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Rugby Nutrition:

Supplements – An integrated Approach

Performance and Body Composition Supplements

Performance Supplements

There are very **few** supplements that have been shown to have a role in enhancing performance. The few supplements for which there may be a small performance benefit in some individuals, are summarized in Table 1 below.

Table 1: Examples of some sport supplements that may have performance benefits in some situations
(Table on page 2)

Adapted from Meltzer and Associates; 2013 and Australian Institute of Sport
<http://www.ausport.gov.au/ais/nutrition/supplements/groupa> ^[1,2]



Table 1: Examples of some sport supplements that may have performance benefits in some situations

Supplement Type/Category	Use and rationale	Risks and Comments
Caffeine	Caffeine improves performance in a number of activities, primarily by increasing alertness and concentration, and delaying exhaustion by decreasing the perception of fatigue.	Benefits are seen with doses as low as 2mg/kg body weight. More is not necessarily better and too much caffeine (usually > 6mg/kg body weight) can cause palpitations, affect co-ordination, cause stomach upsets and sleep disturbances, thereby negatively affecting subsequent performance. Have a strategic plan for caffeine use considering the timing of matches and importance of each outcome (i.e. you may want to reserve caffeine use for when it counts most), if playing several matches in a day or on subsequent days. May be less effective in the heat and some individuals may react negatively with withdrawal.
Creatine	Can be used for strength, muscle mass gains, and enhanced training and recovery, particularly if exercise has involved repeated bouts of high intensity sprints.	Weight gain initially may be due to water retention and this may be disadvantageous in some sports. Creatine should be avoided in persons with kidney problems and with high blood pressure. Slow or rapid loading protocols can be used depending on goals.

Sodium bicarbonate and Sodium citrate	These are alkalizing agents that are extracellular buffers useful in high intensity exercise	May cause side effects like diarrhoea which can be minimized by using different loading protocols of sodium citrate.
Beetroot juice	A vegetable juice packaged as a supplement high in nitrate which may lower resting blood pressure and oxygen cost of exercise.	Evidence is stronger for sub-elite athletes; more research is required for elite athletes regarding dosage and exercise duration.
Beta-alanine	Increases muscle carnosine which acts as an intracellular buffer, and may enhance the training-induced effect on VO ₂ , peak power output and physical working capacity in high intensity exercise.	Acute dosing over 1-2 days is likely to be ineffective. Although showing some promise, most research has been done in cycling and more research is required in rugby and in truly elite athletes.

REMINDER & PROVISOS ^[1,2]

- These supplements need to be integrated into an individualized dietary program prescribed by a registered dietitian working in sport.
- Any supplement should be individually prescribed, trialed and managed (more is not better), and periodised to prevent overuse and injury risk. What works for one player may not work for another!
- A thorough RISK (health, contamination, legal and cost considerations) to BENEFIT analysis should be done before considering the use of supplements.
- Remember that the performance benefit of any supplement is small in comparison to the benefits of an optimal diet combined with optimal training.
- No sport specific supplement should be used by rugby players under the age of 18 years ^[3].
- Understand the small print – certification programs are not entirely risk free and players are reminded that they are strictly liable for any supplements used.

Body Composition Supplements ^[1]

Both weight gain and weight loss supplements are heavily promoted in the sports industry.

Weight gain:

Protein shakes, powders and bars are popular products often used for weight gain. Although, they may be low in fat and convenient, there are certain watch points to consider:

- There is an upper limit as to how much protein the body can use, and in most cases this can be met through a well-balanced diet
- These supplements are often expensive
- Too much protein may 'crowd out' other important nutrients and can also lead to unwanted fat mass gain
- These supplements may build an increasing reliance and dependence on them and promote the use of more dangerous substances
- There is no evidence to support their superiority over food and there is a risk of inadvertently consuming risky and banned substances.

Weight Loss:

There are 2 main categories of weight loss supplements:

1. those that reduce food intake such as appetite suppressants (these include stimulants like ephedrine and pseudoephedrine, caffeine, guarana and ma haung) and nutrient absorption blockers (these include guar gum and chitosan), and
2. those that increase energy expenditure (thermogenics, metabolism boosters, and fat burners like CLA and carnitine).

Be aware that many of these ingredients are banned for use in sport.

Meal Replacements:

Another dietary strategy that can be used to reduce and help control energy intake is the use of meal replacements. Portion size are easily standardised which allows for better control, the fat content is moderate to low, and there is usually a good supply of other nutrients. However, it is important to check the nutritional composition and ensure that no “risky herbs” or other “risky” substances have been added.

These also need to be individually prescribed by a dietitian working in sport and properly integrated into the diet, while ensuring that whole foods are still included and that not all meals are replaced.



What about PROHORMONES?

These designer supplements include testosterone or nandrolone precursor hormones such as androstenedione, 19-norandrostenedione, and dehydroepiandrosterone (DHEA). They promise to increase muscle size, strength and power but have many side effects such as liver, kidney and heart disease, certain cancers, hardening of the arteries, depression, paranoia, aggression, stunted growth in adolescents, and acne. **Men** can develop breast tissue and premature baldness, atrophy of the testes, decreased sperm count, infertility, enlarged prostate and prostate cancer and in **Women**, increased facial and body hair, deepening of the voice, abnormalities of the reproductive system and sexual organs, clitoral enlargement and menstrual problems, increased risk of breast and endometrial cancer, can result.

Note: *herbal supplements like tribulus terrestris are often promoted for weight or muscle mass gain despite limited evidence. Moreover, they have been associated with positive tests for banned substances in athletes.* ^[1,2,3]

For more information on *Rugby Nutrition*, go to the BokSmart website www.BokSmart.com or go to the

following link: <http://boksmart.sarugby.co.za/content/eating-and-drinking-right>

REFERENCES

1. Meltzer and Associates; 2013, SSISA Nutrition Short Course. Module 7 .
2. Australian Institute of Sport <http://www.ausport.gov.au/ais/nutrition/supplements/groupa>
3. A Claassen. Position Statement of the South African Institute for Drug Free Sport (SAIDS) on the use of supplements in sport
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Document Compiled by Shelly Meltzer RD(SA), Shelly Meltzer & Associates