European Research Studies Journal
Volume XXI, Issue 2, 2018

pp. 110-133

A Study of the Determinants of Sports Participation by Maltese Nationals

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Abstract:

Currently, there have been various concerns relating to the amount of sports and physical exercise practiced by people in the European Union. Evidence collected by WHO and Eurostate show Malta as having the highest rates of obesity in the European Union. These results are worrying when one considers the consequences of such a condition, ranging from cardiovascular diseases such as angina, stroke and heart attacks to cancer.

In this study, we use the economic, neo-classical and heterodox theories to explore sports participation, specifically of Maltese people in handball, badminton and wrestling. We targeted the whole population (n = 565) of registered and active sports participants within the three sport activities during the competitive season 2015-2016. We considered demographic characteristics, economic factors including education, employment and recreational activities, lifestyle factors as well as psychological and sociological factors.

Our findings show dependency between gender and sports, the ratio of male to female participating in wrestling is significantly different from that of handball and badminton, dependency between age and sports and wrestling attracts a more mature participant.

Given that income is not an issue effecting sports participation, there is a need to be more targeted public policies aimed at encouraging the uptake of sports within Malta as well as an investment by Government to promote sports participation.

Keywords: *Sport participation, multi-level analysis, obesity, gender, government policy.*
Original scientific paper UDK:
JEL classification: *Z2,I13, I18, P4.*

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1. Introduction

The European Commission (2013) defines physical activity as one of the most important health determinants in modern society, and sport constitutes a fundamental part of any public policy approach aimed at improving the levels of physical activity.

In this study we take Hallmann and Breuer's (2014) suggestion and deviate from the traditional research on general sport participation and sport frequency by carrying out a more specific and individual investigation of three different sports. More deeply, it is inclined towards the need to identify the drivers of sport participation as well as their magnitude of influence. These results should provide important information to the government, local sports federations and other national entities in their quest to better address a number of sports, health, societal and other related issues occurring in Malta, but typical of many other countries across the world. To our knowledge there is no evidence of such similar research having been carried out about Malta.

Sports participation rates are decreasing or approaching stagnation point in many countries (Lera-López and Rapún-Gárate, 2011) and all across the world, sport plays a significant role in modern societies. Because of its many variations and multifaceted nature, it is widely regarded as supporting the development of better individuals, communities and economies. Notwithstanding its numerous beneficial impacts, lack of sport participation and physical activity has drastically become a top item on many national health and sport policy agendas, due to the ever-increasing concerns about several adverse health outcomes, particularly obesity. Various sports policies published and implemented by different governments approve an undisputed fact, that the sports benefits cannot remain overlooked, and hence they see the importance to invest a percentage of their annual budget to increase sports participation at home. World Health Organization (WHO) guidelines for health-enhancing physical activity (HEPA) include increasing sport participation as one key objective in achieving this desired change in behavior.

Despite several efforts, suggested guidelines of physical activity are not always met, and in some cases the health situation in some countries is worrying with obesity rates reaching new heights. While generally, men are more physically active than women, it has been reported that 59% of European Union (EU) citizens rarely practice sport, if any at all (Special Eurobarometer 214, 2014).

Malta is no exception. Evidence shows that Malta has scored extremely badly in recent studies about overweight and obesity in adults, placing worst amongst all European countries (Eurostat, 2016) and third worst behind Andorra and Turkey, when taking non-EU countries into account (WHO, 2015). 68.5% of Maltese men and 59.6% of Maltese women are at risk of developing several non-communicable diseases mainly in the form of cardiovascular diseases such as angina, stroke, heart

attacks and also cancer. Overweight and obesity are normally caused as a result of an unhealthy diet and a lack of physical activity.

2. The Rationale and the Objective of the Study

A study about physical activity, screen time and obesity status of Maltese 10-11-year olds, (Decelis *et al.*, 2014) revealed that only 39% of boys and 10% of girls met the recommended levels of moderate-to-vigorous physical activity (MVPA). Regrettably, important evidence on participation rates of different age groups in Maltese sports clubs is absent. (The Parliamentary Secretariat for Research and Innovation, Youth and Sport, 2016)

WHO (2010) recommends 60 minutes of daily MVPA for children and young people aged 5 to 17 years. Such physical activity should consist of sports, play, games, physical education lessons, transportation (e.g. walking and cycling), planned exercise and recreation. In addition to these forms of physical activity, household chores and occupational activity are also suggested by the same document for two groups of adults aged 18 to 64 years and 65+ years old, who should aim for a minimum of 150 minutes of moderate-intensity aerobic physical activity per week. Additional physical activity in each of these groups further extends the benefits associated with health.

A considerable amount of literature (Breuer *et al.*, 2011; Downward *et al.*, 2014; Lera-López and Rapún-Gárate, 2011; Wicker *et al.*, 2009; Wicker *et al.*, 2012) has revealed that a host of factors impinge in one way or another upon an individual's decision to participate in sport or other forms of physical activity. These determinants include amongst others economic, sociological, demographic and motivational factors along with the availability and standard of sport infrastructure.

In this study we identify the factors, which impact on sport participation as evidenced from three different sports practiced in Malta, namely badminton, handball and wrestling. More specifically, we shall also seek to determine which factors emerge as significant determinants of participation in each of these three sports. Examining Maltese sports participation could also shed light on other factors which are extraneous to the sport environment in other countries and regions and more specifically to Malta. Hopefully, this study will lay the foundations for future studies in the field of sport participation and physical activity in Malta and in other countries by means of such first-time evidence.

We will also analyze the way such factors interact with each other and identify their magnitude of influence on sport participation in the local scenario. Moreover, as noted above we will take Hallmann *et al.'s* (2012) proposal on board and examine sports infrastructure and its effects on sport participation. Ultimately, the main motivation and interest of this study relates also to the fact that governments in many countries, including Malta, have a vested interest in developing a healthy and

fit population; a reason that goes beyond the individual benefits associated with participation in some form of physical activity, which by itself can be considered as a huge milestone. This would reduce the demand on public health services and the costs associated with it as well as contributing to a more productive workforce. Hence, governments not only recognize the significant value of sport participation but regularly publish sport and health policies aimed to reach such objectives. These policies clearly distinguish the widening role of sport and its recognized transformation into an industry of its own (The Parliamentary Secretariat for Research and Innovation, Youth and Sport, 2016).

