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Teaching Athletes to Understand their Attention is Teaching them to Concentrate

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Abstract:
Concentration, focusing on the most relevant information for further processing, is regarded as a prerequisite for successful sporting performance. Athletes must possess awareness, knowledge, and controllability of their attention to concentrate effectively. One way to develop this awareness, knowledge, and controllability of attention is through the mechanism of meta-attention – thinking about, knowing about, and controlling attention. Meta-attention illuminates the underlying cognitive mechanisms that direct the attentional spotlight. We open with a brief background of attention and outline how concentration can be understood through a metacognitive lens. Next, we present Think Aloud Level 3 as a tool for capturing meta-attentional processes during sport performance. Finally, we discuss the applied implications of adopting a meta-attentional approach to understand concentration.

Introduction
Attention refers to selecting information for further cognitive processing consciously or unconsciously and involves the brain focusing and managing sensory inputs towards information perceived relevant to successfully complete the task at hand while inhibiting other information from further processing (Smith & Kosslyn, 2007). But attention has a limited capacity that emphasises selecting stimuli most relevant to complete the task (Chun et al., 2011). Therefore, a performer should select relevant information for further processing that facilitates performance, otherwise, performance decrements might occur as the performer becomes distracted by task irrelevant information. Concentration, or directing attention, is therefore widely acknowledged as a pre-requisite for successful sporting performance because our attention is always somewhere.
We best understand how attention works through metaphors. The most prominent metaphor in sport and performance psychology describes attention as a ‘spotlight’ (Posner, 1980; Moran & Toner, 2017). The attentional spotlight illuminates stimuli and what has been ‘lit-up’ is attended to – or concentrated on. The attentional spotlight can shine outwards towards external stimuli or inwards to internal stimuli. The individual must attempt to illuminate the most relevant information or face becoming distracted. Eye-tracking research (e.g., the ‘Quiet Eye’; Vickers, 1996) shows that expert athletes are better at selecting visual (i.e., external) information than their novice counterparts (Moran et al., 2018) because experts know “when, and where to look” (Mann et al., 2007: p.457). The Quiet Eye refers to the final fixation before skill movement and this fixation lasts longer in experts than in novices. The Quiet Eye phenomenon has been shown across a range of motor-skills (Vickers, 2016) and its significance in skill execution has been highlighted in meta-analyses (e.g., Rienhoff et al., 2016). Eye-tracking research, however, can only show us so much, for example, it cannot show us why or when individuals direct their attentional spotlight inwards as it only provides gaze data. Therefore, we need to get behind the ‘Quiet Eye’ if we are to understand concentration in athletes.

To direct their attentional spotlight, athletes must have knowledge and control of their attention system, something that relies on higher-order processes. First, this means that athletes need to know that they are attending to information that is most facilitative of performance at that time. By having knowledge of their attentional system, they will know the impact of their selected information on their attention. Second, athletes need to be able to implement control routines so that they can then attend to the most relevant information for performance. Therefore, knowledge and control of the attentional spotlight allows an athlete to focus and re-focus their attention during a performance. Without understanding what
athletes think about their own attention, practitioners cannot offer the most effective interventions to their athletes. This article presents an understanding about how athletes direct their attentional spotlight, outlines a methodological approach that can measure and gain insight into the control of the spotlight and provides considerations for practice. First, we explain metacognition and meta-attention and its significance to understand concentration. Next, we explain how ‘Think Aloud’ (Ericsson & Simon, 1993) can explore the meta-attentional processes of athletes. Finally, we consider applied implications of a meta-attentional approach to understand concentration.

Metacognition, meta-attention and its significance for understanding concentration.

The study of metacognition helps us to understand how athletes think about and control their cognitive processes in performance. Metacognition is an individual’s insight and control over their cognitive processes (Flavell, 1979), and it covers each cognition (e.g., meta-emotion, meta-memory, and meta-attention). This means that each cognition we experience has an associated meta-level process. Metacognition is commonly simplified to thinking about thinking or “knowing about knowing” (Van Overschelde, 2008, p. 47), however, metacognition is broader than its frequent simplification and can be best understood as a tripartite construct comprising: knowledge (e.g., of cognitive strategies and when to use them), control, and monitoring (Flavell, 1979; Flavell, 1987; Halpern, 2014; Tarricone, 2011). Therefore, metacognition is considered as fundamental for task performance and effective self-regulation because it allows controlling thoughts and actions to meet task demands (Dinsmore et al., 2008). Metacognition can range from a subconscious monitoring of thoughts to a more detailed reflection of the self, therefore it does not always require awareness or control (MacIntyre et al., 2014; Shea et al., 2014) and may take place in cognitive system 1 (see: Stanovich, 2011). System 2 is involved in metacognitive processes.
where automatic processes would not be sufficient for processing the information faced, such as during more complicated tasks that require reflection or decision-making (MacIntyre et al., 2014). System 1 is automatic and outside of consciousness and, system 2 is conscious and is engaged when an individual faces a more complicated task that relies on an effortful search and control of cognitions.

