



# Guru Performance Position Stand #5

## – Practical Considerations for Supplement Use in Sport

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### OVERVIEW

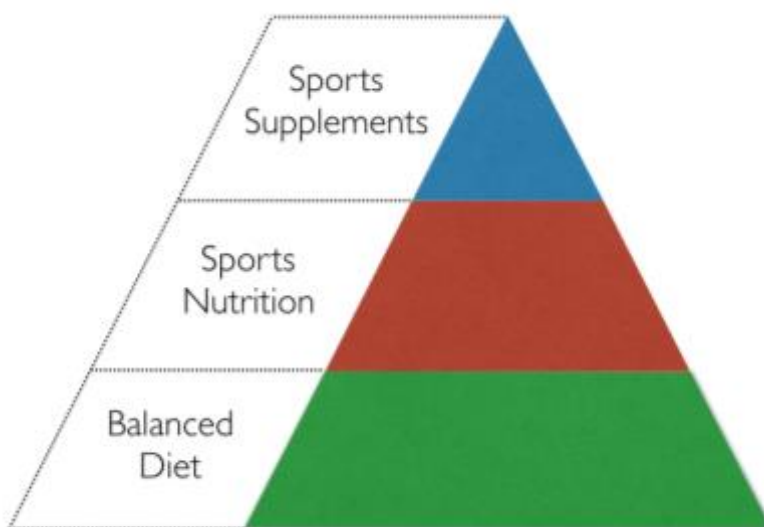
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### (1) INTRODUCTION

The use of supplements in both elite and recreational level sport has grown tremendously in recent years (Knapik et al. 2016). Opinions are clearly split as to whether supplements are a necessary component of the athlete's diet, and the reasons for using supplements are broad. Whilst there is a time and place for supplements, we believe in a simplistic yet discerning approach to advocating them. Moreover, the choice of which supplement brand to use has become more difficult than ever due to the demand of aesthetic focussed supplements containing banned substances or manufactured in third party labs where contaminants may spoil a 'clean' supplement. This position stand will address topical issues surrounding supplement use in sport and provide a clear outline of the practical considerations for utilising supplements in a safe and effective way.

## (2) THE FOOD FIRST APPROACH

A major misconception in the world of sport is that supplements are an essential component of the athlete's diet - whether this means **dietary supplements** for nutrients that may otherwise be lacking in the diet or **ergogenic aids** that potentially improve recovery, training and competition performance. At the elite end of the athlete spectrum, ergogenic aids might provide an incremental improvement in performance and/or recovery, however in the majority of cases the need to supplement is overcome by management of the core diet. Practitioners refer to this as a 'food first' approach, which essentially puts a balanced diet at the forefront of the athlete's nutrition, with supplements used where appropriate to 'supplement' the diet (the clue is in the name – it is a supplement!). This is nicely conceptualized by the food first pyramid (Figure 1).



**Figure 1.** The food-first pyramid. A balanced diet forms the foundation of the diet. Sports nutrition – the manipulation of specific dietary variables to meet the demands of a periodized training programme forms the second tier of the athlete's diet. Sports supplements form the final, but least important aspect of the diet and is only considered when the lower tiers are strongly built.

The food first pyramid shows us that a balanced diet, which would include a variety of sources of protein, carbohydrates and fats as well as vegetables and fruits eaten in appropriate amounts and at appropriate times, is the main building block for the athlete's diet. Unfortunately, in our experience many athletes have not nailed this essential aspect of the pyramid, but instead rely heavily on dietary supplements to aid performance and recovery. Assessing and addressing the athlete's basic diet and the reasons for any shortfalls is a crucial first step. As we will discover in Section 3, each individual has his or her own factors that influence their eating habits and so managing the diet should always be considered on an individual basis.

