

Ergogenic aids in professional and recreational sports – a different perspective

In this magazine, we like to think outside of the metaphorical box and this article is no different. Paul Ehren likes to stretch your imagination, and he does so here with a completely fresh approach on ergogenic aids.

To quote from a 1995 research paper (1): “In the context of sport, an ergogenic aid can be broadly defined as a technique or substance used for the purpose of enhancing

performance. Ergogenic aids have been classified as nutritional, pharmacologic, physiological or psychological, and range from use of accepted techniques, such as carbohydrate loading, to illegal and unsafe approaches, such as anabolic-androgenic steroid use”.

The fact that the use of ergogenic aids is still poorly understood by many in mainstream sports science, and particularly sports medicine, was highlighted in another paper from 2004 (2): “Many team physicians and sports medicine practitioners are unfamiliar with the benefits and risks of these products and thus are unable to educate young athletes on this topic”.

Finally, from Simon Martin, editor of *IHCAN* magazine, sister publication to *FSN* (3): “practitioners looking to supply evidence-based advice to people who want to improve

performance have a different problem – that is that sports science is way behind what coaches and athletes are actually doing”.

We therefore have an extremely large palette from which to draw when considering how best to define and discuss the various aids available to athletes and I would completely agree with Simon Martin that those of us who are working ‘at the coal face’ with athletes tend to be several steps ahead of conventional published sports science/medicine research.

During my recent lecture as part of the CISN post graduate course, I referred to athletes as the ‘canaries in the coal mine’, by which I meant that elite (and recreational) athletes are in many cases pushing the envelope of what is seen as healthy, acceptable or legal, and in some cases paying the price in terms of health

and/or long-term performance.

Most articles on ergogenic aids (EAs) tend to follow a distinct pattern, addressing the most obvious, well researched examples that, to be frank, have been discussed to death (e.g. creatine, caffeine, beetroot juice, BCAAs etc). They may then consider ‘grey area’ supplements and/or practices and then address the ever-blurring line between EAs and performance enhancing drugs (PEDs), normally playing the party line that any form of drug use is universally detrimental to the athlete’s health.

Therapeutic use exemption certificates in sport

Before leaving the conventional view of EAs I would like to touch upon the increasing use of therapeutic use exemption certificates (TUEs)

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and how these are making it yet more difficult to draw a distinction between allowable medication, EAs and PEDs.

Any athlete may suffer from one or more medical conditions that require them to take medication. It is then the athlete’s responsibility to check that the medication in question does not fall within the World Anti-Doping Agency (WADA) prohibited list. The granting of a TUE on the basis that a legitimate medical condition exists, and that the medication is required to bring the athlete back to a level playing field with their healthy peers, would enable training and competition to be undertaken without fear of falling foul of the doping rules.

However, the possibility of system abuse is clear and looking at recent professional cycling has seen the spotlight falling upon

the use of TUEs for some very well-known athletes. An interview with Dr. John Dickinson, head of the respiratory clinic at the University of Kent, carried out by Cycling Weekly in 2016, suggested that up to 40 per cent of British Olympic cyclists recorded suffering from asthma style complaints and having to use medication to alleviate the problem.

In a similar fashion, our editor Ian Craig has explored the thyroid suppressant effect of intense endurance training/competition and how, given a well timed blood test, an athlete can show symptoms of hypothyroidism, and receive medication for it, when no actual clinical issue exists (4). The fact that thyroid medication used on a healthy athlete has been seen to be performance enhancing has been bought into sharp focus over the last few years when a well know track and field

coach has had to deny various allegations of overseeing a structured doping campaign with his athletes.

Departing from the conventional view of ergogenic aids

I would now like to move away from individual substances and tests and ask you to join me for a short while, thinking much more globally about the definition and use of EAs.

Even though the functional medicine and functional sports nutrition models are designed to encourage a multi-faceted view of any particular issue, it is still sometimes easy to get caught up on the minutia and miss the bigger picture(s). It is sometimes necessary to count the rings on a tree trunk in the rain forest when assessing a problem, but equally it is also vital to consider the health of the whole eco system.

Let’s start with a really obvious global example, but one that still gets missed in the context of EAs – your athlete’s overall health. I would argue that health, both initial and ongoing, is the biggest EA that an athlete will ever have. This will seem obvious to any functional practitioner, but still needs to be revisited when dealing with athletes. There are still a lot of performance-centric competitors and coaches operating in many areas of sport, with my specialities of the power and fighting sports probably being among the worst examples of this. It would not be the first time that I have been asked why I am asking so many questions when enquiring about a new client’s toilet habits, the source of their food, or the health of his/her parents.

Establishing a good health base is, however, not enough – we are taking a person’s nutrition, lifestyle and sporting performance to a level that is a long way from what would be considered ‘normal’. To use the analogy of a rally race car, you can’t simply put a high-performance engine into a production line Ford Focus and not also expect to up-grade the suspension, brakes, steering, chassis etc. Our athlete will also ‘blow a gasket’ very quickly if we don’t ensure that every aspect of their physiology and psychology is considered and addressed on a regular basis.

This ongoing assessment of health also fits in very neatly with the eco system hypothesis that I mentioned earlier – this system involves everything that surrounds the individual, either allowing them to flourish or to dwindle.

Two examples could be:

- **Financial** – without some form of regular income, the athlete will not be able to fund optimum food, training facilities or even your own services.
- **Relationships** – if the athlete’s spouse has a problem with the unusual lifestyle that an athlete must pursue, domestic stress

will inevitably follow, producing a very unfavourable environment for recovery and time away from the gym/track/dojo.

