

## Study of Prevalence of Supplement Use and Knowledge of Men National Team Rowers about Doping and Side Effects

<sup>1</sup>Mohammad Azizi, <sup>2</sup>Ahmad Donya Mali and <sup>3</sup>Elma Tabari

<sup>1</sup>Exercise Physiology, University of Razi, Kermanshah, Iran

<sup>2</sup>Head of Rowing Federation of Iran

<sup>3</sup>Exercise Physiology, University of Guilan, Iran

**Abstract:** The purpose of this study was to investigate prevalence of supplement use and knowledge of men national rowers about doping and side effects. The target population was all national team men rowers of Iran. Researcher-build questionnaire distributed between athletes. After translation, questionnaires were evaluated by professor's faculty of physical education and sport sciences. The reliability analysis yielded Cronbach Alpha values of 0.81. The collected data was analyzed by descriptive and deductive method spss v.16 ( $P < 0.05$ ). The results show that 61.9 % of rowers want to use supplements. The reason for using supplement was speed (26 %), strength (27 %) and endurance (37 %). The knowledge of rowers about supplements and doping was moderate (67.9 %), low (14.2 %), no knowledge (10.7 %) and good knowledge (7.1 %) respectively. Also, the place of purchase of supplement products was pharmacy (39.3 %), coach/trainer (25 %), friends (14.3 %) and clubs (3.6 %) respectively. It can be conclude that rower athletes of Iran should extend their knowledge regarding to the amount of supplement intake and doping. Future research should explore other reason than knowledge which may have influence on supplement and doping use.

**Key words:** Supplement • National rower • Doping

### INTRODUCTION

The word doping originates from dop, a term that conventionally refers to a stimulant drink used in tribal ceremonies in South Africa during the eighteenth century. Doping first appeared in an English dictionary in 1889, where it was described as a narcotic potion for reducing the performance of race horses [1]. There is a long history of doping in sport, since the ancient Greco-Roman times, ergogenic aids in the form of natural products, bland chemical and animal extracts have been commonplace in the attempt to increase human performances. In recent times, remarkable advance in science and biotechnology have favored the introduction of synthetic molecules, recombinant hormones and genetic manipulation of athletes [1, 2].

In the quest to be the strongest and fastest, many athletes consume unproven, potentially harmful or even banned nutritional supplements [3, 4]. In sports, doping conventionally referred to the use of performance enhancing drugs, particularly those that

are forbidden by international world anti-doping agency. From the biological perspective, doping is a substance that can change all bodily functional including cerebral, metabolic, cardiovascular, respiratory, hematological and, in the very near future, genetic [3]. Accordingly, athletes might take great athletic advantage from a variety of nutritional supplements and drugs, which have been originally developed to supply nutrients that are missing or not consumed in sufficient quantity in a person's diet or treat pathologies [1, 5].

In the recent decades use of supplement and ergogenic aids increase progressively. In 1996, consumer spending supplements in the United States was USD 6.5 billion. By 2002, this had ballooned to USD 18 billion, with sports nutritional products making up one-third of sales [6, 4]. In 1998, worldwide consumption of creatine was 2.7 million kilograms, [7, 8] and sales of hydroxy-methyl-butyrate (HMB) reached USD 50-60 million, despite any clear proof of its efficacy in increasing muscle mass or strength [9, 4].

Nutritional supplements can be grouped into dietary supplements, ergogenic aids and sports foods. Their use among athletes ranges from 46% to 100 % [10, 11]. This large variation may be partly explained by methodological differences such as the definition of supplements, characterization of use and mode of data collection. For example, a study that involved 21225 university athletes reported a rate of 42% [12, 13]. Other studies reported rates ranging from 65.4% to 98.6% [10, 11].

