

**REASONS FOR NUTRITIONAL SUPPLEMENTS USE BY PHYSICAL ACTIVITY PRACTITIONERS OF ANTÔNIO PRADO-RS**Sabrina Susin<sup>1</sup>Juliana Zortéa<sup>2</sup>Bruna Bellincanta Nicoletto<sup>3</sup>**ABSTRACT**

Objective: To verify the reason for the use of nutritional supplements among gym goers in Antônio Prado-RS. Cross-sectional study evaluating all 222 physical activity practitioners attending the five gyms in the city using nutritional supplements. Whey protein was the most used supplement (40.5%). The frequency of whey protein, maltodextrin, creatine, caffeine, BCAA and mass gainer was higher, while collagen and omega-3 was lower in those looking for hypertrophy. For weight loss, there was a higher use of whey protein, maltodextrin, caffeine and BCAA. For well-being, collagen use was higher than whey protein, creatine and BCAA. In conclusion, proteins were more commonly used between those looking for hypertrophy and weight loss, while collagen was related to well-being.

**Key words:** Knowledge. Nutrition supplements. Fitness clubs. Physical activity.

**RESUMO**

Motivo do uso de suplementos nutricionais por praticantes de atividade física de Antônio Prado-RS

Objetivo: Verificar o motivo de uso de suplementos nutricionais entre frequentadores de academias de Antônio Prado-RS. Estudo transversal incluindo 222 praticantes de atividade física frequentadores das 5 academias da cidade que utilizavam suplementos nutricionais. O whey protein foi o mais utilizado (40,5%). O uso de whey protein, maltodextrina, creatina, cafeína, BCAA e hipercalórico foi maior, enquanto colágeno e ômega-3 foi menor em quem busca hipertrofia. Para emagrecimento, houve maior uso de whey protein, maltodextrina, cafeína e BCAA. Para busca de saúde/bem-estar, foi maior o uso de colágeno e menor whey protein, creatina, BCAA. Em conclusão, proteínas foram mais utilizadas na busca por hipertrofia e emagrecimento, enquanto o colágeno foi relacionado a saúde/bem-estar.

**Palavras-chave:** Conhecimento. Suplementos nutricionais. Academias de ginástica. Atividade física.

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**INTRODUCTION**

Nowadays, the society aims evermore for beauty standards. The environment of gyms favors standards of a lean body, less body fat and increase of lean mass (Hirschbruch and collaborators, 2008). Inside gyms, nutritional supplements have gained prominence.

Besides, media promotes vast advertisement and propagates promises attributed to these products. This search for supplementation has increased among gym goers, even if no conclusive studies about dietetic supplementation and extensive use of these products are available. This indiscriminate use, instead of providing benefits, can induce an inadequate diet and health risks (Silva, Ferreira, 2014).

Young people who are physically active are the most frequent users of nutritional supplements, since they believe that supplements are effective for physical appearance improvement and weight loss (Hirschbruch and collaborators, 2008).

Adults and elderly people aim for quality of life and performance improvement (Perez and collaborators, 2018).

Women use supplements mainly to correct dietary inadequacies, and men in order to increase muscular strength and sport agility (Froiland and collaborators, 2004).

Commercialized in the form of pills, liquids, gels, dusts or bars, these substances can be derived from plants, vitamins, amino acids, proteins, minerals, carbohydrates and others. Despite this great variety, the most consumed supplements are proteins and amino acids, in most cases in order to increase muscle mass and improve recovery (Ferreira, Quintão, 2016).

Unfortunately, this use, in most of times, happens without the necessary orientation, as a result of recommendations from gym mates, trainers, magazines or websites (Gomes and collaborators, 2017).

These products are easily bought in drugstores and/or gyms. This way, people end up not bothering with an adequate diet, believing that the just supplement use will bring positive results (Panza and collaborators, 2007 and Reinaldo and collaborators, 2016).

Media has a lot of influence and physical activity practitioners consume these products without knowing the real purpose and the risks they can bring (Zago and collaborators, 2010).

In this context, the aim of this work was to verify the reason for nutritional supplements use among gym goers from gyms of the city of Antônio Prado-RS.

