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Introducing a Basic Psychological Performance Demand Model for Sport and organisations

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Abstract

This study presents the development of a basic psychological performance demand model (PDM) for sport, adopting a process view of performance underpinned by reversal theory (Apter, 2001). Six elite coaches with extensive coaching experience at European, Commonwealth, Olympic and Paralympic Games in individual (target shooting, squash and canoe slalom), and team sports (soccer, men’s and women’s field hockey), were interviewed. Their interview statements were analysed using a combination of deductive and inductive analysis procedures for qualitative data. In conjunction with the interviewer, coaches developed PDMs for their specific sports. Analysis of interview data and coaches’ specific PDMs identified four main cross-sport themes or fundamental psychological capabilities required for meeting performance demands. These were: Mastery motivation, Decision making, Execution, and Teamship. The PDM offers a starting framework for a new basic performance model that is novel and pragmatic with potential applicability across sports and organisations. The model is useful in its existing form, but needs further testing, extended practical application and reflection by coaches, athletes, and sport psychologists. It has potential for use in other coaching contexts beyond sport, such as business, leadership development, education, and health.

Keywords: performance demand model, elite coaches, elite athletes, reversal theory, psychological preparation
Introducing a basic psychological performance demand model for sport

Practice Points

This manuscript is aimed at sports and executive coaches who wish to improve their coaching and athlete or client performance. It introduces a basic Performance Demand Model (PDM) which is process-oriented and underpinned by a psychological theory, reversal theory. Four main cross-domain themes or fundamental psychological capabilities required for meeting performance demands are presented. These are: Mastery motivation, Decision making, Execution, and Teamship. The PDM offers a starting framework for a new basic performance model that is novel and pragmatic with potential applicability across different domains and provides:

- a model for improved coaching practice and client performance.
- a better understanding of the dynamic processes involved in elite athletic competition.
- a means of helping clients respond with a range of mental performance states as required.
Introduction

In a recent editorial, Iordanou (2018) argued that studies in sports coaching could make a useful contribution to coaching in business, leadership development, education, and health. She saw a connection between sports coaches’ efforts to improve performance and executive coaching where the improvement of certain aspects of the client’s personal and professional behaviour are at focus. She also emphasised the importance of psychology in performance and the coaching process: ‘… the psychological essence of performance is deemed paramount to continuous improvement and development (both personal and professional) in both sports and other types of coaching’ Iordanou (2018, p. 1). We support her arguments and McCarr’s (2016) view that the fast-paced and competitive environments in elite sports are rigorous laboratories for effective coaching.

This study presents the development of a basic psychological performance demand model (PDM) underpinned by a process view of performance in sport and supported by concepts from reversal theory (Apter, 2001) with implications for executive coaching in organisational contexts.

Competitive sport comes in many different forms, but all involve a dynamic process comprising a series of interrelated phases. The pre-event phase is the time leading up to actual competition, the performance phase refers to the time spent in competition, and the post-event phase is the time post-competition until the athlete returns to non-competitive roles and contexts. The demand, duration, degree of overlap and athlete control over initiation and termination of each phase varies between sports.
(e.g., compare a 100m sprint with a golf round or a cricket match lasting several days). To be successful, an athlete must be capable of coping both with the different demands of each phase and the demands of moving between these phases. Thus, sport performance is best conceptualised, not as a single challenge requiring an ideal performance state, but as a dynamic process that requires athletes to adapt to a series of challenges and respond with a range of mental performance states. Managing and coping with change in psychological state therefore seems critical to successful sport performance, a proposal that garners support from prior research that has highlighted the transitions athletes experience, the changing psychological demands of these transitions and how they can influence the athlete’s psychological state and behaviour (e.g., Males, Kerr, Thatcher, & Bellew, 2006; Thomas, Hanton, & Maynard, 2007).

Likewise, performance in an organisational setting can be usefully considered as a process. For example, a manager typically attends to a wide range of challenges in an average day, ranging from a one to one performance review with a team member, to leading a team meeting, to presenting to clients or investors, or attending to individual tasks. Each of these ‘events’ requires preparation, performance and review, although the reality of organisational life means that the events and phases often blur into one. The mental approach required to manage a difficult conversation may not lend itself to a sales meeting with an important client, so there may well be a performance cost to the manager and the others involved.

