# 44 - NUTRITIONAL SUPPLEMENTS FOR ATHLETES: KNOWLEDGE OF NUTRITION UNDERGRADUATE STUDENTS

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## INTRODUCTION

Nutritional supplements are defined as foods that serve to complement with calories and / or nutrients the daily diet of a healthy person, in cases in which their intake, from the diet, is insufficient, or when the diet requires supplementation (Resolution No. 380/2005 from the Federal Council of Nutritionists - CFN). The cases in which nutritional supplements are indicated are: specific physiological states, pathological states and metabolic disorders (BRAGGION, 2008). However, their consumption has increased among practitioners of physical activity, who believe that, for exercise, it is necessary to make use of some supplementation (KALMAN et al., 2004).

This behavior can be attributed to the result of marketing strategies of food industries, leading to increased release of functional foods enriched with substances considered beneficial and / or with low level of components associated with increased risk of diseases (SANTOS; BARROS FILHO, 2002). Unfortunately, most of these advertisements are based only on theories, information taken from witnesses and empirical statements or on exaggerated or erroneous interpretations of scientific research findings (WILLIAMS, 2005). For this reason, sports nutrition professionals need to know how to evaluate the scientific merit of articles and advertisements about nutritional products in order to distinguish between what is marketing from what is scientifically based on evidence (KREIDER, et al., 2004).

The current context requires that training courses for nutritionists to adapt to these new market requirements, including themes, contents or disciplines that enable dietitians to deal with clinical, physiological and marketing issues involving the prescription of nutritional supplements. Despite these new demands, several previous studies have assessed the prevalence of consumption and level of knowledge of practitioners of various sports events (SILVA, 2002; PEREIRA; CABRAL, 2007), but the level of knowledge of professionals involved with this issue (doctors, dietitians, nutritionists and physical education professionals) has not been properly investigated. Therefore, investigations on the learning degree of undergraduate students on sports supplementation is also a topic that deserves to be examined, since it still represents a gap in this research field.

In this context, the objective of this study was to assess the level of knowledge of undergraduate nutrition students from the Federal University of Paraíba on nutritional supplements for physical activity.

## MATERIAL AND METHODS

This is a cross-section, descriptive, population, quantitative approach and non-probabilistic study conducted with all students from both genders enrolled in the Undergraduate Nutrition Course, Department of Nutrition and Health Sciences, Federal University of Paraíba. Students up to the third period of the Nutrition Course were excluded for not being part of the professionalization period of the course, as well as those in the last period for being in supervised training activities outside the university campus. As a result, a total 124 students filled the questionnaire, which represented 43.05% of the total number of students enrolled during the research period. The study protocol was approved by the ethics committee in research of the CCS / UFPB under number 0007/2008, and all subjects signed the free and cleared consent form.

Instruments: The instrument was previously formulated by the researchers and submitted to a nutrition compliance specialist with experience in researching using questionnaires, which suggested corrections of interpretation in the formulation of questions in the forms and criteria for responses.

As a result, the instrument was left with eight questions as follows: two subjective questions formulated to conceptualize nutritional supplementation and ergogenic resources and the others were objective-type questions, which aimed to assess whether the subjects practiced exercises, the goals of this practice, indication and use of supplements, as well as sources used for finding information on these supplements.

Data collection: first, the number of students enrolled in the fourth to seventh period was surveyed and the schedule of classes at these periods was verified.

Then, researchers came into contact with teachers of subjects and requested a time of 30 minutes from their classes for the administration of the questionnaire. It was requested that this time was the interstice between two of its activities for that class as a strategy so that students would not rush to answer the questionnaire because they knew they could be released at the end of it.

Students absent on the day of application of questionnaires were later contacted by researchers and asked to provide some time to answer the questionnaire individually.

Statistical analysis: Data were treated through descriptive statistics of mean, standard deviation of the mean, frequency and percentage. As inferential statistics, the chi-square test was applied for associations between two variables with a significance level of 5%. All procedures were performed using the SPSS 8.0 software for Windows.

