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## > PERTINENT FACTS

### A study of ethics, doping and certain life habits of Quebec young athletes

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The taking of performance-enhancing drugs in sports is a serious problem. Indeed, the International Olympic Committee (IOC) has singled out doping as Enemy Number One in the world of sports. For people involved in the sporting milieu, it brings up issues of ethics in sports and the health of the participants. Although the problem is primarily associated with athletes participating in high-calibre events, certain studies have shown that it also seems to have spread to lower levels of competition.<sup>1-3</sup>

The current study is based on the premise that the consumption of ergogenic products is part of a group of behaviours that can be qualified as essentially volitional. Ajzen's<sup>4-6</sup> theory of planned behaviour could allow to determine the factors associated with the intention of young people to use performance-enhancing products, as well as their behaviour in this regard (see Figure). On the basis of this theory, the study was undertaken with the following goals:

- 1) to document the problems associated with the use of performance-enhancing products;
- 2) to highlight the driving factors of behaviour in terms of doping and certain other life habits;
- 3) to draw guidelines for the development of an intervention strategy.

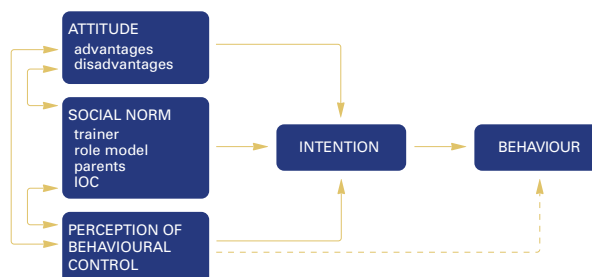
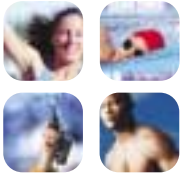


Figure. Illustration of the theory of planned behaviour

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## Methodology

010 The subjects of the sample ( $n = 3573$ ) were  
drawn primarily from two groups:

- 009 a) athletes who are members of Quebec  
provincial teams ( $n = 1290$ ) and
- 008 b) young people playing one or several sports in  
city or school leagues existing within organi-  
007 sations recognized by the Secrétariat au loisir  
et au sport ( $n = 2283$ ).

006 The average age of participants in the study is  
15.49 years ( $SD = 2.37$ ). Among the subjects  
who indicated their sex, 44.1% are women and  
55.9% are men.

005 A self-administered questionnaire was used to  
gather information on the following topics:

- 004 1) knowledge of the products;
- 003 2) perception of the effects of the products;
- 3) social norms influencing the subjects;
- 002 4) factors encouraging or discouraging  
consumption of the products;
- 001 5) intention to consume the products;
- 000 6) consumption of the products.

001 The internal consistency of the measuring  
scales turned out to be considerably acceptable  
(Cronbach's  $\alpha$  between 0.62 and 0.92).

002 Descriptive statistical analyses were drawn up in  
relation to the socio-demographic characteristics  
of the participants, the variables of the reference  
003 model and the variables external to the model.  
Multiple regression analyses were also under-  
004 taken in order to situate the relative weight of  
the different variables of the theoretical model  
with regard to predicting intention and use of  
005 performance-enhancing substances and methods.

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## Results

>KNOWLEDGE – A great majority of the subjects  
( $n = 3557$ ; 95.55%) had already heard of the  
problem of doping in sports. In one of the  
questions, a list of substances, methods and  
products was presented to the subjects, who  
were then asked to indicate whether they were  
familiar with them. According to the answers  
obtained, erythropoietin (9.52%), beta-blockers  
(11.22%), corticosteroids (15.92%) and diuretics  
(16.43%) are the substances, methods or products  
the least known by the subjects. This same  
data indicates that masking products, local  
anaesthesia, narcotic analgesics, amphetamines,  
urine manipulation and the antihistamine  
medications *Hismanal* or *Reactine* are known by  
less than 50% of the subjects of the study.  
Furthermore, the subjects have little knowledge  
of which substances, methods or products are  
totally forbidden, which are limited to restrictions  
and which are permitted for use ( $M = 7.85$  out of  
a possible score of 22).

>PERCEPTION OF EFFECTS – A large proportion  
of the subjects reported not knowing whether  
the substances, methods and products pre-  
sented could help an athlete improve his or her  
performance in a sport. For example, more than  
50% of subjects responded that they did not know  
whether amphetamines (65.21%), analgesics  
(58.35%), narcotic analgesics (65.16%), local  
anaesthetics (63.06%), beta-blockers (75.37%),  
regular *Atasol* tablets (51.95%), diuretics (76.17%),  
erythropoietin (76.38%) or antihistamine medica-  
tions (54.07%) were performance-enhancing.  
Globally, respondents ( $n = 463$ ) moderately believe  
that the substances, methods and products  
presented could help an athlete improve his or  
her performance in a sport ( $M = 2.32$  out of a  
maximum value of 4,  $SD = 0.69$ ).

