

## Literature

### *Sports participation and subjective well-being*

Quality of life and well-being have been analyzed through different points of view over time. During the last years, several studies have used the most diverse terms such as happiness and life satisfaction when aiming to study the way people evaluate their own lives (Diener and Diener 1996). Definitions of subjective well-being can be grouped into three domains (Diener 1984). During this study, the adopted definition will be the one formulated by social research, according to which subjective well-being depends on how and why individuals positively evaluate their lives, this is, individual's life satisfaction. This dimension has been attracting sociologists' attention and stands out as the main indicator of well-being (Giacomoni 2004).

According to Diener et al. (1999, 277), subjective well-being is 'a broad category of phenomena that includes people's emotional responses, domain satisfactions and global judgments of life satisfaction', which translates the individuals' current assessment of their own happiness (Schwartz and Strack 1999).

It is worthy to mention three aspects of subjective well-being (Diener 1984): 1) well-being is subjective, depending on the individual's perception and personal experience; 2) well-being implies not only the absence of negative factors, but also the presence of positive factors; 3) well-being must be seen as an overall measure rather than a measure of a single aspect of life.

In what concerns the sports participation, the European Commission's (2014) definition of physical activity was adopted. Therefore, physical activity was considered as any form of physical activity that has been practiced in a sporting or related context, such as swimming, running outdoors, running at a gym or club, sports competitions etc.

An important share of the literature has focussed on identifying the sociodemographic and economic determinants of individuals' subjective well-being (Dolan, Peasgood, and White 2008; Kahneman 1999; Scorsolini-Comin and Santos 2010) such as income, work situation, academic degree, gender and race.

However, in the sports field, few studies have attempted to examine whether physical and sporting activity impacts individuals' overall well-being. Pawlowski, Downward, and Rasciute (2011) argue that practicing physical activity and sports is a personal and rational decision that maximizes an individual's rational utility, and must therefore, be logically associated with increased subjective well-being. Results have shown convergence of positive and significant effects of sports practice on subjective well-being: Becchetti, Pelloni, and Rossetti (2008) found that sports participation in either type (i.e. collective and individual) increased subjective well-being; Lechner (2009) observed significant effects of sports participation on men's subjective well-being but not on women's; Rasciute and Downward (2010) concluded that walking and recreational cycling had a positive effect on individuals' happiness; Downward and Rasciute (2011) verified different effects on subjective well-being when sports practice involved a higher level of social interactions (team sports performed with partner) and higher monthly frequency; Moradi et al. (2014) highlighted that the frequency and intensity of exercise exerted positive effects on life satisfaction; and Pawlowski, Downward, and Rasciute (2011, 2014) observed that sports participation had a significant effect on subjective well-being in all age groups, although its intensity varied throughout lifetime.

139 Surprisingly, weekly frequency and duration have been neglected in previous studies  
140 (except Downward and Rasciute 2011; Moradi et al. 2014). However, these entail cost and  
141 effort for individuals. Thus, these elements might mediate the relationship between sports  
142 practice and subjective well-being.

143 From the discussion above, the following is hypothesized:

144 H1: Sports participation, in terms of weekly frequency and duration directly and posi-  
145 tively affects subjective well-being.

### 147 ***Sports participation and the perceived value of elite sports***

149 Attendance at sports events and sports participation makes citizens more aware and involved  
150 in sports. On the other hand, processing pieces of information about sports leads to the  
151 development of an individual and subjective idea of what constitutes a country's interna-  
152 tional sporting success.

153 Several methods might be used to measure international sporting success (Bernard and  
154 Busse 2004; Churilov and Flitman 2006). Each one of them entails limitations that are worth  
155 some attention. However, one of the most widespread ways to compare countries' Olympic  
156 and sporting performance is through the Olympic Medals Index. Although the International  
157 Olympic Committee does not officially recognize it as a hierarchic order, the importance  
158 of this index has significantly increased. It plays a major role in media and allows individuals  
159 to formulate an opinion about the merit of sports policies and elite sports in their countries.  
160 Despite the mediatization of international sports results, Grix (2008, 408) argues that elite  
161 sports system has been 'completely cut-off and separated from everyday sport,' which has  
162 led to a decreased acceptance of elite sports among ordinary citizens.

163 Having this in mind, do individuals with high levels of sports participation tend to  
164 attribute a higher value to their country's elite sports? Or will these effects be greater in  
165 sedentary individuals or with a low level of sports participation?

