Exploring the Processes of Evidence-Informed Decision-Making in Applied Sport Psychology

Marie E. Winter[1], Paul Freeman[2], Murray Griffin[2], Andrew Soundy[3], and Ian Maynard[2]

[1] University Campus of Football Business

[2] University of Essex

[3] University of Birmingham

Author note:

All correspondence should be addressed to Marie Esther Winter, University Campus of Football Business, Wembley Campus, London, HA9 0WS, United Kingdom.

E-mail: m.winter@ucfb.ac.uk

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Abstract

The purpose of the current study was to explore evidence-informed decisions involved in designing psychological interventions for performance enhancement. Employing a constructivist grounded theory methodology, 10 experienced and 10 early career sport psychology practitioners participated in semi-structured interviews. All participants gained their qualified status through the British Psychological Society and were registered practitioner psychologists with the Health and Care Professions Council within the UK. Accordingly, results are reflective of the participants' training and practice experiences. Four key categories of decision-making processes were constructed: gathering information about the athlete, using research evidence, drawing on experience and tacit knowledge, and integration. Our findings demonstrated the interactions between research-based and practice-based knowledge when designing interventions that suit the needs of the athlete, work pragmatically within the applied context, and have the desired effect on the intervention goal. Our findings provide a better understanding of the interactions and processes used by sport psychology practitioners in applied practice. Such an understanding may inform the construction of evidence-informed interventions that lead to better performance outcomes.

Lay Summary: This study explored the evidence-informed decision-making processes of 10 early career and 10 experienced, UK-based, sport psychology practitioners when designing interventions for athletes. Results highlighted the importance of integrating evidence from the athlete, research, and practice experiences to support evidence-informed decisions to enhance the performance of athletes.

Applied Implications:

- Our findings suggest that intervention design could be most effective when sport psychology practitioners integrate a range of evidence into their decision-making
- The evidence-informed decision-making model provides processes for practitioners to consider in practice, irrespective of their working environment and level of expertise
- Understanding evidence-informed decision-making processes could help to develop training opportunities to improve evidence-informed decision-making competence

Exploring the Processes of Evidence-Informed Decision-Making in Applied Sport Psychology

The profession of applied sport psychology is underpinned by a process of evidence—based practice, whereby the scientific and applied disciplines inform and influence each other to support advancements in human performance, holistic well-being, and social functioning (AASP, n.d.; Schinke et al., 2023). It is an ethical mandate that researchers and practitioners of applied sport psychology employ evidence-based principles to ensure that clients in practice receive the most effective service, based on the best available information (AASP, n.d.). For a complementary and mutually beneficial relationship to exist between the research and practice disciplines, practitioners need to understand and evaluate intervention publications to implement them effectively (Ely et al., 2021). Furthermore, researchers need to be aware of how they translate research into practical evidence-based guidelines. However, the connection between research and practice is inhibited by two difficulties: (1) the complications faced by researchers in conducting interventions that are rigorous, robust, and also demonstrate real-world effectiveness, and (2) the accessibility and implementation challenges faced by practitioners when trying to apply published research evidence to the real world (Ely et al., 2021). These difficulties contribute to the maintenance of the research-to-practice gap.

The research-to-practice gap illustrates the disconnect between what researchers suggest practitioners should do and what practitioners actually do in applied practice (Keegan et al., 2017). Holt et al. (2018) suggested that a disparity exists between the relevance of research studies and the applied context, causing concern over the usefulness of empirical research. For example, Moore (2007) found that some sport psychology practitioners perceived the psychological skills intervention literature as the most important influence when trying to improve athletic performance. In contrast, Schinke et al. (2023) reported that practitioners are only sometimes informed by science and lack the resources to stay up-to-date with advancements in the literature. It must be recognised that many professionals are both researchers and practitioners; these individuals adopt a scientist practitioner approach and engage in a blended interaction of scientific and applied principles of sport psychology (Schinke et al., 2023). For example, practitioners may consider the uniqueness of practical processes, and researchers may demonstrate the practical relevance of their work by including practical recommendations in their research publications. However, even the effectiveness of the scientist-practitioner approach is contentious. For example, Gould (2016) suggests that without sufficient detail, practical recommendations are less likely to be considered by practitioners.

