%$.

The selection of the independent variables was based on existing consistencies in the variables of the two datasets, excluding factors that are treated inconsistently between the two surveys. Table 7 provides a description of the socio-demographic variables used and the number of respondents within each specified category. Note that although the variables of the two models are constructed in a comparable way, they may not represent identical categories. For example, the English variable 'A levels/below degree average' is not identical to the Spanish 'medium education'.

Sports participation comparisons

Table 8 presents the percentage participation rates associated with each independent variable. Note that in the case of England, the dataset is weighted. The main result is that the sports participation rate in England is significantly higher than that of Spain (47.7% against 36.7%). Moreover, the gender difference in participation in England is much lower than that in Spain (11.2% against 16.2%, respectively).

Sports participation, in both England and Spain, declines by approximately 40 percentage points, as we

Table 6. Sporting activities considered in the definition of sports participation

1 = aerobics	2 = athletics
3 = badminton	4 = basketball
5 = bodybuilding	6 = bowling
7 = cycling (for health and recreation)	8 = dancing
9 = fencing	10 = fishing
11 = five-a-side-football	12 = football
13 = golf	14 = gymnastics
15 = handball	16 = hockey
17 = kayak/canoe	18 = motor sports
19 = martial arts (judo, karate)	20 = paddle
21 = mountaineering and climbing	22 = riding
23 = gym	24 = rugby
25 = risk and adventure sports	26 = sailing
27 = running and jogging	28 = squash
29 = shooting practice	30 = shooting
31 = skating	32 = skiing and other winter sports
33 = swimming	34 = squash
35 = tennis	36 = trekking
37 = underwater sports	38 = volleyball
39 = table tennis and	40 = wrestling and boxing

move from the youngest to the oldest age category. However, the participation rates of the youngest groups in England and Spain differ by 10% (66.2% and 56.1%, respectively). In general (except in the aforementioned case), transition to older groups does not bring analogous decreases in participation in England and Spain. The most noteworthy case is the fall in participation from the group 25–34 to 35–44 where in England the participation falls by 4.5% points (from 56.5% to 52.0%), while in Spain it falls by 8.7% points (from 46.2% to 37.5%). Interestingly, the inverse is true in the transition from 35–44 to 45–54 age group, where the English dataset reports a decrease of 11.2% (from 52.0% to 40.8%) unlike the Spanish dataset which reports a fall of only 8% (from 37.5% to 29.5%).

In both countries, people with higher education tend to participate more. The Spanish dataset presents greater discrepancies in participation among the various education levels than in England. While the difference in sports participation between people of higher and medium education in both countries is very small (2.2% in the UK and 5.4% in Spain), the gap in participation between people of lower and no qualifications grows to 18.3% (45.6% versus 27.3%) in the UK and 15% (27.3% versus 12.3%) in Spain.

Professional and occupational status appears to have, generally, the same effect in terms of

Table 7. Number of respondents by socio-demographic characteristics (count and percentage)

England (unweighted data), <i>N</i> = 319 131			Spain, <i>N</i> = 7078		
<i>Gender</i>					
Male	134 071	42.0%	Male	3541	50.0%
Female	185 060	58.0%	Female	3537	50.0%
<i>Age</i>					
16–24	30 896	9.7%	16–24	1111	15.7%
25–34	52 617	16.5%	25–34	1546	21.8%
35–44	73 356	23.0%	35–44	1479	20.9%
45–54	59 476	18.6%	45–54	1179	16.7%
55–64	61 220	19.2%	55–64	929	13.1%
65–74	41 566	13.0%	65–74	834	11.8%
<i>Education</i>					
Higher (degree equivalent)	97 049	30.4%	Higher (university degree)	1264	17.9%
A levels/below degree equivalent	81 632	25.6%	Medium (secondary education)	1988	28.1%
GCSE/trade apprentices/other	93 028	29.2%	Lower (elementary education)	3346	47.3%
No qualifications	47 422	14.9%	No qualifications	480	6.8%
<i>Professional and occupational status</i>					
Professional/managerial	90 348	28.3%	Professional	929	13.1%
Skilled nonmanual	43 737	13.7%	Medium	1155	16.3%
Skilled manual	42 706	13.4%	Skilled manual	820	11.6%
Partly skilled/unskilled	24 919	7.8%	Unskilled manual	786	11.1%
Unemployed	15 605	4.9%	Unemployed	589	8.3%
Student	13 422	4.2%	Student	610	8.6%
Housekeeping	17 454	5.5%	Housekeeping	956	13.5%
Sick	8 293	2.6%	Sick	43	0.6%
Retired/not classified ^a	62 647	19.6%	Retired/not classified ^b	1190	16.8%