Also, about energetic effect of supplements, there is some data supporting the ergogenic potential of sports drinks, caffeine and creatine, most other supplements have not been shown via scientific studies to enhance sports performance [8, 10] Inappropriate use or contamination may cause potential health problems, [4, 14] and the athlete also risks flouting anti-doping regulations [7, 15]. This opinion may moreover turn out to be well founded, as 10-20% of teenagers and up to 61% of adult amateur athletes stated that they obtained anabolic steroids and other banned drugs from a doctor [16, 17].

There are special dilemmas regarding doping in Iran. Athletes usually have no access to expert consultants and frequently get their information from coaches and traders who are not often very well informed. Also, the rate of drug misuse among amateur athletes is high. Furthermore, athletes commonly use drugs which are inappropriate for their sport discipline or may result in various side effects. Inaccessibility of standard supplements is another problem. Therefore the purpose of this study was to investigate prevalence of supplement use and knowledge of men national rowers about doping and side effects.

## **MATERIALS AND METHODS**

The target population consisted entirely of male national team rowers of Iran. Eighty researcher-built questionnaires randomly were distributed between rowers. Out of these, 65 questionnaires were completely filled out and returned. The questionnaire was evaluated by professional faculty of physical education and sport sciences. Reviewers were asked to comment on content, clarity and construction of the questionnaire. Items on the questionnaire were revised to incorporate the reviewer's suggestions.

This questionnaire in order to study prevalence of supplement use and knowledge of men national team rower athletes about doping side effects is provided. First part of the questionnaire included personal information and the second part was contained questions about prevalence, knowledge and attitude about doping,

supplement, ergogenic aids and their side effects. The third part was contained questions about place of purchase of supplement products and how they gain information about supplement and doping. The final part was 8 scale questions that we want athletes to select way of improve knowledge about supplements and doping. An institutional ethics review board at University of Razi- Kermanshah-Iran approved this study. All volunteers provided written informed consent before participation.

The Reliability of the questionnaire was provided by using Cronbach Alpha value of 0.81. The collected data was analyzed by descriptive (mean  $\pm$ SD, Percent and frequency) and deductive (spearman correlation coefficient) methods, spss V.16 ( $P \leq 0.05$ ).

## **RESULTS**

Mean and standard deviation of age, height, weight, Body Mass Index (BMI) and marital status of subjects are in Tables 1. The prevalence use of supplement reported in Figure 1.

The results show that 61.9 % of rowers want to use supplements, But 92.3 % of rowers was disagree with being allowable of ergogenic aids. 71.4 % reported that they look for information about ergogenic aids, doping and side effects, but just 38.5 % could gain enough and suitable information. Rowers reported that they don't have enough information about Oxymetalone, Dianabol and Methane (85.5 %), Nandrolon and Testosterone (59 %) and Growth hormone (58.3 %). Our results show that rowers didn't satisfy from their weight and shape; they use weight loss (40 %) and weight gain (53.6 %) for reaching ideal weight and shape. The reason for using supplement was speed (26 %), strength (27 %), endurance (37 %) and health (10 %). The knowledge of rowers about supplements and doping was moderate (67.9 %), low (14.2 %), no knowledge (10.7 %) and good knowledge (7.1 %) respectively. Also, the place of purchase of supplement products was pharmacy (39.3 %), coach/trainer (25 %), friends (14.3 %) and clubs (3.6 %) respectively. They reported that source of information about supplement was team physician (28.6 %), coach/trainer (21.4 %) teammate (10.7%), internet (10.6 %) and media (3.6 %). Moreover they reportshow that the best ways of improving knowledge of athletes about supplements and doping was federation journals, workshop about supplement and doping, anti-doping agents, establish internet site about doping and supplement in federations, distribute catalog between athletes, respectively.