## RESULTS

Profile of students: during the survey, the nutrition course did not have any discipline on sports nutrition in its curriculum. Only in subjects Normal Nutrition I and II, professor linked sports nutrition topics associated with the program content of these disciplines. The students had a mean age of 21.9 ± 2.2 years. Table 1 presents their characteristics, which shows that they are equitably distributed among the four periods studied, being predominantly composed of women, and most are not practicing any form of exercise. Among those who were engage in physical exercises, health promotion (17.7%), hypertrophy (14.5%), entertainment (10.5%) and weight loss (4.8%), are the goals mentioned by these subjects.

Table 1: Characteristics of study subjects

| Variables | Frequency | |
|---|---|---|
| | N | % |
| Gender | | |
| Male | 16 | 12.9 |
| Female | 108 | 87.1 |
| Age group (years) | | |
| 19 to 22 | 89 | 71.8 |
| 23 to 26 | 30 | 24.2 |
| ≥ 27 | 5 | 4.0 |
| Period | | |
| Fourth | 31 | 25.0 |
| Fifth | 31 | 25.0 |
| Sixth | 28 | 22.6 |
| Seventh | 34 | 27.4 |
| Practice of physical exercises | | |
| Practice some sports event | 39 | 31.5 |
| No practice of PE | 85 | 68.5 |

Data represent absolute and relative frequencies. There were no differences in the frequency of students between periods studied.

Data from this study showed that 29% of students made use of some nutritional supplement prior to the study. The only variable that influenced the supplement intake was gender, with men showing a statistically higher consumption than women (Table 2).

It could be observed from this table that a wide variety of health professionals or laymen indicated supplements for students and the highest prevalence was made by doctors.

However, when asked what would be the most appropriate professional to prescribe supplements, the vast majority (97.6%) replied that it should be a nutritionist professional. With respect to objectives, it was observed that the use of supplements like vitamin complexes that has the objective of improving health (health promotion item in Table 2) and hypertrophy were the most reported by students evaluated.

Level of knowledge on sports supplementation: It was observed that 54% of students showed a consistent response with respect to the concepts presented in literature to the question "What are nutritional supplements". For the phenomenon "Ergogenic resources"; however, only 16 (9%) of students showed responses compatible with literature.

The knowledge on the concept "Ergogenic resources" was associated with male gender ($p = 0.000$). Only 6.5% of the students had already sought information on legislation on the legal aspects of sports supplementation. Again, it was observed that men sought information on legislation more than women ($p = 0.000$).

Between periods, no differences were found in responses of student to any of these variables.

Table 2: Prevalence of consumption, indication and objectives of the use of nutritional supplements by students from the undergraduate nutrition course.

| | Frequency | Percentage |
|---|---|---|
| Prevalence of use of supplements | | |
| Male | 10 | 62.5 * |
| Female | 26 | 24.1 |
| Indication of supplements | | |
| Friend | 1 | 2.8 |
| Doctor | 12 | 33.3 |
| Self-prescription | 7 | 19.4 |
| Nutritionist | 5 | 13.9 |
| Physical Educator | 4 | 11.1 |
| Doctor and Nutritionist | 1 | 2.8 |
| Nutricionist, Endocrinologist and Personal training | 1 | 2.8 |
| Relatives | 2 | 5.6 |
| Not responded | 3 | 8.3 |
| Objectives | | |
| Health promotion | 16 | 44.5 |
| Hypertrophy | 13 | 36.1 |
| Weight loss | 2 | 5.5 |
| Others | 7 | 19.5 |

Data represent the absolute and relative frequencies. * Indicates statistical difference between the consumption of men versus women

Figure 1 shows that albumin, creatine, vitamin supplements and maltodextrin were well known by nutrition students. The other supplements were known by less than 40% of students. It was also noticed that the responses did not change between students from the 4th to 7th period or between genders.

Figure 2 shows the main resources that were mentioned by students as source of information on various subjects involving supplementation for practitioners of physical exercise and ergogenic resources. Papers were the most cited sources, but it attracted attention the fact that 22.6% of students sought information on sources other than papers such as magazines, books or newspapers (not scientific).

