

Supplements and sports foods

The use of dietary supplements is widespread in football, but players should not expect benefits from most of these supplements.

Players look to nutritional supplements for many benefits, including:

- promoting adaptations to training
- increasing energy supply
- allowing more consistent and intensive training by promoting recovery between training sessions
- maintaining good health and reducing interruptions to training due to chronic fatigue, illness or injury
- enhancing competitive performance.

Few of the products used by athletes are supported by a sound research base and some may even be harmful to the player. All players should look carefully at the risks and rewards of individual supplements before trying them.

Where there is a demonstrated deficiency of an essential vitamin or mineral, and an increased intake from food is not possible, a supplement may be helpful. The use of supplements, however, does not compensate for poor food choices and an inadequate diet. Many players ignore the need for caution in supplement use, and take supplements in doses that are not necessary, and may even be harmful.

Protein powders and supplements

Protein supplements, high protein bars and amino acid preparations are among the biggest selling sports nutrition products. Although an adequate intake of protein is essential for muscle growth and repair, this can easily be achieved from everyday foods and extra protein is seldom required.

Protein-carbohydrate supplements may have a role as part of a post-exercise recovery plan, but the whole proteins that are found in foods generally have advantages over individual amino acids.

Fat reduction and muscle building

A huge array of supplements is on sale with claims that they can reduce body fat levels and build bigger and stronger muscles – claims that appeal to athletes and non-athletes alike.

The reality is that many of the products that are effective in doing this are either on the banned list or are associated with serious health risks (or both).

Compounds in the muscle building category include chromium, boron, hydroxymethylbutyrate, colostrum and others. Based on current research, none of these has anything worthwhile to offer the player.

Increasing energy supply

Supplements in this category include carnitine, pyruvate and ribose as well as some more exotic herbal preparations. None of these is likely to improve performance and, in spite of advertising claims, none is supported by good independent evidence.

Nutrition and the immune system

There is some evidence that players who are training hard may be at increased risk of minor illnesses and infections. These are generally trivial, but they can interrupt training or cause a player to miss important competitions. Hard training may compromise the body's immune system, and high levels of stress hormones reduce its ability to fight these infections.

Many nutrition supplements, including glutamine, zinc, Echinacea, colostrum and others, are on sale with claims that they can boost the immune system, but there is no strong evidence that any of these is effective. The best evidence supports the use of a high carbohydrate diet, which lowers stress hormone levels, and appropriate rest periods.

Supplements for bone and joint health

Hard training puts extra wear and tear on the bones, joints and associated structures, and numerous supplements are claimed to look after these tissues. Healthy bones need a good supply of calcium and Vitamin D. In most cases these nutrients can be supplied by the diet. Players who suffer from problems related to sub-optimal bone density should seek professional advice and supervised treatment from a sports physician.

Glucosamine, chondroitin, methylsulphonylmethane (MSM) and other products are promoted for joint health. Long-term (2-6 months) glucosamine treatment may provide subjective relief in elderly individuals suffering from osteoarthritis, but there is little or no evidence of benefit for otherwise healthy players.

Supplements that might work

Some supplements do offer the prospect of improved performance: these include creatine, caffeine, bicarbonate, and perhaps a very few others.

Creatine. Creatine supplements can increase the amount of high energy creatine phosphate stored in the muscles, and may improve performance in single or multiple sprints. It may also lead to a gain in muscle mass, which is helpful for some players but harmful for others. As with all supplements, exceeding the maximum effective dose is not helpful. Creatine is normally found in meat and fish, but the doses used in supplementation protocols (10-20 g per day for 4-5 days to load, and 2-3 g per day for maintenance) are more than is found in normal foods. Creatine supplementation appears not to be harmful to health.

Caffeine. A small amount of caffeine (1-3 mg/kg) can help performance in prolonged exercise and may also be helpful in exercise of shorter duration. Such moderate doses can be found in everyday amounts of coffee, cola drinks and some sports products (e.g. gels). For example, 100 mg of caffeine is supplied by a small cup of brewed

coffee or 750 ml of a cola drink. Larger doses of caffeine do not seem to be more effective, and may have negative outcomes such as over-arousal and poor sleep patterns after an event.

Bicarbonate. In very hard exercise, the muscles produce lactic acid. This is both good (giving energy to allow hard efforts) and bad (causing pain and interfering with muscle function). In the same way that excess stomach acidity can be neutralised by taking bicarbonate, so sodium bicarbonate (in a dose of about 0.3 g per kg body weight) before an event can counter the negative effects of lactic acid. Bicarbonate supplements are widely used by athletes in events that cause fatigue within a few minutes, and there is now evidence of possible benefits from studies designed to simulate the activity patterns of football players. There is a real risk of gastrointestinal problems and players should experiment in training.

A number of sports foods have been developed to supply a specific formulation of energy and nutrients in a form that is easy to consume. These can be valuable in allowing players to meet their special nutrition needs when everyday foods are unavailable or impractical to eat. This is most often the case just prior to, during, or after an exercise session. Examples of useful sports foods include:

- sports drinks (providing fluid and carbohydrate during exercise)
- sports gels (additional carbohydrate intake, especially during exercise)
- liquid meals (carbohydrate, protein, vitamins and minerals for a pre-event meal, post-exercise recovery or a high-energy diet)
- sports bars (carbohydrate, protein, vitamins and minerals – often a solid form of the liquid meal)

Of course, the cost of these sports foods must be taken into account when deciding to use them.

Supplements and doping issues

Players who are liable for drug testing under national or international programs should be especially cautious about supplement use.

Some supplements are prepared in unhygienic conditions and contain toxins that may cause gastrointestinal problems. Others do not contain ingredients – especially the expensive ones – that are listed on the label. Contamination of dietary supplements with substances that may cause a player to fail a doping test is widespread – some surveys have suggested that as many as one in four supplements may result in a positive test. These prohibited compounds have not been declared on the label, so there is no way for the player to know that they are present.

At present, there is no guarantee of the purity of any commercial supplement. The only way to be sure is to avoid supplements altogether, but many players are unwilling to accept this advice. The sensible player will want to see very good reasons for using a supplement and a very low risk of an adverse test before deciding to use it.

There is no evidence that prohormones such as androstenedione and norandrostenedione are effective in enhancing muscle mass or strength. These

Players must be aware of the strict liability principle that makes them responsible for everything they eat and drink.

Ignorance is not an acceptable excuse for a positive doping result.

Check all supplements with a medical officer. If there is any doubt at all, don't take it.

prohormones are promoted for use by players and are readily available in shops and via the internet, but they will result in negative health consequences as well as positive drug tests.

Many herbal supplements are claimed to increase testosterone levels and hence have an anabolic action: such supplements include Tribulus Terrestris, Chrysin, Indole-3-Carbinol, Saw Palmetto, Gamma-oryzanol, Smilax and Mummio. These claims are based on experiments carried out in test tubes, and none has been shown to work in humans. All players are cautioned against the use of these supplements.

