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CONTENT

The effect of caffeine supplementation on muscular strength and endurance in athletes: A narrative review

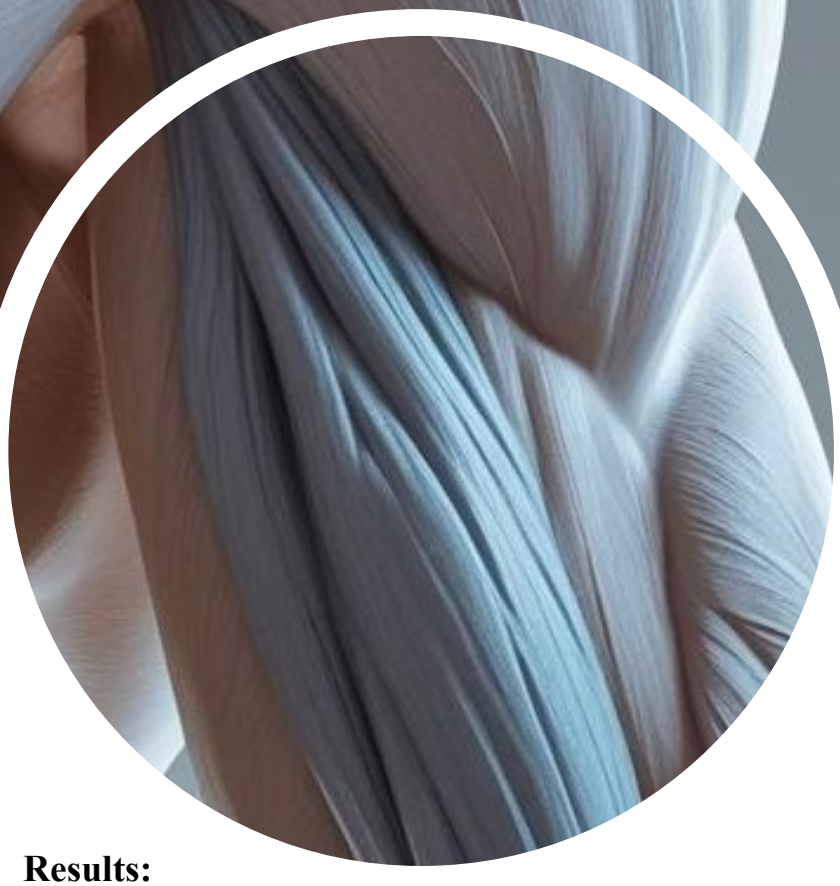
Aida Jabbari, Behnaz Zargaran, Alireza Gheflati

Introduction:

Caffeine is known as one of the most widely used sports stimulants in the world, and its consumption increases energy and improves alertness. On the other hand, proper nutrition is important for the performance and success of athletes, and for many years, athletes have been using various ergogenic compounds and substances to improve sports performance. The aim of this study is to investigate the effects of caffeine supplementation on athletes' performance.

Materials and Methods:

For this review study, we first entered the keywords “caffeine”, “athletes”, “muscular strength” and “endurance strength” into the Google Scholar, PubMed and ScienceDirect search engines and read relevant articles from 2020 to 2025. Finally, we found 3 RCT articles and 1 relevant meta-analysis article.



Results:

According to the reviewed articles, consuming at least 6 mg/kg of caffeine 45 minutes before exercise can be effective in increasing muscular strength and upper and lower body endurance in men, TUT, muscular endurance performance in high and moderate intensity exercises, RM1, maximum barbell speed, average barbell speed, and average power output.

Conclusion:

In athletes, caffeine consumption at doses higher than 6 mg/kg 45 minutes before exercise can lead to increased muscle strength and endurance. However, considering several factors such as gender, level of caffeine dependence, type of exercise, intensity of exercise, etc., these results are affected.