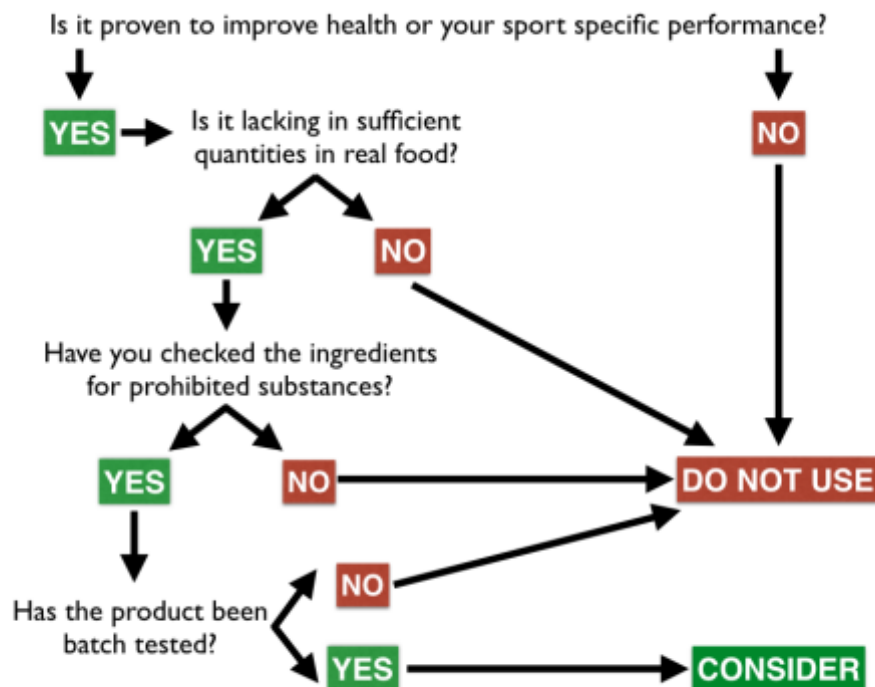
### **“Addressing the athlete's basic diet and the reasons for any shortfalls is a crucial first step”**

If the basic foundation is well developed, sports nutrition is then considered as the second tier. This involves more of a tailored approach where, for example, carbohydrate manipulation is programmed into the athlete's diet (Jeukendrup, 2017). Nutritional periodization is a key component of current sports nutrition; a concept that uses the principle of periodization (often applied in the physical training programme), to manipulate the timing and quantity of macronutrients to meet the demands of the specific training phase. This paradigm requires the athlete to have a solid understanding of basic nutrition and be independent enough to implement the nutritionist's program in their absence and when food/beverage provision is not provided (for example at the club / training ground or indeed at home).

If all the above is implemented and adhered to in parallel with a well-designed training programme, then supplementation can be considered. A great way to think of this is that a balanced diet forms the bulk of a cake, sports nutrition is the icing and supplementation is just the sprinkles on top! However, even when the need for supplementation has been identified, there are still a number of considerations to be made.

### (3) IDENTIFYING THE NEED TO SUPPLEMENT

As we have discussed so far, the 'food first' pyramid is a great starting point to building a great nutrition support plan for the athlete and is rooted in getting as much of the athletes nutritional requirements from food. However, in some cases there is a time and a place for supplements that when implemented correctly can effectively improve health, recovery and performance. The first question to address is whether there is a genuine need to supplement. There may be a number of reasons that prompt supplemental support. In our experience, the main supplements that we advise are protein, creatine, beta alanine, vitamin D and caffeine. In some cases, additional vitamins can be advised to support immune health, such as vitamin C. Why do these particular supplements continuously crop up? Well, this is mainly because higher quantities than can feasibly be obtained in the diet are beneficial and importantly, there is a solid scientific basis for this (example: it takes ~5kg of steak to get the amount of creatine you would need for loading). The UK Sport and Exercise Nutrition Register (SENr; <http://www.senr.org.uk>) have created a decision-making flow chart, which highlights the key questions to ask when considering using a supplement. A modified version of the flow chart is presented below (Figure 2).



