

"What sport do you prefer to do?" Improving knowledge of adolescents' preferred sports within the sport participation decline framework.

Colin Gatouillat, Maxime Luiggi, Jean Griffet, Maxime Travert

▶ **To cite this version:**

Colin Gatouillat, Maxime Luiggi, Jean Griffet, Maxime Travert. "What sport do you prefer to do?" Improving knowledge of adolescents' preferred sports within the sport participation decline framework.. Journal of Public Health, 2019, 10.1093/pubmed/fdz143 . hal-02961099

HAL Id: hal-02961099
https://hal.science/hal-02961099

Submitted on 8 Oct 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Running head: WHAT SPORT DO YOU PREFER TO DO?

This is an Accepted Manuscript of an article published by Oxford University Press in The Journal of Public Health on November, 28, 2019, available online:

https://doi.org/10.1093/pubmed/fdz143

Manuscript title: "What sport do you prefer to do?" Improving knowledge of adolescents' preferred sports within the sport participation decline framework.

Authors: Gatouillat C. (M.A.),[a*] Luiggi M. (PhD.),[a] Griffet J. (Pr.),[a] Travert M. (PhD.)[a]

[a]*Aix Marseille Univ, CNRS, ISM, Marseille, France.*

**Corresponding author: Colin Gatouillat. Email address: colin.gatouillat@univ-amu.fr;*

Email address of other authors: maxime.luiggi@univ-amu.fr; jean.griffet@univ-amu.fr; maxime.travert@univ-amu.fr.

To cite this article: Colin Gatouillat, Maxime Luiggi, Jean Griffet & Maxime Travert (2019) "What sport do you prefer to do?" Improving knowledge of adolescents' preferred sports within the sport participation decline framework., Journal of Public Health, fdz143, 1-9, DOI:10.1093/pubmed/fdz143

Abstract

***Background*:** Sport participation is declining in some European countries. Previous findings recommended considering territorial specificities to adapt local sports promotion programs. However, in France, little is known about adolescents' preferences and their changes across time. This study aimed to measure preferred sports and their changes among a representative sample of adolescents of the third biggest French *département*.

Methods: Data were extracted from a previous cross-sectional study that used a quota sampling design to respect the proportions of advantaged and disadvantaged schools. The present study involved 744 and 938 participants, in 2001 and 2015, respectively. Adolescent preferences were calculated by sex and socioeconomic status (SES). Multiple binary logistic regressions were performed to measure changes between 2001 and 2015 by sex and SES.

Results: Sports preferences and their evolution differed by sex and SES. Three cases were observed: no significant change in sports preferences (low-SES boys); a sharp loss of interest for some sports (low-SES girls and high-SES boys); and a sharp loss of interest for some sports whilst others gained significant interest (high-SES girls).

Conclusions: This knowledge may help the development of sport promotion programs. Future sport policies could choose to develop sports that are preferred and increasingly appreciated by adolescents.

Key words: sport participation; sport preferences; sport promotion; public health.

Background

Physical activity (PA) is linked to numerous long-term[1-3] physical,[4] psychological and social[5,6] health benefits. PA promotion is therefore one of the major objectives of public health.[7] In spite of public health efforts to support PA, findings showed a general decrease in children's and adolescents' participation in western countries[8,9] (for e.g. USA,[10] Switzerland,[11] and Australia[12]).

In France, successive national promotional campaigns – *Manger Bouger* [Eat Move] and the *Programme National Nutrition Santé* [National Healthy Nutrition Plan[13]] have been developed since 2001 to improve a physically active lifestyle among adults, adolescents and children. In this framework, increasing peoples' active movement (e.g. through cycling or walking) and sport participation was considered an important means to reach the above-mentioned objectives. Likewise, sport, which is a sub-form of PA and can be defined with the Council of Europe's definition,[14] is nationally promoted by sport federations and in school-based physical education lessons. Both are supported by specific public health grants.[15-17] Among the former, youth participation is not mandatory, whilst for the latter, participation is compulsory during schooling until age 16 (end of compulsory schooling).

The limited success of these programs, shown by national[18] and regional[19] studies, presents these health efforts with a new challenge. Nationally, in 2015, only 22.6% of French youth (aged 6-17) were sufficiently active.[18] Concerning sport, stability in participation was observed at national level but disparities have been shown at regional level.[19] In the third most populous *département* of France (Bouches-du-Rhône),[20] a decline in adolescents' (organized and unorganized) participation was observed between 2001 and 2015.[19] The decrease concerned boys and girls, regardless of their socioeconomic status (SES). While 79% of

adolescents played sport at least once a week in 2001, 72% did so in 2008, and only 66% in 2015. The results showed important differences in trends by sex and SES.

This last study was in line with general policy guidelines that pointed out the need to consider territorial specificities to adapt sports promotion programs.[21] One of these specificities is the sports chosen by adolescents depending on their life environments.