Keywords:

Caffeine, athletes, muscular strength, endurance strength

Effect of Astaxanthin Supplementation on Oxidative Stress Biomarkers and Female Fertility Outcomes: A Review

Sara Seyedi, Zahra Sadat Razavi, Alireza Gheflati

Introduction:

Infertility is the inability to achieve a pregnancy after 12 months or more of regular unprotected sexual intercourse. It is a widespread issue, affecting approximately 13% of women and 10% of men globally. One of the main causes of infertility is oxidative stress, along with inflammatory diseases such as PCOS and endometriosis. Astaxanthin supplementation may play a significant role in improving fertility outcomes in women. The main objective is to review the effects of astaxanthin supplementation in infertile women.

Materials and Method:

For this study, we systematically searched databases including Google Scholar, Scopus, and PubMed using keywords such as “infertility”, “astaxanthin”, “oxidative stress,” and “ART outcomes” with a time limitation of 2019 to 2024. We identified 60 records through database searching. After screening of the title and abstract 45 studies were excluded. After examining the full text of the articles, 11 studies were also removed. Finally, 4 clinical studies were included in the final assessments.

Results:

The findings demonstrated astaxanthin supplementation significantly improved the level of catalase, total antioxidant capacity, oocyte maturation rate (MII), the number of oocytes, and high-quality embryos. Additionally, it positively affected the levels of IL-6, IL-1, and the outcomes of assisted reproductive technologies in the intervention group.

Conclusion:

Based on the reviewed literature, astaxanthin supplementation may effectively reduce biomarkers of oxidative stress and improve fertility outcomes in women. However, further studies are needed in this area.

Keywords:

Astaxanthin, infertility, oxidative stress, ART outcome

Investigating the relationship between anti-inflammatory diet and obstructive sleep apnea: A narrative review

Shabnam Shojaee, Morteza Sabetghadam, Monireh Dahri

Introduction:

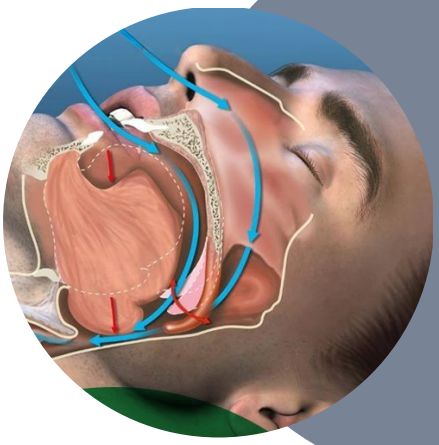
Obstructive sleep apnea (OSA) is one of the most common sleep disorders worldwide, and its extensive complications significantly affect the lives of patients. Fatigue and daytime sleepiness, loss of concentration, and cardiovascular diseases are just a few of the consequences of this condition. Factors such as obesity, smoking, anatomical issues of the upper airway, and airway inflammation play a role in OSA. One approach to preventing and treating this condition is reducing and controlling body inflammation, particularly in the airways, and one effective method to achieve this is through an anti-inflammatory diet. The aim of this study is to investigate the relationship between an anti-inflammatory diet and its impact on the prevention and treatment of obstructive sleep apnea.

Materials and Methods:

For this review study, we initially searched the keywords "anti-inflammatory diet," "obstructive sleep apnea," and "airway inflammation" in the databases Google Scholar, PubMed, and ScienceDirect. We examined relevant articles published from 2019 to 2025. Ultimately, we identified four pertinent articles, including three cross-sectional studies and one cohort study.

Results:

A general review of these articles indicated that an anti-inflammatory diet could improve inflammatory markers such as IL-6 and TNF-α, and by alleviating the symptoms of sleep apnea, it could reduce the severity of this condition's complications.



Conclusion:

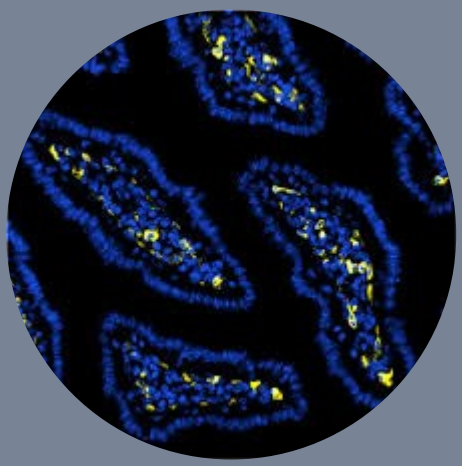
Adopting an anti-inflammatory diet not only improves the body's inflammatory factors but also reduces the symptoms and complications of obstructive sleep apnea, which may enhance the quality of life for these patients. However, other factors such as genetics, living environment, and comorbid conditions also influence the outcomes. Therefore, it seems that further and more precise studies are necessary to achieve comprehensive results and elucidate the underlying mechanisms involved.