**Figure 2.** Supplement decision flow chart (adapted from the SENr supplement use in sport: position stand, 2016).

## **(4) SUPPLEMENT ON A CASE-BY-CASE BASIS**

Simply identifying a potential need to supplement is only part of the process. The training age/status, mental age, previous experience, food / supplement knowledge and psychological factors personal to the athlete are also critical factors to account for. A recurring theme throughout this article is that supplementing safely is imperative, and so if the athlete does not have the skills to understand the practitioner's advice and guidance, this could result in adverse effects.

### **“Simply identifying a potential need to supplement is only part of the process”**

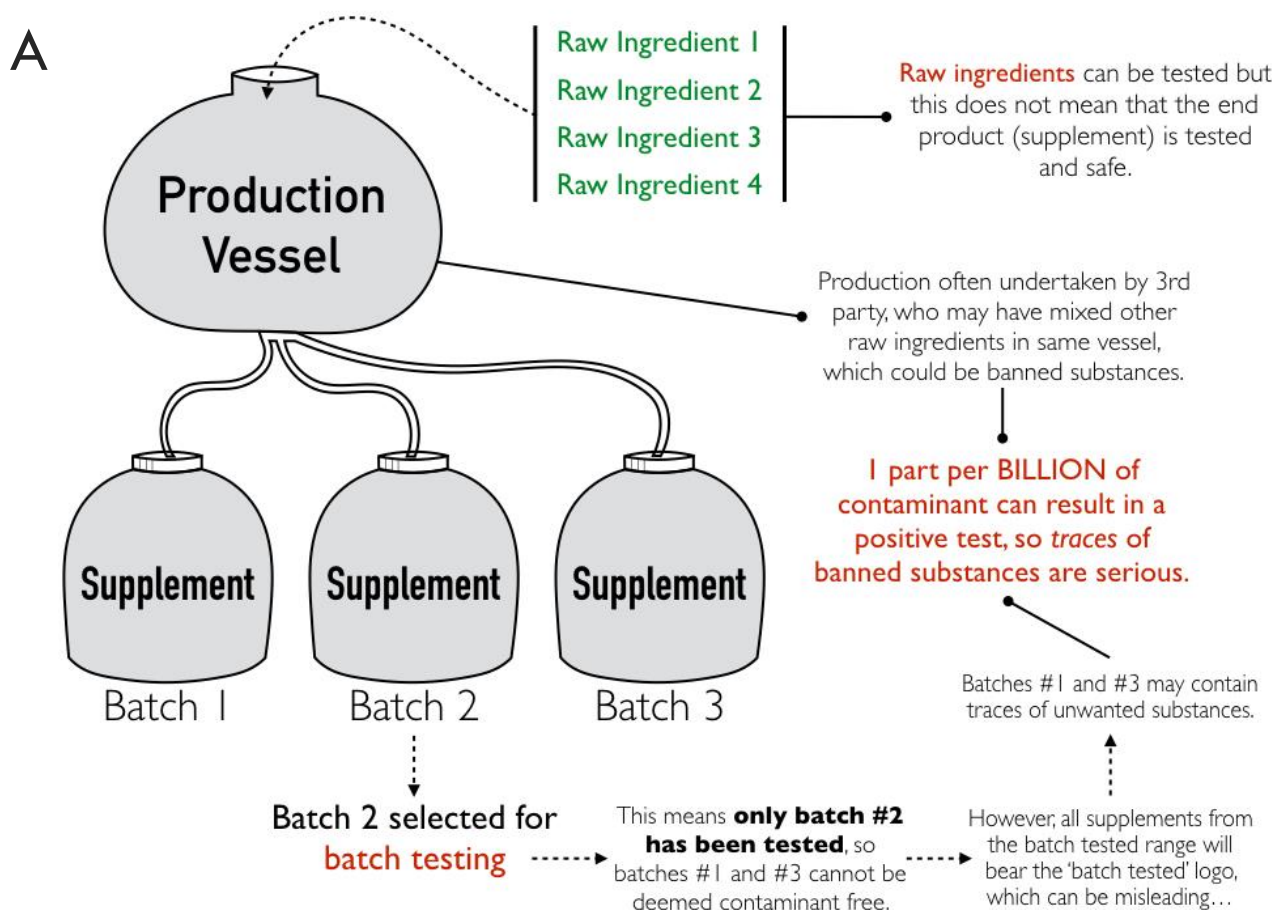
As an example, your athlete may habitually eat well, know how to cook and have learnt some basic sports nutrition. However, they cannot abide by your guidance on supplementation use potentially due to an addictive personality trait or perhaps an unwillingness to carefully monitor their intake of a supplement. Whilst for many permitted supplements this wouldn't result in a ban, the chances of it leading to adverse health are very real.