I have referred to this eco system as my goldfish analogy in the past. A goldfish will grow (or not) depending on the size of the bowl in which it lives: expand the walls of the bowl and you could end up with a shark; restrict the fish's growth and it remains a minnow! Our task as an integrative coach is to help our athletes to expand their walls as far as possible. This means that we become so much more than just someone overseeing a diet plan or a strength and conditioning programme, but isn't this exactly what I first described as an ergogenic aid; "a technique or substance used for the purpose of enhancing performance"?

Continuing this line of thinking, may I also suggest that one fundamental way in which we can enhance our athlete's performance is to expand our own skill sets. It is the nature of modern-day coaching/clinical practice that we have a habit of becoming more and more specialised as our experience and learning flourishes. This, of course, is by no means a bad thing, but I would also put forward the idea that basic knowledge of other disciplines will enable us to judge our own interventions in a much broader light.

As an example, getting to grips with basic strength and conditioning theory should help any nutritional therapist or sports nutritionist to better understand the context in which their advice will be used.

My consultation structure

When I am first conducting a consultation with an athlete, regardless of their sporting discipline, I am looking at two fundamental subjects: the nature of the person in front of me and the nature of their sport. To build an understanding of the nature of the person, I will follow the functional module, including aspects such as their timeline, physiology and function etc. For the nature of their sport, I tend to use a template similar to Figure 1 above.

Assessing the make up of the sport in question, the fundamental physical and psychological requirements, and the rough nature of any training programme that the athlete will undergo, will allow me to fine tune my advice on diet and supplementation. I am not suggesting that we all become Jack of all trades, but simply to open up a window to the other disciplines that go into the care and performance of our clients.

Music, the cognitive ergogenic aid

From skill sets, I would now like to make a handbrake turn and focus on a less championed aspect of EAs; psychological or cognitive aids. I prefer to take a broad view

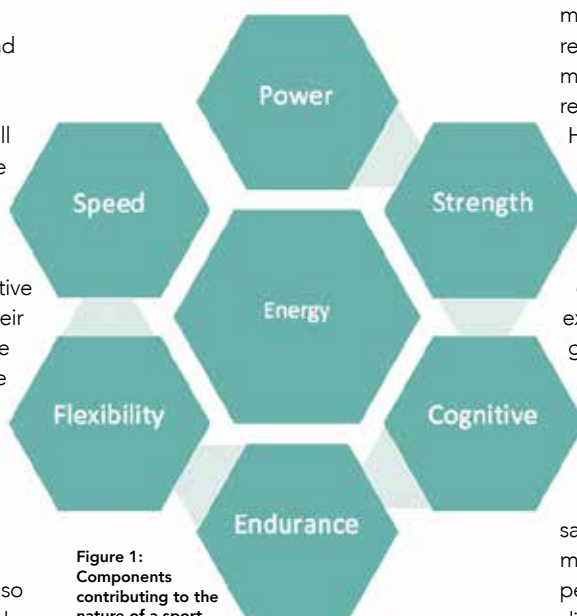


Figure 1: Components contributing to the nature of a sport

of methods that influence psychological/cognitive function. In this respect, let me introduce something that surrounds most of us on a daily basis, but is rarely discussed in sporting terms – music.

Music, or even more generally, noise, can have a profound effect on our mood, sporting performance and even long term physical and mental health. Pete Williams, for one, has commented on the detrimental effect of the constant cacophony of noise generated by modern civilisation which we are all subject to, and how periods of silence throughout the day can be calming and neuroprotective.

Any of us who have experience of high intensity exercise will be aware of how playing our choice of music can enhance our mood, sharpen our performance and reduce the perception of exertion, pain and general discomfort. Conversely, the 'wrong' music will have exactly the opposite effect. Looking at an extreme example, it is not by accident that the military will use recordings of babies screaming and, depending on the cultural make-up of the recipients, Death Metal music as part of the process of breaking the mental resistance of people in interrogation situations.

Concentrating on the sporting environment, I have had some interesting conversations with Dr Dave Elliot of the University of Cumbria, who has conducted work in this area. One quote used by Dr Elliot was: "with its deep-seated association in the history of music and human action, it is hardly surprising that music with a periodic rhythmic structure tends to elicit accompanying movements, whether these are dance movements or less formalised responses."

An introduction to the chemical messengers inside our body that may be stimulated (or inhibited) by music is contained within a paper by Abhishek Gangrade (5). For some people, the basic rhythms of rock or dance

music will provide a huge boost – does this resonate back to ancient forms of tribal music? Additionally, certain frequencies are regularly used in forms of meditation: 174 Hz is seen as a healing frequency and 396 Hz as a promoter of positive energy and rejuvenation.

But why does certain music move the soul of some people, while leaving others stone cold? Classical music is a great example, moving some people to tears and great moments of inspiration, whereas simply moving others to a state of extreme ennui – is it to do with culture, upbringing, musical knowledge or ability, social status etc?

Whatever the answers, I think we can safely say that music is one parameter that may most certainly influence our sporting performance. As a post script to the discussion on music, I remember an American bodybuilder from the 1960s, who later became a trainer to many Hollywood Stars – Vincent Gironda was one of the very few to actually ban music from his gym, stating that it interfered with the purity of the workout.

Each of these subjects is worthy of a lecture or a much longer written piece to explore their intricacies and depths, but I hope that this article gives some basic food for thought and hopefully motivates you to pursue your own research into areas of interest outside of the tried and tested ergogenic aid literature. **fsn**

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