Keywords:

Anti-inflammatory diet, obstructive sleep apnea, airway inflammation

Molecular Mechanisms and the Role of Plasmalemma Vesicle-Associated Protein (PLVAP) in Energy Metabolism Regulation and Targeted Obesity Therapy: A Narrative Review

Amirreza Khamineh Jahromi, Negar Norouzi, Mohammad Nosrati



Introduction:

Obesity is a major global public health concern, marked by a sharp rise in prevalence over recent decades. It is closely linked to a range of chronic metabolic diseases, including type 2 diabetes, insulin resistance, and non-alcoholic fatty liver disease. Understanding the molecular mechanisms underlying energy metabolism has opened promising avenues for the development of targeted therapeutic strategies. Recently, Plasmalemma Vesicle-Associated Protein (PLVAP) has gained attention as a potentially critical regulator in these processes.

Method:

This narrative review included articles published between 2015 and 2025, retrieved from databases such as PubMed, Scopus, Web of Science, and Google Scholar. The search was conducted using the following keywords: "PLVAP", "Energy Metabolism", "Obesity", and "PLVAP and Fatty Acid".

Results:

Current evidence indicates that PLVAP plays a pivotal role in mediating selective free fatty acid transport, modulating inflammatory responses, and maintaining glucose-lipid homeostasis, as well as endothelial integrity. In animal models, PLVAP deficiency or inhibition led to reduced thermogenesis, impaired brown adipose tissue function, ectopic lipid accumulation in skeletal muscles, and improved insulin sensitivity. Notably, high-fat diet conditions induced PLVAP overexpression, particularly in pancreatic alpha cells.

Conclusion:

PLVAP emerges as a key molecular player in energy metabolism and vascular permeability, offering promising therapeutic potential for obesity and associated metabolic disorders. Nonetheless, further mechanistic and clinical studies are warranted to validate its role in targeted metabolic interventions.

Keywords:

PLVAP; Energy Metabolism; Obesity; Fatty Acid Transport; Vascular Permeability; Brown Adipose Tissue; Insulin Resistance; Targeted Therapy; Endothelial Function

The Effect of Antioxidant Supplementation on Reducing Pelvic Pain and Complications Associated with Endometriosis: A Narrative Review

Pegah Farshchian, Fatemeh Kourepaz, Parisa Zarei Shargh

Introduction:

Endometriosis is a common chronic inflammatory condition affecting women of reproductive age, characterized by the ectopic growth of endometrial tissue outside the uterus, often associated with chronic pelvic pain. The role of oxidative stress and inflammatory processes in the progression of endometriosis-related damage has been well-documented. This has led to growing interest in the use of antioxidant supplements as an adjunct approach to managing symptoms of the disease. The aim of this narrative review is to evaluate the impact of antioxidant supplementation on reducing pelvic pain and complications associated with endometriosis.

Materials and Methods:

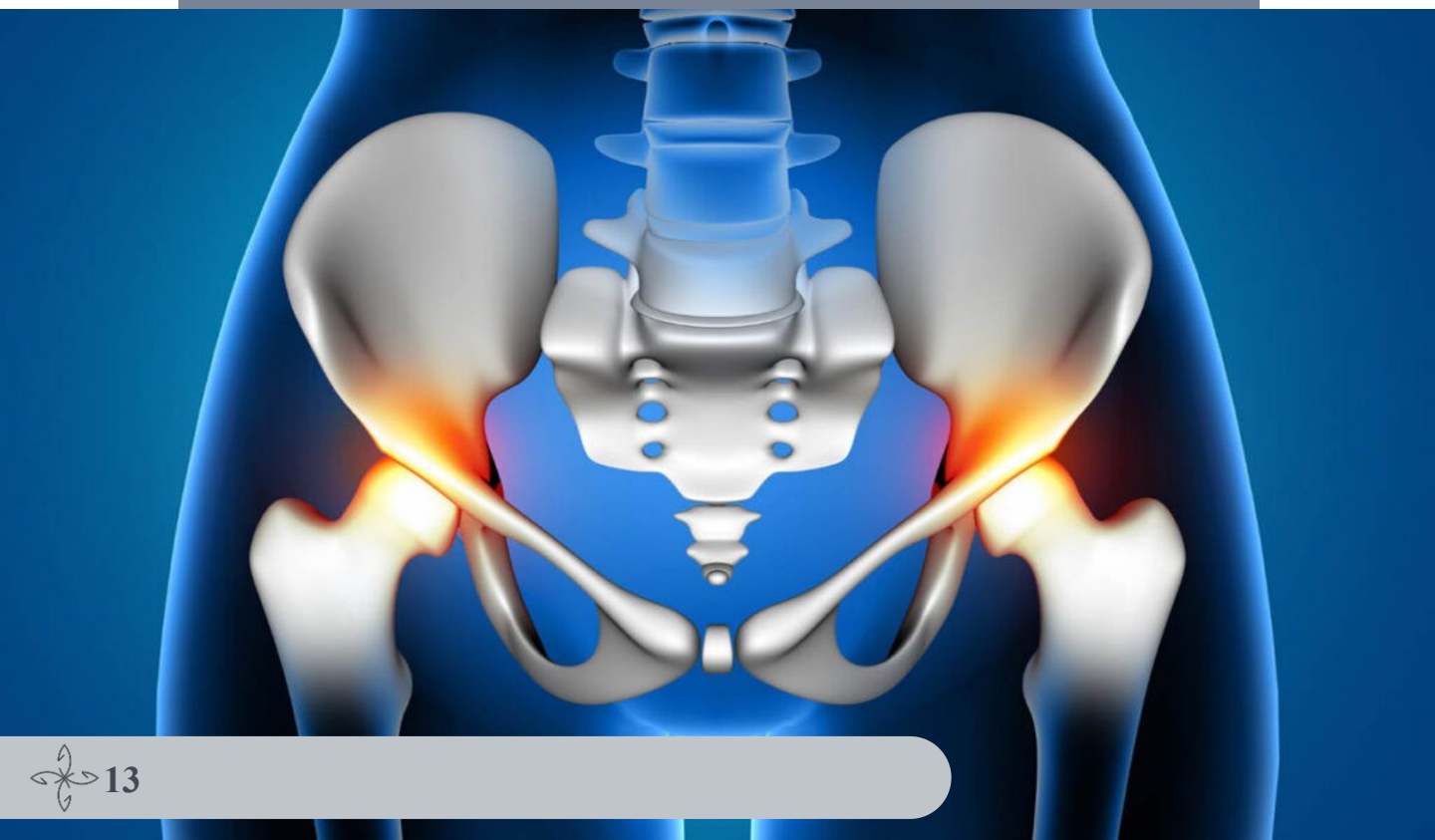
In this narrative review, we searched scientific databases including PubMed, Google Scholar, and Scopus using the keywords: "endometriosis", "chronic pelvic pain", "antioxidant", and "inflammation". Articles published between 2018 and 2025 were considered. After screening titles, abstracts, and full texts, a total of three randomized controlled trials (RCTs) and one meta- analysis relevant to the topic were included for review.

Results:

The selected studies assessed the effects of antioxidant supplementation on reducing complications and pelvic pain caused by endometriosis. Clinical symptoms such as chronic pelvic pain, dyspareunia, dyschezia, dysmenorrhea, sleep disturbances, and quality of life were evaluated using standardized tools such as VAS (Visual Analog Scale), NRS (Numeric Rating Scale), ISI (Insomnia Severity Index), and EHP-30 (Endometriosis Health Profile-30). The majority of studies reported positive effects of antioxidant supplements in alleviating endometriosis-related symptoms and improving quality of life.