As a second example, your athlete may not have the suitable knowledge to supplement appropriately and effectively in your absence. For instance, your athlete may supplement with caffeine gum prior to evening competition; all the while under the impression that this will improve his or her performance based on the evidence-base you discussed. While this may well improve performance on the day itself, the bigger picture has been neglected in that supplementing with caffeine in the evening time will likely affect subsequent sleep duration and quality, particularly if he or she is very caffeine sensitive. Of course, a lack of sleep can bring forth a myriad of negative consequences, including reduced mood, exercise recovery, and subsequent exercise performance (Fullager et al. 2015). What's more, the athlete will be left with a very negative experience of using caffeine to enhance performance.

The take home message here is that effective supplementation is not as simple as; need + safety + efficacy = use. Common sense must be brought into this equation to weigh up whether the training or competition effects ultimately outweigh any negative impacts that may accumulate over time, such as sleep disturbance for example. This is the case because supplements such as caffeine, although safe when used within the identified safety range, could ultimately result in detrimental effects when used at the wrong time over a prolonged period. Supplementing on a case-by-case basis is crucial and supports the need to seek the assistance of a registered sports nutritionist or sports dietician who have the right training and experience to prescribe and monitor supplement use.

## (5) SUPPLEMENT SAFETY

If you've reached the point where supplementation can help your athlete and you need to source a supplement, there are very important safety measures that must be followed to ensure the health of the athlete and their security from a doping perspective. It is extremely important to remember that the athlete has the sole responsibility for what goes into their body (from a liability perspective). **This means education on supplementation is crucial.** The athlete should firstly be aware of what is prohibited in and out of competition in their sport, which is made simpler by the World Anti Doping Agency (WADA), who produce a comprehensive list of prohibited substances (<https://www.wada-ama.org/en/prohibited-list>). Secondly, when the prohibited list has been taken into account, a batch-tested version of the supplement of interest must be sourced. Informed Sport ([http://www.informed-sport.com/#view\\_video](http://www.informed-sport.com/#view_video)) is a quality assurance program for sports nutrition products, suppliers to the sports nutrition industry, and supplement manufacturing facilities. The program certifies that all nutritional supplements and/or ingredients that bear the Informed-Sport logo have been tested for banned substances by the world class sports anti-doping laboratory, LGC. However, it's important to know that you must get a product from the batch that has been tested to have the assurance that there is minimal risk of contamination. **As the name suggests, batch testing means only certain batches are tested, not all!**



B



**Figure 3.** A) Batch testing procedure simplified. It is important to understand that batch testing is only a risk minimization scheme and cannot guarantee 100% purity. Moreover, only the batch that was tested can guarantee minimal risk as other batches have not passed the batch testing procedure. In order to ensure minimal risk, supplements bearing the informed sport logo should be sought (B). The WADA prohibited substance list and information regarding batch testing can be found by clicking the logos in Figure 3B.

**“There are very important safety measures that must be followed to ensure the health of the athlete and their security from a doping perspective”**

Paying attention to the appropriate dose that has been scientifically proven to promote health or performance benefits is also highly important. Athletes typically believe ‘more is better’, which is not the case for almost all supplements and may be detrimental to health in most cases. As an example, vitamin D supplementation is often used to normalize low vitamin D levels, which can improve health via effects on the immune system and improve recovery by aiding muscle remodeling. However, if mega doses are consumed regularly, this can be detrimental to vitamin D metabolism (Owens et al., 2017) and in extreme cases, is toxic.

