

Muscle hypertrophy and alcohol consumption

Hipertrofia muscular y consumo de alcohol

A hipertrofia muscular e o consumo de álcool

Abstract

Muscle hypertrophy provides the improvement of physical aptitudes, health conditions, physical conditioning and longevity. Furthermore, alcohol consumption is a common practice in society, becoming an obstacle when individuals seek weight loss, improvement of physical or aesthetic condition. This is because alcohol consumption impairs muscle gain, as its intake breaks the balance, thus affecting homeostasis. In this context, the work aimed at alcohol consumption and vulnerabilities to hypertrophy in non-athletes. The study is a theoretical reflection of a qualitative approach, on the effects of the consumption of alcoholic beverages in the process of hypertrophy of the skeletal muscles of the human body. However, changes in habits favor the increase of lean mass, and many people who have their goals restrained by the use of alcohol seek in anabolic steroids the income that was lost in diet, metabolism or in the indisposition to practice caused by excess alcohol. Finally, moderate alcohol consumption is not an impediment to hypertrophy in non-athletes, and its use is highly prevalent in physically active individuals.

Descriptors: Hypertrophy; Alcohol Abuse; Anabolic Steroids; Philosophy; Health.

Resumén

La hipertrofia muscular proporciona la mejora de las aptitudes físicas, las condiciones de salud, el acondicionamiento físico y la longevidad. Además, el consumo de alcohol es una práctica común en la sociedad, convirtiéndose en un obstáculo cuando los individuos buscan: pérdida de peso, mejora de la condición física o estética. Esto se debe a que el consumo de alcohol perjudica la ganancia muscular, ya que su ingesta rompe el equilibrio, afectando así la homeostasis. En este contexto, el trabajo tuvo como objetivo el consumo de alcohol y las vulnerabilidades a la hipertrofia en no deportistas. El estudio es una reflexión teórica de enfoque cualitativo, sobre los efectos del consumo de bebidas alcohólicas en el proceso de hipertrofia de los músculos esqueléticos del cuerpo humano. Sin embargo, los cambios de hábitos favorecen el aumento de la masa magra, y muchas personas que tienen sus metas restringidas por el consumo de alcohol buscan en los esteroides anabólicos los ingresos que perdieron en la dieta, el metabolismo o en la indisposición a la práctica provocada por el exceso de alcohol. Finalmente, el consumo moderado de alcohol no es un impedimento para la hipertrofia en los no deportistas, y su uso es muy prevalente en personas físicamente activas.

Descriptorios: Hipertrofia; Abuso de Alcohol; Esteroides Anabólicos; Filosofía; Salud.

Resumo

A hipertrofia muscular proporciona a melhoria das aptidões físicas, condições de saúde, do condicionamento físico e na longevidade. Outrossim, o consumo de álcool é uma prática comum na sociedade, tornando-se empecilho quando os indivíduos buscam: perda de peso, melhoria da condição física ou estética. Isso porque, o consumo de álcool prejudica no ganho de músculo, visto que sua ingestão quebra o equilíbrio, afetando assim a homeostase. Nesse contexto, o trabalho objetivou sobre o consumo de álcool e as vulnerabilidades frente a hipertrofia em pessoas não atletas. O estudo se trata de uma reflexão teórica de abordagem qualitativa, sobre os efeitos do consumo de bebidas alcólicas no processo de hipertrofia da musculatura esquelética do corpo humano. Todavia, mudanças de hábitos favorecem o aumento de massa magra, e muitas das pessoas que tem seus objetivos refreados pelo uso de álcool buscam em anabolizantes o rendimento que se perdeu na dieta, no metabolismo ou na indisposição para a prática causada pelo excesso de álcool. Por fim, o consumo moderado de álcool não é um fator impeditivo da hipertrofia em pessoas não atletas, e seu uso é evidenciado em grande prevalência em indivíduos fisicamente ativos.

Descritores: Hipertrofia; Abuso de Álcool; Anabolizantes; Filosofia; Saúde.