In this regard, one of the phases which is lacking in local policy making is the evidence-based preliminary groundwork, upon which more effective actions can be engaged. This requires a better and thorough understanding of the impacts of the social, economic and environmental issues which are detrimental to an individual's choice to truly be physically active through regular participation. Ultimately, with a more targeted effort, a nation can experience better results. Equal consideration is also necessary in view of the time spent by individuals engaging in physical activities which can also be similarly affected.

Another interest for this study, relates to administrators within national sport federations who work incessantly to promote and further develop their beloved sport. They have an equal necessity to identify these factors and the way they influence participation in their sport. Such data will provide useful information upon which sports administrators can better direct their efforts in attracting more people to their sport. Sport federations have a dire need to identify and further probe, which factors facilitate the participation of individuals in their respective sport or otherwise act as barriers deterring most of their voluntary hard work. Consequently, they can better design and implement more effective strategies to attract more participants. Apart from the many benefits associated with physical activity and sports participation, sports federations have a better opportunity to scale up their international stature through the widening of the pool of participants in their sport and correspondingly their level of quality.

Moreover, another interest for this study relates to governments, who do not only play a vital role in setting policy but also in directing the right investment into the sports sector. Part of these investments are normally aimed towards sport infrastructure, but also other essential resources, which can relate to human matters, financial aid, equipment and logistics. Literature has revealed that infrastructure-level variables are essential predictors of participation in many sports (Hallmann *et al.*, 2012; Haug *et al.*, 2008; Limstrand and Rehrer, 2008; Wicker *et al.*, 2013).

Governments everywhere, including Malta, as providers of public sports facilities have to respond to the changing needs of the population. They have to be able to identify such needs and develop the infrastructure and create the necessary resources accordingly. In the Maltese scenario, considering the limited resources available,

policy makers have the responsibility to ensure that resources are maximised and assigned in ways that best serve sportspeople, their needs and the rest of the community. Therefore, it is crucial that reliable and scientific tools and methods of gathering information are used at the first stage of planning for a new infrastructure or else prior refurbishing of existing ones.

Hence, ensuing from the above rationale we derived the following hypotheses:

H1A: There are no significant dependencies between gender and sport (handball, badminton and wrestling).
H1B: There are no significant dependencies between gender and sport (handball & badminton).
H2A: There are no significant dependencies between age and sport (handball, badminton and wrestling).
H2B: There are no significant dependencies between age and sport (badminton and wrestling).
H3: Educational background is not a significant factor which influences a person's decision in which sport to participate in.
H4: Income is not a significant factor which influences a person's decision regarding which sport to practice.
H5: There is a significant difference between the opinions of a person participating in a sport about the standard and quality of their main facility from the opinion of another person participating in a different sport.
H6: There is no significant difference between the opinions of a person participating in a sport on whether past government policies supported that sport from the opinion of another person participating in a different sport.

3. Economic Theories of Sports Participation

There has recently been a constant growth in academic literature analysing the determinants of sports participation. Much of this literature has employed economic theories mostly based on Becker (1965; 1974). Typically, researchers in this field have a common concern related to public policy and therefore examine sport from an economic perspective. Any policy intervention designed towards triggering progressive growth in sport participation necessitates a better understanding and application of the drivers leading to such goals which Downward (2007) refers to as 'the fulcrum and/or target'. Such insights can be derived to assist policy-makers to address the catalysts for or restrictions to sport participation of different groups of citizens (Hallmann and Breuer, 2014).

Individuals make regular decisions in life to allocate time to various daily activities. These decisions are a direct outcome of demographic features, economic conditions and environmental influences. In economic literature, two comprehensive theories can be identified as relevant to sport participation: neoclassical and heterodox approaches. Both theories can be distinguished by referring to their range of criteria

and the importance they put on results. The neoclassical approaches highlight the impacts of time, income and domestic work, while the heterodox theories underline 'interdependent and hierarchical demands and identity formation, social relations or positions' (Downward, 2007). Still, both emphasize income though providing different theoretical explanations. Moreover, in relation to gender and household variables, neoclassical economics lay more emphasis upon individual choice, while heterodox economics highlights gender and identity constraints.

3.1 Neoclassical Theory

Neoclassical approaches employ a rational-choice framework to model individual sport participation (Garcia *et al.*, 2011; Lera-López and Rapún-Gárate, 2011). They extend upon three main theoretical methodologies, all sharing a common view that an individual sport participant has a given and fixed set of preferences. One approach treats sport participation as a commodity whose demand is based on the classic economic demand theory. A second approach explains that sport is constructed on the consumption of time using the income-leisure trade-off model of labour supply.

The other alternative variant is built on Becker's (1965, 1974) theories and provides a more inclusive groundwork for investigating sport participation. (Breuer, 2006; Breuer and Wicker, 2008; Downward, 2007; Downward and Riordan, 2007; Downward and Rasciute, 2010; Humphreys and Ruseski, 2006). Basically, it explains that the individual's decision to take part in sport is based on the 'choice to commit goods and time to the production and then consumption of sport directly, or to the acquisition of personal consumption capital, or social capital that then underpins sport participation' (Downward *et al.*, 2012). This approach also integrates an important element that both goods and time can be allocated just to sport or else to other activities as well.

3.2 Heterodox Theory

In comparison, 'Heterodox' economic theories consider a wider range of methodological and theoretical principles than 'Neoclassical' theories, embracing together economic, psychological and sociological approaches (Downward, 2007). The 'Heterodox' approach discovers the psychological groundwork of consumer choice in lifestyles, laying emphasis on learning by doing and habits and hence sustaining endogenous preferences of economic agents (Downward *et al.*, 2011). The 'Post Keynesian' approach follows these concepts and demonstrates that preferences and ensuing behaviour are then formed by social values. Through the sociological analysis, individual preferences and sporting styles are linked to individual feelings, social pressure and the influence of habitus (Bourdeiu, 1984). Based on heterodox theories, Downward (2007) came out with a sports participation model which differentiates between individual, economic, social and sport variables.