The disconnect between the research and practice disciplines of the profession and lack of best-practice procedures has led to concern over whether the profession is providing sufficient evidence-driven, decision-making models for consulting with clients (Smith & Keegan., 2023). Schinke et al. (2023) suggest that researchers who dedicate their time to empirically and conceptually advancing the field only sometimes demonstrate a deep experiential comprehension of practice and practical issues. To address this and understand the processes involved in evidence-based practice, researchers have explored the professional judgements and decisions made by the practitioner as judgements and decisions play an

influential part in the design and implementation of successful interventions (Martindale & Collins, 2005, 2012). For example, implementing an intervention aimed towards performance enhancement may elicit a different practitioner-client relationship compared to an intervention aimed towards well-being improvement (Martindale & Collins, 2005). Research into professional judgement and decision-making has furthered understanding of the skills required to make decisions in response to the often dynamic and ill-structured environments practitioners operate in (Smith et al., 2019). However, it is also important to consider what evidence influences the decisions made by practitioners to ensure practice decisions are based on the best available information resulting in application of the most suitable and effective interventions for clients (Ely et al., 2021).

Winter and Collins (2015a) began to explore the influence of evidence on decisions through their investigation into the subjective reasonings underpinning the practice of established sport psychology practitioners. They found that literature underpinning professional practice and information from the athlete's environment were key influences on practice decisions. Furthermore, practice-based knowledge derived from experience has also been demonstrated to influence sport psychology practitioner decision-making through experiential learning and self-reflection (McEwan & Tod, 2015). These findings suggest that decision-making for intervention design requires evaluation of a culmination of evidence sources before arriving at an informed decision. This concept is regarded as evidence-informed decision-making and has received much attention within applied health services research (Belita et al., 2022).

Clinical evidence-informed decision-making has been defined as the application of the best available evidence that enables applied practitioners to decide the most appropriate plan of treatment for a client (Belita et al., 2022). There has been much discussion regarding the nature of clinical decision-making, divided between two possibilities: some view

decision-making as a logical and objective process achieved through reducing a client's issues to their most basic parts, whereas others recognise decision-making as based on tacit knowledge that cannot be represented by a logical model (Gillespie et al., 2015). Attempting to apply these explanations to decision-making in applied sport psychology poses its own challenges. Firstly, the constantly changing nature of applied sport psychology services make it difficult to propose straightforward and singular solutions. Secondly, attributing decision-making to tacit knowledge alone is not appropriate for early career practitioners who have had little experience to develop tacit knowledge through (Williams, 2007).

Researchers have explored the narrative accounts of expert sport psychology practitioners' decision-making processes (e.g., Sharp et al., 2015). The insights provided by expert practitioners, derived from years of practice experience, provide useful information for early career practitioners to relate to their practice when they experience new situations and environments. However, early career practitioners will undoubtedly be faced with circumstances that are completely unfamiliar and they may not have expert literature to guide them. Furthermore, once a sport psychology practitioner is fully qualified, there is no mandatory requirement to continue supervision. Without ongoing support, early career practitioners could make decisions that limit the effectiveness of their work. For example, Winter and Collins (2015) found that trainee practitioners would use a technique within their practice without always knowing the theoretical or mechanistic underpinning. Despite the difficulties trainees experience with evidence-based practices, investigation into the evidence-informed decision-making processes of early career practitioners has received little attention within the applied sport psychology literature.

To better understand the decision-making processes involved in applied sport psychology practice, and take into consideration varying levels of expertise, the concept of evidence-informed decision-making in this study is considered within a constructivist

paradigm; this perspective acknowledges that sport psychology practitioners actively construct knowledge and integrate new information based on their experiences of the world and personal reflections of these experiences (Charmaz, 2014). The constructivist paradigm places intervention design as a construction of the most appropriate course of action that is specific to the practitioner and based on the information they seek and the interpretations they make. This study will focus on intervention design for performance enhancement only, rather than both performance enhancement and well-being. As Martindale and Collins (2005) specify, decisions can differ based on the goal of the intervention, therefore focusing on one intention will provide a more homogenous investigation into practitioner decision-making.

