



# Referred use of medication and dietary supplements in athletes selected for doping control in the South-American Games

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## ABSTRACT

The objective of the present study was to describe the prevalence of medicine and dietary supplements use in athlete who participated in the mandatory doping controls of the VII South American Sports Games, which took place in four Brazilian cities. One issue considering the doping control and relative to substances used in the days that preceded the competition was statistically analyzed. The authors analyzed data collected from 234 athletes of 25 sports participating in the Games, being these athletes 136 males and 98 females, distributed among the 13 participating countries. According to the questionnaire conducted in the doping control, 44% athletes informed some substances used up to three days before the competition. The medications were classified into non-steroidal anti-inflammatory (NSAI) (24.8%), analgesics (15.9%), antibiotics (4.3%), cold medicine (3%) and other medicines (19.3%). Moreover, 50% of athletes reported the use of dietetic supplements, being this group divided into vitamins (39.7%), minerals (21.9%), amino acids (18.9%) and other substances (13.3%). The authors concluded that there was an overuse of anti-inflammatory and analgesic medication in many sports modalities, which raises a concern in terms of control of symptoms of the athletes in competitions. Besides that, there was an important use of dietary supplements without specific indication. Such fact may cause an eventual adverse analytical finding in the control of doping by contamination or manipulation.

## INTRODUCTION

The South-American Sports Games began in 1978, in La Paz, Bolivia and their seventh edition was held in Brazil, in the cities of Curitiba, São Paulo, Rio de Janeiro and Belém do Pará. In this event, the anti-doping control of athletes was conducted by the Medical Commission of the South-American Sports Organization (ODESUR), according to recommendation by the Antidoping International Code of the World Antidoping Agency (WADA)<sup>(1)</sup>, randomly selected among the participant athletes. One of the topics answered by the athletes during this procedure, according to the Brazilian Olympic Committee standards (COB)<sup>(2)</sup>, was concerning the used medication in the last three days. The analysis of this topic enabled the elaboration of the present study.

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The information included in the Doping Control Form was analyzed concerning medication and dietary supplements in order to evaluate the use profile of the main South-American athletes present in this competition. The knowledge of this reality allows us to obtain an idea about which needs the athletes may have and which benefits they aim to reach.

The national literature simply mentions a few studies of this nature. Barros Neto<sup>(3)</sup> called attention to the excessive use of pharmacological ergogenic agents, which completely clashes with the athletes' nutritional needs and the evidence published in the literature. In a guideline by the Brazilian Society of Sports Medicine about this topic, Carvalho *et al.*<sup>(4)</sup> describe the excessive use of dietary supplements in our country, without medical prescription and with health risks.

In the international panorama, several authors observed the high use of supplements by the athletes, not advising such procedure<sup>(5-7)</sup>. Analyzing the use of this kind of product by high level athletes, Burke<sup>(8)</sup> calls attention to the possibility of adverse analytical results occurrence in the doping control, due to the lack of quality control and eventual deficiencies on the label of these products. He also mentions that this fact exclusively occurs by athletes' error and in that case, the sports directors should not forgive them. Specifically in international sports events, and as consequence of the WADA recommendation<sup>(9)</sup>, studies were conducted with controlled athletes in the Sidney Olympic Games and later published by Corrigan and Kazlauskas<sup>(10)</sup>. A research was ordered by the International Olympic Committee (COI) due to the high percentage of supplements used by the athletes in these Olympic Games. It was conducted with 634 dietary supplements from 13 different countries in the Institute of Biochemistry of Colony, by Geyer *et al.*<sup>(11)</sup>, using the same technique previously proposed by this author<sup>(12)</sup>. His aim was to verify the presence or not of pro-hormones (especially testosterone and nandrolone) which could cause adverse analytical results in the antidoping control. It is worth mentioning that a study previous to the Sydney's, despite not being published, had already been conducted in our continent by D'Angelo<sup>(13)</sup> in the Pan-American Games in Mar del Plata, Argentina, in 1995.

The use of supplements, as evidenced in previous reference<sup>(9)</sup>, may cause adverse analytical result in the doping control due to eventual contamination of these products, once their producers do not have to completely declare their composition. Moreover, they do not follow in their majority the ideal techniques for production of substances in laboratory, internationally known as "Good Manufacturing Practices" (GMP).

## MAIN OBJECTIVE

To describe the prevalence of the use of medication and dietary supplements by athletes, who participated in the mandatory doping controls of the VII South-American Games in 2002, held in four

Brazilian cities through analysis of the answer to the topic: *used medication in the last three days*.

