Optimization of performance in top level athletes: A commentary

Optimization of Performance in Top-Level Athletes: An Action-Focused Coping:

A Commentary

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INTRODUCTION

There is undoubtedly an increasing breadth of expertise in 'joined-up' high performance athletic programs. However, it is crucial that the focus remains on performance. With regard to athletic performance, scientists and coaches recognise that it is necessary to put in place a coherent system whereby complex movements can be scrutinised and altered where necessary. The action-focused coping approach (AFCA) developed by Yuri Hanin and Muza Hanina has much to commend it, as we discuss in more detail below. However, our concerns are twofold: the sources of information used in this approach to deliver athlete feedback seemingly rely upon the use of video as the mode through which technical performance is analysed and then reassembled. A further concern relates to the extent that analysis delivered in this format is useful for elite athletes. Athletes of this calibre execute motor skills automatically [1]. Therefore, if you wish to promote good performances, is it necessary to consider the utility of focusing on bad ones?

The target article is of value and interest, because it provides an applied example of how sports scientists can assist athletes whose performance has either broken down, is unstable, or needs to be reacquainted with a previously successful movement pattern. In this critical commentary, we will seek to draw attention to salient features of the Identification – Control-Correction (ICC) program and provide a few empirically grounded suggestions regarding potential modifications to service delivery.

ACTION-FOCUSED COPING?

AFCA is concerned with providing real-time, best available evidence – in a high-performance sporting environment that prominently features, values, and then utilises athlete input to stabilise movement execution. It is interesting to recognise that the emphasis lies on improving motor execution, and then attending to emotional self-regulation. The underlying rationale being that if an athlete is confident that they can execute a movement under pressure, any accompanying psycho-behavioural issues can be delimited and attended to systematically. The athlete can be secure in the knowledge that worthwhile measures have been put in place to make the components that derive motor execution identifiable and accessible to technical modifications.

From our own experiences as researchers and practitioners, we can see the direct application and potential value of the AFCA principles. Consider the example of an elite

horizontal jumper whom we have researched, who has had ten years of competitive experience and medalled in major international competition and who, despite an 'excellent outcome record' of European and Commonwealth athletic medals, over a three-year period 'no jumped' in 48% of attempts. In simple terms, almost half of this athlete's output was wasted effort, a contention supported by the fact that many of these no jumps were unofficially well over PB distance!

The AFCA program, provided it was tailored to the athlete's learning style, could potentially be utilised to provide a corrective intervention designed to inform the athlete and provide them with the psychological resources to cope with the physical rigours, and address the inconsistencies associated with performance in elite competition.

ATHLETIC NEEDS TO THEORY: NOT VICE-VERSA

Hanin and Hanina design their sports science interventions for Finnish elite athletes from a needs to theory approach, rather than theory to performance, the potential cost of which is outlined in the following example.

For some athletes, the majority of research suggests that oral creatine supplementation is an effective means by which to improve some aspects of athletic performance either directly or through improved training. However, many studies with athletes [2, 3] fail to demonstrate significant findings as the response is very much on an individual basis (responders vs. non-responders), dependent on the amount of creatine uptake, which is in turn influenced by a number of factors. The crucial point is, individual performance should remain atheoretical until the athlete's performance requirements are ascertained. Consequently, careful examination of elite competitors must be the essential precursor to personalised intervention. To maximize this confirmation, it seems sensible that data be taken from actual competitions whenever possible, a point that AFCA exemplifies.

TOTAL-COACHING APPROACH

The psycho-pedagogical approach adopted by Hanin and Hanina is of particular interest. Their work with athletes through the AFCA is concerned with enhancing performance by stabilising movement execution. To achieve this in competition, there is a necessary transfer of knowledge / expertise among coaches, scientists and athletes. The coach is required to become a facilitator, and the athlete in turn is required to increase their knowledge with regard to the causative chain of physical movement that plays such a vital role in motor execution.

It is interesting to note that in the AFCA programme, it is the athlete's language that is used to describe *their* movement patterns, an approach that is validated by practitioners who use mental simulations of movement to improve performance [4] (cf., PETTLEP). The benefit of using the athlete's words, not those of the coach, is that it results in a shared language between athlete and coach. The utility associated with this approach is that it can convey much more than just technical information [5]. For example, the emotional intensity, or the speed at which the movement should be performed can be conveyed by carefully selecting words and sounds; so called mood words [6] that embody the totality (and therefore the causative chain) of the movement.

DELIVERY OF CORRECTIVE FEEDBACK

The means of delivering corrective movement information to athletes was an area where we felt the authors of the target paper could develop a lead if they considered alternate sources of information [7], whilst ensuring a fit with the previously identified preferences of their athletes.

The background to the approach that we are proposing stems from the widely supported position that if an athlete is elite, they will perform their event / skill automatically. Our contention is derived from the apparent mismatch between automatic execution and the subsequent accuracy of post-performance review discussed in the target paper. In essence, it makes more sense to promote positive performances rather than to seek to correct those deemed as sub-standard.

A potential solution to movement correction is strongly linked to sources of information. We have worked with elite athletes who have the ability to correct, and subsequently optimise the stability of movement patterns using an auditory representation of the whole movement (e.g., footfall in javelin or footfall in horizontal jumps). The athlete consults an auditory representation of a 'good' movement and rehearses it [4, 8, 9]. Working with the whole movement in this sense does not lead to the athlete emphasising one component in the movement sequence at the expense of another [8]; nor does it re-emphasise any negative imagery associated with previous performances that were poorer than expected by the performance team.

Auditory cues offer a number of advantages: information can be carried in an auditory rhythm concerning the co-ordination of a movement pattern. Furthermore, the auditory rhythm indicates when the execution of a movement should occur and where its constituent components be executed. Utilizing this auditory cue may also be in effect a pre-performance routine and a means of directly accessing stored motor representations. Using this approach, modelling movement and formatting a pre-performance routine is possible for self-paced, closed events such as triple jump, javelin [9], and hurdles.

This approach is supported by work that demonstrates that audition dominates vision in temporal processing [10] and that neurological processes involved in sensorimotor coordination are largely subconscious. Of particular significance in providing theoretical support to our contention were the findings that, while participating in a tapping exercise, participants relied more heavily on auditory information. This remained so even whilst they were instructed to attend to visual information to follow accurately changes in timing (the experimental stimulus as it shifted). Similarly it was demonstrated that that to correct phase alterations in tapping, participants were reliant on temporal information from the auditory rather than visual field [11]. Therefore, in light of the theoretical and applied examples proffered in this commentary, we hope that coaches, performers and scientists will consider the ramifications for performers when seeking to make alterations or changes to gross motor actions.

CONCLUSION

In essence, sound, and therefore derived patterns of rhythm, seem to dominate vision in learning movement patterns emphasising that it is important for coaches and directors of athletic performance to consider the modality that is used to provide feedback to athletes regarding movement competency. Aside from this constructive criticism detailed above, we commend Hanin and Hanina's target article for its breadth and concerted focus on the myriad of components that comprise athletic potential.

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