**MATERIALS AND METHODS****Outlining and research population**

This is a cross-sectional study, including 222 nutritional supplement users, men and women aged 18 or more, gym goers of the city of Antônio Prado-RS.

This is a convenience sample, with data collection from all the five gyms in the city in the period between December 2018 and March 2019.

All registered members at gyms were addressed. Because of this, no sample calculation was performed.

Those users which attended the gym at least once a week, performing any physical activity such as weight training, aerobic, functional or dancing were included in the study.

Exclusion criteria were: members under age 18, pregnant women, lactating women or individuals who did not want to participate in the study. During the study there was no loss of participants.

The research project was approved by the institutional Ethical Committee (Comitê de Ética e Pesquisa da Universidade de Caxias do Sul), under the number 2.988.949. All participants received information and clarifications about the study protocol and their participation. Participants signed a free and clarified consent term before their inclusion in the study.

**Data collection**

Data collection was performed through a self-administered questionnaire, which was answered in the gym.

Participants were addressed and invited to participate in the research at gym entrances. After the verification of eligibility criteria, participants were invited to answer the questionnaire created by the researchers.

Research questionnaire included questions related to the characteristics of the sample, such as height, weight, education, income, age, sex and marital status. There were also questions about life habits such as: time of physical activity, frequency and duration of

exercises, smoking habits, balanced diet, if one receives or has ever received nutritional guidance and questions about the macronutrient that has to be consumed as the larger portion on a diet to evaluate individual knowledge related to that aspect in nutrition. About nutritional supplements it was asked which one was used by the participant, the reason for it, for how long the use has been going on, if one knows about the risks and what was the source of orientation.

Addressing was performed randomly on week days during different times, contemplating morning, afternoon, evening and night during all week days in order to reach all registered members at the gyms.

### Statistical analysis

Data was analyzed through Statistical Package for Social Sciences software, version 20.0 (SPSS Inc, Chicago, IL). Continuous variables were tested as to normality by Shapiro Wilk test. Variables with normal distribution are

presented as mean  $\pm$  standard deviation and non-parametric variables as median (interquartile range).

Categorical variables are presented as absolute numbers and percentage. The association between type and reason for supplement use and other variables were tested by the Spearman coefficient, since the variable presented non-parametric distribution. Significance level adopted was  $p < 0.05$ .

### RESULTS

Among all five evaluated gyms, the number of registered members active in the period was of 816. Of these, 526 did not use any nutritional supplement, 64 were younger than 18 years old, 3 were pregnant e 1 did not want to participate.

Thus, 222 individuals were included in the present study. The flowchart of the study is presented in Figure 1.

