# IMPORTANCE OF NUTRITIONAL SUPPLEMENTS IN SPORT ACTIVITIES

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**Abstract**

*The goals of sports performance cannot be reached only through training, but it includes also nutritional supplements along a proper diet. Especially in body shaping sports (fitness and bodybuilding) supplementation is a key factor contributing to the performance and compromise its failure often results. The right nutritional supplementation means not just what is consumed but when it is.*

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**JEL classification:** *I10, I19*

## 1. Introduction

Sports performances cannot be achieved only through training, but is requiring also a nutritional supplementation along a proper diet. Especially in body shaping sports (fitness and bodybuilding) nutritional supplementation is one of the contributing factors to the performance and compromise its failure often results.

## 2. Content

The right nutritional supplementation means not just what is consumed but when it is (Dragan, I., 1994). From this point of view we can discuss about a modern approach of supplementation, athletes called periodization. The overall goal of periodization is to establish a plan of supplementation that can maximize the effects of workout. The main objective is to fight catabolic state (release into circulation of glucagon, epinephrine, norepinephrine, cortisol) and anabolic hormone activation (testosterone, GH, IGF1, insulin) with direct effects on muscle hypertrophy and recovery after exercise (Manescu, D.C., 2012). It should be noted that each type of workout, as well as sports, have unique nutritional needs. Therefore periodization takes into account the three key phases: before, during, and after training.

Before training – is energy phase which is designed to protect muscle glycogen and structural proteins, increase muscle strength in effort to limit immune suppression, reduce muscle damage, and facilitate post-exercise recovery. Consuming a

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carbohydrate and protein supplement (before and possibly during training) increases muscle endurance during exercise and protein intake stimulates protein metabolism, reducing demand for amino acids that could be taken from muscle tissue. Consumption of carbohidrates during exercise inhibits the release of cortisol, limiting the suppressive effect of exercise on the immune system. Appropriate phase profile energy supplement should contain the following nutrients: 20-25 g carbohydrate high GI, 5-6 g of whey protein (fast digestible, high quality), plus 100 mg vitamin C, 50 IU vitamin E, 100-250 mg sodium.

During exercise - strength training does not require special needs on supplementation, however long aerobic efforts can be supported by consuming beverages with carbohydrates for athletes. As long as the exercise intensity is maintained at low energy is the main source of fat, increase body strength but if looking for a more efficient fuel and begin to consume carbohydrates. At one point glycogen is over and the athlete cannot meet the request. If the athlete has taken care to fill their glycogen stores consuming low glycemic index carbohydrates hours before exercise (egg, rice, apples, peaches) 1 g / kg body weight and drink enough water during exercise is now complete need to consume a carbohydrate drink (which is preferably contain 50% carbohydrates and 50% lower glycemic index carbohydrates with high glycemic index). Solution concentration should be 7-10%, or removal of stomach contents is too slow. They also rehydration drinks should contain adequate levels of sodium, calcium, potassium and chloride electrolytes to replace losses through perspiration.

After training is the period that involves two distinct phases: anabolic phase (range 0-45 minutes), is a period that increases sensitivity to insulin and thus glycogen stores are restored faster and faster muscle synthesis (Manescu, D.C., 2012). In this interval is recommended to consume a supplement rich in carbohydrates with high glycemic index, which serves as an activator of insulin secretion. Also good also contain whey protein, which under the influence of insulin will participate in the synthesis of muscle tissue. Profile of supplementation recommended: simple carbohydrates, whey protein, glutamine, vitamins, growth phase – begins at the end of anabolic phase and lasts until the beginning of the next workout. During this period it is important to maintain increased insulin sensitivity and anabolic status to support muscle mass and strength gains. In the early hours must be pursued refill glycogen stores, while eliminating products of metabolism by increasing blood flow and stimulate muscle repair. In the next 16-18 hours will be considered to maintain a positive nitrogen balance. This goal is achieved by administration of 2 to 2.5 g/kg /day of protein. Profile of supplementation recommended: whey protein, casein, glutamine and high glycemic index carbohydrates.

