

## Participation in sport and use of psychoactive products, from adolescence to adulthood

Trends no. 13

Sport is often associated with positive values in terms of health, well-being and social integration. Advertisements aimed at prevention of drug use sometimes present sport as an alternative. However, epidemiological and ethnological studies carried out during the last few years call into question the supposed protective effect of practising sport in regard to use of psychoactive substances. They suggest that we should reconsider the relationship between this practice and use. In France, this idea notably took shape at the seminar *Sports practices of young people and risk behaviour* organised at the end of 2000<sup>1</sup>. Using a survey of adolescents, this seminar, among other things, made it possible to highlight the existence of a "U curve" between participation in sport outside school and the use of psychoactive products, particularly alcohol: young people who do not do sports and those who do a lot of sport often consume even more than those who participate in moderation.

The system of surveys among the general population set up by OFDT made it possible to explore this link in relation to the most generally-used products (alcohol, tobacco, cannabis) from three complementary sources: a survey in schools from the 4<sup>th</sup> to final year (ESPAD 1999, in partnership with Inserm and the Ministry of Education, a survey centred on 17-year olds, both at school and not attending school (ESCAPAD 2000), and finally a survey of 12-75-year olds (Baromètre Santé 2000 (*Health Barometer 2000*) carried out by the CFES, whose principal partners are CNAMTS, the Ministry of Employment and Job Creation and OFDT).

### ESPAD 1999: very varied relationships

In the ESPAD 1999 survey of 10,810 college and secondary school students aged from 14 to 19, 62% had participated in physical or sporting activity outside school in the previous twelve months (73% of the boys, 52% of the girls). The use of psychoactive products measured by this survey were given in summary form in *Tendances*<sup>2</sup> no. 6. In order to study the relationship between use of these products and participation in sport outside school, four types of sportsman were identified according to the number of hours a week spent in sport: non-sportsman (no participation in sport outside school: 4,371), two levels of moderate sportsmen (1 to 3 hours: 2,821, 4 to 7 hours 2,379) and finally intensive sportsmen (8 hours or more: 1,239). The links between use of psychoactive products and sport were found to be very variable. They depended particularly on gender, level of use, product and age.

First, *the results are often different for girls and boys*. In regard to cannabis, the boys who used it least were the moderate sportsmen, whatever the level of use (occasional: at least once a year; repeated: at least 10 times a year; regular: at least 10 times a month). However, for the girls there was no apparent significant relationship between intensity of participation in sport and occasional use, repeated or regular, of cannabis.

Also, *the results may vary with the level of use*. With tobacco, the proportion of daily smokers declines with the intensity of participation in sport. However, a U curve appears for

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<sup>1</sup> By the Ministry for Youth and Sports (MJS) and the Interministerial Committee on the Control of Drugs and Drug Addiction (MILDT)

<sup>2</sup> Trends [Tr.]

adolescents who smoke more than 10 cigarettes a day: for both sexes, this rate of use applies even more to the two extremes of participation in sport (9% of non-sportsmen and intensive sportsmen as against 5% of the two categories of moderate sportsmen),

*The relationship between use of psychoactive products and participation in sport also depends on the product concerned.* Although for boys a U curve appeared for both cannabis and alcohol, the detail of this curve differs significantly from one product to the other: the non-sportsmen used more cannabis than the intensive sportsmen, but drank alcohol more often.

Finally, *the relationship between sport and use of psychoactive substances partly averages out the effect of age:* on average the moderate sportsmen were aged 16 and 3 months, against 16 and 5 months for the intensive sportsmen and 16 and 7 months for the non-sportsmen. These variations in age contribute to the appearance of a U curve since use of psychoactive products increases with age: the non-sportsmen and the intensive sportsmen were older and had an automatic tendency to use more.

Logistical regression enables us to evaluate the relationship between participation in sport and use of psychoactive substances (tobacco: smoke more than 10 cigarettes a day; repeated use of alcohol: at least 10 times a month; regular use of cannabis), while controlling the influence of age and differentiating between the sexes. Membership of a sports club is also taken into account since this can influence use in so far as those participating alone or with friends are less supervised by adults than those who are in a club.