Notes: ^aNot classified = 2704 do not specify any professional status from the ones above.

^bNot classified = 158 do not specify any professional status from one above.

participation in both societies. Between the two samples, many categories such as ‘Skilled non-manual’, ‘Skilled-manual’ and ‘Unskilled-manual’, present analogous percentage differences to the overall participations (47.7% and 36.7% in the UK and Spain, respectively). Nevertheless, the groups with the highest participation rates, such as ‘Professional employees’ and ‘Students’, present a small difference in participation between the two countries, while on the other hand ‘Unemployed’ vary only by 1%. England and Spain differ mostly across the groups of ‘Housekeeping’ (36.7% against 19.0%); ‘Retired’ (29.4% against 20.2%); and ‘Sick’ (17.6% against 34.9%). The fact that sports participation in the latter category is almost double in Spain compared to the UK, may be due to the small size of the group (43 observations).

Logit modelling

The aforementioned descriptive statistical analysis based on Tables 7 and 8 allowed for the presentation of some interesting ‘facts’, but it is not appropriate to capture the ‘effects’ of the variables examined. The latter can be captured through econometric analysis,

examining the variables as a whole, and accounting for factor interactions such as: ‘people on lower education levels tend to be older’; ‘people with professional occupation tend to have higher education’; ‘students generally belong to low age levels’; ‘housekeepers are usually females’, etc.

Note that the constructed econometric models account (to some extent) for biases such as the ones explained above but do not explore these issues in great depth; the reason being that they do not include any interaction dummy variables designed for this purpose.

The modelling exercise involves a logistic regression of the observed participation rates on the reported economic and demographic factors described in Tables 7 and 8. The regression model which is calculated using Binary Logistic Regression (BLR) in SPSS has the form

$$\ln\left(\frac{p}{1-p}\right) = \beta X + \varepsilon \quad (1)$$

where p is the probability of participation while β and X are the vectors with 18 elements (including the constant). All the explanatory variables of the model

Table 8. Percentage sports participation rates by socio-demographic characteristics

England (weighted data ^a), <i>N</i> = 308 386			Spain (stratified sample ^b), <i>N</i> = 7078		
<i>Gender</i>					
Overall	308 386	47.7%	Overall	7078	36.7%
Male	152 227	53.4%	Male	3541	44.8%
Female	156 160	42.2%	Female	3537	28.6%
<i>Age</i>					
16–24	51 019	66.2%	16–24	1111	56.1%
25–34	56 844	56.5%	25–34	1546	46.2%
35–44	68 177	52.0%	35–44	1479	37.5%
45–54	54 416	40.8%	45–54	1179	29.5%
55–64	48 313	32.4%	55–64	929	24.0%
65–74	29 617	27.1%	65–74	834	16.1%
<i>Education</i>					
Higher (degree equivalent)	88 672	55.8%	Higher (university degree)	1264	53.6%
A levels/below degree equivalent	80 430	53.1%	Medium (secondary education)	1988	47.7%
GCSE/trade apprentices/other	92 969	45.6%	Lower (elementary education)	3346	27.3%
No qualifications	46 317	27.3%	No qualifications	480	12.3%
<i>Professional and occupational status</i>					
Professional/managerial	77 245	58.6%	Professional	929	53.2%
Skilled nonmanual	45 223	49.8%	Medium	1155	38.3%
Skilled manual	43 570	49.2%	Skilled manual	820	40.2%
Partly skilled/unskilled	30 911	43.1%	Unskilled manual	786	34.2%
Unemployed	20 406	37.2%	Unemployed	589	36.2%
Student	24 956	68.1%	Student	610	63.0%
Housekeeping	14 758	36.7%	Housekeeping	956	19.0%
Sick	7 792	17.6%	Sick	43	34.9%
Retired/not classified	43 527	29.4%	Retired/not classified	1190	20.2%

Notes: Participation is defined as taking part actively in any of the 40 sporting activities of Table 6, at least once over 4 weeks and for at least 30 min.