**DISCUSSION**

The prevalence of use and level of knowledge about nutritional supplements and ergogenic resources have been widely investigated in different populations of athletes and recreational practitioners of physical exercises. However, the level of knowledge about this issue among students and / or health professionals has not yet been evaluated in these studies. To our knowledge, this is the first study, at least in Brazil, which investigated the use and level of knowledge of undergraduate nutrition students on supplementation and ergogenic resources for practitioners of physical activities. The fact that the level of knowledge

has not changed among students from the 4th to the 7th periods unequivocally indicates that nutrition students graduate without adequate knowledge to perform their professional activities in the sports nutrition area.

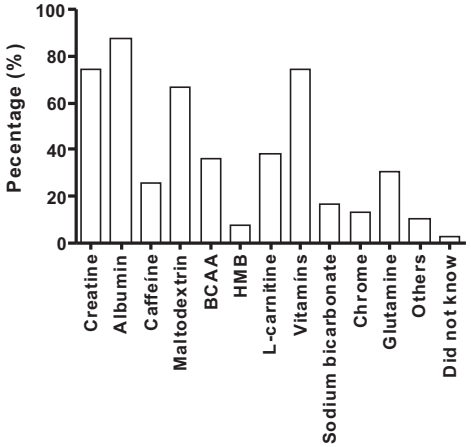


Figure 1: Level of knowledge on the main nutritional supplements available in market at the time of the survey. Data are expressed as percentage of students who had knowledge on nutritional supplements. No differences were found in responses between the four periods investigated. The men evaluated in this study had a tendency to be more physically active (p = 0.06), and it was demonstrated that they used significantly more supplements than women. As a consequence, they had better results on items knowledge on the definition of ergogenic resources and greater interest in legislation. This phenomenon shows that physical activity, rather than vocational formation, was the determining factor for students to search for nutrition information about this area.

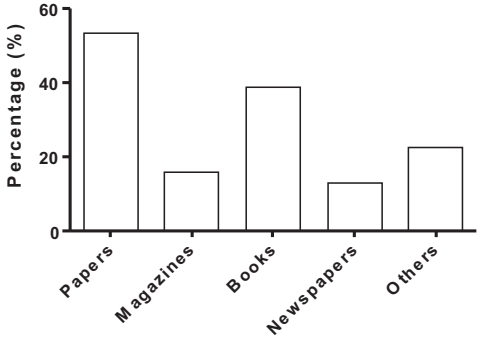


Figure 2: Sources of information most used by nutrition students to learn about supplements for the practice of physical exercises and ergogenic resources.

Interestingly, the vast majority of students feel that the dietitian is the professional who must be legally entitled to intervene in the prescription of sports supplementation. Nevertheless, the data from this study showed that almost 50% of the prescriptions made to nutrition students who made use of supplementation were performed by doctors and / or physical education professionals. These data corroborate with other studies, which never indicate nutritionists as the professionals that most prescribe nutritional supplements to practitioners of physical exercises (PEREIRA et al, 2003; JUNQUEIRA et al, 2007; REIS et al, 2006). An aggravating factor is that over 20% of subjects in our study used supplements on their own or by indication of laymen. This data could be attenuated by the fact that the population of our study was composed of nutrition students. However, similar results were found with lay people, where 42.8% of subjects self-prescribed supplements (HIRSCHBRUCH et al, 2008).

Increased knowledge about creatine and maltodextrin by the subjects of our study corroborates data from Silva (2002), who reported that creatine and carbohydrate compounds were the supplements most used by practitioners of physical activities. However, what attracted our attention was the fact that only 4 out of 11 supplements that were included in this research were known by most students. Other products as common as caffeine, BCAA, HMB and glutamine were unknown for at least 60% of subjects in our study.

Encouraging information was the fact that the sources most used by subjects in this study on supplement information were papers and books. This is explained by the fact that the subjects of this investigation were nutrition students. In fact, curiosity added to the interest observed by the mere fact of being a nutrition student can be a reason for the positive outcome regarding such knowledge. A study conducted by Gomes et al. (2008) with lay individuals showed results very different from those of this study, where 51% of study subjects reported using the labels of supplements as source of information on nutritional products they used.