#### **How should we read the results?**

Logistical regression enables us to simultaneously measure the relationship between several "explanatory" variables (here age, participation in sport and membership of a club) and an "explained" variable (a given use of psychoactive substances). The estimated effect for an explanatory variable is valid "other things being equal", i.e. once the influence of other variables present in the model has been controlled. This effect is represented by an *odds ratio* (OR) which is interpreted as a relative risk or a chance ratio. For a quantitative variable (such as age in years) it has the effect of an additional unit. For a qualitative variable (which breaks down into several terms), the OR of one term compares this to the term taken as reference. An OR above 1 indicates increased relative risk of observing the use studied, conversely an OR below 1 corresponds to a decrease in this risk. Here, OR's which are significantly different from 1 are given in bold type and therefore identify variables which have considerable influence. Let us take as an example the act of smoking more than 10 cigarettes a day for boys in ESPAD. The OR for the age equals 1.38, it is in bold type and therefore significant: other things being equal, the probability of smoking more than 10 cigarettes a day increases with age. In regard to participation in sport, the reference corresponds to the non-sportsmen. For the two intermediary levels the OR's are in bold type and below 1 (0.54 and 0.51): the moderate sportsmen have less chance of smoking more than 10 cigarettes a day than the non-sportsmen. On the other hand the OR for the intensive sportsmen is not significant (0.87): these have as many risks as the non-sportsmen of declaring this rate of use of tobacco.

Although age is always significantly linked to use, this is not the case either with participation in sport or club membership. For both sexes we found a U curve for tobacco (the intensive sportsmen smoked as much as the non-sportsmen, the moderate sportsmen smoked less), but

no link for alcohol and cannabis. As for club membership, this is not significantly associated with regular cannabis use in boys (club members used less). We noted however that the age control weakened the robustness of the results<sup>3</sup>. In addition, for young people who were members of a club, ESPAD did not differentiate hours of sport at the club and outside the club.

Logistical regression : sport and use of psychoactive products (ESPAD 1999)

	tobacco :		alcohol :		cannabis :	
	> 10 cigarettes/day		≥ 10 times/month		≥ 10 times/month	
	boys	girls	boys	girls	boys	girls
age	<b>1.38</b>	<b>1.51</b>	<b>1.46</b>	<b>1.28</b>	<b>1.62</b>	<b>1.45</b>
<u>sport outside school:</u>						
<i>reference : 0 hrs</i>	-/-	-/-	-/-	-/-	-/-	-/-
1 to 3 hrs. a week	<b>0.54</b>	0.88	0.92	0.97	0.86	1.00
4 to 7 hrs. a week	<b>0.51</b>	<b>0.64</b>	0.95	1.19	1.12	0.96
8hrs. and + a week	0.87	1.28	1.15	1.49	1.02	1.78
<u>membership of club:</u>						
<i>reference : not a member</i>	-/-	-/-	-/-	-/-	-/-	-/-
member	1.02	0.86	1.14	1.05	<b>0.73</b>	0.86

Source : ESPAD 1999-Inserm-OFDT-MENRT

**ESCAPAD 2000: the effects of gender and context**

The ESCAPAD 2000 survey enabled us to neutralise the effect of age by limiting itself to 17-year olds, while still using a large sample (8,414). It also separated the times of use at a club and alone or with friends. For these two contexts, the indicator for participation in sport was adapted to three weekly levels (*0 hours, 1 to 3 hours, 4 hours and more*). The previous logistical regressions were repeated.

For the boys, sport is on a par with lower nicotine addiction, without variation depending on the intensity of the participation: at the club or alone or with friends, sportsmen smoke less than non-sportsmen, whether they do from 1 to 3 hours or 4 hours and more a week. On the other hand, whatever the context of the participation, a U curve appears for the girls: those who do from 1 to 3 hours a week smoke more than 10 cigarettes a day less often than non-sportsmen and sportsmen. This curve is especially marked for club sport: it is therefore probably moderate participation at a club which "protects" girls better. In regard to alcohol, there is no discernible significant link for boys. On the contrary, for girls, repeated use of alcohol depends on participation outside a club: girls who do at least 4 hours of sport weekly,

<sup>3</sup> So, for intensive sportsmen, who were rare in the sample, certain OR's are high but not significant.

alone or with friends, have twice the chance of having drunk alcohol at least 10 times within the month. Finally, for cannabis, we simply note that regular use is rarer in boys who participate moderately in club sport.