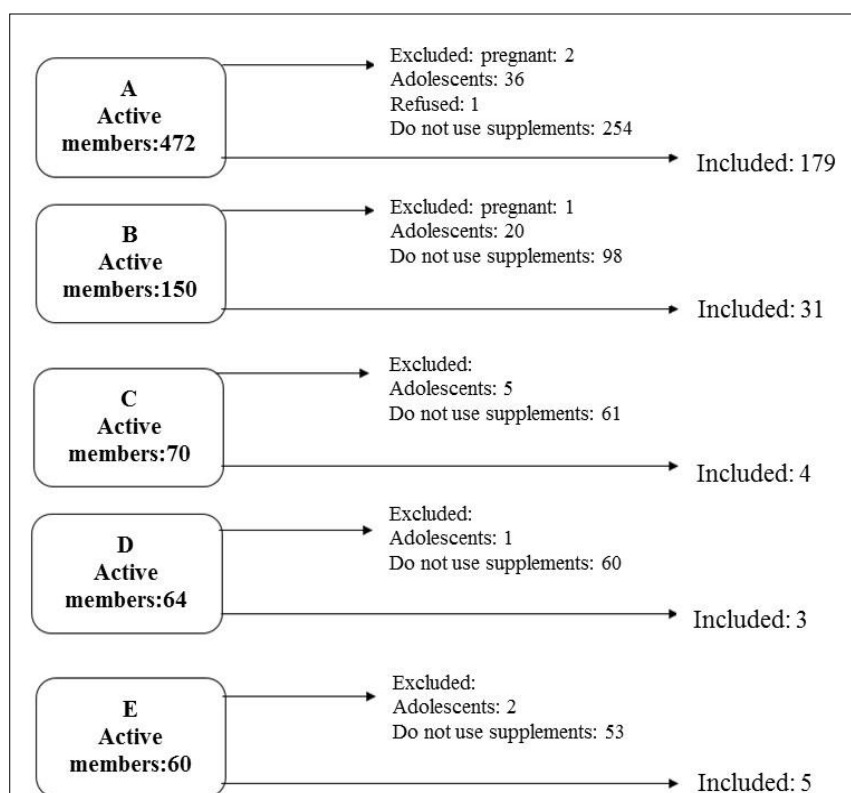


Figure 1 - Flowchart of the participants included in the study.

The population characteristics are shown in Table 1.

Participants had a mean age of 29 (23 - 43) years old, most being women (n=133; 59.9%), with high school education (n=85; 40.9%).

Monthly income was of 3 (2-4) minimum wages. Most participants presented a normal weight (59.8%; n = 128), followed by overweight (35%; n=75) and obesity (5.1%; n=11). According to life habits, 11.5% (n=25) of the participants were smokers.

Median physical activity time practiced by the participants was of 5 (2 - 10) years, 1 (1-1) hour per day, 4 (3-5) times a week.

The most practiced physical activity was weight training (93.2%; n=207), followed by aerobic (71.6%; n = 159).

The reasons for people reaching for the gym was health/quality of life (81.1%; n=180), weight loss (46.4%; n=103) and hypertrophy (32%; n= 71) (Table 1).

**Table 1 - Study population characteristics.**

Characteristic / variable	Sample (n=222)
Age, years	29 (23 - 43)
Females, n (%)	133 (59.9)
Marital status, n (%)	
Single	123 (55.7)
Married/living together	81 (36.7)
Divorced	9 (4.1)
Widowed	8 (3.6)
Education, n (%)	
Higher education, complete	68 (32.7)
High school, complete	85 (40.9)
Higher school, incomplete	42 (20.2)
High school, incomplete	13 (6.3)
Income, minimum wages	3 (2 - 4)
Smoking habit, n (%)	25 (11.5)
Body mass index, kg/m <sup>2</sup>	24.17 (22.14 - 26.58)
Body mass index classification, n (%)	
Normal weight	128 (59.8)
Overweight	75 (35)
Obesity	11(5.1)
Time of physical activity, years	5 (2 - 10)
Physical activity duration, hours/day	1 (1 - 1)
Times a week, number	4 (3 - 5)
Weight training, n (%)	207 (93.2)
Aerobic training, n (%)	159 (71.6)
Functional training, n (%)	71 (32.0)
Reason for physical activity hypertrophy, n (%)	71 (32.0)
Reason for physical activity weight loss, n (%)	103 (46.4)
Reason for physical activity health/quality of life, n (%)	180 (81.1)

Table 2 describes the frequency of use of supplements on the total sample accordingly to the use objective.

The most used supplements were whey protein (40.5%), collagen (36.5%), omega 3 (20.7%) and BCAA (20.7%).

Reasons for supplement use were: hypertrophy (31.98%; n=71), weight loss

(25.67%; n=57) and health/well-being (80.18%; n = 178).

Among individuals who aimed at hypertrophy, the frequency of use of whey protein, maltodextrin, creatine, caffeine, BCAA and mass gainer was higher when compared to individuals who do not aim at hypertrophy.

Collagen and omega 3 use was less frequent among participants who aim at hypertrophy. As for weight loss, individuals with that objective tend to use more frequently whey protein, maltodextrin, caffeine and BCAA.

Frequency of use of supplements by participants who aimed at health/well-being was higher for collagen use and smaller for whey protein, creatine and BCAA when compared to individuals who do not aim at health/well-being (Table 2).