## MATERIAL AND METHOD

The data collected in 242 doping controls performed in 234 athletes from 25 sports, with a total of 33 modalities participant in the VII South-American Games were analyzed. These athletes were divided in 136 male participants and 98 female ones, distributed among the 13 participant countries, being 11 from South America (Argentina, Bolivia, Brazil, Chile, Ecuador, Guiana, Paraguay, Peru, Suriname, Uruguay and Venezuela), 1 from Central America (Panama) and 1 from the Dutch Caribbean (Aruba).

The sample consisted of athletes selected among the participants, being composed by individual or team gold, silver and bronze medalists. Athletes who were randomly selected through a raffle or delegation on the behalf of the competition's technical deputy participated as well.

The data collection was conducted by a group of Brazilian specialists in doping control, trained within the international standards proposed by the WADA, and the Doping Control Forms filled out with information demanded from the selected athletes. Such form consists of three copies: the first one goes to the Games Organization Committee; the second, with no athlete's identification, goes to the Doping Control Laboratory; and the third one is handed to the athlete.

The data bank of this study was built through the typing of the answer to the topic: *previous medication* on the original form, and an electronic spread sheet which divided the athletes in sex, country, medication and dietary supplements was devised.

The medication was divided in the following five categories: non-steroid anti-inflammatories (NSAIs), analgesics, antibiotics, cold medicine and others. In this last item all the range of medication that was only scarcely mentioned was included, such as oral contraceptives and laxatives. In order to correctly classify the medication of the pharmaceuticals from the remaining participant countries, specialists in Sports Medicine from these places were consulted.

The dietary supplements were divided in four following categories: vitamins, minerals, amino acids and others. In this last category were basically considered the isotonic and carbon hydrates. In the two divisions the substances were most frequently found in the previous studies by Corrigan *et al.*<sup>(10)</sup> and D'Angelo *et al.*<sup>(13)</sup>.

This data bank was submitted to statistical analysis by SPSS in its 11 version and the Microsoft Excel. The results were demonstrated through descriptive statistics in frequencies and percentages.

## RESULTS

The distribution of the athletes who were part of this sample is presented as following: 63,63% were gold medalists, 23,13% were silver medalists, 7,85 were bronze medalists and 13,22% were randomly chosen. This distribution is presented in figure 1.

It was confirmed that in the 234 athletes from several countries, 95 (44%) different kinds of medication were taken immediately before or at the moment of the competition. These kinds were classified as following: 58 (24,8%) of NSAIs, 37 (15,9%) of analgesics, 10 (4,3%) of antibiotics, 7 (3%) of cold medication and 45 (19,3) of other medication. Figure 2 shows the percentage distribution in the medication group proposed by the authors.

Use of dietary supplements was reported in 117 athletes, (50%) of the studied sample. Reportedly, in this group 93 (39,7%) took vitamins, 51 (21,9%) took minerals, 44 (18,9%) took amino acids and 31 (13,3%) other substances. Figure 3 shows the percentage distribution in the supplements group proposed by the authors.