^aNote that the sports participation rates based on Active People Survey are produced after the application of National weights which, according to mid-2006 population estimates and 2001 census data, account for the factors: (1) gender, (2) age, (3) ethnicity, (4) household size, (5) working status and (6) NS-SEC categories.

^bThe Spanish dataset is random and stratified by gender, age and area given its population size.

are binary capturing the factors: gender, age, education and occupation (Table 9). In the model, the base category is defined when all explanatory variables are equal to zero; in this case, the right-hand side of the regression equation is equal to the constant. In the constructed models, the base category corresponds to the following socio-demographic profile: (1) female; (2) age: 16–24; (3) education: high; (4) occupation: professional/managerial.

The advantage in using a logistic nonlinear model rather than a linear Ordinary Least Squares (OLS) one is that the expected participation rates generated from the former are designed to have a minimum value of zero and a maximum of one. This makes it ideal for binary variables such as participation (0 stands for nonparticipation and 1 for participation). OLS generated expected values outside this range would be meaningless (i.e. OLS may return results outside the 0–1 domain).

Note that a nonlinear logistic model does not make the unrealistic ‘constant returns’ assumption

embodied in the coefficient values of the linear ones. Therefore, we intentionally do not report the effects of variables through changes in expected participation rates compared to the base category, but we draw comparisons only based upon their coefficient values (*B*) or their odds ratios $\text{Exp}(B)$. Table 9 reports them together with other statistics including the 95% confidence interval (CI) of the odds ratios.

For instance, the expected sports participation rates of an English or Spanish respondent with a profile matching that of the base category are 72.3% and 60.8%, respectively. The expected participation rates are calculated by solving the estimated regression equation in terms of *p*. In the case of base category

$$\ln\left(\frac{p}{1-p}\right) = c \quad (2)$$

Table 9. Models for sports participation in England and Spain

Variables	English model				Spanish model				
	<i>B</i>	SE	95% CI for odds ratio		<i>B</i>	SE	95% CI for odds ratio		
			Lower	Exp(<i>B</i>)	Upper		Lower	Exp(<i>B</i>)	Upper
Constant	0.96	0.02	1.38	2.61	1.42	0.11	1.81	1.55	2.29
Gender: male	0.34	0.01	0.62	1.40	0.65	0.06	0.57	2.04	0.84
Age: 25–34	–0.46	0.02	0.56	0.64	0.60	0.10	0.44	0.69	0.65
Age: 35–44	–0.55	0.02	0.38	0.58	0.40	0.11	0.35	0.53	0.53
Age: 45–54	–0.95	0.02	0.28	0.39	0.30	0.13	0.31	0.40	0.50
Age: 55–64	–1.24	0.02	0.22	0.29	0.24	0.17	0.22	0.31	0.43
Age: 65–74	–1.46	0.02	0.86	0.22	0.90	0.08	0.65	0.76	0.89
Education: medium	–0.13	0.01	0.71	0.88	0.74	0.08	0.34	0.39	0.46
Education: lower	–0.32	0.01	0.45	0.72	0.47	0.17	0.17	0.24	0.33
Education: no qualification/not classified	–0.78	0.01	0.80	0.46	0.84	0.09	0.65	0.78	0.93
Occupation: skilled nonmanual	–0.20	0.01	0.75	0.82	0.78	0.11	0.62	0.77	0.95
Occupation: skilled manual	–0.27	0.01	0.64	0.77	0.68	0.11	0.62	0.77	0.95
Occupation: partly skilled/unskilled	–0.42	0.02	0.48	0.66	0.52	0.11	0.58	0.73	0.91
Occupation: unemployed	–0.70	0.02	0.60	0.50	0.64	0.13	1.02	1.32	1.71
Occupation: student*			0.81	0.84	0.87	0.12	0.58	0.73	0.93
Occupation: housekeeping	–0.48	0.02	0.24	0.62	0.27	0.14	0.52	0.68	0.88
Occupation: sick*	–1.39	0.03	0.24	0.25	0.27				
Occupation: retired/not classified	–0.18	0.02	0.81	0.84	0.87				
	<i>N</i> = 319 131					<i>N</i> = 7078			
	$R^2 = 0.094$ (Cox and Snell), 0.126 (Nagelkerke)					$R^2 = 0.134$ (Cox and Snell), 0.183 (Nagelkerke)			
	Model $\chi^2(16) = 31\,524.3$, ($p < 0.01$)					Model $\chi^2(16) = 1016.9$, ($p < 0.01$)			