The subjects also moderately believe that regular use of these same substances, methods and products can have negative effects on health ( $M=2.70$  out of a maximum value of 4,  $SD=0.75$ ). Thus, as suggested by these results and by the moderate but statistically significant coefficient of correlation between these two beliefs ( $r=0.14$ ,  $p<0.01$ ), it appears that the fact that the subjects believe that the substances, methods and products presented can help an athlete improve his or her performance in a sport does not stop them from believing that the regular use of these same substances, methods and products can have negative effects on health.

A more detailed analysis revealed that this last belief is particularly strong (an average of approximately 3 or more) as regards the following items: alcohol, amphetamines, analgesics, narcotic analgesics, local anaesthetics, beta-blockers, cocaine, diuretics, erythropoietin, growth hormones, marijuana, cannabis, pot, anabolic steroids, stimulants and transfusions of blood or red blood cells.

>CONSUMPTION – More than 25% of respondents admit to having used, in the 12 months preceding the study, one or several of the 15 products, substances or methods presented to them that are either totally prohibited or subject to restrictions under the IOC. It should be noted that of the 15 substances used to operationalize behaviour with regards to doping, only two were used by the subjects at a proportion higher than 5% (Table 1): 6.33% and 7.92% of the respondents admit to having used the decongestant medication *Sudafed* and asthma inhaler medication, respectively. Results also showed that the use of caffeine pills is moderate, with 3.95% of the respondents having previously taken them. The consumption of anabolic steroids, growth hormones and erythropoietin is lower, at 0.98%, 1.15% and 0.78% respectively.

The regression of the planned behaviour model variables on behaviour (use or non-use of doping substances, methods or products) is significant ( $R^2=0.12$ ,  $p<0.0001$ ). Results indicate that the intention to consume is the predictive variable most strongly associated with behaviour ( $\beta=0.34$ ,  $p<0.0001$ ).

It appears that all of the variables of the theory of planned behaviour are statistically associated with the intention to use performance-enhancing substances, methods or products ( $R^2=0.39$ ,  $p<0.0001$ ). A detailed examination of the regression coefficients reveals that facilitating factors (for example, an assurance such as “*This will get you on the Canadian team for sure*”) ( $\beta=0.48$ ,  $p<0.0001$ ) and social norm ( $\beta=0.17$ ,  $p<0.0001$ ) or the subjects’ perception of what people around them think of the use of the doping substances, methods or products are the factors most strongly associated with the intention of adopting such behaviour.

The addition of external variables to the variables of the theory of planned behaviour causes a significant statistical increase in the percentage of explained variance from the intention to use doping products ( $R^2$  increasing from 0.39 to 0.44; Table 2). Facilitating factors and social norms remain two of the variables most strongly associated with the intention to resort to performance-enhancing drugs in sports. The moral obligation the subjects feel to not use the doping products is the third strongest variable associated with the intention to adopt such behaviour. The worse the subjects feel about using ergogenic substances, the less intention they have of adopting this behaviour. It should finally be noted that the attitude of the subjects toward the use of the prohibited substances, methods or products, and the pressure exerted by those around them to gain weight, represent two other variables which must be considered significant with regard to their link with behavioural intentions.

**Table 1**

Percentage of respondents according to their behaviour regarding use of doping substances, methods and products to enhance athletic performance over the last 12 months.

