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Democracy predicts sport and recreation membership: Insights from 52 countries



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Abstract Although evidence suggests sport and recreation are powerful contributors to worldwide public health, sizable gender differences persist. It is unknown whether country characteristics moderate gender differences across countries. The primary purpose of this study was to examine if countries' levels of democracy and/or gender inequality moderate gender differences in sport and recreation membership across countries. The secondary purpose was to examine if democracy and/or gender inequality predicts overall rates of sport and recreation membership for both males and females. This study involved a nested cross-sectional design and employed the sixth wave (2013) of the world value survey ($n_{SS} = 71,901$, $n_{countries} = 52$). Multiple hierarchical nonlinear Bernoulli models tested: (1) if countries' levels of democracy moderate gender differences in sport and recreation membership; and (2) if democracy is associated with increased sport and recreation membership for both males and females. Countries' level of democracy fully moderated gender differences in sport and recreation membership across countries. Moreover, democracy was positively associated with both male and female membership, even when controlling for individual and country-level covariates. Democratic political regimes may confer health benefits via increased levels of sport and recreation membership, especially for females. Future research should test mediating mechanisms.

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1. Introduction

Converging evidence suggests sport and recreation are powerful contributors to worldwide public health [1]. For example, sport participation has been associated not only with healthy lifestyle habits such as long-term physical activity and healthier nutrition [2,3], but also happiness [4], life satisfaction [5], increased academic achievement [6], and decreased depression and suicidal ideation [7]. Indeed, the importance of sport was recognized by the United Nations General Assembly when they adopted the “use of sport as a vehicle to foster development, strengthen education, prevent disease, empower girls and women, promote the inclusion and well-being of persons with disabilities, and support conflict prevention and peace building” [8].

Although the importance of sport and recreation for public health is increasingly understood, there is little understanding of how sport and recreation membership varies across countries, and what factors may explain this variance. This is important, given that unearthing the determinants of sport and recreation that are situated at higher analytic levels (e.g., country-level determinants) will benefit national and international organizations (e.g., International Olympic Committee, United Nations Office for Sport Development and Peace, World Health Organization) that require evidence-based strategies to guide programs and policies [9].

The primary aim of this study is to test moderators of gender differences in sport and recreation membership across countries. Specifically, this study focused on two main country-level measures. The first is the United Nations Gender Inequality Index (GII) [10]. Previous research has demonstrated that a country’s level of gender inequality can help explain gender differences in health behavior, such as physical inactivity. For example, in countries characterized by low levels of gender inequality, gender differences in leisure time physical inactivity are inconsistent and negligible [11]. In regards to international sporting competitions, countries’ gender inequality is negatively associated with higher Olympic participation and performance, for both females and males, even when accounting for known predictors of Olympic success such as a measure of democracy, gross domestic product (GDP), population, and the percentage of a country’s population that is Muslim [12].

The second country-level factor that may help explain gender differences in recreation across countries is Polity2, a graded measure that captures the presence of authority within a country’s

political institutions [13]. The Polity2 measure is a composite of qualities of both democratic and autocratic social structures within a country, and represents the dimension between fully institutionalized democracies and, on the other end, fully institutionalized autocracies. Although the Polity2 measure has been associated with various economic processes and outcomes, including health economics [14], it has yet to be applied to the question of gender differences in sport and recreation membership.

Theoretically, there are at least two reasons why Polity2 should moderate sex differences in sport and recreation membership. First, given that democratic regimes have increased per capita healthcare and general government expenditures [14], it should follow that democratic regimes also have increased per capita expenditures on organized sport and recreational facilities and programming. This increased spending on organized sport and recreational facilities and programming may increase the overall opportunities to participate in sport and recreation, thus increasing membership to such organizations. Although there is very little evidence to appraise this hypothesis, recent research has found that Polity2 is not associated with participation or performance outcomes in the Olympics [12]. The primary purpose of this study is to test if countries’ Polity2 and gender inequality moderate gender differences in sport and recreation participation. Our secondary purpose is to examine how GII and Polity2 are associated with overall rates of both male and female sport and recreation participation.