3.3 Empirical Evidence on Sport Participation

The empirical analysis of sports participation in economics was preceded by the application of various regression techniques in which measures of sports participation are conditioned on a variety of covariates (Downward *et al.,* 2011). Adams *et al.,* (1966) were the first to provide empirical studies in this field by exploring participation in boating, fishing and swimming in the US. Rodgers (1977) provided the first evidence at European level and indicated that sports participation patterns were quite similar across the various countries. Ever since, and in particularly over the last ten years, the analysis of sports participation has led to different approaches being employed by different researchers.

4. Methodology

As mentioned earlier, we analysed sports participation in Malta by considering three sports, namely handball, badminton and wrestling. This was done through a series of structured interviews and questionnaires with registered and active sports participants across three sports associations in Malta, namely Badminton Malta (BM), the Malta Handball Association (MHA) and the Malta Amateur Wrestling Federation (MAWF). When considering the size of the three associations and their member clubs, the number of weekly training sessions, location of training and competition facilities, we decided to target the whole population (n = 565) of registered and active sports participants with BM, MHA and MAWF during the competitive season 2015-2016. The whole population is distributed as follows: badminton (80) handball (440) and wrestling (45).

Face-to-face interviews in the form of guided structured questionnaires were carried out, producing an overall sample of n = 381. This was divided as follows: badminton (47 interviewees), handball (315 interviewees) and wrestling (19 interviewees). We are positively confident that the sample is representative of the whole population. The reasons for accepting this sample size are twofold. First, the size was considered sufficient so much so that further interviews will not provide additional value to the study (Saunders *et al.,* 2009). Questionnaires were conducted with registered and active sports participants of BM, the MHA and the MAWF, producing an overall sample of n = 381, hence meeting the minimum sample required of 229 (Hair *et al.,* 1998). In general, such a high response rate reflects the unequivocal support received from highly dedicated and committed individuals who run the three sports associations and their member clubs.

The data of this study was collected between March and August 2017. We used a purposely designed structured questionnaire with a sequence of questions designed in a standard and fixed format to purposely extract information in a specific order from interviewees (Saunders *et al.,* 2009). Answers were strictly adhered to and no other questions were asked following a respondent's answer. The questions were drawn-up following a literature review and was based upon previous research

studies carried out in other countries. The interview was structured to follow the following themes:

- demographic characteristics (age, gender, nationality, locality of residence, relationship status);
- economic factors (education, full-time and part-time occupations, working time, income, time taking care of and raising children, time taking care of relatives, time spent on social media, non-physical recreational activities and creative, artistic, theatrical, musical or craft activities, number of persons in the household, composition of the household);
- sport-specific factors (club, years of playing sport, number of training sessions per week, duration of training sessions, training facilities, number of competitive matches or events, travelling method to facility, other physical activities performed, amount of other physical activities performed per week);
- lifestyle factors (smoking, alcohol consumption);
- psychological and sociological factors (for playing a particular sport, influence).

A comment box at the end of the questionnaire gave respondents the opportunity to make further comments on top of what had been asked. Moreover, although the questionnaire included the same questions for all three sports, it also allowed some flexibility for answers directly related to the specific sport and regarding the official playing facilities.

We then inputted the data into an MS Excel spreadsheet and exported to the IBM SPSS Version 22 software package. A manual process which coded the data in a way that makes sense for SPSS was carried out before the data was introduced into SPSS. Basically, questions were turned into variables and for each variable a specific value representing the options in the questionnaire was given. Descriptive analysis in the form of frequencies, cross-tabulations, mean averages and hypothesis testing were used to test data statistically.

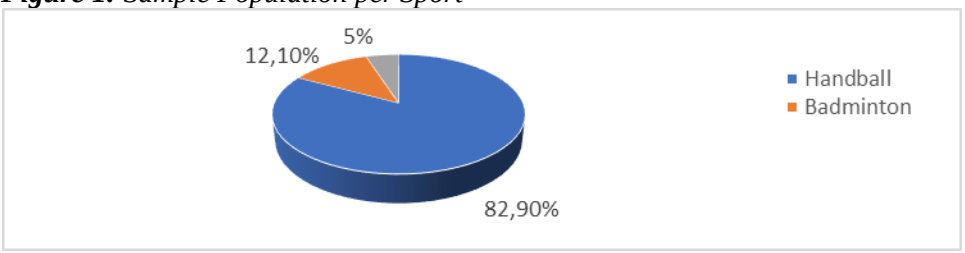
5. Results

5.1 Demographic Characteristics

Figure 1 below illustrates how the participants in our sample are divided according to the sport they practice. Handball participants dominate the sample as it targets the largest population of competitively active participants among the three sports. Here, an important consideration needs to be made in relation to badminton. In the local context, while handball and wrestling are sports that are played at a competitive level only, badminton also engages participants who play for leisure. The badminton sample comprised in this study plays badminton at a competitive level

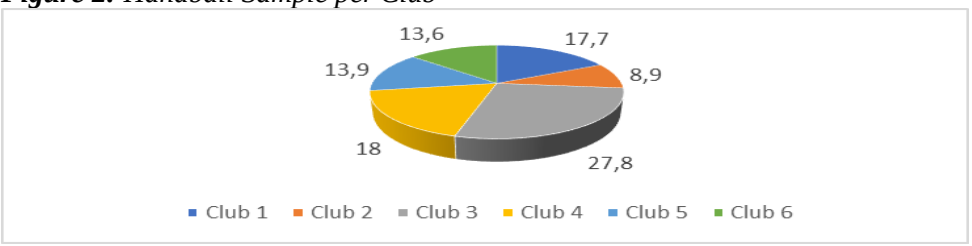
only. Figures 2, 3 and 4 give a clear picture of how the sample data is divided according to each sport and the respective clubs.