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Introduction

Bodybuilding is a physical practice that provides increased strength and body modification. There is a morphological increase in the volume of the muscle cell and, therefore, an increase in the cross-sectional area of the fibers that constitute it. Muscle hypertrophy provides the improvement of physical skills and can provide better health conditions, physical conditioning and longevity. However, when it comes to hypertrophy, alcohol consumption is a big problem faced by bodybuilders. People of all social classes and of all ages use alcohol, decreasing physical performance for those who seek hypertrophy^{1,2}.

As alcohol consumption is a common practice in society and an instrument of socialization, it becomes one of the biggest problems for people looking to lose weight, improve their physical or aesthetic condition. It is known that society has lived with alcohol for many years, being an instrument linked to a culture and to social life itself and may be related to relaxation and reduction of anxiety due to the inhibition of the central nervous system, acting by reducing the levels of anxiety of those who use it, thus stimulating relaxation, camaraderie and humor. Abusive alcohol consumption may be related to the physical performance and health condition of people who seek to obtain better physical and health conditions through the modality³⁻⁵.

There is evidence that alcohol consumption impairs muscle mass gain (hypertrophy), since it alters the diet, which must be balanced in sufficient quantities and qualities of macro and micronutrients suitable for individuals, and can interfere with protein synthesis and physical performance, in addition to having a high caloric index. Even considering the metabolic individuality of each person, alcohol is a problem for the physical performance of bodybuilders. The use of alcohol, in small amounts and infrequently, may not be a problem. However, when there is an increase in the frequency of use, it causes the risk of illness and if they do not change their daily habits^{6,7}.

The process of muscle building and recovery is something that requires nutritional strategies followed by protein ingestion for protein synthesis, and carbohydrates as a reserve source of muscle glycogen. In this sense, the body of a person who practices physical activity (weight training) and aims to gain muscle mass needs to improve physiological functions, not allowing a nutrient deficit to occur in the muscle, and generate adaptation to training, along with the muscle recovery resulting from balance. Undoubtedly "alcohol consumption breaks the balance, thus affecting homeostasis"^{7,8}.

Alcohol consumption changes the diet, especially with excessive use of alcohol, or both together promote nutritional changes, a fundamental objective for hypertrophy, remembering that its use can cause metabolic changes per day. Changes in diets can prevent the practitioner from achieving the desired goal, which increases the use of anabolic steroids, especially in young males between 20 and 30 years old, who seek to compensate for the imbalance in diet and training, harmed by alcohol^{8,9}.

Changes in the inhibition of the central nervous system promote a decrease in the body's response to

physical activity. In the case of weight training, this relationship is more harmful, since the activity demands physical effort and fitness. When you observe consumption after practice, there are some problems related to muscle recovery and caloric change. Some effects are more emphasized, such as: changes in immune, cardiovascular, metabolic, hormonal, psychological, motor, nutritional functions over time, especially with regard to protein synthesis, sleep quality. However, constant consumption is the most worrying and is related to the type of alcohol consumed. Acute use can also be a problem^{10,11}.

Since the literature presents physiological, psychological and nutritional changes, among others discussed here, there is a need for further discussions on the subject and, in this sense, the search for a balance between issues involving the use of recreational alcohol by bodybuilders. Therefore, the objective of this study was to reflect on alcohol consumption and vulnerabilities in the face of hypertrophy in non-athletes.

Methodology

The study is a theoretical reflection with a qualitative approach, which provides information about the effects of alcohol consumption on the process of skeletal muscle hypertrophy in the human body. Therefore, the search was based on the following descriptors: hypertrophy, alcohol abuse, anabolic steroids, philosophy and health.

These descriptors were used to search for studies that contribute to the theoretical reflection based on the theory of Lucius Aneu Seneca, the main thinker of the last phase of the Stoic period. His thinking, present in the work "The Brevity of Life", emphasizes the falsehood of behavior, which surrounds it as an emotional response to everyday facts. A rational unity to everyday acts would be the purpose of human balance, uncharacterized in the failures of reasoning.