This study was conducted for three reasons. Firstly, the difficulties in producing and applying intervention research make the integration of both research and practice in decision-making challenging (Ely et al., 2021). Therefore, exploring the social processes that guide decision-making may prove useful for advancing applied sport psychology research and practice. Secondly, decision-making is dependent upon the context the decision is situated within, meaning contextual factors such as the working environment and the practitioners' experience of working in that environment may impact on intervention decisions (Winter & Collins, 2015). Understanding the nuances of how these contextual factors interact may provide evidence-informed guidance that can be adopted by sport psychology practitioners in any sport setting. Finally, the study's focus was to investigate evidence-informed decision-making with application to all sport psychology practitioners practising within the UK. However, there currently exists little understanding of the practice experiences of early career practitioners (Martin et al. 2022), and the social processes involved in their decision-making. Therefore, this study considered early career practitioners as the initial sample to support growth of early career practitioner decision-making literature, but subsequently allowed further sampling to be informed by the data generation process.

Method

Philosophical Approach

A constructivist grounded theory methodology underpinned by social constructivism was selected to understand how practitioners construct evidence-informed decision-making processes for intervention design, based on their own experiences and interpretation of the social world (Charmaz, 2014). Social constructivism focuses on co-constructed knowledge between the researcher and the participant. It emphasises the participants' own constructions, descriptions, and narrations of their lived experiences, and acknowledges that the co-construction of knowledge is influenced by past experiences and cultural influences (Charmaz, 2014). The current study developed discourse on evidence-informed decision-making by using constructivist methods to explore and understand a social process for which little empirical evidence exists. To facilitate the readers' understanding of the data generation and analysis process, it is important to know that I, the first author, conducted the interviews and preliminary analysis of each transcript. The research team consisted of myself and the co-authors. The co-authors contributed to the co-construction of knowledge by acting as critical friends and engaging in the theoretically sensitive analytical processes (Charmaz, 2014).

Participants

Purposive and then theoretical sampling techniques were used to collect data from applied sport psychology practitioners. Initially, ten early career sport psychology practitioners (three female, seven male) were selected based on the limited research of early career practitioners' experiences within applied sport psychology (Martin et al., 2022). Sampling of subsequent participants was determined by the emerging categories; information provided by one participant directed selection of further participants, refining data collection and analysis (Charmaz, 2014). As the study progressed, description of decision-making processes expanded, requiring the intentional selection of participants with particular

knowledge. For example, during the early career practitioner interviews, the influence of practical experience began to arise as a core category, this provided a rationale to explore the narratives of individuals that had a wider breadth of experiences to draw on in their decision-making processes. Therefore, ten experienced sport psychology practitioners (two female, eight male) were later sampled.

To be considered early career sport psychology practitioners, the participants had to be within three years of gaining the title of chartered psychologist with the British Psychological Society (BPS) and have Health and Care Professions Council (HCPC) registration. Ages ranged from 29 to 49 years (M = 35 years; SD = 5.2). Experience as a sport psychology practitioner after gaining full accreditation ranged from 6 months to 3 years (M = 2 years; SD = 1.0). Seven worked full time in applied sport psychology and three had additional employment responsibilities including research and teaching. To be considered experienced sport psychology practitioners, participants had to have a minimum of ten years' experience post gaining the title of chartered psychologist with the BPS and have HCPC registration. Ages ranged from 35 to 52 years (M = 45 years; SD = 5.9). Experience as a sport psychology practitioner after gaining full accreditation ranged from 10 to 23 years (M = 16 years; SD = 4.8). Three worked full-time in applied sport psychology and seven had additional employment responsibilities, including research, teaching, and supervision. At the time of data collection, the BPS accredited Professional Doctorate and the British Association of Sport and Exercise Sciences' Sport and Exercise Psychology Accreditation route (BASES SEPAR) of qualification were new and did not yet have any graduates. Furthermore, the use of a homogenous sample regarding training route allowed for greater nuance to be explored.

Procedure

The research was approved by a university ethics committee. Participants were invited via email to take part in a study discussing the processes they follow in the design of an

intervention for an athlete. Written consent was gained prior to the participants' engagement with the study. Data were collected between September 2019 and April 2020 via intensive, in-depth, semi-structured interviews. According to the principles of theoretical sensitivity, literature was addressed as sensitising concepts which aided the development of the initial interview guide (Charmaz, 2014). The interview guide was developed based on examinations of previous sport psychology decision-making literature (e.g., Martindale & Collins, 2005, 2012) and medical evidence-informed decision-making literature (e.g., Moore et al., 2015). However, once initial questions had been developed, literature was not incorporated into the data analysis process until construction of categories had begun.

