Doping: reinforce life-skills of young athletes

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Prevalence of doping among youth: not nil

Depending on the survey methods employed, it has been estimated that doping could concern between 3 to 5% of adolescents, whatever the substance used (Laure, 2000).

For example (Table 1), studies carried out in Southern France with 2,926 young athletes aged 13 - 20 years and in Eastern France with 1,501 athletes aged 15 - 19 years, showed that 2.4% and 4.0% of them, respectively, had used banned substances at least once in their life (Pillard & al, 2002 ; Laure & al, 2004).

In a recent study, it has been estimated that 1% of young athletes aged 11 years may be involved in doping at least once during the last twelve months (Laure & Binsinger, 2007).

Table 1: Prevalence of doping substances use among young athletes, at least once a life.

<table>
<thead>
<tr>
<th>References</th>
<th>State</th>
<th>Sample</th>
<th>Age</th>
<th>Drugs.</th>
<th>%</th>
</tr>
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<td>3500</td>
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<td>16-18</td>
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</tr>
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<td>B 2,9</td>
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<td>USA</td>
<td>1175</td>
<td>9-13</td>
<td>A.A.S.</td>
<td>2,7</td>
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</tbody>
</table>

* Cannabis recreational use included – AAS: anabolic androgenic steroids.

Black market and enticement

According to young consumers, it would seem that their suppliers are mostly their peer group and their kin.

For example, work carried out in the United States among 135 users aged from 14 to 18 shows that their sources of anabolic steroids are mainly their friends (for 55% of the subjects), followed by their trainers (for 26%), doctors (for 12%), or their parents (for 7%) (Tanner & al, 1995). Besides their family and kin, the other source of products seems to be the black market as underlined by other work (Althaus & al, 2000; Lambert & al, 1998; Laure & al, 2004; Scott & al, 1996; Terney & McLain, 1990). Finally, the adolescents, even the non-consumers, freely express the ease of being able to get hold of the prohibited products (Kindlundh & al., 1998; Tanner & al., 1995; Terney & McLain, 1990).

Our results confirm this existence of an easily accessed ‘black-market’ for products to improve performance which is directed at adolescent athletes engaged in high level competitions (Laure & Binsinger, 2005).
This black market presents several characteristics:

Firstly, it is well and truly a ‘market’ insofar as it represents a place where the demand for and the supply of products meet. Thus, the majority of young athletes have asked for the substance that they consume. The market can be termed a ‘black market’ as it is both hidden and illicit: the large majority of ‘suppliers’ give or sell the products in conditions which are totally illegal, i.e. cannabis, or medicines which are solely reserved for dispensing pharmacists in France. Finally, in nearly half the cases, the adolescents paid for the substances that they consume. In any case, for the two categories of ‘suppliers’ the most often ‘paid’, it is probable that a part of the ‘transactions’ take place legally. For example, when the adolescent buys vitamins in a pharmacy, or when he states that he ‘paid’ for a product at the doctor’s, whereas in reality only the cost of the consultation is paid.

The second characteristic of this black market is the enticement to take products which are prohibited for athletes: a practice which is forbidden by law in France. This characteristic only concerns a small percentage of adolescents, but it is not certain that all those who have been targeted by this black market have realised that they were being enticed. Thus, the phenomenon is perhaps more widespread than it seems at first sight. We feel however, that the people who entice others to consume products do not simply choose just any adolescent. In fact, they seem especially to target high-level athletes (those at least of a national level) who are not satisfied with their sporting results. What is more, the information on the products that the enticers give to the adolescents is incomplete. The information supplied only underlines the ‘positive’ aspects of the products, that is to say the improvement in performance, the effects against fatigue, etc. No enticer evokes the undesirable effects on the athletes’ health, or the nature of these products which is sometimes illicit for the athletes. Moreover, the enticers' spiel seems to be convincing for the adolescents as they themselves say they are trusting, and especially since more than half of them end up consuming the products. This behaviour obviously does not allow the adolescent to make a free and well-informed decision, that is to say, with full knowledge of the facts. This type of behaviour can thus be seen to be manipulation.

Signs of use?

When doping is evoked, a common and old question from trainers, health professionals or parents is: are there signs or symptoms, which could indicate a prohibited substance use?

It is now well established that doping prevalence is higher among boys and competitors and also increases with age and with level of competitions. However, if these factors can be taken into account, they surely are not sufficient to prevent doping.

Some other statistical associations have been described. For instance, frequent alcohol intoxication and involvement in power sports could predict use of anabolic steroids among high school students (Wichstrom, 2003). In a former paper among athletes aged 15-19 years, we showed, as other authors did, links between prohibited substance use and sex, number of hours of practice per week, and psychoactive drug use such as alcohol, tobacco or cannabis (Laure & al, 2004).