Notes: All variables in the English model are significant at $\alpha = 0.01$ level of significance. All variables in the Spanish model are significant at $\alpha = 0.05$ level of significance. Note that the variable labels express the comparative categories of the two models.

*Insignificant variables: 'Occupation: Student' for the English model ($p > 0.1$); 'Occupation: Sick' for the Spanish model ($p > 0.1$).

where c is the constant, solving for p gives

$$\text{Exp}(c) \frac{p}{1-p} \Rightarrow p = \frac{\text{Exp}(c)}{1 + \text{Exp}(c)} \quad (3)$$

In the English model c equals 0.96 while $\text{Exp}(c)$ is equal to 2.61.

In order to assess the effect of being ‘Male’ (against ‘Female’) *ceteris paribus*, instead of comparing just ‘male’ against ‘female’ as in descriptive statistics, a comparison such as that between ‘Male; Age: 16–24; Education: Higher; Occupation: Professional’ against ‘Female; Age: 16–24; Education: Higher; Occupation: Professional’ is drawn. To estimate the new expected probability (p'), the following calculation is required:

$$\begin{aligned} \text{Exp}(c + B) &= \frac{p'}{1-p'} \Rightarrow p' = \frac{\text{Exp}(c + B)}{1 + \text{Exp}(c + B)} \\ &= \frac{[\text{Exp}(c) \times \text{Exp}(B)]}{1 + [\text{Exp}(c) \times \text{Exp}(B)]} \end{aligned} \quad (4)$$

where $B = 0.34$ (in the English model).

Note that $p' - p$ compares the effect of being ‘male’ against ‘female’ (given the rest of the base category). However, the change in magnitude from p to p' depends on the value of p . In other words, if the remaining characteristics of the base category were defining another social group with different participation rate p_a , the same c and B , would result to a different (in magnitude) change $p'_a - p_a$. Hence, there is no one-to-one relationship between the value of a coefficient and the effect on sports participation; the definition of the base category is of vital importance, defining the position we operate on the logistic curve. However, as mentioned above, in the next section we choose to report only coefficients (B) and odds ratios $\text{Exp}(B)$. Note that the latter is the exponential value of the former. Therefore, according to the exponential function:

- When $B \leq 0$, $\text{Exp}(B) \leq 1$ (i.e. negative or neutral effects)
- When $B > 0$, $\text{Exp}(B) > 1$ (i.e. positive effects)

Note that, an odds ratio of 0.5 indicates a lesser negative effect than of 0.2.

V. Econometric Results

Table 9 summarizes the regression results from the English and Spanish models, which are based on sample sizes of 319 131 and 7078 respondents, respectively (Table 7). In the former, all variables except ‘Occupation: Student’ are significant at 1%

level. In the Spanish model, all variables except ‘Occupation: Sick’ are significant at 5% level. Note that the two aforementioned variables were also insignificant at 90% confidence level. The former is due to the small coefficient value which implied an almost equivalent effect with the base case ‘Occupation: Professional’; the latter is possibly justified on grounds of small group size (i.e. only 43 respondents reported ‘Sick’).

