

PROJECT REVIEW

“Effects of Anxiolytics on Fine Tuning (Neuromuscular) Activity Performance”

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The use of prohibited substances is a burden in sport. This is clearly against fair-play and can be hazardous for health of sportspeople. Although the use of doping substances are rare in sports requiring fine tuning motor movements, there are rumours that some archers tend to use such medicines that diminish anxiety and reduce body sway during shots. This may positively affect shooting performance. FITA (International Archery Federation) Medical and Sport Science Committee (MSSC) decided to carry out a project in order to find out whether there is such an effect of anxiolytic substances on performance. FITA MSSC has proposed to cooperate with WADA Accredited Turkish Doping Control Centre at Hacettepe University, School of Sports Sciences, Faculty of Medicine Department of Pharmacology, Ankara University Faculty of Medicine Department of Sports Medicine Department and Turkish Archery Federation. Research group is planning to perform a double blind study on elite archers in order to evaluate the effects of a benzodiazepine on athletic performance. The analysis method(s) with regard to the benzodiazepine(s) and their metabolite(s) will be developed and optimized in the laboratory. After the validation of the method(s) in urine due to EUROCHEM and ICH Guidelines, the samples will be analysed in the laboratory. The results will be submitted to WADA for further studies, if necessary.

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Results and Conclusions

It is well-known that athletes may experience some form of stress prior to or during a competition which may reduce or at least affect their athletic performance. Therefore, inhibition or reduction of stress may prove beneficial in athletes which can be easily achieved by utilizing an anxiolytic drug and benzodiazepines are the typical examples of these drugs. The purpose of the present study was to investigate whether the intake of a benzodiazepine would exert positive effects on physical performance capacity, such as an increase in shooting performance in elite archers. The research group has compared the effects of oral diazepam (5 mg) vs placebo. A randomized double-blind trial was used to assess shooting scores, heart rate values, body sway, aiming behaviour, anxiety and clicker reaction time in 24 athletes. The results did not show any difference between the groups, neither in physical performance characteristic nor in other parameters. It is concluded that as regards to the performance capacity, benzodiazepine use does not improve athletic performance in archery. However, the benzodiazepine was applied as a single relatively low dose (5 mg). Benzodiazepines exert calming effects with simultaneous reduction of anxiety at relatively low doses. These effects may be accompanied by some depressant effects on psychomotor and cognitive functions which were not observed in our study. Benzodiazepines, contrary to these depressant effects may also cause disinhibition of previously suppressed behaviour which may be related to their behavioural disinhibitory effects, including euphoria, impaired judgment, and loss of self-control which were also not observed in our study. Single-dose administration and selection of a moderate-low dose of a benzodiazepine derivative may explain why these disinhibitory effects are not observed in our study. It is well known that benzodiazepines also exert dose-dependent anterograde amnesic effects. Since benzodiazepines cause sedation and inhibition of motor activity in higher doses, they are expected to negatively affect motor performance in athletic competitions requiring fine tuning skills.