The reflection takes place in the real conjuncture where the imbalance that can happen in different areas of life is perceived in the momentary dispossession of pleasure that one can have in the use of alcohol, which changes the reasoning of the proposition. This would happen due to the ease of this drug causing a psychic and physical imbalance¹⁰. Knowing that hypertrophy goals are made over time, balance and the removal of excesses are necessary, in the goal of hypertrophy and alcohol use, which builds the importance of such construction.

Results and Discussion

The balance between taking care of the body through weight training and the use/abuse of alcohol

The reflection starts from Seneca's thought about excesses. Seneca believed that alcohol consumption was allowed, emphasizing that many good men eventually get drunk and that the problem would be in the excesses that would consume the mind and body, in addition to disfiguring morals. He considered that the use of alcohol is not a rational attitude; the fragility would be in the meetings. Drunkenness, already treated as a synonym for vice, should be avoided by the average person as the perfect sage does.



He does not condemn the use and reveals that guided by good cheer, man, loses control, then says: "what men call pleasures are punishments as soon as they exceed the due limits"¹².

The consumption of alcoholic beverages interferes with the composition. Regarding rational and non-harmful use, researchers separated two groups of adult men and women, where one of the groups did not consume alcohol and the other two did. In the group of men, there was consumption of about two or three drinks a day for 10 weeks, with a volume of beer of 660 ml and an equivalent amount of vodka, while women drank one to two drinks a day, with a volume of 330 ml of beer and the corresponding one of vodka, it was found that the moderate consumption of alcoholic beverages did not interfere in the gain of lean mass nor in the decrease of the fat mass, in addition, the ingestion of beer or if equivalent during the training did not affect the distribution of body fat¹³.

O American College of Sports Medicine adota como official position on the effect of alcohol on sports practitioners. According to the category, the acute ingestion of alcohol can compromise a series of abilities, from psychomotor ones to those related to movements that are more complex¹⁴.

Such acute ingestion compromises essential physiological functions in physical performance, altering O₂ consumption, heart and respiratory rate, blood flow, body temperature, cardiac output, causing other physiological changes, which is not beneficial for those who want to evolve in the practice of bodybuilding. It also modifies "strength, power, speed and muscular and cardiovascular endurance". It can also cause psychic changes and potential problems¹⁴.

Changes in habits that favor the growth of lean mass, using synthetic protein supplements and practicing strength physical activity, such as weight training, are very observed. The results can be considered the perfect balance between protein degradation during exercise and its subsequent synthesis more prominently than the previous one, in this way; it is the quality and quantity of exercise repetitions, energy supply, hormonal regulation, sleep quality and diet that influence this development. Thus, an important strategy for recovery is a diet rich in protein, to promote synthesis, and in carbohydrates, to restore muscle glycogen stores¹⁵.

However, drinking alcohol immediately before or after physical activity has a negative impact when in excess. It should be noted that before physical practice, as it is a drug that depressants the central nervous system, it can be a risk for injuries and even other complications. As it is a drug that interferes with homeostasis, a compound with diuretic characteristics favoring dehydration, and which, due to its psychotropic effect, affects sleep and hormone synthesis, is associated with the accumulation of empty calories that can modify body composition and cause nutritional disorders¹⁶.

In the light of Seneca, it is clear that in order to sustain a well-lived human life, we need choices. The excesses of the body can be harmful to the procession of life. The treatise on moral life can make us reflect on the choices

facing the objectives we postulate. In this sense, man sometimes loses himself with useless matters; now he has unrestrained desires; sometimes he has excessive vanity; now he is tormented by vices of all kinds¹². The big problem of alcohol consumption related to bodybuilder is in relation to the ambiguity of excess. In addition, when this is constant, we have an interference in the proposed objectives. There is a psychic dilemma between addiction or momentary recreation and a desire to change behavior and the aesthetic body, but that is lost in the deviation of behavior. What alcohol impacts on a person's life would be reason enough not to overeat when there is a practice of bodybuilding with specific goals.