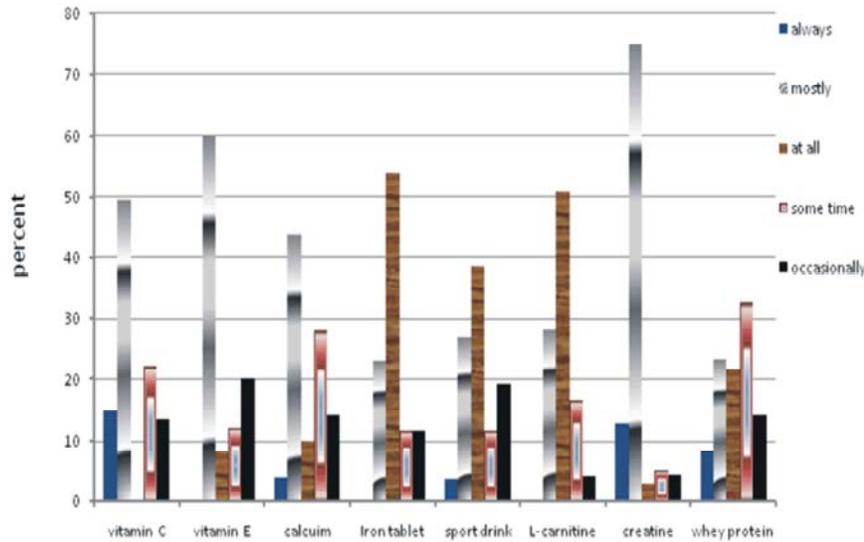


Fig. 1: Frequency use of supplements in rowers

Table 1: Anthropometric characteristics of rowers

Age (yr)		23.2±3.2
Height (cm)		181±7.9
Weight (kg)		75.1±8.8
Body mass index (kg/m <sup>2</sup> )		22.9±1.2
Marital status	Single	93.1
	Married	6.9

## DISCUSSION

The purpose of this study was to investigate prevalence of supplement use and knowledge of men national rower athletes about doping and side effects. In the quest to be the strongest and fastest, many athletes consume unproven, potentially harmful, or even banned nutritional supplements. Also most of people for increase muscle bulk and have mesomorph body style use supplement and ergogenic aids [3, 4].

Our results show that 61.9 % of rowers want to use supplements, these finding is in contrast with Zawila *et al.*, (2003) that show college athlete don't like use supplement and ergogenic aids [18]. May be college athlete in Zawila research have enough knowledge about side effect of ergogenic aids. It can explain that the knowledge of Iranian rowers should be increase, in this way we can be hope that use of supplement and some ergogenic aids in Iranian rowers will be decrease. 71.4 % of rowers reported that they look for information about ergogenic aids, doping and side effects, but just 38.5 % could gain enough and suitable information. In line with our finding, Karegarfard *et al.*, (2007) reported that the knowledge of Iranian athletes about supplement and

ergogenic aids is low [19]. Also a study involving college athletes revealed that 89% of the subjects had used supplements or were using supplements [20]. Additionally, Canadian athletes (94.3%) have been found to use one or more supplements at least once per month [10].

Our results show that rowers mostly consumed creatine, vitamin E, vitamin C, sport drinks and calcium. In line with our finding reported that adolescent consumed protein (14 %), energizers [6 %] and creatine (5 %) [13]. Odea (2003) find that most frequently used nutritional supplement was sport drinks (56 %), with vitamin/mineral tablets second (49 %), followed by energy drinks (42 %), herbal supplements (18 %), guarana and creatine (5 %), high protein milk supplement (4 %) and coenzyme Q10 (1 %) [21]. Ziegler *et al.*, (2003) also found those multivitamin/minerals to be the most popular supplement by both male (61 %) and female (83 %) adolescent athlete [22]. Although exercise may slightly increase the requirements for certain vitamins and minerals [23, 24]. There is currently no conclusive evidence that supplementation enhances health or sports performance. The antioxidant nutrients, vitamins A, C, E, beta-carotene and selenium, may also protect cell membranes against free radical induced oxidative damage during intense exercise [4, 25]. However, data on whether exercise increases the need for antioxidants is equivocal and conflicting and there is no clear consensus on whether supplementation is necessary. But we should know that, Although the risks associated with vitamin and mineral supplementation are not as severe as the risks involved