The odds ratios of the constants in the English and Spanish models are 2.16 and 1.55. As discussed above, this implies that the expected participation levels of the respondents who belong to the base category are 72.3% and 60.8%, respectively. Recall that the base category refers to ‘Female’; ‘Age 16–24’; ‘Higher Education’; and ‘Professional Occupation’.

All the coefficients of the two models agree in sign. Both models support the positive effects of being male, young, highly educated and having high occupational status on sports participation. Specifically, all the signs, apart from ‘Gender: Males’, the constants and ‘Occupation: Student’ in the Spanish model are negative. The ‘switch on’ of any dummy explanatory variable would result to a deviation from the specification of the base category, and consequently, to a change in the expected participation rate. However, these changes usually appear to be disproportionate.

Between the English and the Spanish models, the odds ratios for being male differ significantly (1.40 against 2.04). In other words, the gender coefficient in the Spanish model (0.71) is more than twice as big as the English one (0.34). This implies that gender in Spain is a more important factor than in England with men participating much more than women.

Compared to the age group ‘16–24’, the older age groups ‘55–64’ and ‘65–74’ appear to have a more negative effect in England (0.29 and 0.23) than in Spain (0.40 and 0.31). Another interesting finding is that a switch from ‘Age: 16–24’ to ‘Age: 25–34’ causes a greater fall in expected participation level in England (0.64) than in Spain (0.69). In turn, switching from ‘Age: 25–34’ to ‘Age: 35–44’ yields a greater fall in Spain (from 0.69 to 0.53) than in England (from 0.64 to 0.58). The age variable relates to factors such as free time (in retirement), health and income.

The age coefficients of the English model are distributed across a wider value range than in Spain. Consequently, unlike gender, age is a more important factor in England than in Spain. In contrast, education appears to be more important in Spain. Even after accounting for definitional differences, it is evident that the Spanish coefficients for education are subjected to a greater value range than the English counterparts. In both countries, having a

medium-education level, as opposed to high, results to a relatively small drop in participation (slightly greater in Spain). The most interesting finding though is that a sub-sequent comparison between 'Education: Low' with 'Education: Medium' yields a much greater negative effect in Spain (from 0.76 to 0.39) than in England (0.88 to 0.72). A further movement from 'Education: Low' to 'Education: No qualifications' yields an almost equal drop in expected participation rates.

Compared to 'Occupation: Professional', any other occupation results to a lower expected participation rate (odds ratios less than unity) except in the case of being student in Spain (1.32). This may be due to the established student culture in the UK of working alongside full time studies, restricting significantly free time. Skilled occupations in England (0.82 and 0.77) appear to have similar in magnitude effects compared to Spain (0.78 and 0.77). On the contrary, unskilled labour yields a greater negative effect in England (0.66 against 0.77).

Being unemployed in England (0.50) has a greater negative effect in participation than in Spain (0.73). The definition of unemployment includes both short term (less than 12 months) and long term (more than 12 months). It should be noted that unemployment, relates to both income and free-time effects. Specifically, unemployed are likely to have more free time but less income to spend than professionals. The same applies in the case of students.

Furthermore, 'Occupation: Housekeeping' appears to have a more negative effect in England (0.62) than in Spain (0.73). It is noteworthy that the vast majority of respondents who claimed this occupation are women (e.g. 96.3% in the English dataset), hence there is an explicit relationship with the gender variable.

'Occupation: Sick' yields the most negative effect compared to the base case 'Occupation: Professional'. The small size of Spanish respondents in this category (43 respondents) resulted to the exclusion of the variable due to insignificance ($p > 0.1$).

