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Original paper

Nutritional supplementation habits and perceptions of elite athletes within a state-based sporting institute

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Abstract

The purpose of this investigation was to examine the nutritional supplement intake of athletes from a state-based sports institute. Athletes ($n = 72$) from seven sports (kayaking, field hockey, rowing, waterpolo, swimming, athletics and netball) completed a questionnaire detailing their daily usage and rationale therefore. The large majority (63/72; 87.5 ± 12.5%) of surveyed athletes reported using nutritional supplements, with no difference between female (31/36; 86.1 ± 13.9%) and male (32/36; 88.9 ± 11.1%) athletes. Kayakers (6.0 ± 2.9) consumed a higher number of nutritional supplements than swimmers (4 ± 2.2), field hockey (1.5 ± 1.0), rowing (2.4 ± 1.4), waterpolo (2.3 ± 2.4), athletics (2.5 ± 1.9) and netball (1.7 ± 1.0) athletes. The athletes believed that nutritional supplements are related to performance enhancements (47/72; 65.3%), positive doping results (45/72; 62.5%), and that heavy training increases supplement requirements (47/72; 65.3%). The cohort was equivocal as to their health risks (40/72; 55.6%) or their need with a balanced diet (38/72; 52.8%). The most popular supplements were minerals (33/72; 45.8%), vitamins (31/72; 43.1%), other (23/72; 31.9%), iron (22/72; 30.6%), caffeine (16/72; 22.2%), protein (12/72; 16.7%), protein–carbohydrate mix (10/72; 13.9%), creatine (9/72; 12.5%) and glucosamine (3/72; 4.2%). The majority of supplementing athletes ($n = 63$) did not know their supplements active ingredient (39/63; 61.9%), side effects (36/63; 57.1%) or mechanism of action (34/63; 54.0%) and admitted to wanting additional information (36/63; 57.0%). Only half of the athletes knew the recommended supplement dosages (33/63; 52.4%). The performance enhancing perception may explain the large proportion of athletes that reported using nutritional supplements, despite over half of the athletes believing that supplements are not required with a balanced diet and can cause positive doping violations.

Keywords: Supplements; Questionnaire; Sports academy

1. Introduction

The use of nutritional supplements by athletes has been periodically reported within the literature across the past decade.[1–3] These reports would suggest that the use of nutritional supplementation by athletes is increasing with time.[1,4] Past investigations have suggested that athletes competing at collegiate[5] and elite competition levels[1] consume more nutritional supplements than sedentary or physically active populations.[6] Previously, approximately 65% of Canadian Olympic athletes[1] and 89% of American collegiate-level athletes[2] reported using nutritional supplements as part of their training regime. Interestingly, the use of nutritional supplements by the general public appears to also be increasing with time, with 52% using at least one nutritional supplement and a further 18% using between 2 and 5 supplements.[6] This observation may suggest that there is an increasing societal acceptance of consumption of nutritional supplements, which may help explain the similar trend observed in elite athletes.[1]

Through previous investigations, athletes have reported that they believe a higher consumption of nutritional supplements is required to manage high training loads, maximise recovery, improve training intensities and performance, and/or to avoid illness and maintain health.[7,8] To date, there is limited data to support the notion that generic nutritional supplements (e.g. vitamins, minerals) posses such benefits.[3]

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In contrast, the efficacy of several specific supplements aimed to directly benefit an athlete (e.g. creatine, HMB, protein) has been widely published.[7]

Importantly, selected nutritional supplements should be systematically reviewed by athletes or educated support staff to ensure physiological and performance-enhancement validity, financial viability, and to minimise the likelihood of positive doping violations. The perceived positive benefits seem to justify athletes' higher intake of nutritional supplements given that athletes may be aware of the risks associated with supplement usage.[1,2] The scientific and practical reasons for athletes utilising nutritional supplements appears to be the result of a combination of external factors and influential figures.[1]