Logistical regression : sport and use of psychoactive products (ESCAPAD 2000)

participation in sport...	tobacco : > 10 cigarettes/day		alcohol : ≥ 10 times/month		cannabis : ≥ 10 times/month	
	boys	girls	boys	girls	boys	girls
<u>...at a club :</u>						
reference : 0 hrs.	-1-	-1-	-1-	-1-	-1-	-1-
1 to 3 hrs. a week	<b>0.67</b>	<b>0.49</b>	0.82	0.76	<b>0.69</b>	1.00
4 hrs. and + a week	<b>0.71</b>	0.78	1.15	1.38	0.85	1.20
<u>...alone. with</u>						
<u>friends :</u>						
reference : 0 hrs.	-1-	-1-	-1-	-1-	-1-	-1-
1 to 3 hrs. a week	<b>0.59</b>	<b>0.72</b>	0.92	1.08	0.93	1.08
4 hrs. and + a week	<b>0.64</b>	0.87	0.96	<b>2.27</b>	0.86	0.91

Source : ESCAPAD 2000, OFDT.

In short, less frequent use often corresponds to moderate participation at a club, and more frequent use to more intensive participation, alone or with friends, especially for girls. How should we interpret this result? In adolescence, use of psychoactive products is linked to socialising and to going out, which provides opportunities and shields young people from parental authority. Intensive participation in sport outside a club is an indicator for frequent outings, perhaps more for girls than for boys.

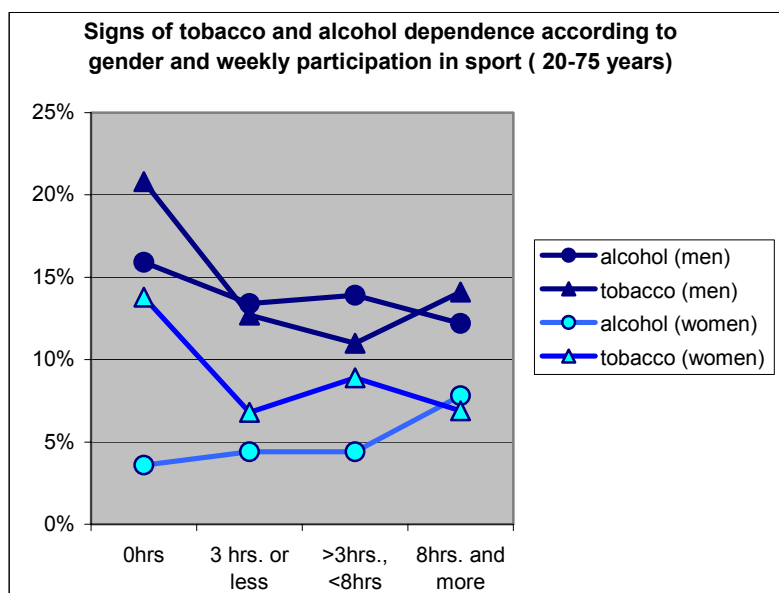
### **Baromètre Santé 2000: sport and signs of dependence**

The Baromètre Santé data opens up two directions in which to pursue our analyses. First, after the 14-19 year olds then the 17-year olds, the Baromètre provides an additional age band: the 20-75 year olds. Then, for tobacco and alcohol the Baromètre enables finer analysis of intensive use since it provides indicators for dependence. However, since cannabis use becomes rare after the age of 40 it was not studied.