The initial interview guide consisted of four broad questions: (1) describe your experiences of applied practice within sport psychology, (2) describe the process of designing an intervention for an athlete, (3) describe the influences on the process of intervention design for an athlete, and (4) describe the role of evidence in informing the process of designing an intervention for an athlete. As themes were constructed, the interview guide was revised and questions became more focused, related to developing categories. The progression of interview guides can be found in the supplementary materials.

Two pilot interviews were conducted prior to the study with an early career practitioner and a member of the research team with expertise in applied sport psychology research and practice. The early career practitioner pilot interview was conducted to ensure appropriateness of the interview protocol and initial questions within the interview guide. The pilot interview with a member of the research team was to provide me with feedback on my interview skills and help to develop my confidence with asking follow-up questions. This individual did not contribute to development of the interview guide. Of the twenty interviews, seventeen were conducted using the video-call platform, two over the phone and one in person. During interviews, I focused on the content of verbal communication to prevent

influence of non-verbal communication that may not be picked up as easily on the phone as in person. The use of open-ended questions, probe questions, and additional follow-up questions allowed for detail in participant responses and flexibility in following up comments made by participants. Interviews lasted 37- 80 minutes (M = 62.34, SD = 12.64), with the length increasing as interviews went on. This can be attributed to my growing confidence in delivering interviews and the experienced practitioners having a larger expanse of experiences to draw from and discuss. Interviews were recorded and transcribed verbatim by the first author. Names of participants were replaced with ID numbers, P1-10 denotes early career practitioners and P11-20 denotes experienced practitioners.

Analysis

Data analysis started following the first participant interview and continued throughout and after data collection (Charmaz, 2014). Initial coding was conducted via line-by-line coding to ensure I (lead author) remained open to exploring all fundamental empirical processes. This involved using codes to describe each line of the transcript according to meaning and action. The codes were constructed directly from the transcripts and were compared iteratively with existing codes to examine similarities or differences. Salient codes were constructed by grouping codes together that shared similar titles and meaning, and that were important to and/or frequently conveyed by participants. As data analysis was iterative, this process was repeated after each interview. Subsequently, the focused coding phase used the most common and salient codes from the initial phase to sort, synthesise, integrate, and organise large sets of data into categories and begin to develop the emerging theory (Charmaz, 2014). This was achieved through the constant comparative method which involved comparing data with data, codes with data, codes with codes, codes with categories, and categories with each other (Charmaz, 2014).

Theoretical sensitivity was applied throughout the data collection and analysis process (Hoare et al., 2012). Firstly, during the interviews, I focused my attention on knowing when to probe. This supported the participants in discussing certain lines of enquiry that may have risen as a code or category from the analysis of previous participants and warranted further exploration. Importance was placed on listening when participants were re-experiencing memories and validating their experiences to ensure the nuances of all emerging themes were explored. Secondly, during coding of the transcripts, I applied analytical tools of questioning and memo writing to recognise and develop elements of data that had relevance for the emerging theory (Tie et al., 2019).

Memo writing was a vital analytical tool in the analysis process as it provided a bank of ideas of the emerging theory. Due to the simultaneous data collection and analysis process, memos helped me to visualise the connection between incidents, codes, properties, and categories being constructed from the data. These memos were discussed during biweekly research team meetings; memos and diagrams about connections between the data were questioned and scrutinised, with memos becoming progressively more analytical. Example memos can be found in the supplementary materials.

Constructivist grounded theory places all researchers as co-constructors of knowledge, therefore it was important for the research team to acknowledge how their experiences may influence data generation (Charmaz, 2014). As a sport psychology researcher that did not practice, my interpretations of the data were not biased by my own practice experiences. The remaining members of the research team included three researchers that all held academic positions in UK universities with research responsibilities in their contracts. When undertaking applied work, they favour a scientist-practitioner approach, but in doing so recognise the need to tailor interventions to the context and needs of an athlete**.** Therefore, lines of inquiry were influenced by their research and practice experiences.

