Use of non-steroidal anti-inflammatory drugs and nutritional supplements in Zimbabwean football

N S Mkumbuzi,[1,2] BSc (Hons) (Physio); **F Kaseke**,[3] MSc (Physio)

[1] *Department of Physiology, College of Health Sciences, University of Zimbabwe, Harare, Zimbabwe*
[2] *Zimbabwe Rugby Union, Harare, Zimbabwe*
[3] *Department of Rehabilitation, College of Health Sciences, University of Zimbabwe, Harare, Zimbabwe*

Corresponding author: *N S Mkumbuzi (nsmkumbuzi@gmail.com)*

Background. The use of medications by football players in many populations is known to be high. Data on African players are scarce.
Objective. To determine the magnitude of use of non-steroidal anti-inflammatory drugs (NSAIDs) and nutritional supplements by Zimbabwean football players.
Methods. We conducted a cross-sectional study during the 2011/2012 Premier Soccer League football season. A total of 86 players responded to a self-administered questionnaire that assessed self-reported use of NSAIDs and nutritional supplements.
Results. All the participants admitted to taking NSAIDs, with 44% self-prescribing. Nutritional supplements were taken by 56% of the respondents. Of these, 21% took them on a daily basis and 40% did so without professional advice.
Conclusion. Regular, self-prescribed use of NSAIDs and nutritional supplements is high among Zimbabwean football players.

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Athletes are usually young individuals in good health, who may use a variety of legal medications and methods to prevent/treat injuries or for competitive edge. This has led to an epidemic of drug use in sport, which is growing in complexity.[1] Often though, most literature and media attention focuses on illegal drugs.[2] However, the use of drugs *not* banned by the World Anti-Doping Agency should also be considered in light of the ethical and health issues that surround their improper use. Studies have shown that athletes use non-steroidal anti-inflammatory drugs (NSAIDs) and nutritional supplements more than age-matched controls,[1] often in inappropriately high doses,[3] concomitantly and without medical advice.[4] While the major concerns of sporting associations are with the use of illegal drugs and supplements, it is imperative that the magnitude of the use of seemingly harmless drugs be investigated, both to safeguard players' welfare and to help design preventive doping measures. Data on the use of legal drugs and supplements by football players are few and far between, and on African players fewer still.[5] The objective of this study was to quantify the magnitude of the use of NSAIDs and nutritional supplements by professional Zimbabwean football players.

Methods

During the latter half of the football season, registered football players from 11 of the 16 teams in the Premier Soccer League (PSL) during the 2011/2012 football season were approached via their club management to participate in the study. Questionnaires were taken to their various training stadia during training and distributed at the end of a training session for completion in the players' own time, should they consent to participate in the study. This questionnaire was adapted for contextual validity from those validated by experts and used in previous studies.[5,6] The questionnaires were anonymous and did not contain any identification information.

Permission was obtained from the Zimbabwe Football Association (ZIFA), and the administrative body for the PSL. Ethical approval to conduct this study was obtained from the Institutional Review Board at the University of Zimbabwe, College of Health Sciences, protocol number JREC/150/11.

Continuous variables are presented as means and standard deviations (SDs), and shown as frequencies and percentages.

Results

Of the 400 questionnaires given out, 86 (22%) were completed and returned. All the participants in this study were male, with a mean (SD) age of 23 (2) years (range 17 - 30). The majority were single (51%) and had a secondary school education (Table 1).

A large proportion of the players (83%) had been playing football for >6 years at the time of data collection (Table 2). More than half of the players trained for ~3 - 5 hours/day and for 3 - 5 days/week (52% and 87%, respectively), and this training was related to league games and championship commitments.

Over half of the respondents (56%) admitted to current use of nutritional supplements, with less than half of these (21%) taking them daily (Table 3). Vitamin supplements were the major form of supplementation taken (20%), closely followed by mineral supplements (17%). The main reason for taking these supplements is unknown, as almost half of the respondents (43%) did not state the reason. Of those that did, they took dietary supplements to build muscle bulk (15%), maintain general health (14%) and for other reasons such as luck. Most of these supplements were taken without expert advice (40%). Medical doctors were the main source of information and advice on nutritional supplements (27%). Only one respondent received advice from a nutritionist before taking nutritional supplements, while a number of players sought advice from a traditional healer or other professionals (15%).