Partial knowledge about the sports practiced by adolescents is provided by federations' license statistics. In 2001 and 2015, in the *département* of Bouches-du-Rhône, the greatest numbers of licenses were found in the soccer, tennis, handball, basketball, horse-riding, and judo federations.[22,23] However, federation license rates entail some limitations.[23] First, some practitioners hold several licenses in different sports federations.[24] In the same federation, they may also have an additional "*service license (referees, club officer)"*.[25] Furthermore, some licenses holders drop out from sport, but their licenses remain recorded in the statistics. Thus, the number of registered licenses is greater than the real number of practitioners in organized sport.[24-26] Moreover, these statistics do not inform about unorganized sports participation although this participation represented 30% of the overall participation in 2001.[27] Some national studies[28,29] have considered both contexts but methodological differences make temporal analysis difficult to perform.[30] They also do not present sports practiced by adolescents within specific French territories.

In the perspective of promotion of sports participation, it would be even better to know not only sports adolescents' practice but also those they say they prefer to do. Preferences are subjective constructs[31] that hierarchize choices, influenced by structural, interpersonal and intrapersonal factors.[32] A preference is a "*judgment of esteem or feeling of predilection by which one person or one thing give prominence over another*".[33] It is linked to remembered utilities[34] of past lived experiences and is predictive of future individual choices.[35,36] The low

level and decline of participation among some groups of adolescents could be in part due to a mismatch between local sports offer – such as facilities, clubs, and events – and their preferences.[32,37-39] Taking into account these preferences could help to adapt the local sports offer and sustain adolescents' commitment in sport.

In this study, we aimed to estimate adolescents' preferred sports participation and their changes in 2015 compared with 2001, in both organized and unorganized contexts, in the *département* of Bouches-du-Rhône. These two temporal points correspond to the overall decline in adolescent participation observed in this area. To achieve this objective, we performed further analysis of data collected among a representative sample of adolescent students from this territory.[19]

Methods

Data

The data were extracted from a data collection conducted among a representative sample of adolescent students of the third most populous French department.[19] Schools were selected to reflect the proportion of advantaged and disadvantaged establishments observed in this *département*. School categorizations were derived from the French Ministry of Education, which classifies them according to (i) the level of pupil achievement, (ii) the parents' occupations, and (iii) the area of residence. Disadvantaged schools are characterized by a lower overall level of pupil achievement, a greater proportion of parents with a low-classified occupation, and a lower overall annual income, and are often located in suburban areas.[40] This sampling strategy helped to catch the social diversity of adolescents and to obtain a representative sample of adolescent students of this *département*. This data collection was approved by the Rector of the regional school authority.

Participants, Procedure and Measures

From this database, we selected participants in 2001 and 2015 and their sociodemographic (age, sex, and SES) and sport participation (rates, favorite practiced sport) variables (n_{2001}=878; n_{2015}=1019). Students with missing values in sex or SES were excluded from the database (n_{2001}=134; n_{2015}=81). The present study included 744 participants in 2001 aged 13 to 20 (50.8% girls; age=16.6, SD=1.7) and 938 participants in 2015 (53.8% girls; age=16.3, SD=1.7). It included sports (n_{2001}=592; n_{2015}=631) and non-sports players. In this data collection sport was defined with the definition of the Council of Europe (2001).[14] Sports players (defined as a student who declared playing voluntarily at least one hour of sport per week) were asked to report the sport they preferred to practice outside school ("What sport do you prefer to do?").

Sport Classification

84 different sports were declared by the adolescents. We created ten subgroups of sports based on categories usually employed by the Ministry of National Education.[41] These sports groups were athletic (athletics, running, etc.), aquatic (swimming, synchronized swimming), gymnastic (rhythmic gymnastics, artistic gymnastics, etc.), artistic (dance, hip-hop, etc.), combat (boxing, judo, etc.), racket (tennis, badminton, etc.), collective (soccer, basketball, etc.), and open-air (climbing, orienteering, etc.). The sports group "self-care" (bodybuilding, aerobics, etc.) was created in 2010.[42] We added "motor" as they appear in the responses and are not taught in schools in France. For more details about groups and sport activities, see Supplementary File 1, Table 1.

Outcomes

Each sports group was used as a different outcome with two possible values. Students who were sports players were classed as (1) in the sport group variable representing their preferred sport, and as (0) in other sport type variables. Students who were not sports players were classed as (0) in all sports group variables.

Data Analyses

All the analyses were performed on the entire sample, and thus not only on sports players. We first calculated the distribution (%) of adolescents' preferred sports groups by sex, SES (low and high), and year. The difference in 2015 compared with 2001 was calculated. Secondly, we performed multiple binary logistic regression adjusted for age to determine the evolution of preferred sports groups between 2001 and 2015 by sex and SES. Odds-ratio (OR), 95% confidence interval (95%CI), and p-value were used to measure changes in sports preferences between 2001 and 2015. Distribution, odds-ratio and p-value are presented by sex and SES. The total row in each table has already been published.[18] This row represents the proportions of adolescents who were sports players by sex and SES in 2001 and 2015. The odds-ratios comparing sports participation in 2015 with 2001 are also presented. Finally, in Supplementary File 2 the details of sports preferences by subgroups of adolescents and sports are presented.

Results

Table 1 presents the preferred sports groups of low-SES girls in 2001 and 2015, with ORs, 95%CI, and p-value describing their evolution between 2001 and 2015.