Conclusion:

In patients with endometriosis, the use of most antioxidant supplements showed significant improvements in clinical outcomes. These findings highlight the potential role of nutritional and supplement-based interventions as non-invasive strategies in managing endometriosis. However, further research is needed to determine the optimal dosage, type, and combination of antioxidant supplements for this patient population



The effect of bovine colostrum on immunity, inflammation and oxidative stress in athletes: A Review

Asma Azari Azghandi, Narges Naeimi Sadr, Alireza Gheflati

Introduction:

Bovine colostrum is the initial milk secreted by dairy cows, typically harvested within the first 48 hours following parturition. It is enriched with bioactive components such as growth factors (e.g., epidermal growth factor), antimicrobial peptides (e.g., lactoferrin), and immunomodulatory agents (e.g., immunoglobulins). High-intensity physical activity is known to induce systemic inflammation and compromise immune function. In recent years, the constituents of bovine colostrum have attracted growing interest in the fields of sports nutrition and exercise immunology due to their potential role in modulating immune responses and enhancing recovery. Accordingly, this study aims to investigate the effects of bovine colostrum supplementation on immune function, inflammation, and oxidative stress in trained athletes.

Materials and Methods:

In this study, a comprehensive literature search was conducted using the databases Google Scholar and PubMed. The search strategy included the keywords "Supplementation", "Athletes", "Bovine colostrum", and "Inflammation". The search was restricted to studies published between 2020 and 2025. As a result, three randomized controlled trials and one meta-analysis were identified and selected for further review.

Results:

Findings from the present study demonstrated that daily supplementation with 2.3 grams of bovine colostrum over a 24-week period resulted in a significant increase in serum levels of superoxide dismutase (SOD), as well as a marked reduction in thiobarbituric acid reactive substances (TBARS) and tumor necrosis factor-alpha (TNF-α). However, no statistically significant changes were observed in other immunological and inflammatory markers such as total antioxidant capacity (TAC) and protein carbonyl (PC). Furthermore, results related to additional immune indicators, including interleukin-6 (IL-6) and interleukin-10 (IL-10), were inconsistent across the reviewed studies.

Conclusion:

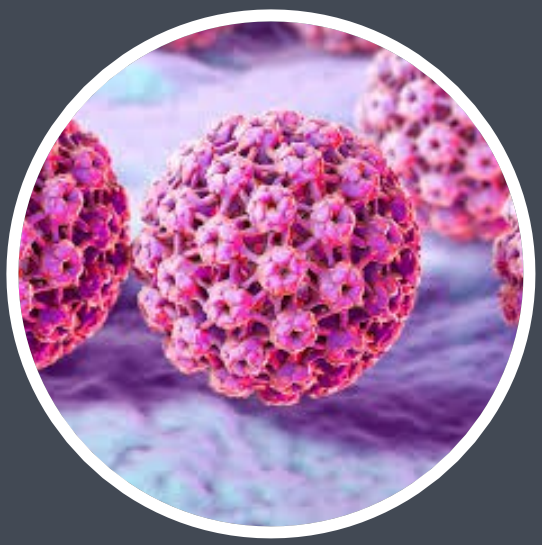
Based on the reviewed studies, bovine colostrum supplementation in athletes demonstrated a favorable effect on reducing oxidative stress markers. However, its impact on other immunological and inflammatory parameters yielded inconsistent and predominantly non-significant results.