Thus, psychological models of sport performance intended to be of practical use in supporting athletes and business leaders, need to be process-based to account for
dynamic nature of competitive sport. In addition, based on suggestions by Pocwardowski, Sherman, and Ravizza (2004), we propose a number of criteria that need to be fulfilled if a psychological performance model is to be of practical use. These are as follows, the model: (1) includes reference to behavioural, cognitive and affective domains; (2) accommodates different sporting contexts; (3) accounts for relationships and team interaction; (4) considers the role of individual differences; (5) has applicability across training, competition and recovery phases; (6) provides a framework to guide performance enhancement interventions, and (7) has a coherent theoretical underpinning that allows for empirical testing. We believe that a gap exists for a basic model that meets these effectiveness criteria, that is underpinned by a process approach and that accounts for the dynamic nature of sport competition. Our aim in this study is to propose such a model using a psychological theory, reversal theory (e.g., Apter, 2001), as a framework providing structure and meaning to this process foundation. Our rationale for employing reversal theory stems from its approach to motivation, emotion and personality and the basic premise that people’s motivations and emotions are inherently inconsistent, but there is a pattern to this inconsistency.

Briefly, the theory posits a framework of eight pairs of opposing motivational states, each of which represents a fundamental psychological motive or value. These are as follows. Pair one: in the serious telic state an individual prefers activities that are perceived to be significant and have meaning beyond their immediate fulfilment. Low arousal is preferred in this state, as high arousal induces anxiety. In the playful paratelic state an individual enjoys activities that are spontaneous and fun, preferring high arousal...
experienced as excitement. Pair two: in the *conformist* state an individual values belonging, wanting to meet prevailing norms and social expectations. In the *negativistic* state an individual desires freedom and autonomy; reacts against expectations being rebellious. Pair three: in the *mastery* state a person values competition and seeks power, control and toughness. In the *sympathy* state, a person values co-operation, care, affection and nurture. Pair four: in the egoistic *self-oriented* state individuality is valued and pleasure or displeasure result from what happens to oneself. In the altruistic *other-oriented* state (hereafter termed 'self' and 'other' states) pleasure or displeasure depend on the experience of others. Motivational states from each of the four pairs typically occur in combination (Apter, 2001). State combinations lead to different emotions, dependent on the degree to which motivational needs are met or not met (i.e., producing pleasant or unpleasant emotions; e.g., telic-conformity - relaxation or anxiety; paratelic-conformity - boredom or excitement; self-mastery - humiliation or pride). The process of reversals is central to the theory and there are three types of causal factors that can trigger a reversal from one state to its opposite: *frustration*, when the needs of our current state are not met; changes in relevant *external events*; reversals occurring naturally over time due to *satiation*. Although people all experience reversals, they also have an innate bias to spending more time in one state than another in the same pair, a personality difference termed *motivational dominance*.

Research has supported the relevance of these core elements of reversal theory within competitive sport and business. First, the full range of motivational states has been reported in sporting contexts, based on data collected with international team and
individual athletes in naturalistic settings and over an extended period (e.g., Kerr & Males, 2010; Males, 1999; Males, Kerr, & Gerkovich, 1998). Evidence across sports and competitor levels indicates that reversals occur during competition and are induced by the three identified agents of reversal, with contingent events and frustration more common than satiation (Hudson & Walker, 2002; Males et al., 2006, 2008). Considering this research as a whole, there is no obvious, static equation that relates a specific motivational state to optimal performance. This makes sense though, as demands and competition contexts differ across sports, suggesting variations in the motivational states associated with optimal performance across sports. Reversal theory research in business contexts has demonstrated its relevance in understanding both individual motivation and organisational climate (Carter & Davies, 2004), and leadership (Carter & Kourdi, 2003).