In 2001, the preferred sports groups of low-SES girls were artistic (23.4%), collective (14.1%), open-air (10.9%), aquatic (8.3%), and athletic (3.6%). In 2015, the preferred sports groups were artistic (19.3%), collective (7.1%), open-air (5.5%), racket (4.6%), and combat (4.6%).

Between 2001 and 2015, there were significant decreases in low-SES girls' preferences for participating in collective sports (OR=0.44, 95%CI=[0.23;0.84]) and in aquatic sports (OR=0.15, 95%CI=[0.04;0.53]). No other significant changes were found.

In Supplementary File 2, Table 1 presents details of preferred sports of low-SES girls in 2001 and 2015.

Table 2 presents the preferred sports groups of high-SES girls in 2001 and 2015, with OR, 95%CI, and p-value describing their evolution between 2001 and 2015.

In 2001, the preferred sports groups of high-SES girls were open-air (20.2%), artistic (14.0%), racket (11.8%), aquatic (8.4%), and collective (8.4%). In 2015, the preferred groups were artistic (27.3%), open-air (8.9%), combat (5.5%), collective (4.4%), and self-care (4.4%).

Between 2001 and 2015, there were five significant changes in sport preferences. High-SES girls were respectively 10.45 (95%CI=[1.37;79.89]) and 2.31 times (95%CI=[1.40;3.81]) more likely to prefer to practice a combat sport or an artistic sport in 2015 compared with 2001. Conversely, they were less likely to prefer to practice an aquatic sport (OR=0.42, 95%CI=[0.19;0.96]), an open-air sport (OR=0.39, 95%CI=[0.22;0.67]), or a racket sport (OR=0.17; 95%CI=[0.07;0.42]).

In Supplementary File 2, Table 2 presents details of preferred sport activities of high-SES girls in 2001 and 2015.

Table 3 presents the preferred sports groups of low-SES boys in 2001 and 2015, with OR, 95%CI, and p-value describing their evolution between 2001 and 2015.

In 2001, the preferred sports groups of low-SES boys were collective (44.9%), combat (16.8%), open-air (6.6%), racket (6.6%), and athletic (5.6%). In 2015, the preferred groups were collective (42.5%), combat (14.0%), racket (6.5%), self-care (5.5%), and aquatic (3.5%).

No relevant changes in sport preferences between 2001 and 2015 were found. On the contrary, one should note the stability of the sport preferences hierarchy of low-SES boys.

In Supplementary File 2, Table 3 presents details of preferred sports of low-SES boys in 2001 and 2015.

Table 4 presents the preferred sports groups of high-SES boys in 2001 and 2015, with OR, 95%CI, and p-value describing their evolution between 2001 and 2015.

In 2001, the preferred sports groups of high-SES boys were collective (34.3%), open-air (22.5%), racket (11.8%), combat (9.0%), and athletic (5.6%). In 2015, the preferred groups were collective (31.9%), racket (12.2%), combat (10.5%), open-air (10.5%), and self-care (4.8%).

Between 2001 and 2015, there was a significant decrease in high-SES boys' preferences for participating in open-air activity. They were 2.44 times less likely to declare preferring to practice an open-air activity outside of school compared with 2001 (OR=0.41, 95%CI=[0.23;0.70]). No other significant change was found.

In Supplementary File 2, Table 4 presents details of preferred sports of high-SES boys in 2001 and 2015.

We also performed additional analyses among students with missing values in SES, by sex. We observed homogeneous results with those performed prior. They are available in Supplementary File 3, Tables 1-2.

Discussion

Main finding of this study

This is the first time that a snapshot of adolescents' preferred sports has been conducted among two populations of adolescents, separated by a fourteen-years interval. The

decrease in adolescent sport participation observed in the third most populous French *département*[18] shows constrats according to the groups of sports studied. Some sport activities were less appreciated whilst others gained in interest. Our findings also showed variations by sex and SES. Three cases were observed. The first concerned low-SES boys and was characterized by no significant change in their sports preferences. Their favorite sports were the same in 2001 and 2015: collective and combat sports. The second case was distinguished by a sharp loss of interest in some sports. It concerned low-SES girls and high-SES boys. Low-SES girls presented a loss of interest in aquatic sports and collective sports. Regarding high-SES boys, a considerable loss of interest was observed toward open-air sports. Finally, the third case was surprising. High-SES girls presented a sharp loss of interest in three groups of sports while two other groups gained in interest. As with high-SES boys, open-air sports were less appreciated in 2015 than 2001. They also presented a loss of interest in aquatic sports, like girls with low-SES. By contrast, artistic and combat sports earned a new attractiveness.

The common loss of interest in aquatic sports among girls raises questions. This result contradicts the common assumption that aquatic sports are one of the most popular sports groups in western countries.[43] This is even alarming given the importance of swimming abilities for public health.[44,45] This loss of interest might be a consequence of the decrease in the number of swimming-pools observed in the most important city –Marseille- of this French *département* (around 50% between 2006 and 2016).[46] Many studies have shown the importance of the availability and the type of sports infrastructures to understand participation.[37,38] While this effect could well be due to this environmental factor, additional studies are still needed to clearly understand this phenomenon. Finally, an important loss of interest in open-air sports was observed among high-SES adolescents. We did not have knowledge of environmental factors that could be responsible for this evolution. In any cases,

a thorough analysis of trends in local sports policy should be made to understand these common losses of interest in aquatic and open-air sports.