A further thought is more of a practical consideration that you won’t learn in textbooks: who has access to and deals with the athlete’s supplements? Just because the supplement arrived ‘clean’ does not mean that in the process of administration and handling it stayed clean. Careful monitoring of supplement access and use is crucial to minimize risk.

## **(6) CONTEXT STATEMENT**

A popular message that has been conveyed by a variety of practitioners and academics within the field of Applied Sports Nutrition is ‘**you can, but should you?**’. We believe this is an extremely powerful question that practitioners who are working with athletes, and indeed athletes themselves, should ask when addressing the need to supplement. In all cases, it is essential that each athlete’s needs, goals, preferences and circumstances are wholly accounted for when deliberating supplement use, and of course athlete safety, from both a health and doping perspective, should also be kept at the forefront of the mind. If your athlete is going to supplement then it is important for us as practitioners to carefully manage expectations, especially when extrapolating research findings from a laboratory-based study to ‘real world’ applied practice with elite athletes. For instance, just because a study reports an average 2% improvement in performance following a particular supplementation protocol does not mean that your athlete will respond in the very same way, both in magnitude and direction. It’s essential to remember that we don’t work with means, we work with individuals, and what may work in one situation for a certain group of individuals may not apply in exactly the same manner with your ‘individual’ athlete.

## (7) REFERENCES & RESOURCES

- **Burke LM (2017).** Practical issues in evidence-based use of performance supplements: supplement interactions, repeated use and individual responses. *Sports Med.*
- **Fullager HK et al. (2015)** Sleep and athletic performance: the effect on exercise performance, and physiological and cognitive responses to exercise. *Sports Med*
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- **World Anti-Doping Agency:**
  - **Prohibited list:** <https://www.wada-ama.org/en/prohibited-list>
  - **The 2017 Monitoring Program:** [https://www.wada-ama.org/sites/default/files/resources/files/2016-09-29 -  
\\_wada\\_monitoring\\_program\\_eng\\_final.pdf](https://www.wada-ama.org/sites/default/files/resources/files/2016-09-29_-_wada_monitoring_program_eng_final.pdf)

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# GURU PERFORMANCE POSITION STAND #5 – PRACTICAL CONSIDERATIONS FOR SUPPLEMENT USE IN SPORT

by Daniel Owens, Scott Robinson, and Laurent Bannock

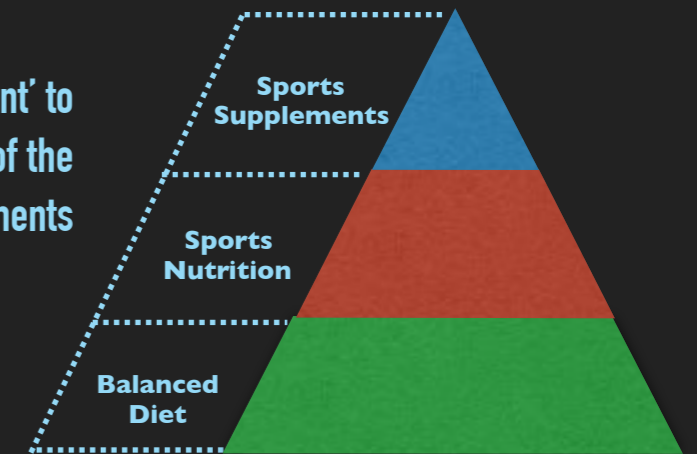
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The use of supplements in elite sport and indeed amongst recreational athletes has grown tremendously in recent years.