As I, the lead author, was a first year PhD student at the time of data collection, I was developing awareness of my philosophical research position and how it influenced my role as a researcher. To facilitate personal reflexivity of this developing understanding and ensure my research decisions were methodologically coherent, I met monthly with an external qualitative researcher and educator. This individual had experience with theory generating reviews which value a social constructivist viewpoint. The qualitative expert was later included in research team meetings discussing the final theoretical coding phase to further analyse the relationship between categories and codes constructed from the data. The approaches implemented supported data saturation in the construction of a conceptual framework based on interrelated decision-making processes (Tie et al, 2019).

Quality and Rigour

Quality criteria for social constructivist methodologies was adopted. First, the use of rich quotes in presentation of our findings provide credibility and resonance for the reader to reflect on the 'relevance' to their own personal experiences (Charmaz, 2014). Second, through the application of questions, memos, and the flip flop analytical tool, data triangulation was employed to satisfy 'appropriateness' of the processes and data that emerged in the study (Hoare et al., 2015). The analytical tools were implemented throughout the analysis process, but most significantly during biweekly meetings with the research team (Smith & McGannon, 2018). These meetings would involve 'flip flopping' emerging data to consider categories from different perspectives and highlight their significant properties (Hoare et al., 2012). Furthermore, discussing memos within the research team allowed for examination of how closely the concepts and theory 'fit' the evidence-informed decision-making phenomena they represented.

Results

Following data collection and analysis, the core category constructed from the data was integration (see Figure 1) [insert figure near here]. The process of integration involved practitioners reaching an endpoint to gathering information and subsequently integrating sources of evidence to form the most appropriate intervention to achieve the proposed intervention outcome. The phenomenon encompassed three interconnected but distinct decision-making processes. These were: tailoring to the individual and context, treating every athlete as an individual, and integrating research-based and practice-based knowledge. These categories represent the social processes practitioners engaged in to draw together evidence gained from the three initial information gathering processes. These processes included: gathering information about the athlete, using research evidence, and drawing on experience and tacit knowledge. In this results section, each of the information gathering processes are presented in turn before moving on to explain how they are connected through the integrative processes of evidence-informed decision-making.

Gathering Information about the Athlete

Gathering information about the athlete describes the processes participants followed in acquiring knowledge that was specific to the athlete. This process ensured that intervention design decisions were based on a thorough understanding of the individual needs of the athlete, the influence of the athlete's support system on the intervention delivery, and considerations as to how the athlete could in part take ownership of the process.

Assessing Needs

Participants described gathering information about the athlete by first assessing the athlete's needs. Participants used a range of methods to achieve this (e.g., observations and interviews). Focusing on the athlete involved understanding the contextual and behavioural needs of the athlete and making decisions based on these. For P1, this knowledge directly impacted the choice of self-regulation strategies: *"*It's looking at what their needs are, starting

with a qualitative type of description of what they're experiencing and any concerns that they have. Based on this I come up with the self-regulation strategies that they can utilise".

Gathering Insight from the Athlete's Support System

This ranged from simply having contact with the athlete's coach to being embedded within a multidisciplinary team of professionals supporting the athlete. Intervention decisions were influenced by the multidisciplinary perspectives within the athlete's support system.

> You're trying to get as much information as possible in that phase from as many different perspectives as possible to have the best idea of how you can work best with the athlete, or how you can support the others to work best with the athlete. –P7

Giving the Athlete Power

Giving the athlete power in the relationship ensured decisions were tailored to the specific requests made by the individual. If an athlete wanted a specific issue to be addressed, it influenced subsequent decisions regarding the purpose of the interaction and how to gather relevant evidence, such was the case for P4 who said: "Sometimes if they've come with something specific like "I've got no confidence", we might do another questionnaire around confidence".

Using Research Evidence

Participants described using information from research to guide decision-making. The use of research evidence was useful in helping participants make decisions based on systematic and peer-reviewed evidence. Participants achieved this through drawing on evidence they were familiar with and continually trying to gain access to available resources that were suitable for guiding decision-making.

Using Familiar Evidence

Participant decisions regarding what research evidence informed intervention design was influenced by their familiarity with certain evidence-based strategies. P1 found that the

more abundant an area of research was, the more confident and knowledgeable participants felt about implement those strategies into their intervention design: “there's just years and years and dozens of studies on self-talk that you can take from and the more it accumulates the more you figure out really what seems to work and what doesn't”.