What is already known on this topic

Several studies have shown a global decrease in physical activity and sport participation among children and adolescents in western countries.[8-12,47-49] In France, national[17] studies show a stability in adolescents' sport participation rates. Locally, a regional study shows a 15-points decline between 2001 and 2015. This study recommendation confirms general policy guidelines that point out the need to consider territorial specificities to adapt sports promotion programs.[20] One of the specificities is the sports practiced by adolescents. Data are provided by sports federations statistics[21,22] and national studies.[27-29] However the former are not population-based and do not reflect the real rates of participation by sports.[23-25] The latter do not examine sports participation within French territories. Finally, none of these studies has examined adolescents' sports preferences despite their importance for potential adaptation of the sports offer (facilities, clubs, events) to adolescents' tastes.[35-38]

What this study adds

To our knowledge, this is the first French population- and territory-based study that has examined the evolution of adolescents' preferred sports, in both organized and unorganized contexts. Preferences were different by sex and SES. In the global decrease in sport participation, some sports activities declined in attractiveness whereas others were more appreciated. These data could help in the development of future sport promotion programs. Public health officials could choose to support sports that are increasingly appreciated and those that remain the most appreciated. On the other hand, the loss of interest for sports with specific implications for public health (e.g. aquatic sports) is challenging. There is a need to understand this decline in attractiveness to devise appropriate interventions to increase

involvement in these activities. Our results could have an additional interest for French physical education and sport (PES) teachers. Our study used the same sports categories as those used by the Ministry of Education.[41,42] One main objective of the PES discipline is to "*develop and consolidate the taste for and pleasure of practicing regularly and independently*".[42] Thus, these results provide PES teachers with initial information to potentially adapt their educational program according to adolescent's preferences.

Limitations of this study

The first limitation is due to the restricted geographical area of the study. Our sample is representative of adolescent students of the third most populous French *département*. Results represent sports preferences and their changes across time. However, we cannot conclude regarding the sports preferences of the whole country. France is characterized by a wide diversity of environments (e. g. mountain, coast, forest) that leads to different sports practice according to *départements*. For example, alpine sports (such as skiing) are popular in the Rhône-Alpes region.[50] Additional studies are needed to improve knowledge of adolescents' sports preferences across the country.

Secondly, we decided to group sports into ten different groups. This strategy may well hide disparities in preferences toward more specific sports. For instance, we observed a decline in attractiveness of the open-air sports category. Within this general decline, horse-riding gained in attractiveness (see Supplementary File 2, Tables 1-2). These results are consistent with the increasing number of licenses of the French horse-riding federation observed in the last fifteen years.[21,22] Future studies may obtain a sufficient sample size to perform narrower analysis by sports.

Thirdly, adolescents' sports preferences were obtained with the question "What sport do you prefer to do?" This question did not allow the adolescents to report multiple

preferences. In future studies, it would be better to offer the possibility of reporting multiple sports practices and ranking them according to their preferences.

Conclusions

We observed a sharp loss of interest in some groups of sports whilst others rose. Changes were different by sex and SES, but some common tendencies were observed. Among girls, aquatic sports have lost attractiveness. Among high-SES boys and girls, open-air sports were less appreciated in 2015 compared to 2001. Collective, racket and combat sports remained preferred by boys. This knowledge may help the development of future sport promotion programs. Sport policies could choose to develop sports that are increasingly appreciated and those that are at the top of adolescents' preferences.

Other information

Acknowledgments

We thank all the school teachers and students who took part in the surveys. We also thank the Rector of the regional school authority (*Académie*) who authorized this study.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Declarations of interest

Authors declare no conflicts of interest.

References

1. Telama R, Yang X, Viikari J, Välimäki I, Wanne O, Raitakari O. Physical activity from childhood to adulthood: a 21-year tracking study. *Am J Prev Med* 2005;28(3):267–273. DOI: https://doi.org/10.1016/j.amepre.2004.12.003.

2. Endes S, Schaffner E, Caviezel S, *et al*. Physical activity is associated with lower arterial stiffness in older adults: results of the SAPALDIA 3 cohort study. *Eur J Epidemiol* 2016;31(3):275-285. DOI: https://doi.org/10.1007/s10654-015-0076-8.

3. Physical Activity Guidelines Advisory Committee (PAGAC). Physical activity guidelines advisory committee report. 2008. Washington, DC: US Department of Health and Human Services, 2008. Available at: https://health.gov/paguidelines/report/pdf/CommitteeReport.pdf. (3 December 2018, date last accessed).

4. Janssen I, LeBlanc AG. Systematic review of the health benefits of physical activity and fitness in school-aged children and youth. *Int J Behav Nutr Phys Act* 2010;7(40):1–16. DOI: https://doi.org/10.1186/1479-5868-7-40.

5. Eime RM, Young JA, Harvey JT, Charity MJ, Payne WR. A systematic review of the psychological and social benefits of participation in sport for adults: informing development of a conceptual model of health through sport. *Int J Behav Nutr Phys Act* 2013;10(135). DOI: https://doi.org/10.1186/1479-5868-10-135.

