

56 - ANTIOXIDANTS CONSUMPTION BY FEMININE ADULT HURDLER ATHLETES, IN THE 400 METERS COMPETITION WITH BARRIERS IN ATHLETICS MODALITY

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INTRODUCTION

Worldwide, it is possible to watch the increasingly interest in the physical activity practice in its most diverse genres, mainly in the search for life quality. And nutrition when allied to sport shows to be the solid base for any athlete, in reason that the feeding and sport activity became dependent for each other.

Facing this, it is maximum importance that the athletes have the knowledge that, in the way to sport success, the feeding will have to be on foreground, because it will bring the necessary energy to the untiring search for victories.

THE ATHLETE'S FEEDING

The path trodden by and athlete, no matter his sportive option, can characterize by several factors, such as life style, feeding, media influence, sportive talent and still by the audacious dedication for the sports causes. These factors in a way or another, will determine his sportive performance.

Emphasizing the feeding factor, being this, considered of great importance in the sportive process, Toral et. al (2007), they talk that the diet is a previous condition to the execution of the exercise, it should be consider as a foundation to the biological work.

In one of the most important interpretations between the sportive practice and the feeding, is the distinction given by Grden, Oliveira and Bortolozo (2008) when they declared that both the choice and the quantity of the food to be consumed should be a worrying reason to the athletes. The actual affirmation is due to an inappropriate nutrition, can damage the athletes' health and the performance during the physical training process.

Abreast to the determinants above combined, is well advised to highlight that an appropriate diet is essential to any human being. However to the athlete it will be total important, the reason is that it will bring the rebalance to the organism due to the loss of electrolytes and energy substrates occurred during the sport practice.

FREE RADICALS

When practicing a physical activity, the human body realizes several physiological adaptations, among them cardiovascular and respiratory adjusts necessary to keep and compensate the effort realized. Koury and Donangelo (2003) when analyzing this process, highlight that, when the physical activity becomes intense it occurs the excessive synthesis reactive oxygen species (ROS) in the organism. This can be synthesized from several exogenous and endogenous sources.

The exogenous sources contextualize through exposure to pollution, tobacco, stress, solar radiation, presence of toxics substances in foods and drinks, high saturated fat consumption, and to the use of certain medicines.

And in the endogenous sources, the free radicals production derives from products arising from the organic metabolism process, such as macrophages and neutrophils.

When screening through these sources, Carvalho et. al (2003) discourse that in athletes, they vary accordingly to the organ, type and time of exercise. In counterpart, Schneider and Oliveira (2004) affirmed that the level of the athlete's muscular damage and the oxidative stress don't depend necessarily on the exercise, but on the exhaustion level the athletes has when realizing the exercise. In that case, the rising of oxidative stress will depend exclusively on the balance between the free radicals generation and the organism's antioxidant capacity of this athlete.

In complementation to this, Bianchi and Antunes (1999) tell that the oxidative stress when moderate, realizes the increase of enzymatic antioxidant defenses. However, if the free radicals quantity is bigger, it can be damage and cell death. In physical activity medium intense, the organism is capable of neutralizing the free radicals production. However in physical activity highly intense and strenuous, the organism fall short, and the damaged caused by the free radicals may occur.

A highly intense exercise, which is the case of the 400 meters competition with barrier, contributes to the free radicals production from the increase of the lactic acid synthesis, catecholamine and the inflammatory process. Before these situations, the organism counts on several enzymes capable of minimize these radicals' actions. However in situations where these enzymes production becomes superior, the natural protection cannot be enough, leading to the macromolecules destruction such as lipids, proteins and nucleic acids, causing fatigue and muscular stress in the athlete.

Given the magnitude of the information above provided, it understands that once recognized the complications brought by the free radicals in the athlete's organism, it is well advised to highlight that a feeding rich in antioxidants agents, becomes primarily vital to a better return in this athlete's sportive life.

ANTIOXIDANTS FOOD SOURCES

As it was cited previously, the antioxidants descendant from a diet, contribute unconditionally on the improving of the organic resistance to the damage caused by the oxidation. In that way, foods rich in vitamins type A, C, E and minerals such as selenium and zinc, will have a vital role to the prevention of these oxidative damages, such as the following presented.