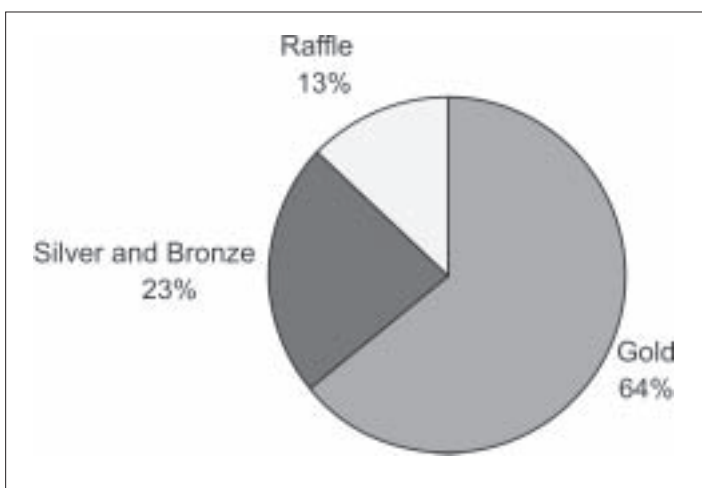


Figure 1 – Distribution of doping controls in the participant athletes

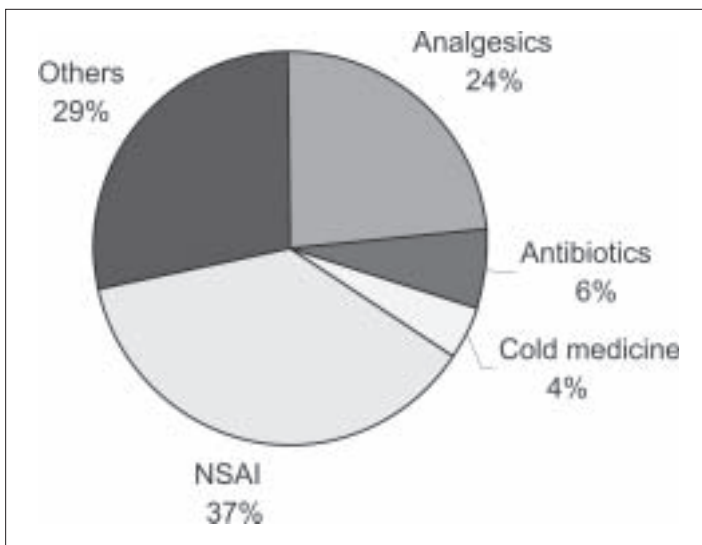


Figure 2 – Percentage distribution for medication in the sample

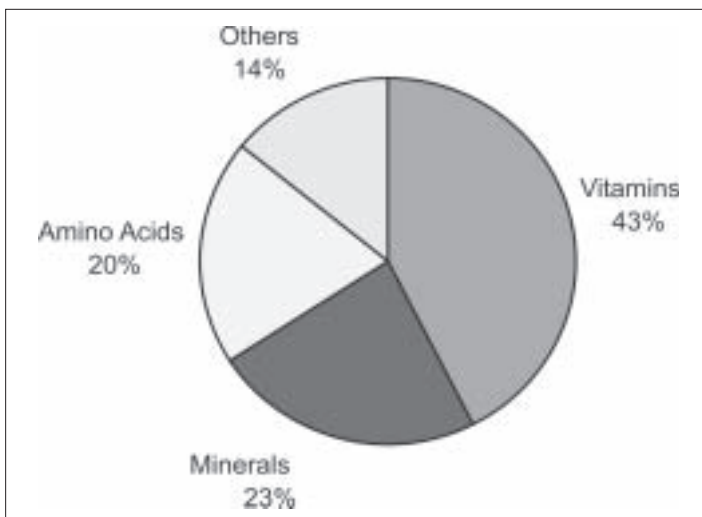


Figure 3 – Percentage distribution for supplements in the sample

Concerning the use of medication or dietary supplements, there may be a multiple use by athlete; this is why the numbers may clearly be higher than the studied population. Concerning gender and general consumption, it is verified that men use more medication and supplementation than women, with no significant difference concerning the distribution by country.

## DISCUSSION

The authors chose the category classification according to the description in materials and methods once they understand that in each of the groups (medication and supplements), the subdivisions reflect the athlete's consumption reality.

The most widely used medication kinds were the ones from the NSAIs class, expressing a tendency observed in medical practice, which is the need of lesions treatment derived from training for competition. The analgesics class was the second most widely used and corroborates the previous explanation.

The concern lies on the fact that should there be a need of use of this medication, medically prescribed or self-medicated, there should also concomitantly be a lesion/suffering condition for the athlete when competing. One should question whether this fact occurs by training excess; by the way the training is performed; by physiological weakness situations; or by other variables which could be altered, determining higher use of these examples of medication. It is important to highlight that the sample mainly consists of athletes winners in their competitions, which implies a high degree of performance.

The most used dietary supplements were the vitamins, followed by minerals, expressing as well a culture of high consumption, once there is no specific literature indicating the use of these substances.

The authors believe that the indiscriminated use of supplements, also shown in previous studies, may cause in the future an increase of adverse analytical results in the doping control, through the athlete's misinformation on the product he/she is taking. Unfortunately, since the product's origin may be unclear, there is not preven-

tion in terms of intentional manipulation or industrial contaminations in the processing of these substances. It is known that some companies produce several kinds of products without ideal standardized technical regulations for the production of these substances in their laboratories.

It is possible that the athlete omits some information concerning medication effectively used in the data collected by the doping control specialist. Due to this fact, the use of pharmaceuticals and supplements may occasionally be higher than the mentioned, which we certainly consider as one of the limitations of the present article, once the athletes do not have to inform all the truth at the control moment.

## CONCLUSION

The authors conclude that there is an exaggerated use of anti-inflammatories and analgesics in several sports modalities, distributed in several South-American countries, due to the concern in terms of symptomatology control of the athletes in competitions. The excessive use of dietary supplements does not present indication in the literature and may lead to an eventual adverse analytical result in the doping control.

The results reflect a behavior pattern similar to the ones verified in other studies conducted by several authors in international competitions in which high level athletes participated.

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*All the authors declared there is not any potential conflict of interests regarding this article.*

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