**Table 2** - Objective and frequency of use of nutritional supplements.

SUPPLEMENT n (%)	Use Supplement (n=222)	HYPERTROPHY			WEIGH LOSS			HEALTH/WELL-BEING		
		YES (n=71)	NO (n=151)	p value	YES (n=57)	NO (n=165)	p value	YES (n=178)	NO (n=44)	p value
		100%	100%		100%	100%		100%	100%	
Whey Protein	90 (40.5)	60 (84.5)	30 (19.9)	<0.001	31 (54.4)	59 (35.8)	0.014	60 (33.7)	30 (68.2)	<0.001
Maltodextrin	16 (7.2)	14 (19.7)	2 (1.3)	<0.001	8 (14.0)	8 (4.8)	0.034	13 (7.3)	3 (6.8)	0.911
Albumine	5 (2.3)	2 (2.8)	3 (2.0)	0.656	3 (5.3)	2 (1.2)	0.108	3 (1.7)	2 (4.5)	0.258
Creatine	42 (18.9)	30 (42.3)	12 (7.9)	<0.001	14 (24.6)	28 (17.0)	0.207	23 (12.9)	19 (43.2)	<0.001
Caffeine	37 (16.7)	19 (26.8)	18 (11.9)	0.006	18 (31.6)	19 (11.5)	<0.001	29 (16.3)	8 (18.2)	0.763
BCAA	46 (20.7)	27 (38.0)	19 (12.6)	<0.001	21 (36.8)	25 (15.2)	<0.001	29 (16.3)	17 (38.6)	0.001
Collagen	81 (36.5)	6 (8.5)	75 (49.7)	<0.001	23 (40.4)	58 (35.2)	0.482	80 (44.9)	1 (2.3)	<0.001
Vitamin complex	21 (9.5)	7 (9.9)	14 (9.3)	0.889	5 (8.8)	16 (9.7)	0.837	16 (9.0)	5 (11.4)	0.576
Mass gainer	8 (3.6)	6 (8.5)	2 (1.3)	0.014	1 (1.8)	7 (4.2)	0.683	5 (2.8)	3 (6.8)	0.196
Omega 3	46 (20.7)	6 (8.5)	40 (26.5)	0.002	12 (21.1)	34 (20.6)	0.943	40 (22.5)	6 (13.6)	0.195

There was positive correlation between time of supplement use and time of physical activity ( $r=0.372$ ;  $p<0.001$ ), gym frequency ( $r=0.201$ ;  $p=0.009$ ) and income ( $r=0.253$ ;  $p=0.002$ ).

There was no correlation between time of supplement use and age ( $r=0.133$ ;  $p=0.091$ ) and BMI ( $r=0.134$ ;  $p=0.085$ ).

The larger part of the sample (73.5%;  $n=161$ ) refers to know about the risks supplements can bring. Related to nutritional orientation, 32.9% ( $n=73$ ) see nutritionists and

15.8% ( $n=35$ ) reported having been oriented in the past.

The larger portion of the sample (70.7%;  $n=157$ ) affirmed having a balanced diet.

As for supplement use orientation, 34.4% ( $n=77$ ) started consuming supplements by their own initiative, 27.9% ( $n=62$ ) were oriented by gym employees and 31.5% ( $n=70$ ) were oriented by a nutritionist. On the question related to macronutrients which we should consume as the major part of our diet, 79.5% ( $n=175$ ) answered "protein" (Table 3).

**Table 3** - Sample characteristics related to quality of life.

Characteristic/variable	Sample (n=222)
Know the risks supplements can bring, n (%)	161 (73.5)
Balanced diet, n (%)	157 (70.7)
Nutritionist guidance, n (%)	73 (32.9)
Nutritionist guidance in the past, n (%)	35 (15.8)
Supplement recommendation, n (%) Own initiative	
Seller Gym Friends Family	77 (34.4)
Physical activity instructor Doctor	13 (5.9)
Nutritionist	62 (27.9)
	23 (10.4)
	3 (1.4)
	17 (7.7)
	10 (4.5)
	70 (31.5)
Macronutrient which must compose the largest part of our diet, n (%)	
Carbohydrates	44 (20.0)
Protein	175 (79.5)
Lipids	1 (0.5)

## DISCUSSION

This study demonstrated that whey protein was the most used supplement among physical activity practitioners.

Protein and maltodextrin supplements have been linked to the pursuit of hypertrophy and weight loss, while collagen has been linked to health and well-being.

The most consumed supplement in the sample, whey protein, was also mentioned in other studies as the most used supplement, such as the study by Fayh and collaborators (2013) and Fontes, Navarro (2010).