As with all things, periodization training leads to better results than those made at random or without a specific structure (Manescu, C.O., 2010). Therefore the first step in determining the best supplements cyclization program is to understand the

major goals of training, and their relationship. These include: greater levels of muscle mass and strength to a certain period - from this point of view there are many supplements that help increase muscle mass and strength, preventing overtraining – many supplements can prevent or delay Overtraining and undesirable associated with it, especially for high volume weight training, use of supplements to support every phase of your workout – almost all supplements have certain goals and helps to achieve different goals (some help to gain weight, others to lose weight In addition, and so on) should therefore be used in conjunction with training, breaks between workouts, or stop using the same type of supplement to prevent "negative" - if used too long the same type of supplements, without breaks, they will lose the effect, the body adapts to them.

Looking from another angle, the nest step is to understand what happens when we train. General adaptation to stress theory puts on three phases of training and physiological events occurring in time (Dragan, I., 2002). Understanding them can help determine the scope supplementation during each phase. Thus we have: shock – the first phase and last two weeks of starting training (much more straightforward for beginners, although it is true for intermediate or advanced when changing the type of training). Increased muscle performance and reduce fever tend to occur at this stage. This supplement role should be to minimize the impact on the muscles and maximize their recovery, strength – is the second phase, and is the best time to exercise. Now produce mass increases, strength and resistance to supplement during this period was to support growth, adaptation – is the third phase and represents a period of stagnation, when the body adapts to external stimuli. During this time the role supplements should be stimulating biochemical adaptation or install overtraining – is the fourth phase and is characterized by muscle fatigue, extended to the whole body.

From another perspective, be known as planned workouts throughout the year. Sport theory identified three forms of periodization so having: macrocycle - which is training plan developed over a period of time (ranging from several months to a year) with a purpose. As a simple example would be gaining 5 kg of muscle mass and losing 5% of the fat in 9 months mezociclul – defines specific phases of training that goes into a macrocycle. An example might be this: 8 weeks of training for mass accumulation followed by 8 weeks of strength training, then another 8 weeks of exercise to reduce fat, microcycle – or actual training session, is characterized by details defined small daily changes in training, and supplement the diet. An example could be: alternating days with heavy weights and low weights, days of rest, and cyclization calories.

## 3. Conclusions and recommendations

Matching together the theory of periodization, an example of supplement program might look like this: Weeks 1-8 will be the main purpose anabolism. Be administered daily protein, multivitamins and antioxidants, plus a rich

carbohydrates content drink and protein immediately after the workout. It will be added one more energizing product, plus a supplement containing isoflavones, Week 9 is the break – without supplements besides protein and multivitamins, weeks 10-18 will be the main force to increase. Be administered daily protein, multivitamins and antioxidants, plus a drink rich in carbohydrates. In addition it will be supplemented with creatine and glutamine, 200 mg caffeine before exercise, and 1500 mg / day glucosamine. Week 19 is the break – no special supplements outside of protein and multivitamin and will gradually decrease caffeine, 100 mg for 3 days and 50 mg for 4 days. Weeks 19-27 will receive daily protein, multivitamins and antioxidants, plus a drink rich in carbohydrates, 8.6 g tyrosine, 2.1 g lecithin, 200 grams of coffee before exercise; creatine (20 g / day during the first two weeks and then 10 g / day) plus 10 g of ribose per day. Week 27 is the break - without supplements besides protein, multivitamins and caffeine will gradually decrease, 100 mg for 3 days and 50 mg for 4 days. Weeks 28-35 will focus on defining and fat loss. Be administered daily protein, multivitamins and antioxidants, plus a drink rich in carbohydrates and protein immediately after training, 3-5 grams per day of fish oil, ALA 300 mg twice daily glucosol 50 mg twice daily and a thermogenic supplement twice a day. Week 36 is without supplements beside protein and multivitamins.

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