The origins of metacognition and metacognitive research relate to education, with many conceptualisations about metacognitive learning. For example, Flavell (1979) considered metacognitive knowledge crucial for students because it enabled self-directed learning. Students proficient in metacognitive knowledge possess awareness of their knowledge, what they need to know and the study techniques that facilitate further knowledge, thus are more effective learners than their peers who do not possess this proficiency. Much of the research has built on Flavell’s (1979) work and remained within an education and learning setting (Hacker et al., 2008). Because intellectual skills and perceptual-motor skills rely on similar mechanisms, metacognition may account for perceptual-motor skills just as they do with intellectual skills (Augustyn & Rosenbaum, 2005; MacIntyre et al., 2014). Therefore, metacognition is a strong theoretical concept from mainstream psychology that applies in sport psychology. Taking this understanding forward, proficiency in metacognition can be linked to skill development because the most successful athletes are likely to have knowledge of their current skillset (i.e., perceptual-motor skills, perceptual-cognitive, technical, and tactical), and the skills that require further development to achieve success (MacIntyre et al., 2014; Moran et al., 2019). Further, by using ‘skills’ to describe metacognition it implies trainability of metacognitive proficiency, that is, metacognition is not necessarily a fixed trait-like characteristic so an increase in an athlete’s domain-specific knowledge will increase the athlete’s ability to use metacognitive strategies in performance.
Meta-attention, a component of metacognition, can provide insights into the controllability of attention and concentration because it is thinking about, knowing about and, controlling attention. Meta-attention holds great promise for better understanding concentration among athletes because the study of meta-attention illuminates the underlying cognitive mechanisms that direct the attentional spotlight (Moran, 1996). As we outlined earlier, an athlete’s focus of attention can have a significant influence on performance outcomes because an athlete must select the most relevant stimuli or become distracted.

The original understanding of meta-attention is rooted in education, with research showing that during a reading task younger children perceive their attention to be controlled by external variables (e.g., distractions such as noise and reward), whereas older children possess awareness of internal variables (e.g., interest) that can be controlled to direct attention to maintain task relevant focus. In a notable study, Loper and Hallahan (1982) measured meta-attention in school-age children (Kindergarten; Grade 2; Grade 5; and Grade 7) by using variables relevant to attention: interest, reward and noise distraction, in a forced choice measure. Each variable had a positive and a negative scenario that were either aids or deterrents to attention (e.g., “imagine a child who is very interested in what he is doing”; “imagine a child who is not very interested in what he is doing”). Cards were then paired to establish forced choice items and children were asked, “which of these two children will better pay attention?” Scoring was then calculated by the number of times a high value card was chosen and the number of times a low value card was not (e.g., the number of times high interest was chosen and the number of times low interest was not). Scoring was performed for three measures: ‘interest’, ‘reward’, and ‘quiet’. Each of the scenarios were paired against each other, to present a variety of situations, and each card was presented five times within
twelve forced choices. Reading achievement was measured by using the validated measure
Wide Range Achievement Test (1965); a word recognition task. This test, however, was not
given to the youngest age group. Loper and Hallahan’s (1982) findings supported their
hypotheses, showing that older children valued interest highest whereas younger children
valued reward and noise distraction. Post-hoc evaluations showed there to be significant age-
group differences on the interest variable. The research indicates that older children are more
aware of the variables required for attention and that they are able to perceive distractors too.
Therefore, older children are in a better position to control arising distractors, avoiding
disruptions to task performance (Loper & Hallahan, 1982; Miller & Bigi, 1979). Older
children possess awareness of their attention, therefore, know techniques that facilitate
concentration and those that do not. Loper and Hallahan (1982) also used Karniol and Ross
(1979) to help explain the differences between older and younger children’s attention in the
reading task, outlining that it is the maturity of the reader that creates a disposition to
discount the value of extrinsic rewards because this may disrupt internal, intrinsic,
enjoyment. Therefore, changes in meta-attention are related to cognitive development.
Applied to sport, this means that performance related cognitions are likely to become more
developed with greater experience and greater knowledge. For example, an awareness of
standards and expectations and of cognitions that are conducive of performance. That is,
planning, monitoring and control of cognitions and behaviours and ensuring these are
consistent with the expected level. Loper and Hallahan (1982) also showed a small, but
significant, positive correlation between interest and reading achievement. Thus,
understanding meta-attention here can be related to the understanding that optimal
concentration requires focusing solely on actions under one’s control (Moran, 2011). The
focus of attention may be ‘lost’ without an environmental distractor (i.e., external) present,
instead a wandering mind can direct attention towards task irrelevant thoughts (i.e., internal)
that result in lost concentration (Moran, 1996; Moran, 2011). The mechanism that realises sufficient attention is not directed to task-relevant information is a monitoring system that facilitates a re-focus to the task can and be identified as meta-attention and mapped onto the metacognitive framework. The accuracy and effectiveness of the meta-attentional mechanism is likely linked to the efficiency of an individual’s cognitive processing (Moran, 1996). Because of a predicted greater metacognitive proficiency among higher-skilled athletes (MacIntyre et al., 2014), it is assumed that such athletes have a greater capacity to focus their attention, and are more aware of a wandering mind and are therefore able to implement suitable strategies to re-focus on task relevant cues allowing for successful control of attention.