All participants admitted to taking at least one NSAID at the time of the study (Table 4). Most of these NSAIDs were self-prescribed (44%). Medical doctors were consulted less for advice and information on NSAIDs than they were consulted for advice on nutritional supplements (4% v. 2%, respectively).

Discussion

The response rate was 22%, which is typical in this type of population, as football players are difficult to enrol in a large cohort unless at major tournaments. Additionally, the study sought information on a somewhat sensitive subject and athletes are generally reluctant to discuss their personal drug habits.[6] The proportion of missing information in our survey was also a testament to this observation (Tables 1 - 4), as is the fact that this response rate is marginally less than that obtained by other authors on the same subject, who interviewed team physicians instead of the players.[2] However, Huang *et al.*[7] obtained response rates of 94% and 98% in athlete interviews during the Atlanta and Sydney Olympic Games, respectively, while Taioli[8] obtained 95% in a survey of Italian football players. Overall, the response rate in the present study, though low, was considered satisfactory because the results obtained from this study were similar to those from previous studies on the same subject, and the conclusions drawn from these results reflect the same trends as those observed by other authors globally.[2,6-8] This is a good indication that a representative sample was obtained in this study.

Our survey indicated a very high intake of NSAIDs, with 100% of the respondents reporting intake of an NSAID at the time of data collection. These results are similar to those obtained by other authors in similar

Table 1. Demographic data, *n* (%)

Age (years)	
15 - 19	14 (16)
20 - 24	42 (49)
25 - 29	27 (32)
Marital status	
Married/cohabiting	37 (43)
Divorced/widowed	1 (1)
Single	44 (51)
Educational status	
Primary	3 (4)
Secondary	74 (86)
Tertiary	7 (8)
Position of play	
Goalkeeper	16 (19)
Defender	21 (24)
Midfielder	30 (35)
Striker	17 (20)

Table 2. Length of football career and duration of training sessions, *n* (%)

Length of football career (years)	
≤2	7 (8)
3 - 5	3 (3)
≥6	72 (83)
Number of weekly training sessions (days/week)	
≤2	0 (0)
3 - 5	75 (87)
≥6	7 (8)
Duration of daily training sessions (hours)	
0 - 2	2 (2)
3 - 5	45 (52)
≥6	37 (43)

Table 3. Use of nutritional supplements, *n* (%)

Current use of nutritional supplements (*N*=86)	
Yes	48 (56)
No	38 (44)
Types of nutritional supplements (*n*=48)	
Herbal	2 (4)
Mineral	8 (17)
Protein powders	4 (9)
Vitamin	10 (20)
Multiple	3 (6)
Frequency of use of nutritional supplements (*n*=48)	
Never	20 (41)
Daily	10 (21)
Weekly	3 (6)
Twice/week	4 (9)
Monthly	2 (5)
Not sure	9 (20)
Reasons for use of nutritional supplements (*n*=48)	
No response	21 (43)
To boost immunity	2 (5)
To enhance performance	3 (7)
To prevent injuries	1 (4)
To augment diet	1 (1)
To build muscle bulk	7 (15)
To maintain general health	7 (14)
Other (e.g. luck, improved power)	6 (12)
Sources of advice on use of nutritional supplements (*n*=48)	
Self	19 (40)
Physiotherapist	2 (4)
Medical doctor	13 (27)
Nutritionist/dietician	1 (1)
Fitness trainer	2 (4)
Other (traditional healer, family member, fellow player, coach)	7 (15)

Table 4. Use of NSAIDs (*N*=86), *n* (%)