2. Methods

2.1. Individual data

Individual level data were acquired from the World Values Study Group, which is a research group that administers the World Value Survey (WVS) to various countries across the world [15]. The WVS is collected according to a rigorous systematic process that adheres to common ethical guidelines [15]. Our analysis of WVS data received full ethical approval from Dalhousie University’s ethical committee, given that the WVS data were publically available, de-identified data. The WVS is constructed to acquire nationally representative data on human values across a number of disparate countries, and it also measures lifestyle characteristics such as how individuals spend their leisure time [15]. The WVS data were largely collected through face-to-face interviews. Only data from

wave six, the most recent wave, were used in this study. Between 2010 and 2014, wave six of the WVS involved the collection of 73,381 individual responses, with the majority (73%) of participants being surveyed between 2011 and 2012. Just over half of the sample was female (51.3%), and ages ranged from 18 years to 99 years, with an average of 42 years ($SD = 16.6$). Participants were recruited from 52 countries and sample sizes ranged from 806 to 2486, with an average of 1411. However, due to missing data at the individual level, this study examined 71,901 participants. The WVS is publicly available for research purposes. A complete description of data collection methods, including procedure and validation, can be found elsewhere [15].

The crucial dependent variable measuring sport and recreation involvement concerned one forced choice question: “For each organization, could you tell me whether you are an active member, an inactive member or not a member of that type of organization: Sport or recreational organization (0 = not active/non-member, 1 = active member)?” Individual variables included three categorical age variables (0 = 18–29, 1 = 30–49, 2 = 50+), education level (0 = less than university degree, 1 = university degree or more), employment status (0 = employed, 1 = unemployed), marital status (0 = married/cohabitation, 1 = not married), perceived health status (0 = poor, 1 = fair/good/very good) and sex (0 = female, 1 = male).

2.2. Country data

Countries’ gender inequality was gathered from the United Nations GII [10]. This index represents a measure of women advancement in a country, and replaces previous indices such as the Gender Development Index and Gender Empowerment Measures, as it more directly measures sex differences in social achievement and empowerment within a country. Specifically, the GII is based on three submeasures: (1) reproductive health; (2) parliamentary representation and higher education attainment; and (3) the labor force participation rate. The GII is a continuous measure, with scores ranging from 0 to 100, with increasing scores representing more gender inequality. This measurement was used in the current study given that GII has demonstrated relationships with sport and other leisure time physical activities [12].

The Polity2 score of countries was gathered from publicly available sources [13]. Polity2 is commonly interpreted as the most in-depth measure of a country’s political structure and is created in a transparent and rigorous fashion [13]. Measures

were constructed for every country with a population >500,000, since the year 1800. The Polity2 index is graded with scores ranging from 10 to –10. Following the recommended and commonly used cutoffs, this study classified scores from –10 to –6 as autocracies (1), –5 to 5 as anocracies (2), and scores >5 to be democracies (3). The current study used the recently constructed 2013 measure [13]. Country-level covariates included countries’ overall population, GDP, and percentage of population that is Muslim. Overall population and GDP was acquired from the World Bank Group [16]. Taiwanese data were acquired from Taiwanese government records [17]. The percentage of countries population that is Muslim was gathered from the Pew Research Center for the year 2012 [18].

2.3. Data analysis

Given the hierarchal structure of cross-national data – individuals nested within countries – hierarchal nonlinear Bernoulli modeling was employed to account for country-level clustering effects. Bernoulli modeling is well suited for testing the dichotomous measure of sport and recreation participation, as it allows for the estimation of the relative probability of event occurrence (e.g., member or nonmember) among different levels of a sociodemographic category while accounting for clustering.