6. Eime RM, Young JA, Harvey JT, Charity MJ, Payne WR. A systematic review of the psychological and social benefits of participation in sport for children and adolescents: informing development of a conceptual model of health through sport. *Int J Behav Nutr Phys Act* 2013;10(98). DOI: https://doi.org/10.1186/1479-5868-10-98.

7. World Health Organization. Regional office for Europe. Promoting sport and enhancing health in European Union countries: a policy content analysis to support action. 2011. Available at: http://www.euro.who.int/__data/assets/pdf_file/0006/147237/e95168.pdf. (3 December 2018, date last accessed).

8. Knuth AG, Hallal PC. Temporal trends in physical activity: a systematic review. *J Phys Act Health* 2009;6(5):548-559. Available at: https://pdfs.semanticscholar.org/1c2b/dc294943918f02c4a7b94bb92d8a3f7f0760.pdf. (3 December 2018, date last accessed).

9. Martins J, Marques A, Sarmento H, Carreiro da Costa F. Adolescents' perspectives on the barriers and facilitators of physical activity: a systematic review of qualitative studies. *Health Educ Res* 2015;30(5): 742-755. DOI : https://doi.org/10.1093/her/cyv042.

10. Adams J. Trends in physical activity and inactivity amongst US 14–18 year olds by gender, school grade and race, 1993–2003: evidence from the youth risk behavior survey. *BMC Public Health* 2006;6(57). DOI: https://doi.org/10.1186/1471-2458-6-57.

11. Suris JC, Michaud PA, Chossis I, Jeannin A. Towards a sedentary society: trends in adolescent sport practice in Switzerland (1993–2002). *J Adolesc Health* 2006;39(1):132–134. DOI: https://doi.org/10.1016/j.jadohealth.2005.09.001.

12. Martin M, Dollman J, Norton K, Robertson I. A decrease in the association between the physical activity patterns of Australian parents and their children; 1985–1997. *J Sci Med Sport* 2005;8(1):71–76. DOI: https://doi.org/10.1016/S1440-2440(05)80026-X.

13. Ministère du Travail, de l'Emploi et de la Santé. Programme national nutrition santé 2011-2015. 2011. Available at:

http://www.sports.gouv.fr/IMG/archives/pdf/PNNS_2011-2015.pdf. (3 December 2018, date last accessed).

14. Council of Europe. European Sport Charter. Strasbourg: Council of Europe, 1992, revised in 2001. Available at: https://search.coe.int/cm/Pages/result_details.aspx?ObjectID=09000016804c9dbb. (3 December 2018, date last accessed).

15. Schut PO, Collinet C. French sports policies for young people: fragmentation and coordination modes. *International Journal of Sport Policy and Politics* 2016;8(1):117-134. DOI: https://doi.org/10.1080/19406940.2014.936961.

16. Bayeux P. Le sport et les collectivités territoriales. Paris : Presses Universitaires de France, "Que sais-je?", 2011.

17. Loirand G. Focus - Le sport est-il toujours bon pour la santé publique ? Informations sociales 2015;187(1):54-57. Available at: https://www.cairn.info/revue-informations-sociales-2015-1-page-54.htm. (3 December 2018, date last accessed).

18. Equipe de surveillance et d'épidémiologie nutritionnelle (Esen). Activité physique et sédentarité. In: Equipe de surveillance et d'épidémiologie nutritionnelle (Esen). Étude de Santé sur l'Environnement, la Biosurveillance, l'Activité Physique et la Nutrition (Esteban) 2014-2016. Volet Nutrition. Saint-Maurice: Santé publique France 2017. Available at: http://invs.santepubliquefrance.fr/Publications-et-outils/Rapports-et-syntheses/Environnement-et-sante/2017/Etude-de-sante-sur-l-environnement-la-biosurveillance-l-activite-physique-et-la-nutrition-Esteban-2014-2016-Chapitre-Activite-physique-et-sedentarite. (3 December 2018, date last accessed).

19. Luiggi M, Travert M, Griffet J. Temporal Trends in Sports Participation among Adolescents between 2001 and 2015: A French School- and Territory-Based Study. *Int J Environ Res Public Health* 2018;15(7):1335. DOI: https://doi.org/10.3390/ijerph15071335.

20. Institut national de la statistique et des études économiques. Populations Légales 2015 – Recensement de la population – Régions, départements, arrondissements, cantons et communes. 2018. Available at: https://www.insee.fr/fr/statistiques/3292643?sommaire=3292701#titre-bloc-2. (3 December 2018, date last accessed).

21. Edward P, Tsouros A. Promoting physical activity and active living in urban environments. The role of governments. World Health Organization. 2006. Available at: http://www.euro.who.int/__data/assets/pdf_file/0009/98424/E89498.pdf (7 March 2019, date last accessed).

22. Ministère des Sports. Licences et clubs des fédérations françaises agréées en 2001. Enquête annuelle menée par le Ministère des Sports. 2004. Available at: http://www.sports.gouv.fr/IMG/archives/pdf/Licences2001Internet.pdf. (27 February 2019, date last accessed).