Keywords:

Supplementation, Athletes, Bovine colostrum،Inflammation

Association of serum folic acid and human papillomavirus

Atena Kadkhoda, Roshana Rasouli, Monireh Dahri



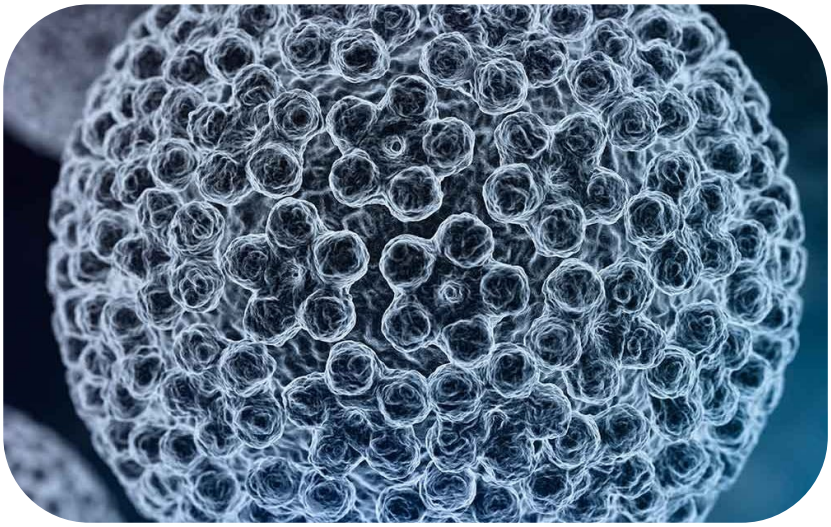
Introduction:

Human papillomavirus (HPV) is recognized as the second most common viral factor in the development of various cancers. Approximately 70% of sexually active individuals become infected with this virus. One of the risk factors for HPV infection is a weakened immune system and reduced intake of certain antioxidants, including folic acid (vitamin B9). Folate deficiency may contribute to HPV-related cancers due to its crucial role in DNA synthesis and methylation.

The aim of this study is to investigate the association between serum folic acid levels and HPV infection.

Materials and Methods:

For this study, the keywords "HPV," "folic acid," and "immune system" were searched in the PubMed and Google Scholar databases. Relevant articles published between 2020 and 2024 were reviewed. Ultimately, one prospective cohort study and three cross-sectional studies were identified as relevant.



Results:

These studies examined the prevalence of HPV and serum folic acid levels in individuals infected with the virus. The results of most of these studies showed a significant association between serum folic acid levels and the occurrence of HPV.

Conclusion:

The studies showed that folate (folic acid) levels in individuals infected with human papillomavirus (HPV) were significantly lower than in non-infected individuals. This finding may indicate a possible role of folate deficiency in increased susceptibility to HPV infection or its progression. However, further studies and research are needed to confirm this association.

Comparison of the Effectiveness of Indicator Bacteria for Obesity Immunity A New Horizon in Treatment through Vaccine Development: A narrative review

Ghazale Ashrafian, Mahsa Chaji, Mohammad Nosrati

Introduction:

Given the increasing prevalence of obesity as a global epidemic and the relative inefficiency of conventional methods such as dieting, medication, and surgery, there is a growing need to explore novel approaches. One emerging strategy involves the use of bacteria to regulate metabolism and promote weight loss. Studies have shown that oral administration of bacterial strains such as A.muciniphila1 and injection of M. vaccae2 can play a significant role in preventing obesity by reducing inflammation and regulating body fat. The aim of this study is to compare the effectiveness of selected key bacterial strains in conferring protection against obesity.

Materials and Methods:

For this review study, a systematic search was conducted in the PubMed, Google Scholar, and ScienceDirect databases. Initially, relevant bacterial strains were identified throgh a preliminary search. Then, by combining the names of these bacteria with the keywords “weight loss” and “high-fat diet,” articles published between 2020 and 2025 were reviewed. After a thorough screening of titles, abstracts, and full texts, four relevant studies were selected for final analysis.

Results:

The selected studies investigated the effects of A. muciniphila, F. prausnitzii3 , Lactobacillus, and M. vaccae on conferring resistance to obesity. All studies analyzed confirmed the beneficial effects of these bacteria in preventing obesity, even under high-fat dietary conditions.

Conclusion:

The studies confirmed that all four bacterial strains are effective in preventing obesity, although M. vaccae may offer the most promising results due to its multiple mechanisms of action. Nonetheless, further comprehensive research is necessary to advance this novel therapeutic approach as a key solution for obesity management.

Keywords:

Obesity prevention, Gut microbiota, Obesity vaccine, Hight-fat Diet

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