Although meta-attention has only recently been examined in a sport context, some insight can be gained by looking at metacognitive research that sought to examine the role of metacognition in attentional focus. For example, Brick et al. (2015) highlighted the important role of metacognition for attentional focus in an endurance sport setting by creating a framework relevant to endurance activity, driven by interview data with elite endurance runners. Their data revealed that athletes monitor and control cognitions during running to optimise performance; specifically, athletes engaged in planning attentional strategies, monitoring task performance and, control of cognition during running. Results also indicated that athletes engaged in a review, an evaluation and refined their cognitions after running; behaviour that can be mapped to self-regulatory behaviours (e.g., Zimmerman, 2006).

Nietfeld (2003) indicated that the effectiveness of metacognitive strategy in performance is underpinned by the ability of the athlete. In a one-mile treadmill running task, Nietfeld (2003) reported a positive relationship between metacognitive strategy knowledge and the
ability of runners to monitor their performance. The findings here indicated that skilled performers monitored largely internally and used domain-specific strategies driven by their experience. Internal monitoring links to the understanding of meta-attention from an educational context that searches for internal variables deemed to be important for performance occurred, whereas strategies, can be linked to conscious control of attention. Monitoring and information management strategies (i.e., control) were runners most frequent reported attentional focus. Nietfeld’s (2003) study also showed a negative correlation between an external focus and metacognition, showing that metacognition is an internal process. A positive correlation was reported between strategic knowledge and pace monitoring; therefore, athletes should require awareness of suitable strategies and tactics to most effectively monitor their performance. Overall, the findings in Nietfeld’s study show that skilled athletes are highly focused and strategic, processes that are seen to be optimal for performance. It is suggested that their domain-specific strategies are developed through their experience. Similar research using recreational runners by Brick et al. (2018) showed that novice runners did not report a repertoire of metacognitive strategies, pacing and tactics were reported, however, planning was not. In addition, post-race evaluations were not conducted independently, rather were done with the help of more experienced runners. The results from this study showed that novice runners were less strategic (i.e., planning) and were less likely to plan or evaluate attentional strategies during running (i.e., monitoring). Brick et al. (2018) outlined that metacognitive ability and cognitive strategies were developed through running experience and this helped, runners shifting their attentional focus. Through newly gained metacognitive abilities, runners were aware of sensory cues as an information source relevant for their pace decision-making. By using MacIntyre et al. (2014) and Bless et al. (2009) conceptualisation of metacognition, experience could be explained by expert and higher-skilled athletes’ possessing greater declarative knowledge (i.e., ‘knowing that’; Sternberg &
Sternberg, 2016). Experts are then able to judge whether information is relevant, and take it forward for greater processing, or if it is not relevant, to discard that information. Therefore, practitioners should focus on developing declarative knowledge with their athletes because this will teach them to monitor for relevant cues across situations. Thus, with declarative knowledge athletes are more able to direct their attentional spotlight. Brick et al.’s (2018) findings add support to the previous research that indicates the important role of task-specific metacognitions that best facilitate regulation of cognitions such as attentional focus. To date, the findings from studies that adopt a metacognitive framework to better understand attentional processes in performance are bound by the context specificity of endurance sports.