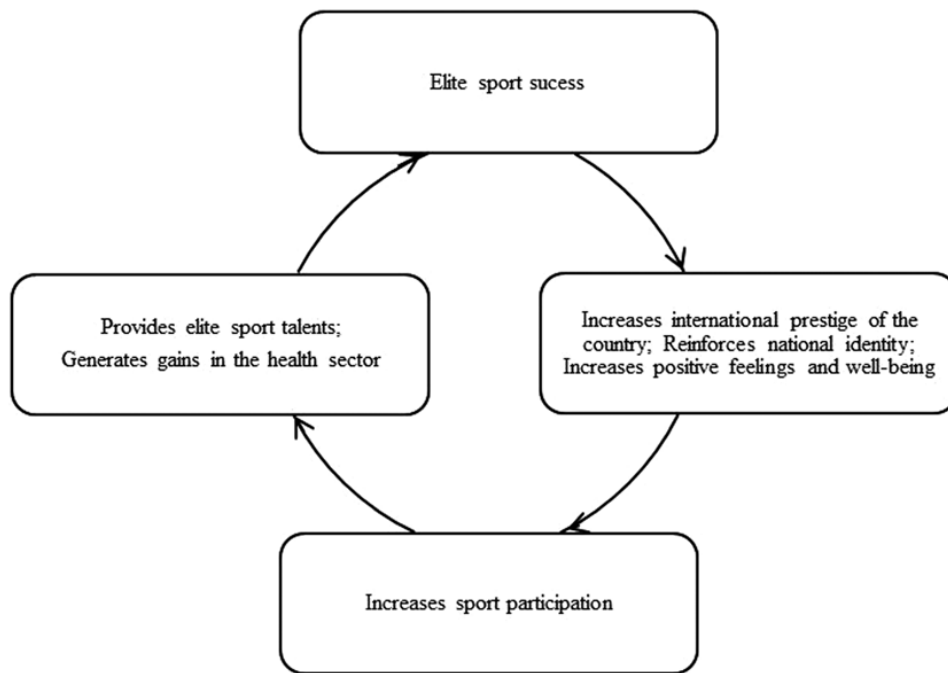
166 The perceived value of elite sports recognizes individuals' subjective views of what con-  
167 stitutes international sporting success, rather than previously determining its meaning. For  
168 instance, perceived value of elite sports was not particularly connected with a victory in  
169 any sporting event, but rather with an individual and global summary assessment about  
170 the value of the county's elite sports in the international context.

171 According to previous discussion, it seems plausible that higher and more regular sports  
172 participation might lead to an increase on the perceived value of elite sports. Thus, the  
173 following hypothesis is posited:

174 H2: Sports participation directly and positively affects the perceived value of elite sports.

### 177 ***The perceived value of elite sports and subjective well-being***

178 The investment philosophy of the so-called developed countries (UK, France, Australia)  
179 in elite sports is called 'virtuous cycle' (Grix and Carmichael 2012). According to this, elite  
180 sports' success: 1) brings international prestige to the country; 2) reinforces national identity;  
181 3) represents a factor of positive feelings and well-being; 4) promotes an increase in sports  
182 participation among the overall population, which ultimately; 5) leads to improvements in  
183 the health sector and provides a greater number of elite sports' talents; consequently leading  
184 back to elite sports' success, as shown in Figure 1.



**Figure 1.** The “virtuous cycle” of sports. Adapted from (Grix and Carmichael 2012, 76).

In addition to the effects on the sports system, the perceived success of athletes and teams in international competitions has been shown to impact feelings of national pride and international prestige (Allison and Monnington 2002). Likewise, it fosters positive feelings among society members (Grix and Carmichael 2012).

Although this factor appears to be difficult to quantify (DCMS/Strategy Unit 2002), Downward and Rasciute (2010) argue that it seems to relate with interactions with friends about the event and with individual’s subjective well-being.

However, sporting success cannot be measured by the absolute number of medals a country won at the Olympics. For a country like Luxembourg with a population of 480,000 winning a single gold medal can be considered a success. For Germany with a population of 82 million it would represent a national sports’ crisis.

Few studies analyzed the effect of sporting success on national pride and subjective well-being (Hallmann, Breuer, and Kühnreich 2013). Even so, results (e.g. Kavetsos and Szymanski 2010) showed that the success of national teams in the Olympics and in the major international football competitions (i.e. FIFA World Cup, UEFA European Championship) marginally affected and only in the short-run, the reported happiness (subjective well-being).

Convergent with marginal effects, Elling, Van Hilvoorde, and Van Den Dool (2014) found that the perceived sporting success of Dutch athletes led to small short-term positive effects on subjective well-being. However, Hallmann, Breuer, and Kühnreich (2013) verified that two-thirds of the Germans felt pride and happiness when their country’s athletes succeeded in major competitions.

These results do not provide clear evidence of the population’s positive feelings, as it is often claimed. Nevertheless, it has been highlighted that levels of national sporting performance higher than expected tend to generate higher levels of subjective well-being, when compared with levels of performance aligned with the expected (Kavetsos and Szymanski 2010).

231 Therefore, government interventions in the sports sector are substantial worldwide. In  
232 England, the goal of ‘sustainable improvement in success in international competition, par-  
233 ticularly in the sports which matter most to the public, primarily because of the “feelgood  
234 factor” associated with winning’ was suggested to the government (DCMS/Strategy Unit 2002).

235 In Portugal, Major Planning Options for 2016–2019 refers the goal of promoting sports  
236 as a form of personal fulfilment, and highlights an objective focussed on elite sports, aiming  
237 at supporting athletes and high-performance coaches, Olympic and Paralympic projects  
238 and high-performance sports participation (Lei no. 7-B/2016 2016, 1110).