**FINAL CONSIDERATIONS**

Data from this study suggest that the nutrition students investigated have insufficient level of knowledge on nutritional supplements and ergogenic resources. Altogether, data from this study highlight the need for greater disclosure, especially in academia, on the law aspects and efficacy and safety studies on nutritional supplements. This should preferably be done by the implementation of disciplines including sports nutrition in the curriculum of undergraduate nutrition courses in this and in all other nutrition courses. In fact, during this study, there was no discipline on sports nutrition in the nutrition course investigated. However, upon the completion of this manuscript, the course had provided one elective discipline where sports nutrition and

supplementation are the contents taught. Thus, with a few more years ahead, a new study should be conducted to assess the impact of this discipline in the formation of nutrition students.

**BIBLIOGRAPHIC REFERENCES**

BRAGGION, G. F. **Suplementação alimentar na atividade física e no esporte – aspectos legais na conduta do nutricionista.** Nutrição Profissional, São Paulo, n 17, p. 40-50, jan. 2008.

GOMES, G. S.; DEGIOVANNI, G. C.; GARLIPP, M. R.; CHIARELLO, P. G.; JORDÃO JR, A. A. **Caracterização do consumo de suplementos nutricionais em praticantes de atividade física em academias.** Medicina, Ribeirão Preto, v. 41, n. 3, p. 327-331, 2008.

HIRSCHBRUCH, M. D.; FISBERG, M.; MOCHIZUKI, L. **Consumo de suplementos por jovens freqüentadores de academias de ginástica em São Paulo.** Rev Bras Med Esporte, Niterói, v. 14, n. 6, dez. 2008.

JUNQUEIRA, J. M.; MAESTÁ, N.; SAKZENIAN, V.M.; BURINI, R. C. **Uso de suplementos nutricionais e conhecimentos dietéticos de freqüentadores de academias de Botucatu/SP.** Nutrição em Pauta, jul. 2007.

KALMAN, D.S.; CAMPBELL, B. **Sport nutrition: What the future may bring.** Sport nutrition Review Jornal. v. 1, n 1, p.61-66, 2004.

KRIDER, R. B. et al,. **Issn Exercise & Sport Nutrition Review: Research & Recommendations.** Sports Nutrition Review Journal v.1 n.1, p.1-44, 2004.

PEREIRA, J. M. O.; CABRAL, P. **Avaliação dos conhecimentos básicos sobre nutrição de praticantes de musculação em uma academia da cidade de Recife.** Revista Brasileira de Nutrição Esportiva, São Paulo, v. 1, n. 1, p. 40-47, jan. 2007.

PEREIRA, R. F.; LAJOLO, F. M.; HIRSCHBRUCH, M. D. **Consumo de suplementos por alunos de academias de ginástica em São Paulo.** Revista de Nutrição, Campinas, v.16, n.3, p.265-272, jul. 2003.

REIS, M. G. A.; MANZONI, M.; LOUREIRO, H. M. S. **Avaliação do uso de suplementos nutricionais por freqüentadores de academias de ginástica em Curitiba.** Nutrição Brasil, v.5, n.5, p.257, set. 2006.

Resolução nº 380 do Conselho Federal de Nutricionistas, de 9 de dezembro de 2005. **Dispõe sobre a definição das áreas de atuação do nutricionista e suas atribuições, estabelece parâmetros numéricos de referência, por área de atuação, e dá outras providências.** Diário Oficial da União, Brasília, DF, publicada em 10 de janeiro de 2006.

Resolução nº 390 do Conselho Federal de Nutricionistas, de 22 de novembro de 2006. **Regulamenta a prescrição dietética de suplementos nutricionais pelo nutricionista e dá outras providências.** Diário Oficial da União, Brasília, DF, publicada em 22 de novembro de 2006.