In a prospective cohort study, which included all of the pupils entering the first year of secondary school (sixth grade) in the Vosges department (Lorraine region, east France) during the school year 2001-2002 and followed for four years, we confirmed the importance of intention in doping use (Laure & Binsinger, 2007). Intention, or representation of a goal, is related to the perception of others’ judgment and to the degree of control that the person has, or imagines to have, on its own behaviour. It constitutes the heart the Theory of Reasoned Action/Planned Behaviour, which is used in prevention (Fischbein & Ajzen, 1975; Ajzen, 1991). In the field of psychoactive substances, many works underline the predictive potential of intention, for instance for tobacco, alcohol or illicit substances use by adolescents (Ellickson & al, 2001 ; Petraitis & al, 1998 ; Watanabe & al, 1995). In a non-published study, carried among 3,600 athletes aged 13-18 years, Valois and coll. stressed that adolescents who say to intend to use doping agents have a greater probability to pass to the act (Valois & al, 2002). We showed that a young athlete, non user, who states that he is tempted to try a prohibited drug, has an average 7 times more risk to use it six months later (Table 2).
Table 2. Doping and intention to use doping-drug among pre-adolescents.

<table>
<thead>
<tr>
<th>Period (N)</th>
<th>6th grade</th>
<th>7th grade</th>
<th>8th grade</th>
<th>9th grade</th>
<th>Global OR [CI 95 %]</th>
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<td>15.7%</td>
<td>8.5%</td>
<td>21.8%</td>
<td>9.0%</td>
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<tr>
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<td>***</td>
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</tr>
<tr>
<td>Nov. 02 (3253)</td>
<td>1.6%</td>
<td>1.7%</td>
<td>1.8%</td>
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<tr>
<td>May 03 (3019)</td>
<td>1.6%</td>
<td>1.7%</td>
<td>1.8%</td>
<td>1.8%</td>
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<tr>
<td>Nov. 03 (2867)</td>
<td>1.6%</td>
<td>1.7%</td>
<td>1.8%</td>
<td>1.8%</td>
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</tr>
<tr>
<td>May 04 (2775)</td>
<td>1.6%</td>
<td>1.7%</td>
<td>1.8%</td>
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<tr>
<td>Nov. 04 (2665)</td>
<td>1.6%</td>
<td>1.7%</td>
<td>1.8%</td>
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<td>1.7%</td>
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<tr>
<td>May 05 (2199)</td>
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<td>1.7%</td>
<td>1.8%</td>
<td>1.8%</td>
<td>1.7%</td>
</tr>
</tbody>
</table>

Comparison by recreational drug use, and intention to use doping-drug (Chi-square test). (* p<0.05  ** p<0.01 *** p<0.001).

Also, we showed that, compared to non-users, young prohibited substance users show low self-esteem and high trait anxiety (Table 3). However, these two psychological factors are potentially linked to risk behaviours, such as risky sexual behaviour, suicidal ideation and attempts, dieting and substance abuse. This could contribute to explain the link between doping-drug use, alcohol and cannabis use.

Table 3. Self-esteem, trait anxiety and happiness among doping-drug users.

<table>
<thead>
<tr>
<th>Period (N)</th>
<th>6th grade</th>
<th>7th grade</th>
<th>8th grade</th>
<th>9th grade</th>
</tr>
</thead>
<tbody>
<tr>
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<td>30.4</td>
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<td>*</td>
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<td>39.5</td>
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<td>39.5</td>
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<tr>
<td>May 05 (2199)</td>
<td>40.8</td>
<td>39.5</td>
<td>39.6</td>
<td>39.9</td>
</tr>
</tbody>
</table>

Comparison by Global Score of Self-Esteem and Global Score of Anxiety Trait (ANOVA)

| # Measured by Rosenberg’s Self-esteem Scale (Rosenberg, 1979). Higher is the score, higher is self-esteem.
| # Measured by Spielberger's State-Trait Anxiety Inventory (Spielberger, 1983). Higher is the score, higher is trait anxiety.

Doping or doping behaviour?

In the field of sports, the use of performance-enhancing drugs registered on a particular list, namely "The Prohibited list. International standard" (as developed in the World Anti-doping Code by the World Anti-Doping Agency) certainly qualifies as “doping”. The problem is that this definition, although perfectly legitimate in the repression of illicit acts in organised sports, demarcating as it does the limit between “the permissible” and “the forbidden” therein, is only problematically extended in the domain of prevention outside sports. For instance, to preserve the athletes’ health and equality, sporting institutions like WADA have identified substances, which are not against the spirit of sport, which do not confer any advantage a priori (or at least any advantage considered to be illicit), and which are not dangerous for health. Extending this logic, it has prohibited all the others, i.e. drugs which are

1 A substance is prohibited when it meets any two of the following three criteria:

- Medical or other scientific evidence, pharmacological effect or experience that the substance has the potential to enhance or enhances sport performance;
- Medical or other scientific evidence, pharmacological effect or experience that the use of the substance represents an actual or potential health risk to the athlete;
considered effective or dangerous. There are, however, substances in relation to which these criteria could be questioned. For example, to illustrate the combined concepts of effectiveness and harmfulness: we might consider the use of non-steroidal anti-inflammatory drugs. They are authorized by WADA, whereas these drugs not only enable to continue a physical effort but also can cause severe adverse effects.