23. Ministère des sports. Licences et groupements sportifs: archives. Licences et autres titres de participation. 2015. Available at: http://www.sports.gouv.fr/organisation/publication-chiffres-cles/Statistiques/Donnees-detaillees/article/Licences-et-groupements-sportifs. (27 February 2019, date last accessed).

24. Lafabrègue C. Qui construit les données du sociologue? Les problèmes posés par l'analyse secondaire des fichiers des licences fédérales. *Bulletin of Sociological Methodology* 2005;86(1):55-82. DOI: https://doi.org/10.1177/075910630508600105.

25. Surault P. Pour une estimation de la "population sportive". *Population* 1991;46(1):159-164. DOI : https://doi.org/10.2307/1533616.

26. Cleron E. Mission des Etudes de l'Observation et des Statistiques. Les licences et clubs des fédérations sportives agréées en 2014. *Stat-Info: Bulletin de statistiques et d'études; Jeunesse, Sports et Vie Associative* 2016;16(4). Available at: http://www.injep.fr/sites/default/files/documents/stat_info_16-04-licences-clubs-2014.pdf. (3 December 2018, date last accessed).

27. L'Aoustet O, Niel A, Griffet J. Formes actuelles de la pratique sportive des jeunes: description des tendances et méthodes d'investigation. *Loisir Soc-Soc Leis* 2002;25(1):119-138. DOI: https://doi.org/10.1080/07053436.2002.10707580.

28. Croutte PY, Müller J. Baromètre national des pratiques sportives 2018. Baromètre réalisé par le CREDOC sous la direction de Hoibian S. pour l'INJEP et le ministère des sports. INJEP Notes & rapports/Rapport d'étude. 2018. Available at: http://injep.fr/wp-content/uploads/2019/01/Rapport_2019-01Barometre_sport_2018.pdf (05 March 2019, date last accessed).

29. Institut National du Sport, de l'Expertise et de la Performance. La pratique des activités physiques et sportives en France. Résultats de l'enquête menée en 2010. Available at: http://www.sports.gouv.fr/IMG/pdf/la_pratique_des_activites_physiques_et_sportives_en_france.pdf (05 March, date last accessed).

30. Aubel O, Lefevre B. The comparability of quantitative surveys on sport participation in France (1967-2010). *Int Rev Sociol Sport* 2015;50(6):722-739. DOI: https://doi.org/10.1177/1012690213492964.

31. Dietrich F, List C. Where do preferences come from? *Int J Game Theory* 2013;42(3):613-637. DOI: https://doi.org/10.1007/s00182-012-0333-y.

32. Crane, J., & Temple, V. A systematic review of dropout from organized sport among children and youth. *Eur Phys Educ Rev* 2015;21(1):114‑131. DOI: https://doi.org/10.1177/1356336X14555294.

33. Trésor de la Langue Française informatisé. Définition du terme “préférence”. Available at: http://www.atilf.fr/tlfi. (27 February 2019, date last accessed).

34. Kahneman D, Wakker PP, Sarin P. Back to Bentham? Explorations of experienced utility. *Q J Econ* 1997;112(2):375-406. DOI: https://doi.org/10.1162/003355397555235.

35. Kiviniemi MT, Voss-Humke AM, Seifert AL. How do I feel about the behavior? The interplay of affective associations with behaviors and cognitive beliefs as influences on physical activity behavior. *Health Psychol* 2007;26(2):152-158. DOI: https://doi.org/10.1037/0278-6133.26.2.152.

36. Van Cappellen P, Rice EL, Catalino LI, Fredrickson BL. Positive affective processes underlie positive health behavior change. *Psychol Health* 2018;33(1):77-97. DOI: https://doi.org/10.1080/08870446.2017.1320798.

37. Crawford DW, Godbey G. Reconceptualizing barriers to family leisure. *Leisure Sci* 1987;9(2):119‑127. DOI: https://doi.org/10.1080/01490408709512151.

38. Hallman K, Wicker P, Breuer C, Schönherr L. Understanding the importance of sport infrastructure for participation in different sports – findings from multi-level modeling. *Eur Sp Man Quar* 2012;12(5):525-544. DOI: https://doi.org/10.1080/16184742.2012.687756.

39. Wicker P, Hallmann K, Breuer C. Analyzing the impact of sport infrastructure on sport participation using geo-coded data: Evidence from multi-level models. *Sp Man Rev* 2013;16(1):54-67. DOI: https://doi.org/10.1016/j.smr.2012.05.001.

40. Direction Générale de l'Enseignement Scolaire. Réseaux D'éducation Prioritaire. Académie d'Aix-Marseille. Données 2014–2015. Available at: https://www.reseau-canope.fr/education-prioritaire/fileadmin/user_upload/user_upload/comprendre/donnees_cles/2014-2015/2014_2015_education_prioritaire_aix_marseille.pdf. (27 February 2019, date last accessed).

41. Ministère de l'éducation nationale, de l'enseignement supérieur et de la recherche. Programme d'EPS de la casse de sixième des collèges. B.O. n°29 du 18 juillet 1996, 1996. Available at: https://www.ac-strasbourg.fr/fileadmin/pedagogie/eps/Textes/txt_generaux/colleges/Programme_EPS__Classe_de_6__Arrete_du_18_juin_1996__._RLR__524-2a._BO_n_29_du18-7-96.pdf. (3 December 2018, date last accessed).