Data analysis occurred in three stages. For the first stage of data analysis, unconditional models were initially calculated to assess if, in fact, significant variation in sport and recreation participation exists across countries and thus, whether hierarchal linear modeling is even necessary. Unconditional models were constructed for the overall model, and for the male-specific and female-specific models. Second, multiple nonlinear, multi-level Bernoulli models were constructed to test the moderation effects of Polity2 and GII. Importantly, Polity2 and GII were not significantly correlated in this study ($r = -0.297$, $p > 0.05$). Country-level covariates were added to subsequent models to assess the contribution of additional covariates. For example, in Model 1, which did not include country-level moderators, individual sport and recreation participation was regressed onto age, education level, marital status, and sex, at Level-1 using a random intercept and random slope for sex and controlling for the country-level clustering at Level-2. The same model, with the addition of country-level moderators (i.e., interacting terms including sex) was then used for subsequent models (Models 2–5). For all Bernoulli models, the intercept was permitted to vary randomly across

countries, as was the slope. Analyses were performed using Hierarchical Linear Modelling 6.3 [19].

The third and final stage of data analysis involved testing if the examined country-level variables contribute to overall rates of both male and female sport and recreation. Accordingly, additional sets of Bernoulli models tested whether, for males (Models 6–8) and for females (Models 9–11), country-level variables and covariates are associated with increased rates of overall sport and recreation. These models included the same individual and country level variables as used in the preceding models. Models 6–8 examined male participation and Models 9–11 examined female participation.

3. Results

Results of the unconditional model revealed that sport and recreation membership varies significantly across countries [intercept coefficient = -2.06, standard error (SE) = 0.13, $p < 0.001$, intraclass correlation coefficient = 0.35] and does so separately for both males (intercept coefficient = -1.80, SE = 0.16, $p < 0.001$, intraclass correlation coefficient = 0.28) and females (intercept coefficient = -2.36, SE = 0.15, $p < 0.001$, intraclass correlation coefficient = 0.43).

Models 1–5 five examined moderation effects of Polity2 and GII (see Table 1). Overall, results suggest that Polity2 fully moderates gender differences in sport and recreation. For example, in Model 1, which did not include interaction terms between country-level variables and sex, males were 1.63 times as likely [95% confidence interval (CI): 1.28–1.80] to report participation in sport and recreation than were women. However, in Model 2, which included a lone interaction term between Polity2 and sex (Polity2 \times sex), males were equally as likely as females to report participation in sport and recreation [odds ratio (OR): 1.15, 95% CI: 0.86–1.54] and the interaction term was significant (OR: 1.15, 95% CI: 1.02–1.29). In Model 3, the inclusion of an interaction term between GII and sex (GII \times sex) was not significant (OR: 1.01, 95% CI: 1.00–1.01) and did not meaningfully impact the odds ratio for sex (OR: 1.33, 95% CI: 1.11–1.60). In Model 4, the inclusion of both the interaction terms for GII \times sex and Polity2 \times sex reduced the odds ratio for sex (OR: 0.94, 95% CI: 0.69–1.29), however only the Polity2 \times sex interaction was significant (OR: 1.14, 95% CI: 1.03–1.25). In Model 5, which included all interaction variables, again the odds ratio for sex

Table 1 Odds ratios derived from Bernoulli models for sport and recreation membership (Models 1–5).

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept (y)	0.04* (0.03–0.05)	0.04** (0.03–0.05)	0.04** (0.04–0.05)	0.04** (0.04–0.05)	0.04* (0.03–0.05)
Age 18–29	1.84** (1.68–2.02)	1.85** (1.67–1.99)	1.82** (1.69–2.03)	1.83** (1.67–2.00)	1.84** (1.68–2.01)
Age 30–49	1.36* (1.25–1.47)	1.35* (1.25–1.46)	1.36* (1.25–1.48)	1.35* (1.25–1.47)	1.36* (1.25–1.47)
Age >50	1.0 (Ref. Cat.)	1.0 (Ref. Cat.)	1.0 (Ref. Cat.)	1.0 (Ref. Cat.)	1.0 (Ref. Cat.)
Education level	1.34* (1.25–1.43)	1.34* (1.25–1.43)	1.34* (1.25–1.44)	1.34* (1.25–1.43)	1.34* (1.25–1.44)
Employment	0.74* (0.67–0.83)	0.75** (0.68–0.83)	0.74* (0.67–0.83)	0.75** (0.67–0.83)	0.75** (0.67–0.83)
Marital status	1.15* (1.07–1.25)	1.15* (1.06–1.25)	1.15* (1.06–1.24)	1.15* (1.06–1.24)	1.15* (1.06–1.24)
Perceived health	1.67** (1.53–1.82)	1.67** (1.53–1.83)	1.67** (1.53–1.83)	1.66** (1.52–1.80)	1.66** (1.53–1.82)
Sex (male)	1.63** (1.48–1.79)	1.15 (0.86–1.54)	1.33** (1.11–1.60)	0.94 (0.69–1.29)	0.86 (0.62–1.20)
Polity2 \times sex	–	1.15* (1.02–1.29)	–	1.14* (1.03–1.25)	1.13* (1.04–1.23)
GII \times sex	–	–	1.00 (1.00–1.01)	1.00 (1.00–1.01)	1.01* (1.00–1.02)
GDP \times sex	–	–	–	–	1.00 (1.00–1.00)
Pop. \times sex	–	–	–	–	1.00 (1.00–1.00)
PctMus \times sex	–	–	–	–	1.00 (0.99–0.99)