In addition, with regard to adult citizens, civil society beyond sports does not prohibit any consumption for purposes of performance enhancement (eg sexual performance, pleasure), except for certain products like narcotics (because of their addictive risks). Many in society might not object to a more generally positive attitude towards performance enhancement in many spheres of life. Perhaps this is the reason why some people would like to authorize their use among athletes, either in a completely unregulated way, or by limiting them to certain groups (like professional athletes), or to certain substances (like androgenic anabolic steroids).

For all these reasons, I developed in 1997 the concept of ‘doping behaviour’, now currently used in the field of doping prevention on a national policy level in France. It extends the traditional meaning of doping which is tied, to my mind, too tightly to the proscribed list of WADA’s code and which hermetically seals it off from related behaviours in civil society. I consider this broader frame of reference appropriate in attempting to frame more generally the use of drugs to enhance lifestyles and lifestyle choices. Building upon this concept, in this essay I shall develop an understanding of the range of possible senses of doping behaviours, in an attempt to shed light on the idea of doping in the context of public health.

The concept of doping behaviour was developed in order to draw out nuances in the concept of doping itself. Traditionally understood, it is too blunt a conceptual tool to be functional in the area of prevention. I take doping behaviour to mean the use of a substance in order to enhance performance(s) in the face an obstacle(s) (real or imagined), which is perceived as real by the user or by the people around him.

In this definition, the nature of the substance is of little importance. It can be steroids, vitamins, stimulants like high-dose caffeine, painkillers, extra-proteins, cocaine, etc, and its use can be prohibited (banned by a rule) or not, illegal (banned by a law) or not, dangerous for health or not. This conceptual inflation of more commonplace definitions is important because, contrary to traditional understandings of doping, it is not the drug that defines the behaviour, but rather the reason(s) why this drug is used. Thus, under the rule of strict liability, it is enough to detect a prohibited substance in athletes’ urine to suspect them (and sometimes to accuse them) of doping. This is not the case with doping behaviour: here, we must know whether or not the person wanted to enhance or to maintain their physical or mental performances.

Moreover, the “obstacle” may differ in its nature: a sports competition, a school examination, a job interview, etc. The situation can be summarized as follows: vis-à-vis the obstacle, the person calculates the ratio between the elements that enable her or him to surmount it, and the elements of potential cost to them. If they think that the ratio is in their favour, then they will rely on their own capacities. Thus the reason to take drugs dissipates. If, however the odds are not favourable, they will either give up if the ratio if too unfavourable, or struggle on while resorting to external assistance. This external assistance may take many forms: additional work, relaxation, motivation training course, etc, as well as drug use. A variety of means may suffice to achieve the ends. Moreover, this obstacle can be real, like undergoing a hard educational examination, but it can also be simply perceived, such as taking a driving test, for example, or giving a speech in public. What is more, this imaginary obstacle is not only perceived by the user, but also by the people around him: parents, teammates, work colleagues, etc. This “doping behaviour by proxy” (ie parentally authorized) explains why, in middle of school year, certain parents ask their family practitioner to give stimulants or anti-fatigue drugs to their “too tired” son or daughter.

Finally, the notion of ‘performance’ as considered here, is not necessarily an exploit beyond the bounds of daily living as in a high performance sporting competition. Rather, performance, as a concept should be understood in the person’s usual physical and social environment. For example, having a high-level of performance for certain mothers might be understood as being able to “manage” the 15 friends of their youngest child during his birthday party. This performance may be evaluated according to two scales. The first one, without necessarily being a standard, is commonly accepted by a majority of people. It is, for example, the well known French school mark ten out of twenty (B in the English school system) that enables the scholar to graduate. The second is more specific to particular circumstances and is determined by the degree of significance that each person accords to a given goal.


2 Recent studies show that athletes use non-steroidal anti-inflammatory drugs (NSAIDs) more commonly than age-matched controls, especially athletes competing in speed and power sports. The problem is that inappropriately high doses and concomitant use of several different NSAIDs has been observed, and that adverse effects related to the central nervous system and gastrointestinal adverse reactions are commonly reported in connection with NSAID use in elite athletes (Alaranta A, Alaranta H, Helenius I. Use of prescription drugs in athletes. Sports Med 2008:38:449-63).