To investigate meta-attention further Oliver et al., (2020a) used a grounded theory to understand meta-attention among competitive-elite and successful-elite golfers. The resultant theory showed that meta-attention operated as a bottom-up process with attentional resources evaluated by golfers before using attentional control strategies; selecting an external visual target, implementing a pre-shot routine and a consistent post-shot routine. In this case, attentional resources can be viewed as internal variables and include, but are not limited to: experience, training and confidence. Golfers experienced optimal attentional outcomes after positively perceiving their attentional resources and implemented consistent attentional control strategies; however, should a resource be perceived missing when required or performers did not implement a control strategy, they experienced sub-optimal attentional outcomes and faced internal distraction. The golfers’ understanding of their own attentional system drove meta-attentional processes and selection of desired attentional processes. Evaluating attentional resources and implementing a control strategy uncovered in Oliver et al.’s (2020a) study shows that golfers plan, monitor and control their attention regulation during performance.
Building on these findings, Oliver et al. (2020b) explored meta-attention in a live setting using concurrent data collection of meta-attentional processes during golf performance. By using concurrent data collection, the researchers developed their previous study by exploring how golfers engage in attentional thought and control during performance, capturing thoughts and control strategies as they unfold. Golfers drew on different metacognitive resources (i.e., internal) at different times, however, starting control strategies were far more prevalent than verbalisations of attention-based resource reflections. These findings suggest that monitoring of internal resources is generally an unconscious process, however, during more challenging times it may require an athlete to make a conscious search for a specific attentional resource. For example, when golfers faced a tough shot or a recovery shot, they reflected on practices and coaching they had received verbalising that they intended to draw on these experiences to help them execute the shot they faced. Identifying unconscious monitoring allows for theoretical integration with Stanovich’s (2011) depiction of two cognitive systems. Golfers engaged in a post-shot routine and ‘switched-off’, shifting their attention to a task-irrelevant focus, between shots. This shifting of attention supports Davies et al. (2014) findings about a golfer’s attentional processes between shots and substantiates Tiger Woods’ (2001) anecdotal example that an evaluation should take place before an attentional shift towards the next shot begins. The post-shot thoughts shared by the golfers also extend Kirschenbaum’s 4-F model (1997), expanding from a negative shot outcome to one for all shot outcomes.

Further meta-attentional research by Oliver et al. (under review) showed that higher skilled golfers (Mean Handicap= 5.7) reported significantly more verbalisations per shot than lower skilled golfers (Mean Handicap= 23), suggesting greater meta-attentional knowledge (i.e., more awareness of where their attentional beam was located). The results of Oliver et al.’s
(under review) study lend some support to MacIntyre et al.'s (2014) suggestion that expertise links with metacognition because higher skilled golfers verbalised more thoughts about their attentional cognitions. We are also cautious with this assertion because Oliver et al.'s (under review) study used two levels of club golfers, thus the extent to which the higher-skilled golfers possessed expertise could be questioned. Nevertheless, Oliver et al.'s (under review) study shone a light on golfers’ attentional spotlight and concentration. Thought sequencing showed that higher skilled golfers verbalisations showed two lots of information gathering, suggesting that they spent longer gathering information on their environment, thus, could be seen to develop more informed plans to assist with successful skill execution. Sequential analysis was performed and it indicated likely thought pairings, revealing the most likely preceding thoughts, i.e., thoughts that occurred at a probability greater than chance. Thought pairings that occurred at a greater probability than chance suggest a deliberate decision to divert the attentional spotlight to information, either internally or externally, that the golfer judged most relevant.

Capturing Meta-Attentional Thoughts: Using Think Aloud.