239 Having as a background the discussion above, are the perceived results of elite sports  
240 actually having the desired effects on citizens’ subjective well-being, as believed by many  
241 politicians? Is it plausible that the perceived value of elite sports could lead to an increase  
242 in individuals’ subjective well-being? The following hypothesis is therefore put forward:

243 H3: The perceived value of elite sports directly and positively affects the subjective  
244 well-being.  
245

## 246 **Methods**

247  
248 Data from 567 Portuguese (67% female, 33% male) college students was collected. The  
249 survey was conducted in June 2016. Participants were recruited using a convenience sam-  
250 pling technique. Participants were sent an email containing a link to an online questionnaire.  
251 The response rate was 17.7%. From the respondents, 511 were considered suitable, of which  
252 67.4% were female and 32.6% male. Marital status ranged from single (85.1%), married  
253 (13.6%) and divorced or widow 1.3%. The mean age was  $25.1 \pm 9.74$  years.

254  
255 The questionnaire contained queries about the theoretical concepts underlying this study.  
256 Respondents were informed of anonymity and confidentiality before data collection.

257 Respondents were questioned about variables such as the perceived value of elite sports  
258 (Consejo Superior de Deportes 2011); physical activity (Downward and Rasciute 2011);  
259 and subjective well-being (Simões et al. 2003). These were measured according to what was  
260 previously done in other studies. Sociodemographic details such as age, gender, marital  
261 status, residential region and enrolled academic institution were also asked. An overview  
262 of the variables is provided in Table 1.  
263

## 264 **Data analysis**

265  
266 Structural Equation Modelling (Arbuckle 2007) was used for analyzing the plausibility of  
267 the theoretical and conceptual model. The usage of such technique requires the fulfilment  
268 of a set of assumptions, such as the sample size ( $n = 511$ ), in order to ensure sufficient vari-  
269 ability to estimate the model parameters.

270 To test the hypothetical associations between the present variables in the model, which  
271 identifies the sources of possible unacceptable adjustment of the general model, the recom-  
272 mendations of two steps by Anderson and Gerbing (1988) were adopted. The first step was  
273 to evaluate the quality of the measurement sub-models, of the constructs present in the  
274 global model. The second step was to evaluate the quality of the adjustment of the structural  
275 model. First, the overall assessment was carried out through the selected adjustment indexes.  
276 Second, the parameters leading to test the formulated hypotheses were estimated.

**Table 1.** Variable definition and measurement.

Variable	Description	Scale	Sources
Perceived value of elite sports (PV)	Currently, the internationally position of Portuguese high-competition sport is: (1 = Extremely bad, 2 = Very poor, 3 = Bad, 4 = Fair, 5 = Good, 6 = Very good, 7 = Extremely good); And looking back 10 years ago, the internationally position of Portuguese sports competition is: (1 = Extremely worse than 10 years ago; 2 = Much worse; 3 = Worse; 4 = Equal ; 5 = Best; 6 = Much better; 7 = Extremely better than 10 years ago)	Ordinal	Consejo Superior de Deportes (2011)
Physical activity (PA)	In last month how often did you exercised or played sport? (1 = Never; 2 = one to three times a month; 3 = one to two times a week; 4 = three to four times a week; 5 = five or more times a week). In general, how much time in total do you usually spend in vigorous physical activity? (1 = I never do vigorous physical activities; 2 = 30 minutes or less; 3 = 31–60 minutes; 4 = 61–90 minutes; 5 = 91–120 minutes; 6 = >120 minutes).	Metric	Downward and Rasciute (2011)
Subjective well-being (SWB)	Satisfaction with Life Scale: Overall, I am satisfied with my life. (0 = Not at all satisfied to 10 = Extremely satisfied)	Ordinal	Simões et al. (2003)
Sex	(1 = Female; 2 = Male)	Dummy	
Age	Age in years	Metric	
Marriage Status	(1 = Single; 2 = Married; 3 = Divorced; 4 = Consensual union; 5 = Widow)	Reference category	
Residential region	(1 = North, 2 = Center, 3 = Lisbon and Tejo Valley, 4 = Alentejo, 5 = Algarve, 6 = Azores, 7 = Madeira)	Reference category	
Academic education	Name of the academic institution	Reference category	

### Multi-group analysis

In order to test invariance between male and female, a multi-group analysis was performed, following recommendations of several authors (Byrne 2010; Cheung and Rensvold 2002), namely: 1) measurement model should represent a good fit in each of the groups; 2) configural, metric, scalar and residual should be examined. Invariance assumptions were verified through the differences of CFI ( $\Delta CFI \leq 0.01$ ) in line with Cheung and Rensvold (2002).