SUBSTANCES AND METHODS	NO	YES**	YES, BUT I HAVE STOPPED USING IT	YES, BUT I USE IT RARELY	YES, I USE IT OCCASIONALLY	YES, I USE IT REGULARLY	MISSING DATA
<b>Alcohol</b>	87.99%	11.39%	1.12%	3.69%	5.01%	1.57%	0.62%
* <b>Amphetamines</b>	97.65%	1.48%	0.34%	0.67%	0.34%	0.14%	0.87%
<b>Analgesics</b>	95.24%	3.81%	0.67%	1.65%	1.09%	0.39%	0.95%
* <b>Narcotic analgesics</b>	97.79%	1.12%	0.42%	0.22%	0.22%	0.25%	1.09%
<b>Local anaesthetics</b>	97.34%	1.65%	0.39%	0.70%	0.20%	0.36%	1.01%
* <b>Beta-blockers</b>	96.73%	1.32%	0.25%	0.25%	0.31%	0.50%	1.96%
<b>Soft drinks</b>	73.13%	25.89%	1.09%	4.79%	8.82%	11.20%	0.98%
<b>Recovery drinks</b>	49.68%	49.43%	1.23%	9.43%	18.78%	19.98%	0.90%
<b>Coffee</b>	83.07%	16.01%	1.51%	6.75%	4.98%	2.77%	0.92%
<b>Chocolate</b>	65.02%	34.01%	2.24%	8.56%	13.55%	9.66%	0.98%
* <b>Cocaine</b>	97.01%	2.16%	0.59%	0.50%	0.59%	0.48%	0.84%
<b>Aspirin tablets</b>	83.07%	15.95%	1.76%	8.51%	4.65%	1.04%	0.98%
<b>Regular Atasol tablets</b>	94.77%	4.20%	0.76%	2.02%	0.95%	0.48%	1.04%
* <b>Caffeine pills</b>	95.24%	3.95%	1.34%	1.26%	0.90%	0.45%	0.81%
<b>Regular Tylenol tablets</b>	80.27%	18.78%	1.79%	9.68%	5.93%	1.37%	0.95%
<b>Creatine protein supplements</b>	87.71%	11.45%	3.16%	2.66%	2.63%	2.99%	0.84%
* <b>Diuretics</b>	98.01%	1.04%	0.36%	0.28%	0.22%	0.17%	0.95%
* <b>Erythropoietin (EPO)</b>	98.32%	0.78%	0.25%	0.25%	0.14%	0.14%	0.90%
* <b>Growth hormones</b>	97.96%	1.15%	0.42%	0.36%	0.06%	0.31%	0.90%
* <b>Urine manipulation</b>	98.40%	0.84%	0.20%	0.17%	0.20%	0.28%	0.76%
<b>Marijuana, cannabis, pot</b>	91.55%	7.67%	2.18%	1.82%	1.74%	1.93%	0.78%
<b>Antihistamine medications Hismanal or Reactine</b>	95.94%	3.22%	0.90%	1.32%	0.56%	0.45%	0.84%
* <b>Decongestant medication Sudafed</b>	92.78%	6.33%	1.96%	2.77%	1.23%	0.36%	0.90%
* <b>Asthma inhaler medications</b>	91.10%	7.92%	1.68%	2.18%	1.85%	2.21%	0.98%
* <b>Masking products</b>	98.38%	0.78%	0.36%	0.22%	0.06%	0.14%	0.84%
* <b>Anabolic steroids</b>	98.15%	0.98%	0.28%	0.34%	0.06%	0.31%	0.87%
* <b>Stimulants</b>	96.89%	2.32%	0.95%	0.64%	0.31%	0.42%	0.78%
<b>Vitamin supplements</b>	72.77%	26.45%	2.97%	5.77%	7.16%	10.55%	0.78%
* <b>Blood transfusions or red blood cell transfusions</b>	98.24%	0.84%	0.25%	0.28%	0.11%	0.20%	0.92%

\* These 15 substances, products or methods were used to operationalize behaviour regarding doping in sports.

\*\* This result is the sum of the respondents who answered using or having used the substance, method or product.



**Table 2**

Results of the multiple regression analysis of the variables of the theory of planned behaviour and variables external to theory on the intention.

VARIABLES	BETA	STANDARD ERROR	<i>t</i>	<i>P</i>	STANDARDIZED BETA
Constant	0.71	0.17	4.22	0.0001	
Attitude	0.07	0.01	6.41	0.0001	0.09
Social norm	0.22	0.02	8.93	0.0001	0.13
Facilitating factors	0.35	0.01	25.15	0.0001	0.40
Danger factors	-0.03	0.01	-3.39	0.0007	-0.05
Knowledge of prohibited substances and methods	0.00	0.00	-0.01	0.9922	0.00
Knowledge of products containing substances prohibited by the IOC	0.01	0.01	0.86	0.3921	0.02
Sense of moral obligation	-0.17	0.01	-11.96	0.0001	-0.18
Competitiveness of trainer	0.04	0.03	1.15	0.2504	0.02
Competitiveness of athlete	0.04	0.02	1.75	0.0796	0.03
Fair play	-0.04	0.02	-2.07	0.0386	-0.03
Internal motivation	0.00	0.02	-0.10	0.9202	0.00
External motivation	0.02	0.02	1.04	0.3005	0.02
Lack of motivation	0.03	0.02	1.57	0.1166	0.02
Negative comments regarding body weight	-0.06	0.03	-1.97	0.0492	-0.04
Pressure to lose weight	0.13	0.04	3.59	0.0003	0.06
Pressure to gain weight	0.17	0.03	6.44	0.0001	0.10

$R^2 = 0.44, p < 0.0001$

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## Conclusion

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The multiple regression analyses demonstrate that behavioural intention is the primary predictor of use or non-use of doping substances, methods or products to enhance athletic performance. The results also indicate that attitude, social norms, factors facilitating the use of doping products as well as the moral sense of obligation are associated with the behavioural intention of athletes regarding the use of ergogenic products. Educational programs must therefore be conceived with certain goals in mind. First, the programs should help athletes develop a favourable attitude toward the non-use of doping substances, methods and products in sports, by focussing on the advantages to be gained by refraining from such behaviour. Second, the people in the immediate environment of a given athlete must be sensitized to the athlete's capacity to perform well athletically without the use of doping products. Third, the educational program should place a primary focus on the reinforcement of the athlete's psychological ability to perform in their chosen sport, despite the fact that they may consider themselves to be at a disadvantage because they do not take performance-enhancing products. Their sense of personal efficiency in their athletic performance must be reinforced. They would thereby feel able to refrain from using doping products, even though their performance may not be as strong as a result. In other words, such a psychological reinforcement would make the athletes feel that they were able to perform well athletically, even though they have not taken any performance-enhancing products.