Figure 1: *Sample Population per Sport*



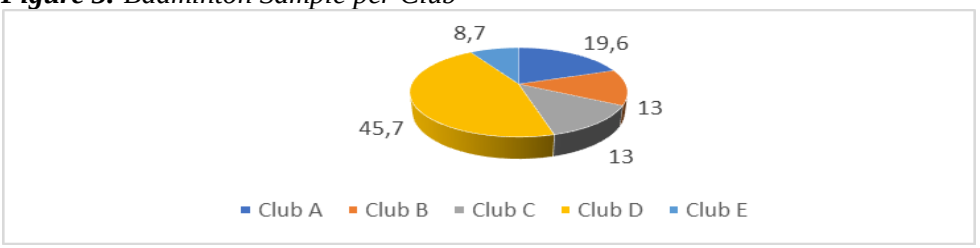
Source: *Data obtained from every club representing every sport at a competitive level, (n=381).*

Figure 2: *Handball Sample per Club*



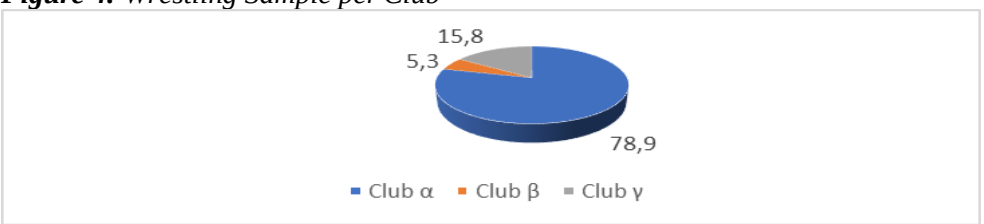
Source: *Data obtained from every club representing handball at a competitive level, (n=316).*

Figure 3: *Badminton Sample per Club*



Source: *Data obtained from every club representing badminton at a competitive level, (n= 46).*

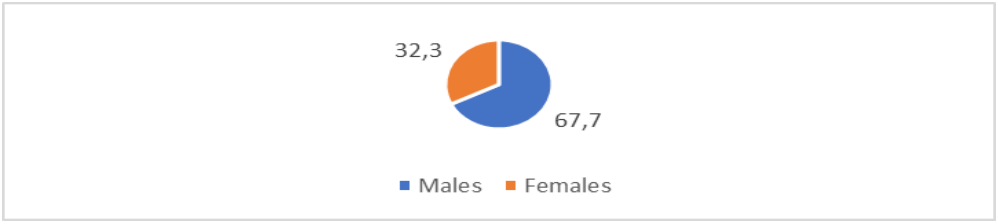
Figure 4: *Wrestling Sample per Club*



Source: *Data obtained from every club representing wrestling at a competitive level, (n= 19).*

As indicated in Figure 5 hereunder, the sample includes 67.7% males and 32.3% females. This data implies a ratio of approximately two males for every female participating in the study.

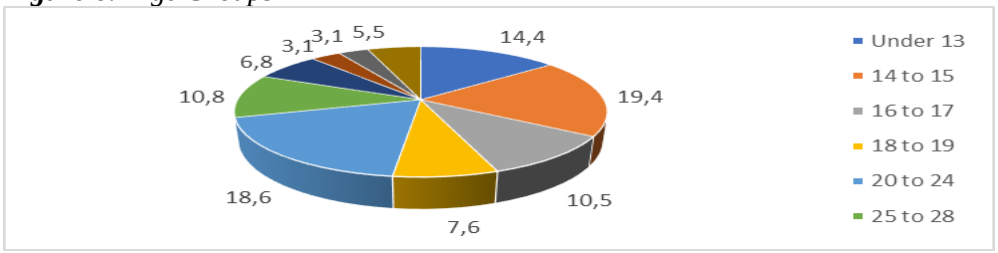
Figure 5: *Gender Frequency*



Source: *Data obtained from every club representing every sport at a competitive level, (n=381).*

As can be seen from Figure 6 and Table 1, 51.9% of the participants are under 19 years of age while 18.5% are 29 years and older.

Figure 6: *Age Groups*



Source: *Data obtained from every club representing every sport at a competitive level, (n=381.)*

91.1% of the participants are Maltese (Table 2). There is a presence of foreign players in all three sports with 16 different nationalities represented, the majority of which are Europeans. Hungary is the most representative foreign nation with 2.1% of the sample. Handball is the sport with most foreigners.

These participants live in various towns and villages across Malta (Figure 7). Mosta (9.97%), Sliema (6.82%), Attard (6.04%), Marsascala (6.04%), Birkirkara (5.51%) and Msida (4.20%) are the top six localities providing participants to these three sports. A detailed distribution of the localities among the three sports is provided in Appendices E, F and G. Worth noting that none of the participants came from Gozo.

61.2% of the sample is single while those dating and married account for 24.1% (Table 3). 13.1% were in a long-term relationship. In comparison with handball and wrestling, badminton had more married players than single (Table 4).

Table 1: *Sport * Gender * Age Group Cross-Tabulation*

Age_Group			Gender		Total
			Male	Female	
Under 13	Sport	Handball	37	14	51
		Badminton	1	2	3
		Wrestling	1	0	1
	Total		39	16	55
14-15	Sport	Handball	49	18	67
		Badminton	3	3	6
		Wrestling	1	0	1
	Total		53	21	74
16-17	Sport	Handball	23	15	38
		Badminton	2	0	2
	Total		25	15	40
18-19	Sport	Handball	15	6	21
		Badminton	3	0	3
		Wrestling	5	0	5
	Total		23	6	29
20-24	Sport	Handball	35	30	65
		Badminton	1	3	4
		Wrestling	2	0	2
	Total		38	33	71
25-28	Sport	Handball	20	12	32
		Badminton	2	3	5
		Wrestling	4	0	4
	Total		26	15	41
29-32	Sport	Handball	15	8	23
		Badminton	2	0	2
		Wrestling	1	0	1
	Total		18	8	26
33-36	Sport	Handball	4	3	7
		Badminton	3	0	3
		Wrestling	2	0	2
	Total		9	3	12
37-40	Sport	Handball	5	2	7
		Badminton	3	2	5
	Total		8	4	12
over 41	Sport	Handball	5	0	5
		Badminton	11	2	13
		Wrestling	3	0	3
	Total		19	2	21
Total	Sport	Handball	208	108	316
		Badminton	31	15	46
		Wrestling	19	0	19
	Total		258	123	381