with using ergogenic aids such as steroids, amphetamines and human growth hormone, young athletes could potentially start out using vitamin and mineral supplements, then progress to more dangerous substances [11]. Many dietary or nutritional supplements have the reputation of being harmless because they consist mainly of naturally occurring compounds and tend to be advertised as safe and legal performance-enhancing substances as opposed to the banned substances such as anabolic steroids. Unfortunately, despite their seemingly 'natural' composition, not all supplements are tested by the Food and Drug Administration (FDA) therefore claims of safeness and reliability cannot be trusted [13]. Furthermore, taking single vitamins and minerals is potentially harmful, as large doses can lead to toxicity and interactions with other nutrients [11, 26].

The reason for using supplement in our rowers was speed (26 %), strength (27 %), endurance (37 %) and health (10 %). Previous studies found that adult athletes using vitamin and mineral supplements frequently and considered them to have the highest impact on healing/rehabilitation, while protein supplements and Creatine were considered to have the highest perceived impact on sport performance [13]. Other reasons for supplement use cited by adult and elite athletes include increased energy, enhanced performance, improved health, prevention of nutritional deficiencies, prevention of illness, increased muscle mass and improved recovery [10, 20].

Iranian rowers reported that source of information about supplement was team physician (28.6 %), coach/trainer (21.4 %) teammate (10.7 %), internet (10.6 %) and media (3.6 %). Tian *et al.*, (2009) reported that nearly 80% information obtained from "questionable" sources, such as the media, the Internet, peers, coaches and trainers [4]. Most coaches and parents have little or no specialised sports nutrition knowledge; hence their advice may be inappropriate, inaccurate or even damaging. Sobal and Marquart (1994) surmised that younger athletes were more likely to be influenced by the media than their doctors [11]. Hence, Iranian rowers must be take care when reading labels or advertisements. They must be cognizant with any additive or synergistic effects of the supplements they intend to consume. Placing misguided faith in a product, or failing to follow administration guidelines, not only waste precious financial resources, but may also expose them to adverse effects or detract from other more worthwhile performance-enhancing strategies, such as sound training and nutrition.

## CONCLUSION

This study indicates that the prevalence of nutritional supplement use is widespread among national rower's athletes in Iran. Besides products with sound scientific backing, many also use supplements and traditional/herbal preparations that have not been validated by rigorous scientific investigation. As athletes and coaches have ready access to an ever-increasing range of supplements and sports foods, there is thus a need to educate them and provide reliable information regarding appropriate use, potential benefits and side effects. This will enable them to make informed decisions and reduce the risks associated with the misuse of supplements.

## REFERENCES

1. Giuseppe Lippi, Massimo Franchini and Gian Cesare Guidi, 2008. Doping in competition or doping in sport. *British Medical Bulliten*, 86: 95-107.
2. American College of Sports Medicine, 1997. Position statement on the use of anabolic-androgenic steroids in sports. *Sports Med Sci Sport Exerc.*, 19: 534-9.
3. Manson, M.A., M. Giza, L. Clayton, J. Lonning and R.D. Wilkerson, 2001. Use of nutritional supplements by high school football and volleyball players. *The Iowa Orthopedic J.*, 21: 43-8.
4. Tian, H., W.S. Ong and C.L. Tan, 2009. Nutritional supplement use among university athlete in Singapore. *Singapor Medicine J.*, 50(2): 165-172.
5. Green, G.A., F.D. Uryasz, T.A. Petr and C.D. Bray, 2001. NCAA study of substance use and abuse habits of college student athletes. *Clin J. Sport Med.*, 11: 51-6.
6. Juhn, M.S., 2001. ergogenic aids in student athletes. *Clin J. Sport Med.*, 11(1): 51-6.
7. Kamber, M., N. Baume, M. Saugy and L. Rivier, 2001. Nutritional supplements as a source of positive doping cases. *Int. J. Sport Nutr. Exerc. Metab.*, 11: 258-63.
8. Williams, M.H., R.B. Kreider and J.D. Branch, 1999. *Creatine: The Power Supplement*. Champaign, IL: Human Kinetics.
9. Juhn, M.S., 2003. Popular sport supplement and ergogenic aids. (Review). *Sport Med.*, 33(12): 921-39.
10. Kristiansen, M., R. Levy-milne and S. Barr, 2005. Dietary supplement use by varsity athlete at a canadian university. *International J. Sport Nutrition and Exercise Metabolism*, 15(1): 195-210.