42. Ministère de l'éducation nationale, de l'enseignement supérieur et de la recherche. Programme d'enseignement d'éducation physique et sportive pour les lycées d'enseignement général et technologique. Enseignements commun, d'exploration et facultatif. B.O. spécial n°4 du 29 avril 2010, 2010. Available at: http://media.education.gouv.fr/file/special_4/73/3/education_physique_sportive_143733.pdf. (3 December 2018, date last accessed).

43. Hulteen RM, Smith JJ, Morgan PJ, Barnett LM, Hallal PC, Colyvas K. Global participation in sport and leisure-time physical activities: A systematic review and meta-analysis. *Prev Med* 2017;95:14-25. DOI: https://doi.org/10.1016/j.ypmed.2016.11.027.

44. Ministère de l'éducation nationale, de l'enseignement supérieur et de la recherche. Le socle commun de connaissances et de compétences. Bulletin Officiel n°29 du 20 juillet 2006, 2006. Available at: http://www.education.gouv.fr/bo/2006/29/MENE0601554D.htm. (3 December 2018, date last accessed).

45. Ministère de l'éducation nationale, de l'enseignement supérieur et de la recherche. Attestation scolaire "savoir-nager". Bulletin Officiel n°30 du 30/07/2015, 2015. Available at: http://www.education.gouv.fr/pid285/bulletin_officiel.html?cid_bo=91204. (3 December 2018, date last accessed).

46. Cours des comptes. Rapport public annuel 2018 : Les piscines et centres aquatiques publics : un modèle obsolète, 2018. Available at: https://www.ccomptes.fr/sites/default/files/2018-01/13-piscines-centres-aquatiques-publics-Tome-1.pdf. (3 December 2018, date last accessed).

47. Tremblay MS, Casey EG, Akinroye K, *et al*. Physical activity of children: a global matrix of grades comparing 15 countries. *J Phys Act Health* 2014;11(s1):S113-S125. DOI: https://doi.org/10.1123/jpah.2014-0177.

48. Lehne G, Bolte G. Socioeconomic status and change in sports activity among middle-aged and older men and women: evidence from the German Ageing Survey. *J Public Health.* 2018;fdy188. DOI: https://doi.org/10.1093/pubmed/fdy188.

49. Green K, Thurston M, Vaage O. Isn't it good, Norwegian wood? Lifestyle and adventure sports participation among Norwegian youth. *Leis Studies* 2015;34(5):529-546. DOI: https://doi.org/10.1080/02614367.2014.938771.

50. Boutroy E, Bourdeau P, Mao P, Senil N. Combinaisons de proximités géographiques et socio-économiques: la filière "Tourisme sportif de montagne et de nature" en Rhône-Alpes. *Journal of Alpine Research* 2012;100(3). DOI: http://doi.org/10.4000/rga.1890.

1

Table 1: Preferred groups of sport activities of **low-SES girls** in 2001 and 2015, with odds-ratio (OR) and 95% confidence interval (CI) describing the relationship between preferred group of sport activities and year, adjusted for age.

Groups of sport activities	2001 % (n)	2015 % (n)	Diff	OR	95% CI
ARTISTIC	23.4% (45)	19.3% (46)	-4.1%	0.77	[0.48; 1.24]
COLLECTIVE	**14.1% (27)**	**7.1% (17)**	**-6.9%**	**0.44***	**[0.23; 0.84]**
OPEN-AIR	10.9% (21)	5.5% (13)	-5.5%	0.50	[0.24; 1.03]
RACKET	2.6% (5)	4.6% (11)	+2.0%	1.78	[0.60; 5.32]
COMBAT	2.1% (4)	4.6% (11)	+2.5%	1.97	[0.60; 6.44]
ATHLETIC	3.6% (7)	3.4% (8)	-0.3%	0.77	[0.48; 1.24]
GYMNASTIC	2.6% (5)	2.5% (6)	-0.1%	0.79	[0.23; 2.74]
SELF-CARE	0.0% (0)	2.5% (6)	+2.5%	NA	NA
AQUATIC	**8.3% (16)**	**1.3% (3)**	**-7.1%**	**0.15****	**[0.04; 0.53]**
MOTOR	0.0% (0)	0.0% (0)	0.0%	NA	NA
All sports players	**67.7% (130)**	**50.8% (121)**	**-16.9%**	**0.49*****	**[0.33; 0.74]**

Notes. Preferred groups of sport activities are sorted in descending order for the year 2015. *p<0.05; **p<0.01; ***p<0.001

Among all low-SES girls, 23.4% preferred to practice an artistic sport. 67.7% practiced a sport activity in 2001.

2

3

1

Table 2: Preferred groups of sport activities of **high-SES girls** in 2001 and 2015, with odds-ratio (OR) and 95% confidence interval (CI) describing the relationship between preferred group of sport activities and year, adjusted for age.