For a performance model to be useful, evidence needs to support the link between model constructs and performance outcomes. In relation to the model effectiveness criteria noted above, theoretical proposals and evidence to date suggest that reversal theory offers a potential framework from which to build a basic psychological performance demand model (PDM), underpinned by a dynamic, process approach. Therefore, the aim of the current study was to develop a PDM framed by reversal theory using the expertise of elite sport coaches, and adopting a post-positivist approach with qualitative methods.

Method

Participants
A purposive sample of 6 sports coaches (1 female) with at least 5 years coaching experience working with international level athletes, i.e., National Team, UK Sport-funded World Class Programme or equivalent were the participants. They had advanced level coaching qualifications and vast coaching experience at European, Commonwealth, Olympic and Paralympic Games in individual (target shooting, squash and canoe slalom), and team sports (soccer, men’s and women’s field hockey). These are sports varying in intensity, duration, skill execution and risk, the factors that differentiate the objective demands of world-class performance (Schnabel, Harre, & Krug, 2008). To protect anonymity, biographies are not provided. Coaches are ideal collaborators in developing and validating a PDM as they have an overview of the performance environment, work with numerous athletes, and can draw on varied experiences.

**Procedures**

Ethical approval for the study was obtained from a UK University and participants provided informed consent prior to participation. Coaches were recruited by personal approach or via their National Governing Body. To enhance data quality, prior to their interview each coach received an outline of the study purpose and the interview focus (Thomas et al., 2007).

Each coach was interviewed individually by the second author and the interviews, lasting 60-80 minutes, were digitally recorded. The first phase used a phenomenological interview methodology where the researcher framed the field of enquiry [that competitive sport is a dynamic process and that it might be possible to develop a basic Performance Demand Model (PDM) for specific sports] then asked questions to draw out the
participant’s experience (Dale, 1996). Thus coaches were first asked to discuss if, and how, they found this a meaningful and useful way of thinking about their sport. In phase two, the coach was asked to identify the key stages and transitions in their sport, including the duration and content of pre-event, competition and post-event phases. Finally, they were asked to describe their perceptions of the ideal state of mind for a competitor and the psychological and performance demands of each stage. Probing questions were used throughout to help coaches elaborate on their answers and the interviewer drew up the PDM on paper, for both to see, as the coach described it. Coaches were encouraged to adapt and validate their PDMs as they were recorded.

Interview recordings were transcribed verbatim and used, with notes and the preliminary PDM, to complete a draft PDM for each coach’s sport. Coaches were invited to amend or approve them as a form of member checking and elaboration on emerging findings (Morrow, 2005). One coach requested an amendment. The interviewer also kept a reflective journal, recording notes about each interview and his on-going understanding of what the coaches said. In addition, he made extensive notes when the interviews were completed. These records informed data analysis and facilitated bracketing, helping the researcher to remain aware of imposing any biases during interviews or data interpretation (Orlipp, 2008).

**Data analysis and trustworthiness**

A deductive analysis approach was used based on reversal theory constructs and proposals. An interview analysis protocol was developed to ensure that interpretation was consistent and theoretically robust, as employed in previous reversal theory based
research (e.g., Males et al., 1998). This was based on state definitions within the motivational State Coding Schedule (Potocky, Cook, & O’Connell, 1993) and Eight Ways of Being (Apter, 2003). The draft protocol was verified by an expert in reversal theory and sport and underwent two iterations before its final version. To assist in enhancing trustworthiness, three researchers with detailed understanding of reversal theory independently analysed the data then discussed their analyses to triangulate these and produce final interpretation (Denzin & Lincoln, 2000). Each PDM was systematically reviewed, referring to transcripts and the analysis protocol, in line with Males et al. (2006). Differences in interpretation were infrequent and attributable to lack of contextual awareness but were resolved when greater understanding was shared by the interviewer.

Initial analysis involved first reading and re-reading the interview transcripts to check that the PDM captured key elements discussed by the coach during the interview, and to validate or challenge the first drafts of key psychological demands and supporting processes. Second, each PDM was examined and the analysis protocol used to identify reversal theory states or state combinations that described the preferred psychological states, and, any other reversal theory constructs such as reversals. We also identified any elements in the coaches’ description not readily explained by reversal theory to guard against bias, including perceived positive and negative indicators of each Fundamental. Using the analysis protocol, we then produced commentaries to show how reversal theory informed each coach’s description of the sport’s performance demands.