95% Confidence intervals are in parentheses.
 GDP = gross domestic product; GII = Gender Inequality Index; Pop. = Population; PctMus = Percent population that identifies as Muslim.
 * $p \leq 0.05$.
 ** $p \leq 0.001$.

was reduced (OR: 0.86, 95% CI: 0.62–1.20) and the Polity2 \times sex interaction variable was significant (OR: 1.01, 95% CI: 1.01–1.02).

Models 6–8 examined if Polity2 and GII are associated with overall rates of male sport and recreation (see Table 2). Model 6, which included Polity2 as the lone country-level predictor, found that Polity2 was significantly associated with sport and recreation participation (coefficient = 0.66, SE = 0.17). Model 7 included both Polity2 and GII as country-level predictors, and found that while Polity2 remained a substantial predictor, GII was nonsignificant (coefficient = -0.01 , SE = 0.01). In Model 8, which included not only Polity2 and GII, but also population, GDP, and percentage of population that is Muslim, Polity2 remained the only meaningful predictor of sport and recreation (coefficient = 0.49, SE = 0.12). The GII \times sex interaction was also significant, albeit marginally (coefficient = -0.01 , SE = 0.00).

Models 9–11 examined if Polity2 and GII are associated with overall rates of female sport and recreation (see Table 3). Model 9, which included Polity2 as the lone country-level predictor, found that Polity2 was significantly associated with sport and recreation participation (coefficient = 0.82, SE = 0.31). Model 7 included both Polity2 and GII as country-level predictors, and found that Polity2 remained a substantial predictor, and that GII was significant, albeit marginally (coefficient = -0.02 , SE = 0.01). In Model 8, which included not only Polity2 and GII, but also population, GDP and

percentage of population that is Muslim, Polity2 remained the only meaningful predictor of sport and recreation (coefficient = 0.41, SE = 0.13).

4. Discussion

This study offers two novel findings, that (1) democracy not only moderates gender differences in sport and recreation across countries, but also that (2) democracy is associated with increased participation for both males and females across 52 countries. Other country-level variables, including gender inequality, did not meaningfully moderate gender differences or predict levels of male or female sport and recreation participation. Importantly, the relationship between democracy and sport and recreation was not due to gender inequality, population, GDP, or percentage of the population that is Muslim. Thus, it can be posited that democracy is specifically associated with sport and recreation participation.

4.1. Why democracy?

Although there is a dearth of literature regarding the association between democracy and sport and recreation, we argue that the most plausible explanation is that, due to more transparent government institutions and spending, more resources are dedicated to sport and recreation facilities and programming that affect the general public rather than elite level sport which affects only a select

Table 2 Bernoulli models for male sport and recreation participation (Models 6–8).