Groups of sport activities	2001 % (n)	2015 % (n)	Diff	OR	95% CI
ARTISTIC	**14.0% (25)**	**27.3% (74)**	**+13.3%**	**2.31*** **	**[1.40; 3.81]**
OPEN-AIR	**20.2% (36)**	**8.9% (24)**	**-11.4%**	**0.39*** **	**[0.22; 0.67]**
COMBAT	**0.6% (1)**	**5.5% (15)**	**+5.0%**	**10.45***	**[1.37; 79.89]**
COLLECTIVE	8.4% (15)	4.4% (12)	-4.0%	0.50	[0.23; 1.09]
SELF-CARE	2.8% (5)	4.4% (12)	+1.6%	1.61	[0.56; 4.67]
AQUATIC	**8.4% (15)**	**3.7% (10)**	**-4.7%**	**0.42***	**[0.19; 0.96]**
ATHLETIC	3.4% (6)	3.7% (10)	+0.3%	1.12	[0.40; 3.16]
GYMNASTIC	2.8% (5)	3.3% (9)	+0.5%	1.18	[0.39; 3.58]
RACKET	**11.8% (21)**	**2.2% (6)**	**-9.6%**	**0.17*** **	**[0.07; 0.42]**
MOTOR	0.0% (0)	0.0% (0)	0.0%	NA	NA
All sports players	**72.5% (129)**	**63.5% (172)**	**-9.0%**	**0.66***	**[0.44; 1.00]**

Notes. Preferred groups of sport activities are sorted in descending order for the year 2015. *p<0.05; **p<0.01; ***p<0.001

Among all high-SES girls, 14.0% preferred to practice an artistic sport. 72.5% practiced a sport activity in 2001.

2

1

Table 3: Preferred groups of sport activities of **low-SES boys** in 2001 and 2015, with odds-ratio (OR) and 95% confidence interval (CI) describing the relationship between preferred group of sport activities and year adjusted for age.

Groups of sport activities	2001 % (n)	2015 % (n)	Diff	OR	95% CI
COLLECTIVE	44.9% (88)	42.5% (85)	-2.4%	0.89	[0.59; 1.33]
COMBAT	16.8% (33)	14.0% (28)	-2.8%	0.78	[0.45; 1.35]
RACKET	6.6% (13)	6.5% (13)	-0.1%	0.94	[0.42; 2.10]
SELF-CARE	5.1% (10)	5.5% (11)	+0.4%	1.22	[0.50; 2.98]
AQUATIC	0.5% (1)	3.5% (7)	+3.0%	7.22	[0.87; 59.78]
OPEN-AIR	6.6% (13)	3.0% (6)	-3.6%	0.38	[0.14; 1.04]
ATHLETIC	5.6% (11)	2.0% (4)	-3.6%	0.41	[0.13; 1.31]
ARTISTIC	0.5% (1)	0.5% (1)	0.0%	0.70	[0.04; 12.40]
MOTOR	0.5% (1)	0.5% (1)	0.0%	1.37	[0.08; 24.12]
GYMNASTIC	0.0% (0)	0.5% (1)	+0.5%	NA	NA
All sports players	**87.2% (171)**	**78.5% (157)**	**-8.7%**	**0.51***	**[0.30; 0.88]**

Notes. Preferred groups of sport activities are sorted in descending order for the year 2015. *p<0.05; **p<0.01; ***p<0.001

Among all low-SES boys, 44.9% preferred to practice a collective sport. 87.2% practiced a sport activity in 2001.

2

1

Table 4: Preferred groups of sport activities of **high-SES boys** in 2001 and 2015, with odds-ratio (OR) and 95% confidence interval (CI) describing the relationship between preferred group of sport activities and year adjusted for age.

Groups of sport activities	2001 % (n)	2015 % (n)	Diff	OR	95% CI
COLLECTIVE	34.3% (61)	31.9% (73)	-2.4%	0.92	[0.60; 1.39]
RACKET	11.8% (21)	12.2% (28)	+0.4%	0.98	[0.53; 1.81]
COMBAT	9.0% (16)	10.5% (24)	+1.5%	1.20	[0.62; 2.34]
OPEN-AIR	**22.5% (40)**	**10.5% (24)**	**-12.0%**	**0.41*** **	**[0.23; 0.70]**
SELF-CARE	3.4% (6)	4.8% (11)	+1.4%	1.56	[0.56; 4.34]
ATHLETIC	5.6% (10)	3.9% (9)	-1.7%	0.69	[0.28; 1.75]
AQUATIC	3.4% (6)	3.5% (8)	+0.1%	1.05	[0.36; 3.10]
MOTOR	0.0% (0)	0.9% (2)	+0.9%	NA	NA
ARTISTIC	1.1% (2)	0.9% (2)	-0.3%	0.79	[0.11; 5.67]
GYMNASTIC	0.0% (0)	0.0% (0)	0.0%	NA	NA
All sports players	**91.0% (162)**	**79.0% (181)**	**-12.0%**	**0.38*** **	**[0.21; 0.69]**

Notes. Preferred groups of sport activities are sorted in descending order for the year 2015. *p<0.05; **p<0.01; ***p<0.001

Among all high-SES boys, 34.3% preferred to practice a collective sport. 91.0% practiced a sport activity in 2001.

2