Thus, alcohol consumption affects the function of hormones involved in lipid metabolism, which can lead to an increase in the production of fatty acids. It also interferes with protein metabolism by reducing the function of the mTOR protein that is responsible for the growth and maintenance of cells, reducing the synthesis of type II fibers when ingested within 8 hours of physical activity. There is also interference in testosterone and growth hormone levels, causing changes in muscle development and blood glucose levels, since alcohol interferes with gluconeogenesis that works during recovery after exercise. Ethanol increases cortisol levels, which in turn raises adrenocorticotrophic hormone (ACTH) which is catabolic and impairs muscle growth¹⁷.

Avoiding alcohol consumption is an important factor to be considered for those who want muscle hypertrophy. However, it is necessary to understand how alcohol consumption affects the hypertrophy process. Alcohol inhibits the transit of calcium ions to the myocyte, which in turn inhibits calcium channels in the sarcolemma, impairing the process of muscle contraction and strength.

Other deleterious effects include compromised sarcolemma integrity, dehydration, and impairment of the body's thermoregulatory mechanisms, hypoglycemia, and reduced use and storage of intramuscular glycogen¹⁸. Even with this information, balance is still cited as a possibility. There is, therefore, academic dissent when it comes to the effects of moderate alcohol use as a deterrent to muscle hypertrophy.

For this reason, Seneca's philosophy fits into the reflection of balance and balancing. For example, when analyzing the effects of an alcohol-containing diet in mice that had the gastrocnemius muscle removed to induce postoperative plantar muscle growth, 14 days after the operation, the control group and the group with alcohol supplementation showed no significant differences in weight, nor in protein synthesis. No effects on gene expression and function of the mTOR protein have yet been demonstrated¹⁹.

There is a high number of people who have their goals restrained by the use of alcohol and who seek in anabolic steroids the income that was lost in diet, metabolism or the indisposition to practice caused by excess alcohol. Anabolic steroids have long been used to treat disorders that generate muscle deficiencies, as well as syndromes and sarcopenia situations in general, now used



as a way to promote hypertrophy. The disordered use and without evaluation of such substances by bodybuilders happens, and with systemic effects not only on muscle physiology, but also neuropathological. The use of such substances is also linked to alcohol abuse, a thesis that was addressed in a research with men who practice bodybuilding, under 40 years old, among them, some reported using anabolic steroids, and this study concluded that there was a significant correlation between alcohol use and anabolic steroid use²⁰⁻²².

Seneca, when reflecting on the brevity of life, puts in reflection, a speculative exercise on our daily lives, with a more philosophical vision, superior to the conventional understanding of the daily behavior of man. Thinking about the conflicting relationship that we have when practicing physical activities such as weight training promotes the objective of aesthetic or health improvement that is opposed to the perspective of using alcohol within a routine of daily life. There is no contraindication for the use of alcohol for the simple fact of carrying out the practice of bodybuilding. Nevertheless, it is worth mentioning that it is a drug that can reduce the performance in the practice of bodybuilding and aesthetic goals. In addition, it creates social, psychological, physical and emotional problems.

Conclusion

From this reflection, it was possible to identify that moderate alcohol consumption is not an impediment to muscle hypertrophy in non-athletes. Although some studies point out that the physiological process of alcoholic degradation can impact the muscle gain process, other studies show that it is not an impediment to this, if the use of this substance is not excessive. In this way, the dichotomy of conclusions on the subject is identified. Reflecting on balance through Seneca's philosophy promotes greater discussion about the source of balance that man should seek.

The use of alcohol is evidenced in high prevalence in physically active individuals, as well as the use of anabolic steroids and steroids to achieve hypertrophy. These data point to the tendency of individuals to seek practices that can harm their health, making them vulnerable to health problems, provoking the need for new reflections on the use of alcohol or any other drug, with the possibility of generating harm to health. . However, there are limitations in this reflection due to the impossibility of investigating all the variables of this subject, since the consumption of alcoholic beverages can occur in many ways and the hypertrophy process depends on several factors.

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