WADA's January 2016 list of prohibited substances is extensive, the main categories being the anabolic androgenic steroids, various peptide hormones such as erythropoetin and growth hormone, $\beta_2$-sympathomimetics, hormone and metabolic modulators, diuretics, stimulants, narcotics, cannabinoids, glucocorticosteroids, alcohol and $\beta$-sympathicolytics. However, there has been little sound scientific research into the influence of the listed agents on performance in sports. Practical experience suggests that the most thoroughly investigated substances, the anabolic androgenic steroids, erythropoetin and oral $\beta_2$-sympathomimetics, can enhance performance, but from a scientific point of view, the evidence remains insufficient. Research into the efficacy and side-effects of doping products is characterised by bias, uncertainty, methodological limitations and hence insufficient hard evidence. Few randomised double-blind studies have been published, and the ones that have been published rarely had a cross-over design (in which each athlete is their own control), and studies nearly always included small groups of, mainly male, users. In addition, top athletes’ competition commitments prevent them from taking part in doping studies, so that researchers have to make do with recreational athletes who do not run the risk of being excluded by their club. It is therefore impossible to tell whether the results of published studies also apply to top athletes. Furthermore, it is not always possible to distinguish the effects of doping from those of intensive training. As a consequence, it is virtually impossible to draw hard and scientifically sound conclusions from the studies discussed in the article, except that too little is known for a well-substantiated and complete list of prohibited substances. As such, the present conclusion differs little from that reported in *Gebu* 1996; 30: 125-132 which concluded that ‘the scientific proof for the performance-enhancing effects of many substances regarded as doping is definitely insufficient.’

On the other hand, athletes are highly convinced of the efficacy of doping, and one of the results of this discrepancy between science and sports practice is that users of anabolic androgenic steroids have hardly taken medical opinion seriously. The question is what would be the consequences if well-designed randomised research into the efficacy of doping should result in more reliable information about this efficacy. If such research should prove that doping is ineffective, it remains to be seen whether the athletes will be convinced by this or whether they will continue to believe in an effect (whether real or placebo). Hence, this could still mean the difference between a medal or none. And if research should show that doping is indeed effective, this would probably encourage its use, with peer pressure playing an even bigger role. These are two sides of the same coin, but generally speaking, research is nevertheless needed to establish well-founded doping policies.

Violating the doping rules can have far-reaching effects for competitive athletes and their coaches, including lengthy suspensions and a tarnished reputation, with the associated financial consequences. In addition, each athlete should ask themselves whether the known or unknown risks and potential damage to their health are justified by unproven performance-enhancing effects. Athletes should regard the ‘spirit of sports’ as their top priority. Whether doping works or not, sports should be characterised by performances achieved without the use of doping, by fair competition.

References*


9. KNMP Kennisbank, via: KNMP Kennisbank online.


755–760.


*The literature refers to the Dutch text*