For instance, a student who wants to obtain his diploma with a mark higher than eighteen out of twenty (A or A+), where the preceding average (B) would be enough to achieve a more widely shared social goal which they wish to exceed. Thus, in the contexts of sports, doping must be framed as a particular kind of doping behaviour insofar as it concerns a specific population (those who practice sports) along with a limited and specifically designated number of substances (the list of banned drugs) that is subject to regulations (which forbid it).

**Doping prevention: the help of skills-based education**

Recently, there has been a great interest for prevention actions based on health education and reinforcement of psychosocial competence through life skills, defined by the abilities for adaptative and positive behavior that enable individuals to deal effectively with the demands and challenges of everyday life (WHO 1997). Life skills can be addressed by education to contribute to the promotion of personal and social development, the projection of human rights, and the prevention of health and social problems (WHO 1997). One of the purposes of life skills education is to reinforce existing pro-social and health skills and behavior, and to prevent or reduce risky behaviors.

In practice, life skills education addresses skills considered to be core skills such as self-awareness, decision-making, empathy, critical thinking, coping with stress and interpersonal skills, through interactive teaching methods that include role plays, open discussions, situation analysis, small group activities, etc (UNICEF 2004; WHO 2001).

A fundamental component of many prevention programs is self-assertion and refusal skills (“way to say no strategies”), which constitutes a sub-skill of interpersonal skills, especially in the field of drug and alcohol abuse prevention (Botvin & al, 1995; Nichols & al, 2006; Palinkas & al, 1996), but also doping prevention (Elliot & al, 2004; Goldberg & al, 2000; Laure & Lecerf 2002).

To be effective, self-assertion and refusal skills education requires an active and repeated participatory process. In other words, skills-based education takes time. In the area of sports, this is sometimes judged to be problematic when actions are held instead of sports training, especially if they are numerous. This constitutes one of the reasons why many French coaches, bound by time constraints, refuse that their club takes part in active prevention programs. Consequently, some clubs benefit from effective actions and many others have no action at all, to say the least.

We hypothesized that an effective although short prevention action may be proposed to all clubs, to sensitize young athletes to say “No” to doping drugs.

Among self-assertion and refusal skills education strategies, we chose to target only self-assertion, which enables an individual to express its thoughts, feelings, values and rights about a situation openly and directly with due regard for the others persons feelings, values and rights (Alberti & Emmons 1974).

We focused on self-assertion for four main reasons: 1) Many works have concluded that a low self-assertion could be associated with risk behaviors, such as drugs use, eating disorders, or none use of condoms in a sexual relationship (Behar & al, 2006; Troth & Peterson, 2000; Williams & al, 1993); 2) Some self-assertion based actions have shown effectiveness in achieving the reduction of psychoactive substances use and abuse, like alcohol or tobacco (Botvin & Kantor 2000; Harris & al, 2007; Schinke & al, 2005; Trudeau & al, 2003); 3) Self-assertion training could also enhance self-esteem, an important and well-known factor in mediating behaviors in everyday life (Shimizu & al, 2004); 4) Although assessing the general impact of refusal skills education is difficult, self-assertion evolution can be easily quantified by the Rathus Assertiveness Schedule (Rathus 1973).

In a randomized controlled trial, we recently showed that self-assertion can to be improved among early adolescent athletes with a 2 x 2 hours intervention (Table 4).

<table>
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<th>EXP (N = 450)</th>
<th>CON (N = 310)</th>
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<td>4.3</td>
<td>1.02, NS</td>
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<tr>
<td>Rathus' scores at M+3</td>
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<td>4.5</td>
<td>7.71, p &lt; 0.01</td>
</tr>
<tr>
<td></td>
<td>4.10, p &lt; 0.001</td>
<td>3.00, p &lt; 0.001</td>
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</tbody>
</table>

Self-assertion is measured by the Rathus Assertiveness Schedule (Rathus 1973). Higher is the score, higher is self-assertion.
This action was more effective at pre-adolescents (10-11 years), whose Rathus' score is low at the beginning, and in the groups of less than 20 pupils, when the size of classes enables each one to take an active part in role-playing games. It is also more effective among pupils who are the most involved in their sport (more than ten hours of practice per week). This result is quite interesting, because it was already shown, that these young athletes could be more at risk to use psychoactive or doping substances.

References

Alberti, M.A., Kubr, I. and Mahler, F. Prevalence of anabolic steroid consumption in male teenagers in the french part of Switzerland. Medecine & Hygiene 2000; 2309:1528-1532
Botvin GJ, Kantor L.W. Preventing alcohol and tobacco use through life skills training. Alcohol Research Health 2000;24:250-257.