## Results

### Preliminary analysis

A preliminary data analysis demonstrated that non-respondents accounted for <0.1%, without showing any type of pattern. Therefore, data were imputed using regression procedures of AMOS. Descriptive analysis revealed no violations of the univariate distribution since Skewness and Kurtosis were contained between  $-2, +2$  and  $-7 + 7$  (Byrne 2010). However, Mardia coefficient exceeded the expected value for multivariate normality ( $>5.0$ ). Thus, a

Q11  
Q12

**Table 2.** Mean, SD, and factor loadings.

Constructs items	Mean	SD	Factor loadings
<b>PA</b>	2.95	1.16	
PA1 – How often do you exercise or play sport? (in last month).	2.82	1.27	.62**
PA2 – 1. How often do you exercise or play sport? (in last month).	3.09	1.29	.62**
<b>The perceived value of elite sports</b>	4.99	.961	
PV1 – Currently, in the international context, the position of Portuguese high-competition sport is.	5.38	1.14	.60**
PV2 – And relatively 10 years ago, in the international context, globally, the position of Portuguese high competition sport is.	4.60	1.22	.55**
<b>Subjective well-being</b>			
<b>Q21</b> SWB1 – Overall, I am satisfied with my life	8.15	1.90	.85**

Bollen-Stine Bootstrap of 2000 samples was used for the subsequent analysis. The results of the measurement model are presented in [Table 2](#).

### Results from SEM

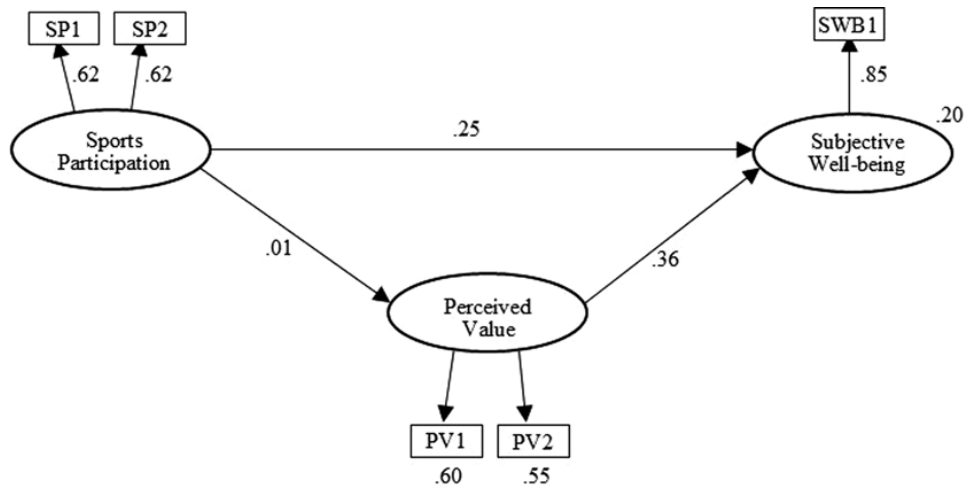
It has been found: 1) a positive and significant effect between sports participation and subjective well-being ( $\beta = .25$ , IC90% = .121–.371,  $p = .002$ ); 2) a positive and significant effect between the perceived value of sports and subjective well-being ( $\beta = .36$ , IC90% .239–.500,  $p = .001$ ); and lastly, 3) a positive but not significant effect between sports participation and perceived value of sports ( $\beta = .01$ , IC90% =  $-.169$ – $.166$ ,  $p = .962$ ), as shown **Q13** in the [Figure 2](#). The model had acceptable fit [ $\chi^2 = 18.342$ ,  $df = 6$ , B-S  $p = .005$ , TLI = .944, **Q14** CFI = .966, RMSEA = .064, 90% (IC .032–.098)].

### Multi-groups analysis

Results showed that the model is invariant between gender. Concretely, the data fit the measurement model in each group: male,  $v\chi^2 = 9.839$  (6), B-S  $p = .198$ , TLI = .945, CFI = **Q15** .967, SRMR = .047, RMSEA = .063 (CI = .000, .130)]; female, [ $\chi^2 = 8.507$  (6), B-S  $p = .155$ , TLI = .981, CFI = .989, SRMR = .028, RMSEA = .035 (CI = .000, .084)]. In addition, invariance was achieved since the chi-square test did not present differences between the free model (i.e. unconstrained model) and the other models: structural weights ( $\chi^2 = 5.40$ ;  $df = 8$ ;  $p = .714$ ), measurement residuals ( $\chi^2 = 5.40$ ;  $df = 9$ ;  $p = .798$ ). Results show that structural weights and model's measurement errors are equivalent between gender ( $p > .05$ ). Hence, it is reasonable to assume that any interpretation to be drawn from the relations among the studied variables has the same hypothetical effect between men and women, as observed in [Table 3](#).

### Hypothesis test

Sports participation exerted a positive and significant effect on subjective well-being ( $\beta = .25$ ,  $p < .005$ ), therefore confirming H1. Sports participation had a positive but



**Figure 2.** Standardized parameters of the structural model (n = 511).

**Table 3.** Goodness-of-fit indexes of measurement invariance between gender.

Models	$\chi^2$	df	$\Delta\chi^2$	$\Delta df$	<i>p</i>
CI	18.358	12	–	–	–
MI	23.758	20	5.400	8	.714
SI	23.764	21	5.406	9	.798

CI: configural invariance; MI: metric invariance; SI: Structural Invariance.