Think Aloud (TA) is a research method outlined by Ericsson and Simon (1993) to overcome retrieval issues related to cognitive processes and experiences which are not an observable behaviour. Therefore, TA is a tool that can help us get behind the ‘Quiet Eye’ and capture conscious-level metacognitive processes involved in directing the attentional spotlight. We do, however, acknowledge that TA can only provide insight into processes occurring in cognitive system 2. Nevertheless, system 2 is where we see effortful planning, monitoring and control of physiological and psychological processes in a sport performance, something that previous research indicated expert performers do. Processes that are verbal are ideal for
TA research, thus thinking about attention and vocalising strategies deployed to control attention (i.e., meta-attention) is a prime candidate for research and applied practice.

There are three levels of TA (Ericsson & Simon, 1993), Level 1 is an effortless communication of inner speech and Level 2 refers to verbalising an internal representation that is not originally in verbal code (e.g., visual stimuli). Level 3 is at a much more detailed level than Level 1 and 2 because it requests individuals to explain their thoughts, ideas and motives. Therefore, Level 3 is closest to accessing the meta-level because it requires individuals to think about their thinking (Oliver et al., 2020b). For example, a golfer explaining why they are playing a certain shot and the factors they consider making this decision. To achieve Level 3 verbalisation, there is a requirement that the participant links between information and previously attended to thoughts. This means that Level 3 TA includes retrieval from Long Term Memory (i.e., where the explanation is housed). Because individuals consciously attend to additional information, that would otherwise be automatic, there is some concern that this focus could disrupt thought processes and performance (e.g., lead to reinvestment: Masters, 1992; Masters & Maxwell, 2008), however, research by Whitehead and colleagues (2015) allayed these fears and showed that within Level 3 TA golfers did not have their performance adversely affected by engaging in TA. Therefore, TA is a suitable tool to capture, measure and understand the cognitive processes experienced by athletes during performance with no detriment to performance. TA is also a useful tool for practitioners to better understand the cognitive processes that their athletes experience during performance.

To further highlight TA’s suitability for collecting data on cognitive processes experienced by athletes during performance, is the growing popularity of the successful application of TA
across sport, including but not limited to: golf (Calmeiro & Tenenbaum, 2011; Nicholls & Polman, 2008; Oliver et al., 2020b; Oliver et al, under review; Whitehead et al., 2015; Whitehead et al., 2016), trapshooting (Calmeiro et al., 2010), tennis (McPherson & Kernodle, 2007), snooker (Walsh et al., 2018) and cycling (Whitehead et al., 2019). TA allows us to measure cognitive processes during a performance which can be mapped, and taken forward to inform interventions. Athletes should be briefed on TA and undertake practice trials that act as a warm-up and familiarisation to using TA (Eccles & Arsal, 2017). Previous research suggests that those completing TA are handed and narrated Level 3 TA instructions outlining what is asked for them. The instructions given to participants should be sport specific for example golfers are instructed to verbalise where they directed their attention before a chip shot and why attention was to be directed there (Oliver et al., 2020b). Athletes should be given the opportunity to ask questions they have on Think Aloud. Practice trials can then provide familiarity with verbalising aloud (Eccles, 2012). Recent research outlines that practice trials may be context specific (Birch & Whitehead, 2020), however, to date much of the research has used non-task specific tasks such as calculating the number of dots on a page. The importance in familiarity and warm-up tasks shows the practitioner that athletes understand what is being asked of them when thinking aloud. By explaining their thoughts and actions, Level 3 TA provides an approximation to metacognitive processes because it required the golfers to think about their thinking (Oliver et al., 2020b).

Capturing meta-attentional verbalisations therefore allows practitioners to map the direction of the attentional beam, for example, when and why athletes divert it inwards at certain points during their performance. TA may also be of direct benefit to performers too as verbal reports can provide athletes insights into their own thought patterns, for example, it allows them to identify where thoughts have been helpful and unhelpful, this can then be used as part of their
own learning, development and may benefit the development of metacognition. Therefore, TA is posited as a suitable tool for understanding attentional control because it provides insights to the higher-level executive (i.e., meta-level) functions involved in orienting attention, something that can be used by athletes and practitioners.