These commentaries were then inductively analysed to identify emergent themes
or differences across sports, based on the process outlined by Biddle, Markland, Gilbourne, and Chatzisarantis (2001). The second author repeatedly read each interview transcript and commentary to immerse himself in the data, whilst maintaining his reflective journal. The PDMs and commentaries were grouped into pre-event, competition or post-event periods to maintain the dynamic process-based approach underpinning the PDM. Cross-sport themes in each period were identified, with a focus on performance demands and preferred reversal theory states. The first and third authors read these materials to offer new perspectives and ensure consistency with the earlier analysis. This combination of deductive and inductive analysis approaches has been used in previous reversal theory studies (Kerr & Houge Mackenzie, 2014). The deductive analysis of individual interviews preceded the inductive analysis of common themes across sports to produce a generalisable PDM framework, presented below.

Results

PDM synthesis: four fundamental themes

The items from all sports were then subjected to a further inductive thematic analysis. Individual items were grouped to form higher order themes, which in turn were clustered to reveal four fundamental psychological themes (capabilities) and the relevant RT constructs. Space limitations do not allow details of how all fundamental themes were inductively analysed, however Table 1 illustrates the process for one of the key themes.

The analysis of cross-sport data revealed four fundamental psychological themes (capabilities) that athletes must possess to manage their motivation and emotions to meet
the performance demands across pre-event, competition, and post-event phases. These are: *Mastery motivation*; *Decision making*; *Execution*, and, *Teamship*. They represent the core of our basic PDM, but may have varying emphases in different sports and can be used to underpin sport and context-specific PDMs.

**Theme 1: mastery motivation.**

This component is the most important and must underpin the athlete’s whole approach to their sport, embodied as a positive, professional and goal-oriented attitude to both training and competition. Space limitations do not allow details of how all fundamental themes were inductively analysed. As an example, Table 1 illustrates how we constructed the Mastery motivation theme. With Mastery motivation, athletes will actively seek out and look forward to competition, seeking mastery over themselves and the event. Mastery motivation primarily requires the *self-mastery* state combination to underpin self-discipline, will to win and take personal responsibility. However, to sustain motivation and performance there will be times when the athlete needs to reverse and access the self-sympathy state combination to ensure adequate rest and recovery, and, for team sport athletes to reverse to the *other-mastery* state combination to support teammates and team processes. Mastery motivation requires a dynamic inter-play between the serious *telic* and playful *paratelic* states, for instance, when the athlete will simply need to complete hard, repetitive training in a serious, ends-oriented telic state, interspersed with regular access to the playful, spontaneous *paratelic* state to balance this *telic* focus. Positive indicators of Mastery motivation include actively seeking and enjoying competition and pre-competition emotions, being committed to, and disciplined in, the
pursuit of goals, making honest self-reflections, awareness of one’s emotions, and, taking personal responsibility for oneself, including, adequate preparation, nutrition, rest and recovery. Negative indicators include avoiding competition in training, experiencing maladaptive pre-competition emotions, excessive concern with being liked, reluctance to challenge oneself, failing to prioritise training, and, potentially suffering from burnout or over-training injuries. **In a business setting, mastery motivation is required to harness one’s own and others’ energy in pursuit of goals. Constantly seeking to improve and learn is consistent with a growth mindset, recognised as a key component of business success (Dweck, 2016).**

**Theme 2: decision making.**

Decision making involves clearly and rationally gathering and managing information to analyse competition demands, set goals and determine tactics. Often mental rehearsal plays an important role in evaluating different options and feeling confident in decisions made. Decision making is primarily a telic activity and is best achieved in a calm, low arousal state but may be enhanced by conformity or negativism. In situations that demand a low level of risk, the telic-conformist state combination will be most relevant as the athlete will be content to follow established routines. In situations that require innovation or a higher level of risk, the negativistic state is appropriate. A self-mastery state combination is important to maintain a high degree of self-discipline and confidence. Positive indicators of Decision making include actively seeking feedback, honest and objective self-evaluation of performance, feeling confident and equipped to make the correct tactical decision, making effective decisions, and,
appropriate management of risk. Negative indicators include repeating errors from one event to another, making poor or rushed decisions, and inappropriate risk management.