**Table 4.** Standardized coefficients of the structural model of subjective well-being (n = 511).

H	Hypothesis/pathway	Confirmation	Standardized trajectory coefficient ( $\beta$ )
H1:	Sport participation → Subjective well-being	Yes	.25*
H2:	Sport participation → Perceived value of elite sports	No	.01 <sup>ns</sup>
H3:	The perceived value of elite sports → Subjective well-being	Yes	.36**

Note: \* $p < .05$ ; \*\* $p < .001$ ; ns: not significant.

non-significant predictive action on the perceived value of elite sports ( $\beta = .01, p < .962$ ), hence not sustaining H2. The perceived value of elite sports exerted a positive and significant effect on subjective well-being ( $\beta = .36, p < .001$ ), thus supporting H3, as shown in Table 4.

Findings support 2 of the 3 formulated hypothesis and present three main results: 1) Sports participation positively affects the individual's subjective well-being; 2) Perceived value of elite sports positively affects the individual's subjective well-being; 3) Sports participation does not significantly affect the perceived value of elite sports.

## Results and discussion

### Sports participation and subjective well-being

One purpose of this study was to show the causal relations between sports participation and individuals' subjective well-being. Promotion and widening of physical activity as an instrument for improving physical condition, life quality and health of citizens has caught

415 the attention of several international organizations and national governments. Research  
416 has shown that certain variables of sports participation are important predictors of indi-  
417 viduals' subjective well-being (Becchetti, Pelloni, and Rossetti 2008; Downward and Rasciute  
418 2011; Lechner 2009; Moradi et al. 2014; Pawlowski, Downward, and Rasciute 2011; 2014;  
419 Rasciute and Downward 2010; Ruseski et al. 2014; Wiese, Kuykendall, and Tay 2018).

420 The first result to be highlighted is the positive and significant effect of weekly frequency  
421 and duration of practicing vigorous physical activity on individuals' subjective well-being.  
422 This result clearly confirms what has been previously verified by Downward and Rasciute  
423 (2011) and Moradi et al. (2014), who claimed that physical activity's frequency and duration  
424 have a positive effect on subjective well-being and life satisfaction.

425 Therefore, it was concluded that higher weekly frequency and longer duration led to  
426 higher levels of individuals' subjective feeling of well-being. These results are in line with  
427 Pawlowski, Downward, and Rasciute (2011), who argue that physical activity practice is  
428 rational and therefore, performed in a positive and favourable way.

### 430 ***Sports participation and the perceived value of elite sports***

431  
432 The second objective of this study was to identify the effects of sports participation on the  
433 perceived value of elite sport. Governments' investment philosophy of many so-called devel-  
434 oped countries in elite sport is labelled 'virtuous cycle', through which the success of the  
435 elite sports, among other benefits, brings international prestige to the country and contrib-  
436 utes to positive feelings and well-being (Grix and Carmichael 2012). On the other hand,  
437 Grix (2008) defends that the elite sporting system was 'completely cut-off and separated  
438 from everyday sport', which has led to a decline in public acceptance of governments' high  
439 investments in elite sports.

440 Results seem to converge with this idea, having shown that sports participation did not  
441 significantly affect the perceived value of elite sports. That is, results do not confirm any  
442 position. It was not possible to verify whether individuals who manifested higher sports  
443 participation assigned a significantly higher value or, conversely, a lower value to their  
444 country's elite sports.

445 It is concluded that sports participation does not impact the perceived value of elite  
446 sports. This may be due to two reasons: 1) the physical effort and increased sports practice  
447 did not influence the way people evaluate their country's athlete's achievements; and 2) the  
448 country's sporting achievements may be so irrelevant that are not perceived as valuable.

### 450 ***The perceived value of elite sports and subjective well-being***

451  
452 It was intended to determine the extent to which the perceived value of elite sports influences  
453 individual's subjective well-being. Research has shown that athletes and sports teams' inter-  
454 national success impacts feelings of national pride and international prestige (Allison and  
455 Monnington 2002), fostering a positive sensation among the population (Grix and  
456 Carmichael 2012) and individuals' subjective well-being (e.g., Downward and Rasciute  
457 2010). Governments use this 'feelgood factor' after sporting success as a way to justify  
458 investments in elite sports (DCMS/Strategy Unit 2002).

459 Findings significantly confirmed the belief that the greater the perceived value of a country's  
460 elite sports, the greater the individuals' subjective well-being. Elling, Van Hilvoorde, and Van

461 Den Dool (2014) observed that the perceived sports success of Dutch athletes led to small  
462 positive effects on subjective well-being in the short-term. In addition, Hallmann, Breuer, and  
463 Kühnreich (2013) pointed out that German nationals' feelings of happiness were increased when  
464 German athletes were successful in major international competitions. Our results are aligned  
465 with the ones of these studies, providing evidence that the perceived value of elite sports of ones'  
466 country positively and significantly influences individuals' subjective well-being. However, other  
467 studies found contrary results. Pawlowski, Downward, and Rasciute (2014) found that the pride  
468 of international sporting success did not show direct results on increased subjective well-being.  
469 Kavetsos and Szymanski (2010) found that sporting success positively influenced national pride,  
470 but that national pride did not influence the subjective perception of well-being.

471 Despite these opposed findings, our results seem to legitimize governments' strong  
472 investment policies in elite sports, supported by the effect of the so-called 'virtuous cycle'  
473 (Grix and Carmichael 2012). Besides stimulating sports participation, this 'virtuous cycle'  
474 positively impacts the perception of the country's elite sports value, subsequently leading  
475 to the development of feelings of well-being.