In a past investigation, Canadian Olympic athletes reported that in-store employees, fellow athletes, friends, family and coaches were their most commonly used sources for information on nutritional supplements.[1] This report appears concerning due to the lack of in-depth knowledge of nutritional supplements that these individuals may possess and the absence of health professionals as a trusted source of supplement advice. Past reports have demonstrated that using nutritional supplements may place athletes at a higher risk of positive doping violations.[9,10] Therefore, athletes need to be educated to seek advice on nutritional supplementation from sports nutritionists, medical practitioners and/or exercise scientists.[11,12]

Further, social cultures and physical demands in different sports may encourage varying levels of reliance on nutritional supplements.[4,13] To date, existing data examining nutritional supplement use has reported upon Olympic level[1] and college-level[2,5] athletes as well as the general public.[6] Such reports have suggested that nutritional supplements are frequently utilised for their proposed benefits, with many athletes being largely unaware of the associated scientific research that details the apparent benefits, risks and side-effects. While published findings have detailed the nutritional supplement intake of athletes across various competition standards and nationalities, to our knowledge no data is available detailing the self-reported usage of nutritional supplements by athletes within a state-based sports institute in Australia. These athletes may be unique in comparison to previously described athletic populations given the compounding factors such as readily available access to scientific support staff, socioeconomic status and national societal influences. Therefore, the aim of the current study was to detail the nutritional supplements utilised by such athletes, as well as their knowledge and support systems which may be used to justify their use.

2. Methods

Seventy-two athletes ($\bar{X} \pm$ S.D.) (age: 21.9 ± 3.9 years; training volume: 18.9 ± 8.7 h/week) from a state-based sporting institute (Western Australia Institute of Sport) participated in the current survey. This group was split evenly between males ($n = 36$, 23.1 ± 3.3 years; 20.1 ± 8.6 h/week) and females ($n = 36$, 20.7 ± 4.2 years; 17.6 ± 8.7 h/week). The athletes were recruited from eight different sports including kayaking ($n = 5$); swimming ($n = 4$); rowing ($n = 14$); athletics ($n = 13$); netball ($n = 7$); field hockey ($n = 21$), and; waterpolo ($n = 8$). Ethical approval was provided by a local university ethics committee and individual consent was provided prior to the administration of the questionnaire.

Athletes that held scholarships at the sporting institute were interviewed by a researcher in a familiar training environment. For the purpose of the current study, athletes were asked to report all dietary supplements that they were consuming. The questionnaire surveyed the athletes on the following areas:

(1) demographic details (i.e. age, gender, sport, training volume);
(2) nutritional supplement usage;
(3) identification of supplements used;
(4) reasons for taking or not taking nutritional supplements;
(5) general perceptions regarding nutritional supplements;
(6) specific information on their reported supplements;
(7) influential people in deciding on nutritional supplement use.

Details of the results were electronically transferred to Microsoft Excel (Microsoft Corporation™, Redmond, Washington, USA) where the results were collated and analysed. Feedback was provided to all athletes and their respective coaches. Data is presented below as number of positive responses (p) from total number of surveyed athletes (t) and subsequent relative percentage (%) (p/t; %).

3. Results

The results of the questionnaire showed that 63 out of 72 athletes (87.5%) surveyed were taking at least one nutritional supplement. This was similar between male (32/36; 88.9%) and female (31/36; 86.1%) athletes.

The average number of supplements used by athletes across the various sports is shown as Fig. 1. Kayakers and swimmers reported utilising a considerably higher number of supplements compared to the remaining sports. The percentage of athletes that reported utilising various nutritional supplements are shown in Fig. 2. 'Other nutritional supplements' included items such as garlic, horse radish, fish oil and bicarbonate.

Athletes provided a variety of reasons for taking nutritional supplements in their diet (shown as Fig. 3). Other reasons that were used to justify the use of nutritional supplements included aiding hypertrophy, overcoming muscle cramps and breast feeding.

The frequency of general perceptions towards nutritional supplements from the current population is shown in Fig. 4. It would appear that athletes who take nutritional supplements