Source: *Data obtained from every club representing every sport at a competitive level, (n=381).*

Table 2: *Participants' Nationality*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Maltese	347	91.1	91.1	91.1
	Serbian	3	.8	.8	91.9
	Macedonian	2	.5	.5	92.4
	Hungarian	8	2.1	2.1	94.5
	Brazilian	1	.3	.3	94.8
	Italian	3	.8	.8	95.5
	French	4	1.0	1.0	96.6
	Spanish	2	.5	.5	97.1
	Romanian	1	.3	.3	97.4
	Danish	2	.5	.5	97.9

	Swedish	2	.5	.5	98.4
	Bulgarian	1	.3	.3	98.7
	English	1	.3	.3	99.0
	Latvian	2	.5	.5	99.5
	Russian	1	.3	.3	99.7
	Iranian	1	.3	.3	100.0
	Total	381	100.0	100.0	

Source: *Data obtained from every club representing every sport at a competitive level, (n=381).*

Table 3: *Status*

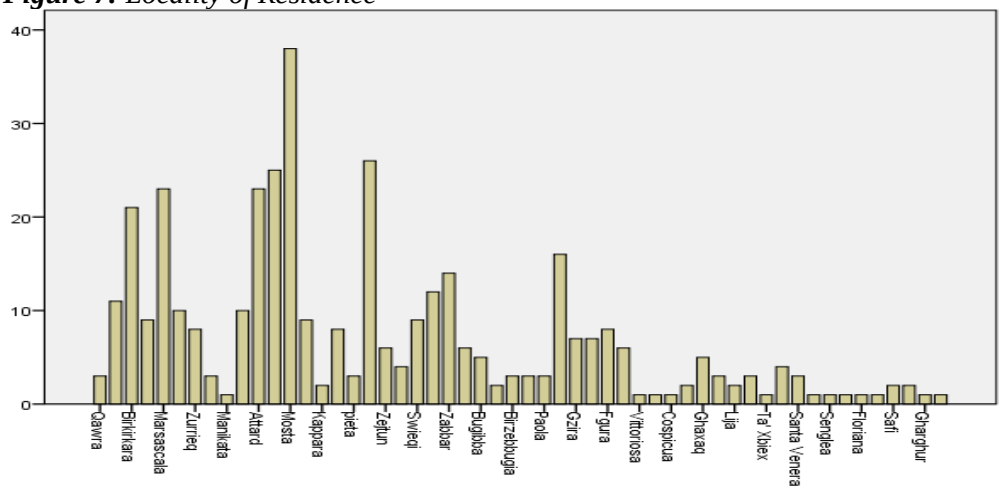
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single	233	61.2	61.2	61.2
	Married	44	11.5	11.5	72.7
	Dating	48	12.6	12.6	85.3
	Widowed	1	.3	.3	85.6
	Cohabiting	4	1.0	1.0	86.6
	Separated	1	.3	.3	86.9
	In a long-term relationship	50	13.1	13.1	100.0
	Total	381	100.0	100.0	

Table 4: *Sport * Status Cross Tabulation*

Count

		Status							
		Single	Married	Dating	Widowed	Cohabiting	Separated	In a long-term relationship	Total
Sport	Handball	206	18	44	1	4	1	42	316
	Badminton	17	20	3	0	0	0	6	46
	Wrestling	10	6	1	0	0	0	2	19
Total		233	44	48	1	4	1	50	381

Figure 7: *Locality of Residence*



5.2 Hypothesis Testing

Hypothesis 1A: Sport vs Gender
H0: There are no significant dependencies between gender and sport (handball, badminton and wrestling).
H1: There is a dependency between gender and sport (handball, badminton and wrestling).

Table 5 gives a clear indication of how the ratio of males to females is divided according to sport. It can be observed that handball and badminton have a male to female participants' ratio of 2:1, while wrestling is a male dominant sport with no female participants. Hence, it is expected that there is a dependency between gender and participation in certain sports, which can also be confirmed visually by noting the expected and observed frequencies for those participants practicing wrestling.

Table 5: *Observed & Expected Frequencies of Males & Females in Handball, Badminton & Wrestling*

			Gender		
			Male	Female	Total
Sport	Handball	Count	208	108	316
		Expected Count	214.0	102.0	316.0
	Badminton	Count	31	15	46
		Expected Count	31.1	14.9	46.0
	Wrestling	Count	19	0	19
		Expected Count	12.9	6.1	19.0
Total		Count	258	123	381
		Expected Count	258.0	123.0	381.0

Source: *Data obtained from every club representing every sport at a competitive level, (n=381).*

Consequently, the null hypothesis that there are no significant dependencies between gender and sport (handball, badminton and wrestling) was tested against the alternative hypothesis that there is in fact a dependency between gender and sport and a certain gender may opt either to participate or not participate in a sport.
The chi-square test in Table 6 provides a p-value = 0.008 which is less than 0.05 and hence there is enough evidence to reject the null hypothesis and accept the alternative hypothesis that there is a dependency between gender and sport and a certain gender may opt either to participate or not participate in a sport.

Hypothesis 1B: Sport (Handball & Badminton) vs Gender
H0: There are no significant dependencies between gender and sport (handball & badminton).
H1: There is a dependency between gender and sport (handball & badminton).

Table 6: *Sport (Handball, Badminton & Wrestling) vs Gender Chi-Square Test*

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.579[a]	2	.008
Likelihood Ratio	15.329	2	.000
Linear-by-Linear Association	6.474	1	.011
N of Valid Cases	381		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.13.

Table 7 shows the expected and observed frequencies of both sports individually. Hence, if what was observed from the sample is very close to what is expected with a lack of dependency between the categories, then it is expected that the null hypothesis is accepted.