**Business leaders also require the capacity to plan, analyse and choose amongst options, both on a short-term tactical level (equivalent to an athlete and coach preparing for a specific competition) and on a long-term strategic basis (equivalent to an athlete and coach planning for a four-year Olympic cycle).**

Balancing risk and reward is key to sound commercial judgement, and the capacity to do this well marks out successful from unsuccessful leaders.

**Theme 3: execution.**

During Execution the athlete must be ‘in the moment’, totally focused on the task at hand, able to ignore distractions and to make fast, automatic responses under pressure. The athlete needs to execute skilfully from the start of competition and throughout, regardless of distractions, requiring the ability to quickly re-focus and adapt to changing demands. The mastery state is key for Execution as it underpins the competitive mind-set and desire to achieve; in individual sports this will be *self-mastery*, whereas in team sports combinations of *self-* and *other-mastery* states are appropriate. The paratelic state is likely to enhance the athlete’s ability to focus ‘in the moment’ and respond creatively but the athlete may also experience the telic state, for example, when he or she becomes aware of the score and the implications of the final outcome. At these times *self-mastery* is needed to re-focus on the task and maintain an appropriate arousal level. In some instances, negativism could be required to generate novel responses or tactics but generally, conformity to rules and agreed tactics is most appropriate during Execution.
Positive indicators include sustained focus and commitment throughout an event, an ability to manage arousal, and, responding well under pressure. Negative indicators include superior performance in competition compared with training, concentration loss during competition, particularly after an error, and, over analysis, reducing movement fluidity.

Execution in a business setting is the ability to deal with intense and high pressure situations. These may range from an important client pitch, speaking to a large group in a ‘town hall’ event, or responding to an urgent product recall. On a more mundane basis, execution underpins the capacity to be present and to focus on the task at hand, whether this is analysing a spreadsheet or engaging in dialogue with a team member, without mentally ‘checking out.’

Theme 4: teamship.

Teamship refers to athletes’ ability to build and maintain relationships, offer and receive support and feedback from team-mates, and contribute to an effective team environment. It includes the ability to be honest with oneself and others, and requires access to other-mastery to enable the athlete to prioritise team over individual needs, to identify with the team more than their own performance, and to enable others to be powerful. Other-sympathy is necessary to build strong relationships, look after team-mates, and co-operate with others to achieve and encourage team spirit and emotional support. Reversals to the self-sympathy state combination are required so that the athlete can receive support and care from others. Positive indicators of teamship are support and encouragement for team-mates, appreciating support from team-mates and coaches, and,
prioritising team needs when appropriate. Negative indicators include disrespect towards coaches or support staff, being unwilling to receive feedback, creating or fuelling team conflict, and, always prioritising own needs above those of the team.

**Teamship in a business setting has obvious applications to build and maintain effective working relationships, and there are clear overlaps with the constructs of emotional intelligence.**

Mastery motivation is key and is required at all stages, as is Teamship in team sports. In individual sports, Teamship is only relevant pre and post-event when the athlete is interacting with his or her support team. Decision making is evident across all phases but most salient pre-event when planning current tactics, and, post-event when reviewing and planning for future events. In contrast, Execution is likely to be most salient during the competition phase where performance should be as automatic as possible, but has some salience in the pre-event period during warm-up.

**Example of a sport specific Performance Demand Model: canoe slalom**

Space limitations only allow us to present an example of one PDM and commentary. Our example focuses on canoe slalom, an individual sport, with verbatim comments from the coach used to illustrate the model elements. Table 2 illustrates the PDM in detail; numbers in parentheses below refer to specific elements, numerically labelled, in Table 2. Throughout, we identify examples where the fundamental capabilities underpin the sport specific performance demand.