The vitamin A, also known as retinol, can be synthesized by the organism from substances called beta-carotene, which has antioxidants properties that help neutralizing the free radicals action in the organism. Besides its high antioxidant capacity, this vitamin plays other important roles, such as the maintenance of the eyes health, the nose's coating, the mouth's, athletes digestive and urinary tract.

The foods considered riches in this vitamin are carrot, pumpkin, liver, yams, dried apricot, broccoli, kale, asparagus, tomato, mustard, zucchini, watercress, spinach, cherry, nectarine, nutmeg, guava, papaya, peach, melon, mango, milk, eggs, fish oil and butter.

The vitamin C or ascorbic acid is another antioxidant essential to the athletes, because it acts in several metabolic processes, and the main one is to protect the organism against the oxidative process' damages. This vitamin also helps the

inhibition of diseases; it is the accelerator key in the epithelial wound healing; and vital component to other tissues' synthesis.

The main sources of vitamin C are basically the citric foods, such as: acerola, lemon, orange, pineapple, passion fruit, banana, papaya, kiwi, tangerine, cashew, strawberry, guava, peach, mango, melon, kale, tomato, asparagus, cabbage, broccoli, potato, cauliflower, okra and bell pepper.

The vitamin E is the antioxidant that has a vital role to the good function of the muscular cells during the physical exercise, because it acts promoting against the aging, through the destruction of the free radicals that cause tissues degeneration. To Nicolodi et. al (2010), this vitamin is essential to the maintenance of the immune system, being capable of chelate forms to the oxygen reactive.

Athletes that train daily prey substantially levels of vitamin E from the cell's membranes and from the muscular tissues exercised. And when missing this vitamin the athlete tends to decrease his performance. Exercises that increase the production of the free radicals, which is the case of the 400 meters with barriers, the action of the vitamin E together with the selenium mineral, will be vital to the formation of the glutathione peroxidase, an important antioxidant enzyme.

The food sources of vitamin E are: wheat germ (most important source), soy oils, rice, corn and sunflower oil, almond, nut, Brazilian nut, yolk, peanut, corn, hazelnut, avocado, beans, fiber cereal, sunflower's seed and wheat germ's oil.

The zinc, another powerful antioxidant, beyond its constant involvement with the protein synthesis, cellular respiration and energetic metabolism, is a vital component from more than three hundred enzymes. To the athlete this important mineral participates of the bone formation and immunological answer, besides also acting in the dehydrogenase processes of the lactic acid.

Because this mineral is easily lost by sweat, its replacing becomes indispensable to the athletes. The damages brought by the lack of zinc in the organism covers the risks to anorexia, osteoporosis, loss of weigh, and consequently drop in performance. Before this, it emphasizes that the consumption of the zinc food sources be consumed. This mineral is easily found in celery, asparagus, fig, peaches, potato, eggplant, meats, fishes (including oysters and crustaceans), poultry and milk, grains, beans, liver and nuts.

Just as the zinc, the selenium has great antioxidant capacity. And as mentioned before, without it the organism cannot produce glutathione peroxidase, one of the best antioxidants that act inside the cell. In this perspective, the selenium does important activities to the athlete, because it acts in the skin protection against ultraviolet rays; elimination of toxic metals from the organism; and against cardiac and circulatory diseases intermediating metabolic processes.

The foods rich in selenium are: oats, brown rice, peaches and Brazil's nut, seafood (salmon and oysters), liver, meat and poultry, milks and dairy, hazelnut, almond, mushroom, garlic, wheat bran, sunflower's seed, corn, granola and rye flour.

Methodological Procedures

The people in the study is represented by 14 (fourteen) hurdler athletes, from feminine adult category, in the 400 meters competition with barriers, as the ranking of the Brazilian Athletics Confederation (BAC) from 07/02/2010. The inclusion criterion was for individuals ranked by BAC in the year 2010, excluding from the sample athletes not included in the ranking and under 18 years old aged.