Table 7: *Observed & Expected Frequencies of Males & Females in Handball & Badminton*

			Gender		
			Male	Female	Total
Sport	Handball	Count	208	108	316
		Expected Count	208.6	107.4	316.0
	Badminton	Count	31	15	46
		Expected Count	30.4	15.6	46.0
Total		Count	239	123	362
		Expected Count	239.0	123.0	362.0

The chi-square test in Table 8 produced a p-value of 0.834 which exceeds 0.05 and hence there is not enough evidence to reject the null hypothesis. In this regard, it can be concluded that the ratio of male to female participating in badminton is not significantly different from that of handball. On the other hand, combining both hypothesis tests used in relation to sport and gender, it can be concluded that the ratio of male to female participating in wrestling is significantly different from the other two sports.

Table 8: *Sport (Handball & Badminton) vs Gender Chi-Square Test*

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.044[a]	1	.834		
Continuity Correction[b]	.002	1	.965		
Likelihood Ratio	.044	1	.833		
Fisher's Exact Test				.870	.488
Linear-by-Linear Association	.044	1	.834		
N of Valid Cases	362				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 15.63.

b. Computed only for a 2x2 table

Hypothesis 2A: Sport vs Age
H0: There are no significant dependencies between age and sport (handball, badminton and wrestling).
H1: There is a dependency between age and sport (handball, badminton and wrestling).

Using a similar approach to the hypotheses tested previously, the next test shall confirm whether age is a significant factor within participation in certain sports. Using a Chi-square test, the null hypothesis that age is not a significant factor was tested against the alternative hypothesis that age is in fact a dependent factor. Table 9 shows the expected and observed frequencies of age in all sports.

***Table 9**: Observed & Expected Frequencies of Age in Handball, Badminton & Wrestling.*

			Age Group										Total
			Under 13	14-15	16-17	18-19	20-24	25-28	29-32	33-36	37-40	over 41	
Sport	Handball	Count	51	67	38	21	65	32	23	7	7	5	316
		Expected Count	45.6	61.4	33.2	24.1	58.9	34.0	21.6	10.0	10.0	17.4	316.0
	Badminton	Count	3	6	2	3	4	5	2	3	5	13	46
		Expected Count	6.6	8.9	4.8	3.5	8.6	5.0	3.1	1.4	1.4	2.5	46.0
	Wrestling	Count	1	1	0	5	2	4	1	2	0	3	19
		Expected Count	2.7	3.7	2.0	1.4	3.5	2.0	1.3	.6	.6	1.0	19.0
Total		Count	55	74	40	29	71	41	26	12	12	21	381
		Expected Count	55.0	74.0	40.0	29.0	71.0	41.0	26.0	12.0	12.0	21.0	381.0

The Chi-square test in Table 10 provided a p-value of 0.000 which is less than 0.05 and hence there is enough evidence to reject the null hypothesis and accept the alternative hypothesis. Hence, it can be concluded that participation in sport for certain age groups varies from one sport to another.

***Table 10**: Sport (Handball, Badminton & Wrestling) vs Age Chi-Square Test*

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	98.717[a]	18	.000
Likelihood Ratio	76.261	18	.000
Linear-by-Linear Association	35.217	1	.000
N of Valid Cases	381		

a. 17 cells (56.7%) have expected count less than 5. The minimum expected count is .60.

Hypothesis 2B: Sport vs Age
H0: There are no significant dependencies between age and sport (badminton and wrestling).
H1: There is a dependency between age and sport (badminton and wrestling).

On the basis of the expected and observed frequencies in Table 9, a decision was taken to test whether there is a significant difference between badminton and wrestling regarding certain age participation. If not, then using both hypothesis, it can be concluded that handball attracts a different age group population from badminton and wrestling. Table 11 shows the observed and expected age groups frequencies of both badminton and wrestling alone.

Table 11: *Observed & Expected Frequencies of Age in Badminton & Wrestling*

			Age Group									
			Under 13	14-15	16-17	18-19	20-24	25-28	29-32	33-36	37-40	over 41	Total
Sport	Badminton	Count	3	6	2	3	4	5	2	3	5	13	46
		Expected Count	2.8	5.0	1.4	5.7	4.2	6.4	2.1	3.5	3.5	11.3	46.0
	Wrestling	Count	1	1	0	5	2	4	1	2	0	3	19
		Expected Count	1.2	2.0	.6	2.3	1.8	2.6	.9	1.5	1.5	4.7	19.0
Total		Count	4	7	2	8	6	9	3	5	5	16	65
		Expected Count	4.0	7.0	2.0	8.0	6.0	9.0	3.0	5.0	5.0	16.0	65.0

The chi-square test in Table 12, provides a p-value of 0.337 which is greater than 0.05. Hence, there is not enough evidence to reject the null hypothesis, meaning that there is no significant difference between the age groups attracted by badminton and the age groups attracted by wrestling. On the other hand, on the basis of the two tested hypotheses (2A and 2B), handball is different from the other sports in this regard, and while it attracts younger participants, badminton and wrestling attract more mature participants.

Table 12: *Sport (Badminton & Wrestling) vs Age Chi-Square Test*

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.172[a]	9	.337
Likelihood Ratio	11.726	9	.229
Linear-by-Linear Association	.609	1	.435
N of Valid Cases	65		

a. 17 cells (85.0%) have expected count less than 5. The minimum expected count is .58.

Hypothesis 3: Sport vs Educational Background
H0: Educational background is not a significant factor which influences a person's decision in which sport to participate in.
H1: Educational background is a significant factor that influences a person's decision in which sport to participate in.

In the next hypothesis we test the null hypothesis that educational background does not influence a person's decision to participate in certain sports between handball, badminton and wrestling, against the alternative that in fact educational background is a dependent factor which may influence a person in choosing which sport to practice.
In order to reduce bias and inaccuracies within the results in this hypothesis, all participants who were still full-time students were eliminated so that focus was put specifically onthose who did not attend school anymore (Table 13).