Finally, retirement has a negative effect in participation in both England and Spain (0.84 and 0.68) compared to the base category. The participation rate of people in retirement is affected positively through more free time and negatively through less income and old age. Given that the age variables account for the age effect, if the free-time effect is significantly great, we expect a positive effect on retirement and *vice versa*. In the case of England, retirement despite having a negative coefficient has the greatest odds ratio within the occupation group (0.84). This means that the sports participation of people in retirement is only disadvantaged compared to the base category; it

is better positioned than any other occupational group in England. Had we considered any other base category in occupation, the effect of retirement in England would appear to be positive. The aforementioned English position is in total contrast to the sports participation of the people in retirement in Spain; this is by far the less active occupational category, as indicated by the odds ratio of 0.52. We expect that the people in retirement will fare much better if we include walking in the sports participation definition. However, the comparison between the two nations clearly illustrates that if sports policies in Spain targeted the group of people at the age of retirement, a lot of potential could be realized.

VI. Conclusions and Implications

Over the past 10 years, sports participation appears to have reached a stagnation point in many European countries. Consequently, a serious concern among governments has been the development of adequate sports policies to promote sports participation and increase individuals' wellbeing and social integration. In this context, a strong increase in academic interest in sports participation research has emerged.

This article investigates the role of socio-demographic characteristics, educational and economic variables on sports participation in a comparative way in two European countries: a Southern country (Spain) and a Northern country (England). It is evident that sports participation behaves in a similar fashion in England and in Spain *albeit* at different levels of sports engagement. Despite having a higher level of participation in England, the factors of influence are similar. It has been demonstrated that gender, age, occupation and education level are all significant factors in analysing sports participation in both countries. This is also in accordance to the shared experience of the EU countries as outlined in the Eurobarometer publication (European Commission, 2004), confirming the empirical evidence in other countries.

Higher education level, professional occupation, younger age and being male are factors associated with more sports participation. Although there is no difference in the direction of the factor effects on participation between England and Spain, there is considerable variation in their relative strength. For example, the age effect is more profound in England, while the gender and education effects are more important in Spain. In particular, the Spanish population group with 'low' educational level suffers an unusual fall in sport participation compared to the

base categories. This illustrates the importance of factors related to active citizenship on sports participation with implications on sports policy.

The results reveal that in the context of a general European support for sports participation, European countries should develop specific sport promotion policies. For example in both countries, it was verified that as age increases, sports participation declines. From the odds ratios we can see that there is no reversal of this pattern. However, what is interesting is not so much the statement of the direction of the relationship, but the degree of the participation fall among the considered age groups. In the case of England, an unusual fall occurs when we switch from the 35–44 age group to 45–54 (odds ratios decline from 0.58 to 0.39). A similar exaggerated effect can be detected in Spain when switching from the 25–34 age group to 35–44. In the case of Spain, this may be accounted by the pressure of marriage and having children. In the case of the UK, there is a direct relationship with employment status. People aged 45–55 in the UK are usually moving to the top jobs especially in the AB occupational categories, often changing residency and as a result, they experience a breakdown in their personal sport networks and less free time. This analysis suggests that England and Spain should focus policy on the 45–54 and 35–44 age groups, respectively.

In Spain among the elderly, women and less educated groups, sports participation rates are particularly low compared to the English situation. Hence, special emphasis needs to be placed on the health and well-being effects of sports practice among these social groups. Promotion of the benefits of sports practice through conferences and social activities in, for example, pensioners clubs should be encouraged. In addition, particular promotions of some specific sporting activities such as swimming and gym for the less-educated groups, the elderly and women, should be promoted. By comparing the Spanish and English experience, it can be concluded that the safest way to increase sports participation in Spain is through taking advantage of the free-time capital owned by pensioners. This has clearly been achieved in the UK, indicating the feasibility of such policy; in Spain this occupation group is the most disadvantaged in terms of sports participation.

In England overall, sports policy should be focused on preventing the unusual (according to Spanish experience) dips in sports participation in the age groups, 25–34 and especially 45–54. Of even greater importance is the class divide that appears in the UK but not in Spain. For example, in the case of unemployed the odds ratios in England and Spain are 0.5 and 0.73, respectively. A similar divergence

can be observed in the group of partly skilled/unskilled people between the two countries. We suspect that this observation reflects a failure of civic engagement at large in the aforementioned social groups in the UK. Although we do not endeavour to address this problem, it is clear that the UK has a lot to learn in this matter from the Spanish experience.

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