## 477 **Conclusion**

478  
479 This work contributed to an emerging body of literature, centred on the effects of sports  
480 participation in the perceived value of elite sports and individual's well-being. Results allow  
481 to draw three conclusions:

482 First, citizens' sports participation, in terms of frequency and volume, was shown to  
483 positively and directly affect individual's subjective well-being, according to participants'  
484 self-report of how satisfied they feel with their lives.

485 Second, this study provides evidence that the perceived value of elite sport is important  
486 in society. Results show that the perceived value of elite sport has a positive impact on  
487 individuals' subjective well-being.

488 Third, no evidence was found that higher levels of sports participation directly affect  
489 the value attributed to one's country elite sport.

## 491 **Theoretical implications**

492  
493 Results introduce two particular theoretical implications that need to be highlighted.

494 First, our study reinforces the idea that higher sports participation (i.e. weekly frequency  
495 and training volume) acts on subjective well-being, strengthening the existing knowledge.  
496 Second, the theoretical linkage established between the perceived value of elite sports and  
497 subjective well-being will allow extending the research on international sports success, on  
498 the perceived value of elite sports and on the individuals' subjective well-being.

## 500 **Managerial implications**

501  
502 These results entail two main outcomes for sports policymakers and for managers respon-  
503 sible for the development of physical activity and sports programmes.

504 First, these results support the growing amount of public policies that look for promoting  
505 sports practice generalization. Findings sustaining that sports participation increases sub-  
506 jective well-being provide support for many governments' policies focussed on augmenting

507 sports participation among the overall population. This suggests that public information  
508 campaigns praising the various benefits of sports participation, including improved health,  
509 can be an effective political tool to boost subjective well-being. A political decision that  
510 promotes a greater balance in the allocation of resources and shows an evident increase in  
511 funding for the objectives of a clear improvement of the sporting participation of the entire  
512 population. A funding that balances with the high amounts intended for the preparation  
513 of elite athletes. The following principle holds: Few resources can benefit many people,  
514 while few people benefit from many resources. In order to increase individuals' subjective  
515 well-being, governments should be encouraged to design sports participation public policies  
516 and programmes focussed on two targets: 1) sedentary population, in order for these to  
517 initiate sports practice and, therefore, improve levels of subjective well-being and; 2) low-in-  
518 tensity sports participants, focussed on the increase of training frequency and duration,  
519 which has been demonstrated to contribute to increase levels of subjective well-being.

520 On the other hand, results also highlight the need of reinforcing certain policies targeting  
521 elite sports. This issue is extremely important since results showed that the effect of sports  
522 participation on subjective well-being was surprisingly lower than the perceived value of  
523 elite sports on subjective well-being. For instance, since the 2012 Olympics success, the UK  
524 has increased its funding for preparing the 2016 Olympics by 11%. In contrast, funding for  
525 recreational sports participation is under enormous pressure (Downward and Rasciute 2010).

526 All in all, this finding provides solid ground for governments and managers of sports  
527 programmes to adequately manage public resources, whether for elite sports or for recre-  
528 ational sports participation. In addition, financing national sports teams and elite athletes  
529 can be considered as a political tool for raising individuals' subjective well-being, which  
530 had already been stressed by Hallmann, Breuer, and Kühnreich (2013), who encouraged  
531 politicians to be aware that sporting success obtained in international competitions can  
532 benefit happiness of all segments of the population.

533 This relation is of particular interest for governors and policymakers, who are advised  
534 to consider the importance of the value of elite sports when making decisions and formu-  
535 lating national strategies involving investment in elite sports. Thus, governments are rec-  
536 ommended to work on the development of sport policies targeting elite sports, providing  
537 funds to support national teams and elite athletes who show strong potential to achieve  
538 international sporting success. By doing so, the perceived value of elite sports will increase,  
539 because individuals tend to reach a higher level of subjective well-being. On the other hand,  
540 governments can act on the perception of sports value, developing consistent communica-  
541 tion campaigns that point out genuine sporting achievements, leading to an increase in  
542 subjective well-being. Policies aiming at supporting high-performance athletes and coaches  
543 and the increase in the financial support for the Olympics and Paralympics in Portugal  
544 seem to find rational ground in the fact that the perceived value of elite sports develops  
545 feelings of subjective well-being.

### 546 **Limitations**

547  
548  
549 As in any investigation, this study has a set of limitations. One limitation was that the model  
550 considered only individual determinants of subjective well-being and did not consider  
551 macro-level data. On the other hand, the size of the sample, the larger number of women  
552 and the average age of 25 might have influenced the results. Neither age nor levels of

education of the sample were analyzed. However, studies show that socioeconomic factors may have had an effect on the obtained results.