Variables	Model 6		Model 7		Model 8	
	Coefficient (SE)	VC	Coefficient (SE)	VC	Coefficient (SE)	VC
Level two variables						
Intercept	-4.72^{**} (0.49)	0.91	-4.09^{**} (0.51)	0.85	-4.69^{**} (0.44)	0.55
Polity2	0.66^{**} (0.17)	–	0.56^{**} (0.17)	–	0.49^{**} (0.12)	–
GI	–	–	-0.01 (0.01)	–	0.01 (0.01)	–
GDP	–	–	–	–	0.00 (0.00)	–
Pop.	–	–	–	–	-0.00 (0.00)	–
PctMus	–	–	–	–	-0.01^{**} (0.00)	–
Level one variables	OR (95% CI)	–	OR (95% CI)	–	OR (95% CI)	–
Age (y): 18–29	2.26^{**} (1.95–2.61)	–	2.27^{**} (1.96–2.64)	–	2.32^{**} (1.99–2.70)	–
Age (y): 30–49	1.52^{**} (1.37–1.69)	–	1.53^{**} (1.38–1.70)	–	1.54^{**} (1.39–1.71)	–
Age (y): >50	1.0 (Ref. Cat.)	–	1.0 (Ref. Cat.)	–	1.0 (Ref. Cat.)	–
Education level	1.37^{**} (1.24–1.53)	–	1.38^{**} (1.25–1.53)	–	1.39^{**} (1.25–1.54)	–
Employment	0.69^{**} (0.57–0.84)	–	0.69^{**} (0.56–0.84)	–	0.68^{**} (0.55–0.85)	–
Marital status	1.15^{*} (1.01–1.32)	–	1.15^{*} (1.01–1.32)	–	1.16^{*} (1.01–1.33)	–
Perceived health	2.06^{**} (1.73–2.46)	–	2.08^{**} (1.75–2.47)	–	2.10^{**} (1.75–2.53)	–

CI = confidence intervals; GDP = gross domestic product; GI = Gender Inequality Index; OR = odds ratio; Pop. = Population; PctMus = Percent population that identifies as Muslim; SE = standard error; VC = variance component.

* $p \leq 0.05$.

** $p \leq 0.001$.

Table 3 Odds ratios derived from Bernoulli models for female sport and recreation participation (Models 6–8).

Variables	Model 6		Model 7		Model 8	
	Coefficient (SE)	VC	Coefficient (SE)	VC	Coefficient (SE)	VC
Level two variables						
Intercept	−5.34** (.31)	1.26	−3.90** (0.38)	0.96	−4.24** (0.48)	0.66
Polity2	0.82** (.15)	—	0.56** (0.12)	—	0.41* (0.13)	—
GII	—	—	−0.02** (0.01)	—	−0.01 (0.01)	—
GDP	—	—	—	—	0.00 (0.00)	—
Pop.	—	—	—	—	−0.00 (0.00)	—
PctMus	—	—	—	—	−0.01 (0.00)	—
Level one variables	OR (95% CI)	—	OR (95% CI)	—	OR (95% CI)	—
Age: 18–29	1.65** (1.39–1.96)	—	1.67** (1.43–1.96)	—	1.70** (1.44–1.99)	—
Age: 30–49	1.26* (1.03–1.50)	—	1.25* (1.06–1.49)	—	1.26* (1.06–1.49)	—
Age: ≥50	1.0 (Ref. Cat.)	—	1.0 (Ref. Cat.)	—	1.0 (Ref. Cat.)	—
Education level	1.41** (1.26–1.59)	—	1.42** (1.27–1.58)	—	1.42** (1.27–1.59)	—
Employment	0.80* (0.67–0.96)	—	0.80* (0.67–0.96)	—	0.80* (0.67–0.95)	—
Marital status	1.13* (1.01–1.27)	—	1.13* (1.01–1.27)	—	1.14* (1.01–1.28)	—
Perceived health	1.68** (1.40–2.01)	—	1.68** (1.43–2.03)	—	1.73** (1.43–2.09)	—

CI = confidence intervals; GDP = gross domestic product; GII = Gender Inequality Index; OR = odds ratio; Pop. = Population; PctMus = Percent population that identifies as Muslim; SE = standard error; VC = variance component.

* $p \leq 0.05$.