As the weekly duration of participation in sport (outside school and work) is measured this time in minutes and not in hours, the previous intervals had to be adapted: no participation, from 1 to 180 minutes (3 hrs. or less), from 181 to 479 minutes (more than 3 hrs. but less than 8 hrs.), and finally 480 minutes and more (8 hrs. and more). The following indicators were selected to mark signs of dependence on tobacco or alcohol: for tobacco, smoking at

least 20 cigarettes a day or smoking the first in the half-hour following waking; for alcohol, answering yes to at least two of four questions in the DETA test<sup>4</sup>.

The signs of dependence reach a peak for tobacco between the ages of 26 and 34 (24% of men, 16% of women) and for alcohol between 45 and 54 (19% of men, 5% of women). The graph below compares signs of dependence with weekly participation in sport. For both sexes, the frequency of signs of dependence on tobacco is significantly higher in non-sportsmen, but then does not vary with intensity of participation: taking men and women together, 17% of non-sportsmen show signs of nicotine dependence, against 10% of moderate sportsmen and 11% of intensive sportsmen. However, for alcohol the results differ significantly according to gender: for men, the frequency of signs of dependence on alcohol decreases if participation in sport increases (non-sportsmen to intensive sportsmen: from 16% to 12%), while it increases for women (respectively from 4% to 8%).



Source : Baromètre Santé 2000, CFES, OFDT processing.

Here again, logistical regressions are used to control the effect of age. As the relationship between age and signs of dependence is non-linear (with a peak for intermediate ages), age will be taken into consideration in identifying three bands: ages 20-34, ages 35-54, ages 55-75. As we assumed above that participation in sport could be a sign of going out, two other variables were introduced to take account of the socialising of those surveyed: having gone out *a lot*, *a little* or *not at all* during the preceding eight days, to *meet parents or friends for conversation or visits* on the one hand, or during *group or leisure activities (joint activities, cinema, parties etc.)* on the other hand.

<sup>4</sup> Avez vous déjà ressenti le besoin de **diminuer** votre consommation de boissons alcoolisées ? Votre entourage vous a-t-il déjà fait des remarques au sujet de votre consommation ? Avez vous déjà eu l'impression que vous buviez trop ? Avez vous déjà eu besoin d'**alcool** des le matin pour vous sentir en forme ? (Acronym formed from letters in bold type.)

Have you ever felt the need to cut down your consumption of alcoholic drinks? Have your friends annoyed you by remarking on your consumption? Have you ever had the idea that you drink too much? Have you ever felt a need for alcohol in the morning in order to feel on form? English equivalent CAGE (cut down, annoyed, guilty, eye opener). [Tr.]

For both sexes, once the effect of age is controlled the previous results are confirmed. Non-sportsmen show signs of nicotine dependence more often than sportsmen, without any difference between moderate and intensive sportsmen (with a slight impact of socialising). For alcohol the contrast between men and women is maintained in the same way. Men who are most involved in sport have signs of alcohol dependence more rarely, while the relationship is inverted for women. The effect of socialising is low for men, but very significant for women: those who say they go out a lot most often show signs of dependence<sup>5</sup>.

Logistical regression: sport and signs of tobacco and alcohol dependence (Baromètre Santé 2000)

	signs of dependence...			
	...on tobacco		...on alcohol	
	men	women	men	women
<u>age :</u>				
<i>reference : 20-34 yrs.</i>	-/-	-/-	-/-	-/-
35-54 yrs.	<b>0.80</b>	1.03	<b>1.58</b>	<b>1.38</b>
55-75 yrs.	<b>0.29</b>	<b>0.27</b>	1.23	0.75
<u>participation in sport :</u>				
<i>reference : no participation</i>	-/-	-/-	-/-	-/-
3hrs. or less a week	<b>0.51</b>	<b>0.42</b>	0.81	1.02
>3hrs. and <8hrs. a week	<b>0.46</b>	<b>0.59</b>	0.87	1.01
8hrs. and + a week	<b>0.66</b>	<b>0.46</b>	<b>0.74</b>	<b>1.76</b>
<u>outings in the last 8 days :</u>				
meetings (parents. friends):				
<i>reference : not at all, a little</i>	-/-	-/-	-/-	-/-
a lot	1.10	1.15	<b>1.19</b>	<b>1.55</b>
group activities. leisure:				
<i>reference : not at all, a little</i>	-/-	-/-	-/-	-/-
a lot	<b>0.73</b>	0.99	1.05	<b>1.70</b>