Table 13: *Participants who Finished Schooling*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Secondary	8	5.2	5.2	5.2
	Post-secondary	25	16.3	16.3	21.6
	Diploma	33	21.6	21.6	43.1
	Bachelor's Degree	54	35.3	35.3	78.4
	Master's Degree	28	18.3	18.3	96.7
	Doctorate Degree	5	3.3	3.3	100.0
	Total	153	100.0	100.0	

The observed and expected educational background frequencies of handball, badminton and wrestling are indicated in Table 14.

Table 14: *Observed & Expected Frequencies of Educational Background in Handball, Badminton & Wrestling*

			Education						
			Secondary	Post-secondary	Diploma	Bachelor's Degree	Master's Degree	Doctorate Degree	Total
Sport	Handball	Count	5	14	25	39	25	4	112
		Expected Count	5.9	18.3	24.2	39.5	20.5	3.7	112.0
	Badminton	Count	2	10	6	9	1	1	29
		Expected Count	1.5	4.7	6.3	10.2	5.3	.9	29.0
	Wrestling	Count	1	1	2	6	2	0	12
		Expected Count	.6	2.0	2.6	4.2	2.2	.4	12.0
Total		Count	8	25	33	54	28	5	153
		Expected Count	8.0	25.0	33.0	54.0	28.0	5.0	153.0

The Chi-square test below (Table 15) provided a p-value of 0.181 which exceeds 0.05 and hence there is not enough evidence to reject the null hypothesis. Therefore, it can be concluded that educational background is not a significant factor which influences a person's decision as to which sport to participate in.

Table 15: *Sport (Handball, Badminton & Wrestling) vs Educational Background Chi-Square*

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.818[a]	10	.181
Likelihood Ratio	14.582	10	.148
Linear-by-Linear Association	2.663	1	.103
N of Valid Cases	153		

a. 10 cells (55.6%) have expected count less than 5. The minimum expected count is .39.

Hypothesis 4: Sport vs Income
H0: Income is not a significant factor which influences a person's decision regarding which sport to practice.
H1: Income is a significant factor which influences a person's decision regarding which sport to practice.

This time, the null hypothesis that a person's income or more importantly, a person's standard of living does not influence a person's decision in which sport to participate in, is tested against the alternative hypothesis that a person's income is in fact a key factor which may influence a person's decision in this regard. To avoid bias and inaccuracies within results, all participants whose source of income is not applicable and those who earn a student stipend were eliminated. The observed and expected income frequencies of handball, badminton and wrestling are specified in Table 16.

Table 16: *Observed & Expected Frequencies of Income in Handball, Badminton & Wrestling*

		Sport						Total	
		Handball		Badminton		Wrestling			
		Count	Expected Count	Count	Expected Count	Count	Expected Count	Count	Expected Count
Salary Group	<20,000	29	27.2	6	7.7	3	3.1	38	38.0
	20,000-30,000	42	41.5	11	11.8	5	4.7	58	58.0
	30,000-40,000	17	17.9	6	5.1	2	2.0	25	25.0
	40,000-50,000	8	8.6	3	2.4	1	1.0	12	12.0
	50,000-60,000	6	5.7	1	1.6	1	.6	8	8.0
	60,000-80,000	3	2.9	1	.8	0	.3	4	4.0
	80,000-100,000	1	1.4	1	.4	0	.2	2	2.0
	>100,000	0	.7	1	.2	0	.1	1	1.0
Total		106	106.0	30	30.0	12	12.0	148	148.0

Again using a Chi-square test, a value of 0.939 was obtained which exceeds 0.05. (Table 17). Hence, there is not enough evidence to reject the null hypothesis. It can

be concluded that a person's income does not influence a person's decision regarding which sport to practice.

Table 17: *Sport (Handball, Badminton & Wrestling) vs Income Chi-Square Test*

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.874[a]	14	.939
Likelihood Ratio	6.399	14	.955
Linear-by-Linear Association	.475	1	.491
N of Valid Cases	148		

a. 16 cells (66.7%) have expected count less than 5. The minimum expected count is .08.

Hypothesis 5: Sport vs Standard and Quality of Playing Facility
H0: There is a significant difference between the opinions of a person participating in a sport about the standard and quality of their main facility from the opinion of another person participating in a different sport.
H1: There is no significant difference between the opinions of a person participating in a sport about the standard and quality of their main facility from the opinion of another person participating in a different sport.

Handball, badminton, and wrestling have their own main playing facility where competitions are held. Interviewees were asked how satisfied they were with the overall standard and quality experience of the facility. As a result, it is interesting to test a null hypothesis that there is a significant difference between the opinions of a person participating in a sport in regard to the standard and quality of their main facility from the opinion of another person participating in a different sport. The null hypothesis was tested against the alternative hypothesis that there is in fact no difference in opinion from one sport facility to another. The observed and expected frequencies for the different opinions in handball, badminton and wrestling are specified in Table 18 below.

Table 18: *Observed and Expected Frequencies for Standard and Quality of Playing Facility*

			Question_1a					Total
			Strongly disagree	disagree	neither agree nor disagree	agree	Strongly agree	
Sport	Handball	Count	12	49	65	162	28	316
		Expected Count	14.9	55.6	73.0	147.6	24.9	316.0
	Badminton	Count	6	12	16	12	0	46
		Expected Count	2.2	8.1	10.6	21.5	3.6	46.0
	Wrestling	Count	0	6	7	4	2	19
		Expected Count	.9	3.3	4.4	8.9	1.5	19.0
Total		Count	18	67	88	178	30	381
		Expected Count	18.0	67.0	88.0	178.0	30.0	381.0

The Chi-square test in Table 19 provides a p-value of 0.000 which is less than 0.05 and therefore there is enough evidence to reject the null hypothesis and accept the alternative hypothesis. Hence, it may be concluded that the overall opinion on the main sport facility with regards to the level of satisfaction with the overall standard and quality experience is different from one sport facility to another.

Table 19: *Sport vs Standard and Quality of Playing Facility Chi-Square Test*

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	30.593[a]	8	.000
Likelihood Ratio	33.178	8	.000
Linear-by-Linear Association	13.457	1	.000
N of Valid Cases	381		

a. 6 cells (40.0%) have expected count less than 5. The minimum expected count is .90.