*Self-mastery* underpins pre-event tasks (1, 2, 3) such as becoming familiar with the particular competition environment and *telic-conformity* underpins the requirement to
plan ahead and “solve the problems” presented by course designers (4), illustrating the need for *Mastery* and *Decision making*, respectively. The dynamic nature of canoe slalom requires athletes to be highly focused on their immediate performance (4) to execute their planned run (4, 17), yet they must also be highly adaptable, both to late input from the coach on the start-line, for example, if a competitor’s alternative tactic proves to be faster (7), and, to respond to their own error by “paddling reactively” (18). This provides an example of telic-oriented preparation transitioning into a paratelic-oriented execution phase, best supported by a combination of paratelic-conformity and self-mastery (illustrating the need for Mastery and Execution).

There was also an element of telic-negativism inherent in his requirement that paddlers be “fearless” and willing to take risks rather than “defend a position” (16). This is an unusual motivational state combination not yet encountered in other sports. It is negativistic because the paddler is expected to be innovative and bold, and telic because this behaviour is motivated by a pursuit of important objectives (Execution). *Self-mastery* is explicit in several of the identified demands, such as the requirement to deliver the best possible performance (14) and to remain confident and focused on strengths (15). *Self-mastery* continues in the post-event period, when the paddler is expected to manage his or her own emotional response (21) before moving to a state of telic-conformity, described by this particular coach as “logic mode”, to reflect and analyse the performance and use this to inform the next round of training (Decision making; 22).

The performance model described by this coach requires a high level of motivational fluidity, as the athlete must be able to adapt quickly to changed circumstances, yet remain
resilient. At the same time the coach encourages a consistent, process-oriented approach to both training and competition “in training or racing the fundamentals are the same – water and poles” which suggests that the primary emphasis is on helping the athlete maintain a stable *self-mastery* state. In sum, results from this initial phase support our proposition that a process based, reversal theory framed PDM helps conceptualise the psychological demands of sport performance with potential to develop sport specific models for a range of sports.

**Discussion**

Our aim was to develop and initially validate a psychological performance model that offered a generic framework, adaptable to the dynamic processes and transitions involved in a range of sports, and, which met our criteria for pragmatic effectiveness. The model was developed based on evidence from sports varying in intensity, duration, skill execution and risk, the factors that differentiate the objective demands of world-class performance (Schnabel, Harre, & Krug, 2008). To illustrate, target shooting involves low physical intensity, in a controlled, low risk environment, without direct interaction with others, and has a relatively simple (but not easy) skill component. In contrast, rugby sevens is a high intensity team sport that involves a range of dynamic skills, with a high degree of antagonistic physical interaction (Kerr & Svebak, 1994).

In relation to our first effectiveness criterion, the example PDM refers to emotional processing in the post-event phase, controlling cognitions during competition and implementing systematic training behaviours in the pre-event phase. The second criterion is met as the model was supported by coaches from a range of sports,
demonstrating its general applicability, albeit with some sport specific modifications.

Criterion three was supported by the relevance of the fundamental psychological element of Teamship, somewhat unexpectedly for some coaches in individual sports. Criterion four refers to a need to account for individual differences. We did not directly measure these in terms of dominance, as these would be conceptualised in reversal theory, but the potential for the model to account for individual difference factors was suggested by the insight offered into coaches’ experienced gender differences. The model accommodated the fifth criterion as coaches in both study Phases endorsed the model’s process based framework and the shifting emphasis of the Fundamentals across different phases. We did not test criterion six robustly as this should be the aim of future work following the development and initial validation of the framework. The model’s reversal theory underpinning satisfied the final criterion, providing added meaning to coaches’ interpretation of the PDM and Fundamentals, and importantly, facilitating novel insight for vastly experienced coaches. The Fundamentals resonate with previous reversal theory explorations of motivational states in sport (e.g., Kerr & Houge Mackenzie, 2014; Males et al., 1998). The fact that the PDM finds support from previous research helps to further our claims for its validity (see also Males, Hudson, & Kerr, 2018). More importantly though, our study makes a novel contribution to understanding psychological performance demands by offering an integrated framework that adds greater meaning to motivational states experienced by sports performers.