### Future research

Additionally, it would be interesting to evaluate a more gender balanced sample and to extend the research to other representative age groups. Future research focussed on the analyzed constructs should fail to consider the deeper study of the relation between sports participation and the perceived value of elite sports. It is suggested that this topic should be looked on more in detail, since marginal, but not significant, positive effects were found. Additionally, it would be interesting to evaluate a more gender equilibrated sample, to extend the research to other representative age groups and to control the effects of the socio-economic factor of individuals. Future research in the field of sporting success enhancement can still focus on cross-country and socio-demographic segments comparisons, since each sport national importance might differ among distinct countries (e.g. football in Portugal and soccer in the USA). The way sports participation affects subjective well-being is still uncertain in the literature and is an important area for future research.

Finally, as argued by Pawlowski, Downward, and Rasciute (2011), policymakers have been recognizing the importance of subjective well-being as a target of public policies, since this enables them to direct these policies towards factors that effectively increase citizens' subjective well-being feelings.

### Disclosure statement

No potential conflict of interest was reported by the authors.

Q16

### ORCID

Pedro Sobreiro  <http://orcid.org/0000-0003-3971-3545>

### References

- Allison, L., and T. Monnington. 2002. "Sport, Prestige and International Relations." *Government and Opposition* 37 (1): 106–134. doi:10.1111/1477-7053.00089
- Anderson, J., and D. Gerbing. 1988. "Structural Equation Modeling in Practice: A Review and Recommended Two-Step Approach." *Psychological Bulletin* 103 (3): 411–423. doi:10.1037/0033-2909.103.3.411
- Arbuckle, J. 2007. *Amos 16.0 User's Guide*. Chicago: SPSS. Accessed 26 February 2014. <http://www.amosdevelopment.com/download/Amos%2016.0%20User's%20Guide.pdf>
- Becchetti, L., A. Pelloni, and F. Rossetti. 2008. "Relational Goods, Sociability, and Happiness." *Kyklos* 61 (3): 343–363. doi:10.1111/j.1467-6435.2008.00405.x
- Bernard, A., and M. Busse. 2004. "Who Wins the Olympic Games: Economic Resources and Medal Totals." *The Review of Economics and Statistics* 86 (1): 413–417. doi:10.1162/003465304774201824
- Churilov, L., and A. Flitman. 2006. "Towards Fair Ranking of Olympics Achievements: The Case of Sydney 2000." *Computers & Operations Research* 33 (7): 2057–2082. doi:10.1016/j.cor.2004.09.027
- Consejo Superior de Deportes. 2011. *Encuesta sobre los hábitos deportivos en España 2010*. Accessed 9 February 2017. <http://www.csd.gob.es/csd/estaticos/dep-soc/encuesta-habitos-deportivos2010.pdf>