Teaching athletes how to concentrate

Using meta-attention to understand concentration has several implications for athletes, coaches and sport psychologists. First, meta-attention shows that understanding the attentional system drives meta-attentional processes and selecting desired attentional processes. Those who are most proficient in their meta-attention can accurately direct their spotlight to the most relevant stimuli at the required time. By understanding their internal and external attentional stimuli athletes can more accurately direct their attentional spotlight and are less likely to succumb to distraction (i.e., illuminating task irrelevant stimuli). Specifically, our current understanding of meta-attention (e.g., Oliver et al., 2020a) shows an evaluation of attentional resources takes place; should an individual experience cognitive anxiety related to their attentional resources their perception of their resource can become an internal distraction. Applying this process to practice, concentration could be enhanced by teaching performers to avoid using binary evaluations of their attentional resources. Oliver et al.’s (2020a) research shows golfers evaluate their attentional resources through a positive-negative lens, they either have the attentional resource required or they do not. Using a binary evaluation on attentional resources may be the source of the problem, rather than the missing resource itself, because it is the negative perception that becomes the source of distraction. Therefore, athletes should avoid using a positive-negative evaluation of their attentional resources. To help performers avoid binary evaluations of their attentional resources, it may be worthwhile for golfers to undertake mindfulness training (e.g., Birrer et al., 2012; Birrer &
Röthlin, 2017) because being mindful takes away the binary evaluation that occurs in the
monitoring stage of meta-attention. We also believe that meta-attention and mindfulness are
contceptually linked because proficiency in each promote a focus on the present moment. If
athletes are mindful they can bring their attention to the present moment, that is, they can
direct their attentional spotlight to the most important information but to do so they need to
know where their spotlight is shining in the first place (i.e., having meta-attentional
awareness). Mindfulness-based interventions may also benefit golfers who do not have a full
repertoire of the attentional resources outlined by Oliver et al.’s (2020) model because a
mindful-based approach could offset negative perceptions of ‘missing’ resources.
Practitioners could use a mindfulness-based intervention with athletes regardless of their skill
level.

Another practical implication from meta-attentional research relates to controlling attentional
shifts. Pre-shot routines for switching on attention is well established for self-paced sports
(e.g., Cotterill et al., 2010) and is widely applied as an intervention in practical sport
psychology settings. But there has been less attention in the literature that seeks to understand
how golfers use the time between shots. The ways golfers make use of this time provides
details on effective attention regulation, and allows for attention control and spotlight shifts
to be mapped. Oliver et al.’s (2020a; 2020b; under review) findings showed that golfers took
on a task irrelevant focus during periods between skill executions as a final stage in their
post-shot routine. These findings offer a recommendation that those working with golfers
instruct them to implement a post-shot routine to allow for feedback to take place. Then,
golfers should initiate a switch-off period between shots. The downtime between shots is
taken up by a task irrelevant focus. When coaches and sport psychologists are developing an
attention training package post-shot routine training and switch-off should be delivered
alongside a pre-shot routine. Providing training on pre-shot and post-shot routines within the same intervention package will give golfers’ greater control of their attention shifts that will occur in a round of golf. This pairing can also increase athletes’ awareness and knowledge of their attention. The practical suggestion of the benefits that a post-shot routine and between-shot switch-off bring indicated by Oliver et al.’s research (2020a; 2020b; under review) is consistent with previous research in golf (Davies et al., 2014; Davies et al., 2017; Kirschenbaum, 1997). A further benefit of training post-shot routines and disassociation is that golfers preserve attentional resources required for attentional control throughout a round of golf. A post-shot routine may resemble an immediate outcome reaction (good or bad), a technical evaluation and a task irrelevant focus. Anecdotal evidence suggests that golfers “switch off” – or disassociate – between shots because it is unfeasible to be focused throughout an entire round of golf. Applied sport psychologists may wish to apply these principles to athletes from other intermittent and target sports so that their athletes optimise their concentration, and gain greater control of their attentional spotlight.

To conclude, this article has shown that meta-attention can explain distractibility in sports performers and describe ways in which an athlete focuses and re-focuses attention. Concentration depends on positive evaluations of attentional resources when they are required and implementing a suitable control strategy pre- and post-skill execution because these strategies allow performers to direct their attentional spotlight. This is a process that is underpinned by an athlete’s meta-attentional proficiency. Because attention is always shining somewhere and metacognitive processes are on-going, TA can be used to improve spotlight accuracy because it makes performers more aware of their attentional processes. If performers are aware of where their spotlight is shining and where it should be shining they can direct it if it is misplaced. Therefore, TA would increase accuracy of their attentional
spotlight. We suggest that practitioners explore their athletes’ understanding and knowledge
of attention in live performance settings, and create a bespoke training programme to
optimise concentration. This is achieved by showing athletes where their attention is, in turn
handing athletes more awareness, greater control of their attentional spotlight; teaching them
how to concentrate.

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