11. Sobal, J. and L.F. Marquart, 1994. Vitamin/mineral supplement use among athlete: a review of literature. *International Journal Sport Nutrition*, 4: 320-324.
12. Nieper, A., 2005. Nutritional supplement practices in UK junior national track and field athletes. *British J. Sports Medicine*, 39: 645-649.
13. Jill Anne McDowall, 2007. Supplement use by young athlete. *J. Sports Science and Medicine*, 6: 337-342.
14. Pipe, A. and A. Christiane, 2002. Nutritional supplement and doping. *Clin J. Sport Med.*, 12: 245-9.
15. Scofield, D.E. and S. Unruh, 2006. Dietary supplement use among adolescent athletes in central Nebraska and their sources of information. *J. Strength and Conditioning Res.*, 20(2): 452-455.
16. Laure, P., C. Binsinger and T. Lecerf, 2003. General practitioners and doping in sport: attitudes and experience. *British J. Sport Medicine*, 37: 335-338.
17. Tymowski, G. and C. Somerville, 2001. The use of performance-enhancing substances by New Brunswick students: Pilot study report. A collaborative venture between Faculty of Kinesiology, University of New Brunswick and Royal Canadian Mounted Police, pp: 1-32.
18. Zawila, L., C.M. Stebib and B. Hoogenboom, 2003. The female collegiate cross-country runner: nutrition knowledge and attitude. *J. Athletic Training*, 38: 67-74.
19. Kargarfard, M. and A. Kashi, 2007. Prevalence of use anabolic androgenic steroid and awareness of Isfahan University students about their side effect. *Quarterly J. Fundamentals of Mental Health*, 8(1-2): 73-82.
20. Froiland, K., W. Koszewski and J. Hingst, 2004. Nutritional supplement use among college athlete and their sources of information. *International J. Sport Nutrition and Exercise Metabolism*, 14(1): 104-120.
21. O'Dea, J.A., 2003. Consumption of nutritional supplements among adolescents: usage and perceived benefits. *Health Education Res.*, 18(1): 98-107.
22. Ziegler, P.J., J.A. Nelson and S.S. Jonnalagadda, 2003. Use of dietary supplements by elite figure skaters. *International J. Sport Nutrition and Exercise Metabolism*, 13: 266-276.
23. Van Eenoo, P. and F.T. Delbeke, 2003. The prevalence of doping in Flanders in comparison to the prevalence of doping in international sports. *Int. J. Sport Med.*, 24(8): 565-70.
24. American College of Sports Medicine; American Dietetic Association; Dietitians of Canada. Joint Position Statement, 2000. Nutrition and athletic performance. American College of Sports Medicine, American Dietetic Association and Dietitians of Canada. *Med. Sci. Sports Exerc.*, 32: 2130-45.
25. Sarlak, M., M. Shojaei and A. Kashi, 2007. Prevalence of use of ergogenic aid in Iranian women elite athletes. MS. Dissertation. Arak University, College of Sciences in Physical Education, pp: 1-100.
26. Maughan, R.J., D.S. King and T. Lea, 2004. Dietary supplements. *J. Sports Sci.*, 22: 95-113.