Regarding the practical utility of the PDM, coaches in this study reported that the accompanying materials provided enough detail without being too narrowly defined and
each coach adapted the core materials somewhat differently to use in their specific context. There were, inevitably, some challenges to our assumptions, proposals and conceptualisations and some suggested modifications of future iterations of the model. For example, whilst all the coaches endorsed ‘Teamship’ as a fundamental component of successful performance they felt a different term, such as ‘Teamwork’ would be more familiar to and accepted by athletes and coaches. Some modifications were identified that related more to the materials supporting the implementation of the model.

The results suggest that the PDM helped athletes and coaches to develop a shared understanding of the specific mental and physical requirements of a sport. It is based on an assumption drawn from evolutionary psychology that athletes are creative and adaptable, and that they will naturally learn more quickly when the nature of the presenting challenges is clearly known (Balish, Eys, & Schulte-Hostedde, 2013). The PDM explicitly maps temporal changes in performance demands to help the athlete prepare for the total competitive experience, and, with some modification, it can be applied to the demands of the training environment. By integrating the Fundamentals at the different stages of performance, the PDM gives athletes and coaches a clear description of the required capabilities for successful performance. We therefore suggest that the PDM offers a starting framework for a new basic performance model that is useful in its existing form but that could be further developed following more extended application and reflections on this by athletes, coaches and sport psychologists. Readers are directed to Author, Author & Author (2018) for a further test of the PDM’s validity.

We also see immediate application of the PDM for executive coaches and
their clients. In a corporate context a ‘performance’ might be an important meeting, a conference presentation, or even a busy working day. In each case a business leader, just like an athlete, can develop the psychological skills to successfully transition between the different stages of preparation, performance and review. In a fast-paced business context such transitions are often given scant attention, with executives moving from meeting to meeting with little time to take stock and prepare for each new challenge. In applying the PDM principles, an executive coach would first help a client understand the specific demands of a chosen performance, then identify when and how to prepare, perform and review. A greater understanding of the performance context will invite many executives to change how they manage time priorities so that they create the space for planning and reflection.

Reversal theory has been used to underpin leadership interventions and has strong face validity for managers (Carter & Davies, 2004) and we believe the four psychological fundamentals we have identified are also valid in a corporate setting. Revisiting each in turn: business leaders need to set goals that harness their own and others’ energy (mastery motivation), develop the capacity to strategize and plan (decision making), act purposively under pressure (execution) and communicate clearly to build strong relationships (teamship). Taken together, the capacity to act, relate and think in pursuit of meaningful goals provides a simple, yet comprehensive framework for mapping the psychological demands of business leadership. An executive coach or leadership consultant could also use an existing competency framework within a
PDM, where this offers greater congruency with an organisation’s existing ways of working.
Conclusion

This paper has described an innovative study from the world of high-performance sport that has drawn on the practical insights of highly experienced and successful sport coaches to create a framework that can support performance in any context. We have shown the parallels between sport performance and effective leadership; both are usefully considered as a dynamic process, both require the athlete / leader to effectively meet different and changing psychological demands over the duration of their ‘event’, and both can benefit from the input of a skilled coach. Future research is needed to explore the benefits and limitations of using a PDM in both sport and business settings. Key questions include: Does the business context, or other sports not yet examined, require additional psychological fundamentals beyond those identified in this study? What are the types of managerial and leadership roles and cultures where this approach has most resonance? Where does it resonate least? How might the language we have used need to be adapted for a business setting or different sports? We look forward to exploring these questions and welcome others also applying and testing the frameworks we have presented in this paper.
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Table 1
Inductive thematic analysis underpinning Psychological Fundamental, Mastery motivation (TS: target shooting; SQ: squash; CS: canoe and slalom; WH: women’s field hockey; S: soccer; MH: men’s field hockey; RT: reversal theory)