** $p \leq 0.001$.

few. For example, in China, which according to the Polity2 measure is an autocracy [13], a significant amount of resources could be dedicated to elite level sport in the form of training centers and programs, but much less to broader recreational facilities and programming for the general public. In contrast, in Australia, which according to the Polity2 measure is a democracy [13], although resources are of course dedicated to elite level sport, substantial resources could also be dedicated to recreational sport facilities and programming for the general public. In support of this hypothesis, previous research has demonstrated that higher levels of democracy (i.e., higher in Polity2) across countries are associated with increased per capita healthcare and general government expenditures [14]. This hypothesis may also explain why Polity2 is not associated with participation or performance in the Olympics [12]. If the positive relationship between democracy and sport participation is further established, future research will be necessary to test the mediating role of government resources devoted to mass sport and recreational participation.

Although perhaps the most plausible interpretation is that the enactment of democratic structures within a political regime benefits sport and recreation participation, the reverse causal direction is also a plausible hypothesis. Indeed, Christesen [20] has argued that mass sports participation is a dominant driver of the democratization of political structures of the corresponding political regime.

Christesen [20] argues mass participation in “horizontal” (i.e., sports which value autonomy, consensually-derived rules, and participant-oriented awards) fosters democratic ideals that become firmly rooted to larger relational communities and give rise to widespread support for democratic ideals, such as meritocracy. However, while the links between sport participation and democracy seem like a persuasive account of historical records of sport during antiquity, such as in ancient Greece where caste systems clashed with the meritocracy of sport, this causal direction is less evident in modern times. For example, while sport has been linked to social capital [21,22], there is little evidence of any connection between social capital and democracy [23].

4.2. Why not gender inequality?

Our findings also suggest that the United Nations GII is largely unrelated to gender differences and overall rates of sport and recreation. This finding contrasts with previous research that has demonstrated that the level of gender inequality in a country is associated not only with gender differences in physical inactivity [11], but also participation and performance in the summer Olympics [12]. To explain these results, it is informative to recognize that the GII is composed of several measures that are somewhat distant to sport and recreation participation (i.e., reproductive health, parliamentary representation and higher education

attainment, and the labor force participation rate). It may be the case that GII and gender differences in sport follow a curvilinear relationship in which countries with lower GII actually have a positive relationship with gender differences, but countries with a higher GII have a negative relationship. Indeed, previous research has demonstrated that gender differences in personality are greater in countries characterized by a high Human Development Index [24]. Future research may find that gender differences in sport are greater in countries with higher human development measures.

Future research is needed to replicate these findings using different measures of sport and recreation participation. In particular, it may be worthwhile to examine how the ratio of investments in public sport to elite level sport contributes to overall levels of sport participation and gender differences therein. If the positive relationship between democracy and sport and recreation participation is further substantiated, it may be worthwhile to further elucidate the actual health outcomes of democratic political institutions.

4.3. Limitations

This study has several limitations. First, it relied on a dichotomous measure that combined participation in sport and recreation. Previous research has demonstrated that sport and recreation exhibit different levels of gender differences [25]. Future research may find that the relationship with democracy may only occur for either sport or recreation. Second, other measures of democracy and gender inequality will be necessary to further test this relationship, and to demonstrate that the effect is not dependent on a single measure, such as Polity2. Third, examining participants from a greater diversity of countries and political regimens may be necessary to further test the validity of the findings demonstrated in this article. For example, although this study included a measure of the percentage of a population that is Muslim, many of the countries with a low Polity2 score are situated in or near Middle Eastern countries. Fourth, perhaps most importantly, democratic regimes may affect opportunities to become a member of a sport or recreation organization. For example, democracy may coincide with capitalism, wherein for-profit sport and recreation organization would seemingly increase. In contrast, autocracies often coincide with communism wherein the country builds substantial public recreational facilities, thus decreasing the need to become a member of sport or recreational organization.

5. Conclusion

Democracy, but not gender inequality, moderates gender differences in sport and recreation membership, and moreover, is associated with increases in both male and female sport and recreation membership. This finding helps elucidate the value-added nature of a democratic political regime across 52 examined countries. It is hypothesized that federal resources invested in mass sport and recreation may mediate the relationship between democracy and sport and recreation.

Conflicts of interest

The author declares no conflicts of interest.

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