In the study by Pellegrini and collaborators (2017) 84% of respondents responded that they use whey protein and 57%. Wagner (2011) found, in his study with gyms in the city of Florianópolis, that 50% of respondents consumed supplements, with whey protein also being the most cited (81.6%).

It is also important to highlight that the abuse of these supplements and the consumption without adequate guidance from a qualified professional can bring renal overload and the chance of the protein being converted and stored in the body as fat or carbohydrate.

In this study, the participants aimed at weight loss, but also hypertrophy, and the same supplement was used in both cases. In the study by Terada and collaborators (2009) whey protein favored the process of reducing body fat

due to the reduced appetite of the participants, making them eat less food.

However, it is known that whey protein has no direct link with weight loss, as excess protein can be stored by the body.

A large part of the participants replied that they go to the gym for health / well-being.

The answer was the same in Liz's study Andrade (2016) who assessed the reason for people looking for gyms and has health and well-being as the main answer.

In this study, the use of collagen was linked to the search for health and well-being. However, as there was no alternative related to the benefits of collagen, it is believed that the sample selected health and well-being, as they were closer to the real reason for using this supplement, which may be related to beauty, well-being and physical appearance. There are no specific studies that prove that collagen has effects related to physical activity and health / well-being.

Most study participants said they knew the risks of misusing supplements. However, in a literature review that evaluated renal complications caused by abuse of supplements, it was observed that users had no knowledge related to complications caused by the use of these products, such as the appearance of pathologies, kidney and liver problems, gastroenteritis and cardiac and muscle damage (Junior and collaborators, 2018).

Another question applied in this study was related to nutritional knowledge, about which is the macronutrient that should make up most of our diet. Most of the participants, 79.5%, answered that it was protein, according to the study by Lopes and collaborators (2015) who presented the same question and received the same answer (protein) from 66% of the participants.

There are studies that show that the consumption of carbohydrates before physical activities increases the performance of those who exercise (Fontan, Amadio, 2015).

Low carbohydrate intake is a widespread error, as this study shows in the question related to the participant's nutritional knowledge and also in other studies that demonstrated that protein comes first in the athletes' diet (Alaunyte and collaborators, 2017).

Another point worth noting is related to the orientation for the consumption of supplements.

According to Pedrosa and collaborators (2010) and Moreira, Rodrigues, (2014), the nutritionist is the only professional qualified to prescribe nutritional supplements and provide individual dietary guidance, encouraging the consumption of adequate and balanced meals so that the individual's physical integrity is preserved.

But, as shown by this and other studies, nutritionists are not the main sources of recommendation. In this study, the main source of indication was the initiative itself and, behind, the orientation of the nutritionist, which indicates a low search for qualified professionals.

Regarding the characteristics of the participants, the majority were female, which accompanies the study by Bernardes, Silva and Frutoso (2016) which states that women are more concerned with physical appearance. Regarding balanced diets, 70.7% (n=157) answered that they have a balanced diet.

This study evaluated all the gyms in the city and, therefore, can cover a large part of the population that practices physical activities in the city of Antônio Prado.

The refusal to answer the questionnaire was very low, which can be considered a positive aspect for the conduct of the study. Regarding the reasons for using supplements, alternatives were offered: hypertrophy, weight loss, health / well-being, weight gain and it is not known why.

These alternatives may have limited participants' responses to the real reason for using supplements, forcing them to assign one of the specific alternatives provided. However, this method made it possible to group the results for analysis.

## CONCLUSION

Whey protein supplement is the most consumed among gym goers from Antônio Prado-RS.

As for the reason for use, protein and maltodextrin supplements were related to hypertrophy and weight loss and collagen was related to health and well-being.

The longer the time of supplement use, the longer and more frequent was gym attendance and larger was the income of the individual.

It is important that consumers are provided with better clarification about nutritional supplements.

Thus, the search for nutritional guidance is primordial, because it is the nutritionist professional's role to recommend a supplement, since he/she has the necessary knowledge to develop an individual dietary plan and include supplements if necessary, without bringing risks to the patient's health, thus helping physical exercise practitioners and athletes to achieve their goals.

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## Conflicts of interest

The authors declare to have no conflicts of interest.

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