SANTOS, K. M. O; BARROS FILHO, A.A. **Consumo de produtos vitamínicos entre universitários de São Paulo, SP.** Revista Saúde Pública, São Paulo, v. 36, n.2, 2002.

SILVA, M. S.; CARVALHO, M. S. **Análise da suplementação nutricional dos atletas da seleção brasiliense de karatê.** Rev. Bras. Cienc. Esporte, v.24, n.1, p.127-137, set. 2002.

WILLIAMS, M. H. **Nutrição para a saúde, condicionamento físico e desempenho esportivo.** Manole, Barueri, São Paulo, 2005.

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**NUTRITIONAL SUPPLEMENTS FOR ATHLETES: KNOWLEDGE OF NUTRITION UNDERGRADUATE STUDENTS**

**ABSTRACT**

For being a phenomenon that showed large growth only in this decade, sports supplementation is still a relatively unexplored subject in the curricula of undergraduate health students. Thus, the objective of this work was to evaluate the level of knowledge of undergraduate nutrition students on nutritional supplementation for athletes. To do so, a cross-section, descriptive, population and quantitative approach study was conducted with 124 students enrolled from the fourth to seventh period of the course, 87.1% females with mean age of 21.9 ± 2.2 years. It was found that among 11 supplements mentioned, the students demonstrated sufficient knowledge only about albumin, creatine and vitamins. Men had a significantly greater interest in seeking information on legislation on nutritional supplements (P <0.05). Similarly, they were more knowledgeable on the concept of ergogenic (P <0.05). It was also found a correlation between gender and the consumption of supplements (P <0.05), where men made greater use. The doctor was seen as the professional that most prescribed supplements among individuals surveyed (33.3%). Nevertheless, it was observed that the majority (97.6%) chose the dietitian as the most suitable for prescribing supplements. It follows therefore that the absence of a discipline of sports supplementation impairs the knowledge of nutrition undergraduates on nutritional supplements for the practice of physical exercises. This study highlights the need for the implementation of disciplines including sports nutrition in the curriculum of undergraduate nutrition courses.

**KEYWORDS:** knowledge, students, nutritional supplements.

**SUPPLÉMENTS NUTRITIFS POUR ATHLÈTES: CONNAISSANCE DES ÉTUDIANTS DE PREMIER CYCLE NUTRITION**

**RÉSUMÉ**

La supplémentation en sport est toujours un sujet relativement peu exploré dans les programmes de santé de premier cycle, même en ayant considé que c'est un phénomène qui a connu une importante croissance population de cette seule décenni. Ainsi, l'objectif était d'évaluer les connaissances des étudiants diplômés dans la nutrition sur la supplémentation nutritionnelle pour les athlètes. En tant que tel, il ya une population à l'étude de caractère, une approche transversale à visée descriptive et quantitative avec 124 élèves inscrits dans la quatrième femme à septième période du cours, et de 87,1%, âge moyen 21,9 ± 2 2 années. Il a été constaté que parmi les 11 suppléments en question, les élèves ont démontré une connaissance suffisante de l'albumine, de la créatine et des vitamines seulement. Les hommes avaient un intérêt nettement plus dans la recherche d'informations sur la législation sur les compléments alimentaires (P <0,05). De même, ils étaient mieux informés de la notion de ergogéniques (P <0,05). On a également constaté une corrélation entre le sexe et la consommation de suppléments (P <0,05), où les hommes utilisent davantage. Le médecin a été considéré comme suppléments les plus prescrits chez les professionnels personnes interrogées (33,3%). Néanmoins, il a été observé que la majorité (97,6%) ont choisi la diététiste comme la plus appropriée pour prescrire des suppléments. Il s'ensuit donc que l'absence d'une discipline de la supplémentation

sportive diminue de connaissances des diplômés de la nutrition sur les suppléments nutritionnels pour les exercices pratiques. Cette étude met en évidence la nécessité d'une mise en œuvre de disciplines qui comprennent la nutrition sportive dans le programme des cours de premier cycle en nutrition.