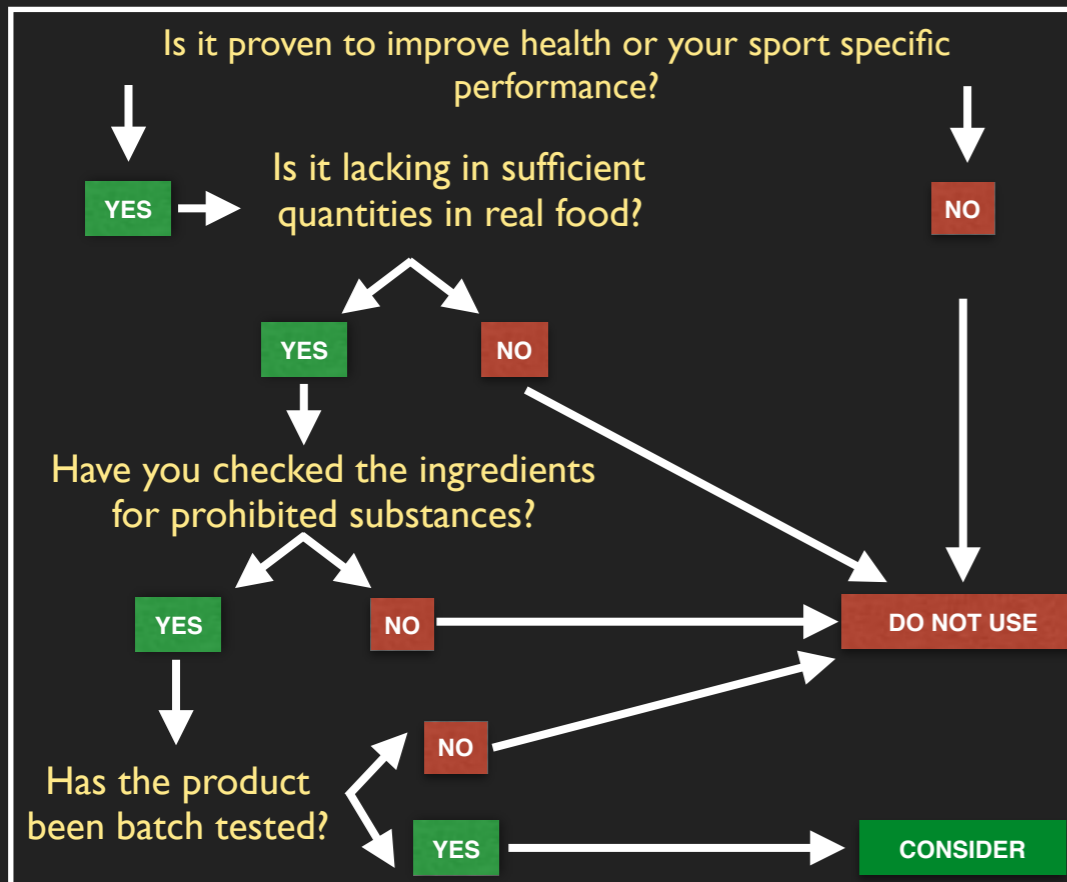
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The clue lies in the name. It is a 'supplement' to the diet, not an 'instead of'. Management of the core diet should be priority, with supplements considered once this has been achieved.



3

The SENr supplement decision flowchart is a useful resource for practitioners and athletes to use when considering supplement use



4

Identifying a potential need to supplement is only part of the process. The training age / status, mental age, previous experience, food / supplement knowledge, and psychological factors must also be considered!

5

Supplement safety is CRUCIAL. Athlete education, awareness of what is prohibited in sport and what's on the WADA watch list, and the use of batch tested supplement is key.



6

More isn't always better and can sometimes be detrimental. Just because the supplement has arrived 'clean' doesn't mean that in the process of administration and handling it stayed 'clean'. Remain vigilant at all times!

7

## You can do it, but should you do it?

\*This infographic provides an overview of the key points covered in the Position Stand article. To ensure a comprehensive understanding of the topic we encourage readers to read the full article and watch the overview video.

Read the full article at: [www.GuruPerformance.com](http://www.GuruPerformance.com)