Source : Baromètre Santé 2000. CFES. OFDT processing

## Conclusion

The links observed between participation in sport and use of the commonest psychoactive substances (tobacco, alcohol, cannabis) are contrasted. For tobacco, once age and gender have been controlled, it is the non-sportsmen who smoke more or who most often show signs of dependence. For alcohol, the link differs according to gender. It is negligible for 17-year old boys, while for men aged from 20 to 75 the non-sportsmen more often show signs of dependence. However, 17-year old girls who often do sport outside a club drink more alcohol, while among women aged from 20 to 75 those most involved in sport show signs of dependence more frequently (these signs are also linked to going out). In regard to regular use of cannabis among adolescents, this varies only slightly with participation in sport for adolescents of comparable sex and age. The results observed for alcohol emphasise the importance of the context of the sporting activity and its association with other forms of socialising (whether before or after the activity itself). Certainly, another essential aspect of

<sup>5</sup> We note that for women, taking into consideration socialising reduces the link between sport and alcohol dependence: if going out is not introduced into the model, the OR estimated at 1.76 goes to 2.36.

participation in sport has been left out: the discipline practised. This aspect has already been studied for ESCAPAD (Beck, Legleye, Peretti-Watel, 2000). It now remains for this work to be extended to the two other surveys.

### **Methodological references**

The data presented here is taken from 3 national surveys:

- ESPAD 1999: survey in schools carried out by Inserm in partnership with OFDT and MENRT. The field work was done from March to May 1999 in around thirty European countries using a common questionnaire. The French sample was 11,870 school pupils taken at random by class (2 classes in each of the 300 establishments selected, from the fourth to final years) from all types of public and private teaching establishments. The young people answered self-administered questionnaires of one hour's duration individually in class in the presence of a health professional.
- ESCAPAD 2000: OFDT set up a survey during the Day of Conscription and Preparation for Defence (JAPD) which is replacing military service and also involves girls. All conscripts present on a given day in May 2000 (around 14,000) filled in a self-administered questionnaire, which took 25 minutes. They were aged between 17 and 19. This survey obtained notice of opportunity from the CNIS (National Council for Statistical Information) and was assigned the general interest label by the Label Committee.
- The CFES Baromètre Santé 2000 was carried out by telephone between October and December 1999 with 13,685 individuals aged from 12 to 75 years. The objective of this multi-subject survey was to measure the behaviour and opinions of French people in regard to health, particularly to give guidelines for actions by professionals and public health decision-makers. The results presented here are weighted by probability of extension within the household but have not been adjusted on the data from the last census.

### ***For further reading ....***

Proceedings of the seminar *Pratiques Sportives des jeunes et conduites à risques* (Participation in Sport by young people and risk behaviour) ([www.jeunesse-sports.gouv.fr/conduitesarisques](http://www.jeunesse-sports.gouv.fr/conduitesarisques)).

Beck F., Legleye S., Peretti-Watel P., *Regards sur la fin de l'adolescence: consommation de produits psychoactifs dans l'enquête ESCAPAD 2000*, (An examination of the end of adolescence: use of psychoactive products in the ESCAPAD 2000 survey) OFDT report, 2000 (220 p.).

Choquet M., Bourdessol H., Arvers P., Guilbert P., De Peretti C., *Jeunes et pratique sportive* (Young people and participation in sport), Injep report, 2000 (67 p.).

Guilbert P. "Pratique du sport et habitudes alimentaires", (*Participation in sport and eating habits*) *Baromètre Santé premiers résultats 2000* (Preliminary results of Health Barometer 2000)(4 p.).

Guilbert P., Baudier F., "Sport et activité physique", (*Sport and physical activity*) in Baudier F., Janvrin M.P., Arènes J., *Baromètre Santé jeunes 97/98*. (Young people 97/98 Health Barometer) Vanves : CFES, 1998 : pp.101-115.