The data collect was realized through an adapted questionnaire from Fanhani and Ferreira (2006), which is composed of closed questions subdivided in personal data, knowledge level and feeding frequency. The data collect happened in BAC officials' competitions in the months of July and September, 2010. The result analyzis were expressed on average, followed by its standard deviation.

The actual research was approved by the Ethic in Research Committee (ERC) from CESCAGE on July 17th, 2010.

RESULTS AND DISCUSSION

PERSONAL DATA

The level of schooling of the interviewed the results show that 7, 14% (n=1) have complete college degree; 14, 28% (n=2) complete high school; and 78, 57% (n=11) incomplete college degree. The high prevalence of athletes with incomplete college degree can be related to de medium age found, that was 21, 85 years old. Showing this way that these athletes dedicate both in study and sport.

In the case of the familiar income, 7, 14% (n=1) of the interviewed reported monthly income of until 1 minimum salary; 42, 85% (n=6) 4 or more minimum salaries; and 50% (n=7) 2 to 3 minimum salaries. These results suggest that the familiar income of these athletes can be directly connected to their ages, because, they fit into the Brazilian population that most contributes to the employability in the country. Another point to be observed is that treated about athletes from the Brazilian elite. It shows the sport as a profession, where they receive monthly income from its clubs.

The acting time in the athletics was presented in years, where the average found was 7,3 years of career as athletes. Time extremely relevant if compared to the exposure to the free radicals level.

Related to the number of days in a week that the athletes dedicate to the training, 100% (n=14) answered that they train 4 or more days a week. This high index justifies for being elite athletes that nowadays are among the best in Brazil, in the 400 meters competition with barriers.

In respect to the hours spent in training, 57, 14% (n=8) of the athletes reported to train 2 to 3 hours a day; and 42, 85% (n=6) 4 or more hours a day. This result, if compared to the high proportion of athletes that train 4 or more times in a week with average of two hours a day, can be suffering more consequences of the physiological stress. Mainly if their feeding is not being ingested properly.

As to the presence of a nutritional monitoring, 42, 85% (n=6) reported they had it in average of 2,2 years. Nevertheless 57, 14% (n=8) don't have this treatment. When questioned about the use of vitamin complex these athletes, 64, 28% answered not using it, on the other hand, 35, 71% use it in average of 2, 4 years.

The high percentage of athletes that don't receive nutritional monitoring is worrisome, because it pertains to Brazilian elite athletes. The presence of a professional nutritionist to this class becomes indispensable, because high intensity training implicates in a bigger energetic necessity for the performance. In this perspective Sartori, Prates and Tramonte (2002) comprehend that the nutritional planning should take into consideration their training.

Falls to the nutritionist to synchronize the caloric ingestion with the energetic demand imposed by the different phases of the athlete's training. As for the use of vitamin complex it notices that the high percentage of athletes that don't do it, can be related to the lack of knowledge or even by the lack of a professional nutritionist to do the monitoring.

KNOWLEDGE LEVEL

On the table 1 are described the results obtained as to the level of knowledge related by the athletes, referring to four raised questions. These being, consisted to: 1) the importance of a health feeding for the athlete, including fruits and vegetables.

2) free radicals (what they are and what are they for). 3) Antioxidants (what they are and what are they for). And 4) Relation between free radicals x antioxidants x performance.

Table 1. Knowledge level.

KNOWLEDGE/ QUESTION	INSUFFICIENT	LITTLE SUFFICIENT	AVERAGE SUFFICIENT	SUFFICIENT	VERY SUFFICIENT
QUESTION 1	0% (n=0)	14,28% (n=2)	28,57% (n=4)	21,42% (n=3)	35,71% (n=5)
QUESTION 2	21,42% (n=3)	28,47% (n=4)	14,28% (n=2)	21,42% (n=3)	14,28% (n=2)
QUESTION 3	7,14% (n=1)	35,71% (n=5)	21,42% (n=3)	21,42% (n=3)	14,28% (n=2)
QUESTION 4	7,14% (n=1)	35,71% (n=5)	14,28% (n=2)	28,57% (n=4)	14,28% (n=2)

Despite the importance of the first question, it notices that less than half of the athletes researched consider themselves to have a "very sufficient" knowledge about the subject, showing that the relation between sport and nutrition are not well clarified in this population. As for the last three questions, because they are about a little known subject of the athletes, they evidenced the high percentage of answers to the option "little sufficient knowledge" suggesting that the lack of information in these cases, can affect direct or indirectly the performance of this athlete.