**MOTS-CLÉS:** connaissances, étudiants, suppléments nutritionnels.

**SUPLEMENTACIÓN NUTRICIONAL PARA ATLETAS: CONOCIMIENTO DE ESTUDIANTES DE GRADO EN NUTRICIÓN**

**RESUMEN**

Por ser un fenómeno que presentó un gran crecimiento poblacional, sólo en esta década, la suplementación deportiva es todavía un tema poco aprovechado en las currículas de las carreras de grado en el área de salud. De este modo, se buscó evaluar el conocimiento de los estudiantes de grado en nutrición sobre la suplementación nutricional para atletas. Para ello, se realizó un estudio de carácter poblacional, de tipo transversal, descriptivo y abordaje cuantitativa con 124 estudiantes inscriptos entre el cuarto y el séptimo período de la carrera, siendo 87,1% del género femenino, con edad media de 21,9 ± 2,2 años. Se constató que entre 11 suplementos presentados, las estudiantes demostraron conocimientos suficientes apenas sobre albumina, creatina y vitamínicos. Los hombres presentaron un conocimiento significativamente mayor en cuanto a la búsqueda de informaciones en la legislación sobre suplementos nutricionales ($P < 0,05$). Del mismo modo, se mostraron más conocedores del concepto de ergogénicos ($P < 0,05$). Fue encontrada, también, una correlación entre los géneros y el consumo de suplementos ($P < 0,05$), donde los hombres presentaron un uso mayor. El médico fue visto como el profesional que más recetaba suplementos entre los individuos investigados (33,3%). A pesar de esto, se observó que la mayoría (97,6%) eligió al nutricionista como el más indicado para recetar suplementos. Se concluye, por tanto, que la ausencia de una disciplina específica sobre suplementación deportiva interfiere de forma negativa en el conocimiento de los graduandos en nutrición sobre suplementos nutricionales para quien practica ejercicios físicos. Este estudio apunta la necesidad de implementar disciplinas que contemplen la nutricón deportiva en la currícula de la carrera de grado en nutrición.

**PALABRAS CLAVE:** conocimiento, estudiantes, suplementos nutricionales.

**SUPLEMENTAÇÃO NUTRICIONAL PARA ATLETAS: CONHECIMENTO DE ESTUDANTES DE GRADUAÇÃO EM NUTRIÇÃO**

**RESUMO**

Por ser um fenômeno que apresentou grande crescimento populacional somente nesta década, a suplementação esportiva ainda é um tema pouco explorado nos currículos dos cursos de graduação em saúde. Desta forma, objetivou-se avaliar o conhecimento dos estudantes de graduação em nutrição sobre a suplementação nutricional para atletas. Para tanto, fez-se um estudo de caráter populacional, do tipo transversal, descritivo e abordagem quantitativa com 124 estudantes matriculados do quarto ao sétimo período do curso, sendo 87,1% do gênero feminino, com idade média 21,9±2,2 anos. Constatou-se que dentre 11 suplementos questionados, os estudantes demonstraram conhecimento suficiente apenas sobre albumina, creatina e vitamínicos. Os homens apresentaram um interesse significativamente maior em buscar informações na legislação sobre suplementos nutricionais ($P < 0,05$). Do mesmo modo, eles se mostraram mais conhecedores do conceito de ergogênicos ($P < 0,05$). Foi encontrada ainda uma correlação entre os gêneros e o consumo de suplementos ($P < 0,05$), onde os homens faziam maior uso. O médico foi visto como o profissional que mais prescrevia suplementos entre os indivíduos investigados (33,3%). Apesar disto, observou-se que a maioria (97,6%) elegeu o nutricionista como o mais indicado para prescrever suplementos. Conclui-se, portanto, que a ausência de uma disciplina de suplementação esportiva interfere negativamente no conhecimento dos graduandos de nutrição sobre suplementos nutricionais para praticantes de exercícios físicos. Este estudo aponta a necessidade da implementação de disciplinas que contemplem nutrição esportiva na grade curricular do curso de graduação em nutrição.

**PALAVRAS-CHAVE:** conhecimento, estudantes, suplementos nutricionais.