Frequency of use of NSAIDs	
Never	0 (0)
Daily	10 (12)
Weekly	9 (11)
Twice/week	0 (0)
Monthly	5 (6)
Rarely	37 (43)
Sources of information and advice on NSAIDs	
Self	38 (44)
Physiotherapist	15 (17)
Fitness trainer	17 (20)
Medical doctor	3 (4)
Fellow player	8 (9)
Other	5 (6)

cohorts. Holmes *et al.*[3] demonstrated a 96% consumption rate in collegiate football players, 93% of Italian footballers were found to be taking NSAIDs[7] and 100% of gymnasts at the Sydney 2000 Olympic Games were found to be taking NSAIDs.[8] In these studies, 50%, 22% and 100%, respectively, of these athletes took NSAIDs daily, compared with 12% in the present study; however, our results represent a higher NSAID intake than observed during various Fédération Internationale de Football Association (FIFA) World Cup tournaments, where about 40% of football players used NSAIDs.[9] At these tournaments, however, the consumption of NSAIDs far outweighed the injury rate. This liberal use of NSAIDs raises misgivings of whether they are being used solely for therapeutic purposes or whether athletes have discovered their ergogenic aid. This theory is supported by data from other studies, which show that athletes are using NSAIDs for 'prophylactic pain management'.[9] Some use NSAIDs for treatment of injuries, probably because they do not take time off to rehabilitate minor injuries.[1,10] The latter may also explain the high prevalence of use of NSAIDs in our sample, as the majority of the participants had intense training schedules. This ample use of NSAIDs, often without medical advice, reflects that footballers may be unaware of the cumulative adverse effects of NSAIDs on the various body systems,[10] and may have developed these drug habits from early adolescence, considering that the majority of these participants have been playing football from an early age.

In this study, over half of the football players (56%) took nutritional supplements. Vitamin supplements represented the majority of the supplements taken (20%) and were taken daily by ~1/5 players. This is a lot less than the 82% obtained by Taioli[8] among Italian football players, and that observed by Waddington *et al.*[6] in English football players (58%). Vitamins were also the most common form of supplementation (41%) taken by football players during the 2006 FIFA World Cup.[2] In comparison, across sporting disciplines, the use of nutritional supplements is generally upward of 60%.[2,8,9] It is noteworthy, though, that for reasons unknown, African athletes report lower nutritional supplement use than their European and American counterparts, especially in ball sports such as football.[9] Nutritional supplements are not necessary in athletes who are generally healthy by all standards. However, aggressive advertising and endorsements by supplement manufacturers have led to a high use of supplements in highly active individuals, as they purport to aid recovery and assist with altering body composition favourably.[7] Data to support these assertions are equivocal.[11] This uncertainty is even more pertinent in light of the fact that 40% of our participants were found to be taking dietary supplements at their own discretion and without professional advice. This trend exists in athletes from other populations, who have a tendency not to consult club medical personnel before taking supplementation.[6,10] This trend to self-medicate is worrisome, especially to the 9% of the participants who reported taking protein powders that may contain creatine. Creatine and other amino acid preparations, if improperly dosed, may have deleterious effects on vital organs.[6] In addition to the harmful effects that these supplements may have on the body, the risk of cross-contamination with banned substances during manufacture exists, as the manufacture of supplements is not strictly regulated. This, plus inadequate product labelling, may lead to an inadvertent positive dope test.[12] Interestingly, a considerable proportion of our respondents (15%) consulted a traditional healer for supplements, presumably herbal. This is not surprising in the African setting, where the game of football is fraught with rituals, and the use of *juju* (traditional medicine) for luck and victory is rife.[13] However, as the active ingredients of most of these preparations are unknown, the possibility of accidental ingestion of a banned substance also exists.

Study limitations

The data were collected at a single time point, from the footballers' perspective. Drug use frequency may fluctuate during the season and is subject to social and recall bias. Future studies may explore this further over a whole season more objectively, e.g. using blood tests.

Conclusion

The use of NSAIDs and nutritional supplements was high in these Zimbabwean footballers, but lower than in other similar populations. The major concern is that these medications are taken without professional advice or supervision. In addition to providing information on illicit drugs, information on the effects of permitted drugs such as NSAIDs should be disseminated to athletes, as should the risk of unintentional doping with unchecked use of nutritional supplements.

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