Hypothesis 6: Sport vs Government Support
H0: There is no significant difference between the opinions of a person participating in a sport on whether past government policies supported that sport from the opinion of another person participating in a different sport.
H1: There is a significant difference between the opinions of a person participating in a sport on whether past government policies supported that sport from the opinion of another person participating in a different sport.

Through the years, different local government policies aimed to support the development of handball, badminton, and wrestling in various ways. In this regard, interviewees were asked about their level of agreement on whether or not such policies supported their sport. Consequently, a null hypothesis that there is no significant difference between the opinions of a person participating in a sport on whether past government policies supported that sport from the opinion of another person participating in a different sport, was built. The null hypothesis shall be tested against the alternative hypothesis that there is in fact a difference in opinion about government policies from one sport to another. The observed and expected frequency levels of agreement as to the support provided by government policies among the three sports are indicated in Table 20.

Table 20: *Observed and Expected Frequencies for Government Support*

			Question_2g					
			Strongly disagree	disagree	neither agree nor disagree	agree	Strongly agree	Total
Sport	Handball	Count	25	79	160	43	9	316
		Expected Count	24.9	77.1	155.9	44.0	14.1	316.0
	Badminton	Count	3	9	22	7	5	46
		Expected Count	3.6	11.2	22.7	6.4	2.1	46.0
	Wrestling	Count	2	5	6	3	3	19
		Expected Count	1.5	4.6	9.4	2.6	.8	19.0
Total		Count	30	93	188	53	17	381
		Expected Count	30.0	93.0	188.0	53.0	17.0	381.0

The Chi-square test below provides a p-value of 0.087 which is more than 0.05 and therefore there is not enough evidence to reject the null hypothesis. Hence, it may be concluded that the overall opinion about whether government policies supported handball, badminton and wrestling is the same between participants of all sports (Table 21).

Table 21: *Sport vs Government Support Chi-Square Test*

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.803[a]	8	.087
Likelihood Ratio	10.864	8	.210
Linear-by-Linear Association	3.119	1	.077
N of Valid Cases	381		

a. 6 cells (40.0%) have expected count less than 5. The minimum expected count is .85.

6. Salient Findings

In summary we found that:

- there is a dependency between gender and sport and a participant in a certain gender group may opt either to participate or not participate in a sport;
- the ratio of male to female participating in wrestling is significantly different from that of handball and badminton;
- there is a dependency between age and sport, and participation for certain age groups varies from one sport to another;
- handball is different from the other sports as it attracts younger participants whereas badminton and wrestling attract more mature participants;
- both educational background and income are not significant factors which influence a person's decision as to which sport of the three to participate in;
- the overall opinion about the level of satisfaction on the main sport facilities of badminton, handball and wrestling with regards to the overall standard and quality experience is different from one sport facility to another;
- the overall opinion about whether past government policies supported handball, badminton and wrestling is the same between participants of all sport.

Other findings revealed that:

- males are more active than females in Maltese badminton, handball and wrestling, indicating that gender is a barrier for sport participation in the three sports even though the magnitude of influence may be different;
- all three sports are quite representative in certain localities, but do not attract similar numbers in most of the other localities around Malta and Gozo;
- the majority of participants were single and without marital

commitments;

- 56.9% of participants who completed their education had attained either a bachelor's or a master's or doctorate degree;
- 59.84% of participants in these sports were full-time students;
- managers (6.30%), teachers (4.46%) and self-employed (2.62%) ranked as the top three occupations across the sample;
- 72.44% work between 21 and 40 hours a week while 24.67% work more than 41 hours per week;
- 18.1% of the sample have a part-time job;
- over 80% train their sport between two to three times weekly;
- training sessions last between one hour and one and a half hours (40.94%) or between one and a half hours and 2 hours (54.59%);
- 46.19% travel to their playing facility using their own transport with 34.91% driven by their parents;
- 67.45% perform other physical activities or sport at least once a week, and the most practiced were gym (31.5%), football (19.4%) and walking (13.9%).

7. Concluding Remarks

With this study we have sought to analyse the determinants of sports participation across three key sports in Malta, namely badminton, handball and wrestling. To this end, we conducted various structured interviews with registered sports participants across three sports associations in Malta. The data gathered from these interviews was then analysed statistically in order to derive meaningful results based on a series of hypotheses derived from the literature.

The results show that sports participation in Malta is unrelated to income and educational background, meaning that access to these sports is open to all socio-economic groups, an important consideration when looking at the importance of physical activity to health outcomes. Nonetheless, there are significant differences in participation across genders and age groups, particularly (as expected) with regards to wrestling, although it is interesting to note that handball is managing to attract a younger cohort of participants. The findings also supported the notion that the sporting infrastructure available within the country can play a key role in attracting or dissuading participants, coupled with perceptions regarding the level of government policy support.

Therefore, our study emphasizes the need for more targeted public policies aimed at encouraging the uptake of sports within Malta. Given the fact that income was not a key correlate of sports participation, it is clear that the time for monetary incentives to encourage sporting participation is over, and should be supplanted by more targeted interventions based on the salient findings from this study. This can take various forms, from investments in upgrading of sporting facilities to the

promotion of specific sports and the provision of subsidized time-off specifically for sports participation.

To ameliorate Maltese sport participation, one cannot rely only on short term planning and strategies. Rather, it necessitates a long term vision which is supported and implemented by all stakeholders. In the past, there have been many debates about the situation of Maltese sport, the size of the country, the lack of talent, our own closed culture and perhaps a submissive mentality, all of which impede us from increasing participation levels and standards, and eventually achieving better results and really aiming high when it comes to sport. The primary onus lays on the government, which needs to believe more in the benefits of sport and consequently take the right decisions now and invest.

Finally, we are confident that this study has laid the foundations for future research in the field of sport participation in Malta and that the recommendations put forward will enhance local participation rates in ways that will eventually yield better results which put Malta in a more advantageous and prominent position on the international sport map.

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