<table>
<thead>
<tr>
<th>Raw data</th>
<th>Theme</th>
<th>Relevant RT constructs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set realistic goals and targets (TS, SQ, CS)</td>
<td>Goal-oriented</td>
<td>Telic-conformist, Self-mastery</td>
</tr>
<tr>
<td>Quality training and preparation, knowing they have trained hard (SQ, CS, TS, WH, S, MH)</td>
<td>Self-disciplined</td>
<td>Telic-self-mastery, reversal to self-sympathy, Self-mastery</td>
</tr>
<tr>
<td>Process own emotional response and refocus on next competition (TS, WH)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Players need to cool down, attend to physical recovery and eat (S, MH)</td>
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</tr>
<tr>
<td>Develop right emotional state (S)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintain emotional and physical intensity and will to win (WH)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manage own emotional state to remain focused and confident (TS, SQ, MH, S, WH)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motivated to deliver best possible performance this moment in time (CS)</td>
<td>Mastery motivation</td>
<td>Self-mastery, Access to paratelic state to enjoy high arousal</td>
</tr>
<tr>
<td>Confident and positive attitude (CS, SQ, MH)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stay strong, win their bouts against opponents (S)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fight when the chips are down (S)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respond positively in big game environments (WH)</td>
<td></td>
<td></td>
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<tr>
<td>Feel confident and believe they have the skill to beat the other side (WH)</td>
<td></td>
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<tr>
<td>Take responsibility for own and team’s performance on the pitch (MH)</td>
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<tr>
<td>Self-sufficiency (TS)</td>
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<tr>
<td>Take ownership of the whole process (CS)</td>
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<tr>
<td>Self-reliance (MH)</td>
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</tr>
</tbody>
</table>
Table 2
Canoe slalom performance demand model

<table>
<thead>
<tr>
<th>Pre-event</th>
<th>Competition</th>
<th>Post-event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation for a specific event sits within annual and multi-year cycles</td>
<td></td>
<td>Post-race review feeds straight into preparation for the next race</td>
</tr>
<tr>
<td><strong>Key Tasks and Psychological Demands</strong></td>
<td><strong>Key Tasks and Psychological Demands</strong></td>
<td></td>
</tr>
<tr>
<td>1. Be familiar with the general race environment and feel confident.</td>
<td>Focus is on the here and now; the next step, the next stroke not on the outcome.</td>
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<tr>
<td>2. Feel confident in knowledge and experience of key technical challenges on the course, developed through quality preparation.</td>
<td>Motivated to deliver best possible performance at this moment in time.</td>
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</tr>
<tr>
<td>3. Assess the specific technical challenges inherent in the course design for race itself.</td>
<td>Confident and positive attitude, focused on strengths not weaknesses.</td>
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<tr>
<td>4. Develop a plan to ‘solve the problems’ posed by the course designers. This requires decision making in a chaotic and dynamic environment.</td>
<td>Be fearless and willing to take risks without ‘defending a position’.</td>
<td></td>
</tr>
<tr>
<td>5. Be fearless and willing to take risks without ‘defending a position’.</td>
<td>Maintain a steady emotional state; trust that they have the tools (technical skills and race plan) to answer the challenges that have been set.</td>
<td></td>
</tr>
<tr>
<td>6. Self-aware – about personal responses to challenging situations.</td>
<td>Be adaptable to move to alternative tactics (“plan B, C or D”) and ‘paddle reactively’ when necessary.</td>
<td></td>
</tr>
<tr>
<td>7. Remain open to late information from coaches about the course and be able to integrate into race plan.</td>
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</tr>
<tr>
<td><strong>Supporting Processes</strong></td>
<td><strong>Supporting Processes</strong></td>
<td></td>
</tr>
<tr>
<td>Familiarity with competitive environment and venues is built over time via repeated visits, training &amp; competition.</td>
<td>Coaches watch the performance and provide video and split-time feedback.</td>
<td></td>
</tr>
<tr>
<td>9. Systematic training sessions to develop experience and technique to deal with all possible gate and water combinations.</td>
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</tr>
<tr>
<td>10. Observation of self (via video) or other competitors to develop and analyse options</td>
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<tr>
<td>11. Evidence and feedback from coach, based on the stopwatch.</td>
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<tr>
<td>12. Seasonal goals are based on benchmarking against external standards.</td>
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</tr>
</tbody>
</table>