FEEDING FREQUENCY

The table 2 presents the percentage of feeding frequency, referring to the five groups of antioxidants vitamins and minerals analyzed.

Table 2. Food consumption frequency of antioxidants groups.

Frequency/ antioxidant	Never/ doesn't like it	Rarely (monthly)	Regularly (bimonthly)	Almost always (3 times a week)	Always (daily)
Vitamin a	35,57% (n=5)	30,85% (n= 4)	12,28% (n=2)	8,85% (n= 1)	14,57% (n=2)
Vitamin c	22,67% (n=4)	31,36% (n=5)	16,45% (n=2)	10,24% (n=1)	19,25% (n=2)
Vitamin e	37,14% (n=5)	33,33% (n=5)	7,61% (n=1)	5,23% (n=1)	16,66% (n=2)
Selenium	30,55% (n=4)	33,73% (n=5)	5,15% (n=1)	7,53% (n=1)	23,01% (n=3)
Zinc	29,59% (n=4)	27,04% (n=4)	6,12% (n=1)	6,63% (n=1)	30,61% (n=4)

Showing the results on table 1, it notices that only the zinc food sources presented bigger percentage in the option "daily consumption" (30, 61%), however this result shows itself very close to the percentage of the option "doesn't consume" (29, 59%) and "monthly consumption" (27, 04%) of itself. Clarifying that even though there's a big variety of zinc food sources, there are still, foods not well accepted in this population.

As for the food sources of the three vitamins (A, C, E) and of the selenium mineral, it notices that all of them presented themselves with the bigger percentage, respectively in the options "doesn't consume" and "monthly consumption". A data considered worrisome, because the daily recommendation (DR) of these vitamins and minerals, cannot being reached. Consequently the antioxidants endogenous production is damaged.

CONCLUSION

Despite the small number of the population in study, it was possible the scaling of the existing gaps in the top athletes' feeding frequency, making it clear that the resistance in the fruit and vegetable consumption is still prevalent. And that despite the neglect to this food group, it is still possible the reversal of this fact.

The professional nutritionists' acting in the sportive area shows to be the key point to the athletes' awareness, to the importance of the consumption of food beneficial to their performance, such as the antioxidants sources, however it comprehends that the diet composition will be only one of the items to be valued in this population.

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ANTIOXIDANTS CONSUMPTION BY FEMININE ADULT HURDLER ATHLETES, IN THE 400 METERS COMPETITION WITH BARRIERS IN ATHLETICS MODALITY

ABSTRACT:

Being the best in what you do and reaching the highest spot in the podium is a goal for any athlete. And the feeding consists in an essential component for this ideal. Accordingly to this, it aimed to analyze, if the consumption of antioxidants food sources realized by athletes from the feminine adult category, in the 400 meters competition with barriers is appropriate. Because it is questioned that this population's diet doesn't provides properly such sources. Therefore, it applied the questionnaire method containing closed questions referring to personal data, knowledge level and feeding frequency. The results obtained showed that among the four raised questions, referring to the knowledge level, three had bigger percentage in the "just enough" knowledge option about the subject. About the feeding frequency, only one, of the five groups of antioxidants analyzed, was adequate to the daily consumption of antioxidants food sources. Evidencing that way, that the athletes fall short as to the intake of antioxidants food sources, what ends up contributing to the emergence of serious damage to medium-long term in their performance.

KEY-WORDS: Sportive nutrition, free radicals, feeding frequency.

LA CONSOMMATION D'ANTIOXYDANTS PAR LES'ADULTES ATHLÈTES FÉMININES DANS LA PREUVE DU 400 MÈTRES AVEC DES OBSTACLES SOUS LA FORME DE L'ATHLÉTISME.