- 599 DCMS/Strategy Unit. 2002. *Game Plan: A Strategy for Delivering Government's Sport and Physical*  
600 *Activity Objectives*. London: Cabinet Office.
- 601 Direção Geral da Saúde. 2016. *Estratégia Nacional Para a Promoção da Atividade Física, da Saúde e*  
602 *Do Bem-Estar*. Lisboa: DGS.
- 603 Dolan, P., T. Peasgood, and M. White. 2008. "Do we Really Know What Makes us Happy? A Review  
604 of the Economic Literature on the Factors Associated with Subjective Well-Being." *Journal of*  
605 *Economic Psychology* 29 (1): 94–122. doi:10.1016/j.joep.2007.09.001
- 606 Downward, P., and S. Rasciute. 2010. "The Relative Demands for Sports and Leisure in England." *European Sport Management Quarterly* 10 (2): 189–214. doi:10.1080/16184740903552037
- 607 Downward, P., and S. Rasciute. 2011. "Does Sport Make You Happy? An Analysis of the Well-Being  
608 Derived from Sports Participation." *International Review of Applied Economics* 25 (3): 331–348.  
609 doi:10.1080/02692171.2010.511168
- 610 Elling, A., I. Van Hilvoorde, and R. Van Den Dool. 2014. "Creating or Awakening National Pride  
611 through Sporting Success: A Longitudinal Study on Macro Effects in The Netherlands." *International Review for the Sociology of Sport* 49 (2): 129–151. doi:10.1177/1012690212455961
- 612 Forrest, D., and S. Robert. 2003. "Sport and Gambling." *Oxford Review of Economic Policy* 19 (4):  
613 Q17 598–611. doi:10.1093/oxrep/19.4.598
- 614 Grix, J. 2008. "The Decline of Mass Sport Provision in the German Democratic Republic." *The*  
615 *International Journal of the History of Sport* 25 (4): 406–420. doi:10.1080/09523360701814755
- 616 Grix, J., and F. Carmichael. 2012. "Why Do Governments Invest in Elite Sport? A Polemic." *International Journal of Sport Policy and Politics* 4 (1): 73–90. doi:10.1080/19406940.2011.627358
- 617 Hallmann, K., C. Breuer, and B. Kühnreich. 2013. "Happiness, Pride and Elite Sporting Success:  
618 What Population Segments Gain Most from National Athletic Achievements?" *Sport Management*  
619 *Review* 16 (2): 226–235. doi:10.1016/j.smr.2012.07.001
- 620 Kahneman, D. 1999. "Objective happiness." In *Wellbeing: Foundations of Hedonic Psychology*, edited  
621 by Kahneman, Daniel, Diener, Ed ward, and Schwarz, Norbert, 3–25. New York: Russell Sage  
622 Foundation Press.
- 623 Kavetsos, G., and S. Szymanski. 2010. "National Well-Being and International Sports Events." *Journal of Economic Psychology* 31 (2): 158–171. doi:10.1016/j.joep.2009.11.005
- 624 Lechner, M. 2009. "Long-Run Labor Market and Health Effects of Individual Sports Activities." *Journal of Health Economics* 28 (4): 839–854. doi:10.1016/j.jhealeco.2009.05.003
- 625 Lei no 7-B/2016 de 31 de março da Assembleia da República. 2016. *Diário da República: I série, No*  
626 *63*. Acedido a 24 January 2010. Accessed 10 September 2017. [www.dre.pt](http://www.dre.pt)
- 627 Moradi, S., A., Nima, M. R. Ricciardi, T. Archer, and D. Garcia. 2014. "Exercise, Character Strengths,  
628 Well-Being, and Learning Climate in the Prediction of Performance over a 6-Month Period at a  
629 Call Center." *Frontiers in Psychology* 5: 1–11. doi:10.3389/fpsyg.2014.00497
- 630 Onusic, L., and W. Mendes-da-Silva. 2015. "Orgulho de Ser Brasileiro Impacta o Nível de Felicidade?"  
631 Q18 *Revista de Administração Contemporânea* 19 (6): 712–731. doi:10.1590/1982-7849rac20151488
- 632 Pawlowski, T., P. Downward, and S. Rasciute. 2011. "Subjective Well-Being in European countries –  
633 On the Age-Specific Impact of Physical Activity." *European Review of Aging and Physical Activity*  
634 *8* (2): 93–102. doi:10.1007/s11556-011-0085-x
- 635 Pawlowski, T., P. Downward, and S. Rasciute. 2014. "Does National Pride from International  
636 Sporting Success Contribute to Well-Being? An International Investigation." *Sport Management*  
637 *Review* 17 (2): 121–132. doi:10.1016/j.smr.2013.06.007
- 638 Porsche, M., and W. Maennig. 2008. "The Feel-Good Effect at Mega Sports Events. Recommendations  
639 for Public and Private Administration Informed by the Experience of the FIFA World Cup 2006." *Economic Discussions* 18: 1–27. doi:10.2139/ssrn.1541952
- 640 Rasciute, S., and P. Downward. 2010. "Health or Happiness? What Is the Impact of Physical Activity  
641 on the Individual?" *Kyklos* 63 (2): 256–270. doi:10.1111/j.1467-6435.2010.00472.x
- 642 Ruseski, J., B. Humphreys, K. Hallman, P. Wicker, and C. Breuer. 2014. "Sport Participation and  
643 Subjective Well-Being: instrumental Variable Results from German Survey Data." *Journal of*  
644 *Physical Activity and Health* 11 (2): 396–403. doi:10.1123/jpah.2012-0001
- Scorsolini-Comin, F., and M. A. D. Santos. 2010. "O Estudo Científico da Felicidade e a Promoção da Saúde: revisão Integrativa da Literatura." *Revista Latino Americana de Enfermagem* 18 (3): 472–479. doi:10.1590/S0104-11692010000300025

- 645 Simões, A., J. Ferreira, M. Lima, M. Pinheiro, C. Vieira, A. Matos, and A. Oliveira. 2003. “O Bem-  
646 Estar Subjectivo Dos Adultos: Um Estudo Transversal.” *Revista Portuguesa de Pedagogia* 37 (1):  
647 5–30.
- 648 Van Hilvoorde, I., A. Elling, and R. Stokvis. 2010. “How to Influence National Pride? The Olympic  
649 Medal Index as a Unifying Narrative.” *International Review for the Sociology of Sport* 45 (1): 87–  
650 102. doi:10.1177/1012690209356989
- 651 Van Praag, B., and P. Frijters. 1999. “The measurement of welfare and well-being: the Leyden ap-  
652 proach.” In *Wellbeing: Foundations of Hedonic Psychology*, Kahneman, Daniel, Diener, Ed, and  
653 Schwarz, Norbert, 413–432. New York: Russell Sage Foundation Press.
- 654 Wicker, P., J. Prinz, and T. von Hanau. 2012. “Estimating the Value of National Sporting Success.”  
655 *Sport Management Review* 15 (2): 200–210. doi:10.1016/j.smr.2011.08.007
- 656 Wiese, C., L. Kuykendall, and L. Tay. 2018. “Get Active? a Meta-Analysis of Leisure-Time Physical  
657 Activity and Subjective Well-Being.” *The Journal of Positive Psychology* 13 (1): 57–66. doi:10.1080  
658 /17439760.2017.1374436
- 659 World Health Organization. 2013. *The European Health Report 2012: Charting the Way to Well-  
660 Being*. Copenhagen: WHO. Accessed 15 September 2017. [http://www.euro.who.int/\\_\\_data/  
661 assets/pdf\\_file/0004/197113/EHR2012-Eng.pdf](http://www.euro.who.int/__data/assets/pdf_file/0004/197113/EHR2012-Eng.pdf)

Q19

Q20