RÉSUMÉ:

Être le meilleur à ce que vous faites c'est aller à la plus haute place dans le prix, ce qui signifie un objectif pour toute l'alimentation. être le point principal dans ce case. En cet égard a été réalisée si votre apport en antioxydants par les athlètes femmes adultes dans les essais du 400 mètres avec obstacles qui appropriées. Comme ne fait aucun doute que le régime alimentaire de ces personnes ne sont pas suffisamment fournissant du matériel de sources telles sorte que cette méthode a été appliquée contenant un peu dur questions se référant à des données personnelles telles que le niveau de connaissances et de alimentisia. Los souvent résultats de cette étude a montré que dans les quatre questions précises concernant le niveau de connaissances, trois ont été plus de ponctuation dans la connaissance, très peu sur la question de fréquence alimentaire, que l'un des cinq groupes ont été analysées antioxydants un apport adéquat de tous les jours des sources alimentaires antioxydantes. Es évident que les athlètes veulent arrêter la consommation de sources de nourriture.

MOT-CLE: Nutrition, sports radicaux libres et performance alimentaire

CONSUMO DE ANTIOXIDANTES POR ATLETAS BARRERISTA ADULTOS FEMENINOS, EN LA PRUEBA DE LOS 400 METROS CON BARRERAS EN LA MODALIDAD DE ATLETISMO.

RESUMEN:

Ser el mejo en lo que uno hace es alcanzar el lugar mas alto en las premiaciones ,significando una meta para cualquier atleta. Siendo la alimentacion el punto principal en esa idea. En este sentido se llevo a cabo si el consumo de antioxidantes realizado por atletas adultos femenino en la prueba de los 400 metros con barreras esta adecuada. Pues se cuestiona que la dieta de esas personas no fornece adecuadamente tales fuentes por eso se aplico este método conteniendo algunas preguntas un poco duras refiriendose a datos personales , como nivel de conocimiento y frecuencia alimentisia. Los resultados obtenidos en este estudio demostraron que dentro de las cuatro cuestiones señalada referente al nivel de conocimiento, tres obtuvieron mayor puntuacion en conocimiento , bien poco, sobre el asunto de frecuencia alimentar, apenas uno de los cinco grupos de antioxidantes analizado estaba adecuado al consumo diario de fuentes alimentares antioxydantes. Es evidente que los atletas dejen de desear el consumo de fuentes alimentisias antioxydante lo que lleva a contribuir el surgimiento de daños sérios a largo plazo en su desempeño.

PALABRA CLAVE : Nutricion deportiva, radicales libres, frecuencia alimentisia

CONSUMO DE ANTIOXIDANTES POR ATLETAS BARREIRISTAS ADULTO FEMININO, NA PROVA DOS 400 METROS COM BARREIRAS NA MODALIDADE ATLETISMO

RESUMO:

Ser o melhor no que faz e alcançar o lugar mais alto do pódio é uma meta para qualquer atleta. E a alimentação constitui-se como um componente essencial para esse ideal. Nesse sentido objetivou-se analisar, se o consumo de fontes alimentares de antioxidantes realizados por atletas da categoria adulto feminino, na prova dos 400 metros com barreira, está adequada. Pois questiona-se que a dieta dessa população não fornece adequadamente tais fontes. Para tanto, aplicou-se o método de questionário contendo perguntas fechadas referentes a dados pessoais, nível de conhecimento e frequência alimentar. Os resultados obtidos nesse estudo demonstraram que dentre as quatro questões levantadas, referentes ao nível de conhecimento, três obtiveram maior porcentagem na opção de conhecimento "pouco suficiente" sobre o assunto. A respeito da frequência alimentar, apenas um, dos cinco grupos de antioxidantes analisados, estava adequado quanto ao consumo diário de fontes alimentares de antioxidantes. Evidenciando assim, que os atletas deixam a desejar quanto ao consumo de fontes alimentares de antioxidantes, o que acaba contribuindo para o surgimento de sérios danos a médio-longo prazo no seu desempenho.

PALAVRAS-CHAVE: Nutrição esportiva, radicais livres, frequência alimentar