Accessing Available Resources

Participants accessed a wide variety of information sources to guide decision-making for intervention design. This included journal articles and books within applied sport psychology and neighbouring psychological domains (e.g., clinical and counselling psychology). However, some practitioners noted difficulty in doing this and saw access as a barrier. Participants who worked for a university, national governing body, and/ or sporting institutions reported better access to research than those working in private practice. Privately practising participants described research evidence “sitting behind paywalls” and only incorporated research evidence into decision-making when reproduced or available on accessible platforms, such as blogs and podcasts. Participants also felt a publication bias existed against the types of research they felt would be most effective:

> There’s literature out there that is valuable for educating yourself about the theoretical components of an area of work, a concept, a challenge, a population. I think what there isn’t loads of is really good case work, really good intervention work that is either rigorous or just informative. There’s a publication bias against that. –P16

Drawing on Experience and Tacit Knowledge

Drawing on experience and tacit knowledge involved participants using intuitive knowledge, skills and capabilities, that were derived from their experiences of working with a range of athletes in various sport settings, to make decisions. The experiential nature of tacit knowledge made these social processes hard for practitioners to articulate, but participants

described decisions being led by repeating past successes, doing what feels right, and developing practice-based evidence.

Repeating Past Successes

Repeating past successes involved practitioners repeating interventions that have previously been successful when addressing a similar issue. As experience progressed, practitioners were able to pick up on repeated patterns of behaviour between different athletes they worked with and apply similar solutions to address the issues, when the practice situation was similar:

> Each individual is unique and there can always be new information, but you recognise patterns of people relating their experience and thinking which you know from experience of working in that sport, in those situations, and with those issues. –P17

Doing What Feels Right

This concept encompassed decisions participants made based on tacit knowledge alone. These participants relied on their capability to understand athlete issues instinctively, without need for conscious reasoning. P13 struggled to articulate their decision-making process; with over 25 years of experience, they had become reliant on their tacit knowledge, derived from the culmination of experience within the field:

> I think when you have been doing something a long time, I don't think logically through these steps. Sometimes you do things and when someone says why did you do that, I struggle to think why I did that. And I know it must be so deeply embedded in knowledge, I can't say there is a concrete step.

Developing Practice-Based Evidence

When faced with situations with limited empirical evidence to inform intervention decisions, participants described recording their own data and using that as evidence when designing future interventions, such as for P10:

> We'd look for support (from research) but if it wasn't there, we'd be willing to try something but still think about actually it needs an evidence base. We need to record the evidence of what we're doing. So, is what we're doing having the impact we want? Is it working? That might be speaking to players and staff.

Integration

The process of integration involved practitioners reaching an endpoint to gathering information and subsequently integrating sources of evidence to form the most appropriate intervention to achieve the proposed intervention outcome. Being able to visualise the entire picture was an integral component in transitioning from gathering information into gaining an understanding of the athlete's issue and making the most informed decisions for the intervention. To draw together the evidence gained through information gathering, participants described tailoring their interventions to the bespoke needs of the individual and context, treating every athlete as an individual rather than prescribing solutions, integrating-research-based and practice-based knowledge, and being flexible when constantly reacting to new information. These four components make up the subordinate themes of integration.

Tailoring to the Individual and Context

Representing the intersection between gathering information about the athlete and using research evidence, tailoring to the individual and context involved adjusting research-based interventions into pragmatic exercises that could be implemented within the sporting context and suited the needs of athlete based on the information gathered. P8 discussed a direct example of how they condensed an eight-week mindfulness strategy into an intervention that could be delivered immediately and over a shorter time period, based on the needs and context of their athlete:

> I've looked at how it (mindfulness) is used in sport and I've been creative by working out methods that I can take from the eight week course and instantly apply with an athlete as opposed to going through a longer routine that's in a journal article.

Treating Every Athlete as an Individual

Representing the intersection between gathering information about the athlete and drawing on experience and intuition, treating every athlete as an individual involved practitioners leaving preconceived notions and biases behind and considering what the most suitable solution is for that individual athlete, within their specific environment, and at that particular moment in time. Although participants would draw on their experience if they recognised a behavioural pattern, P11 described remaining sceptical of the previous experiences by questioning the appropriateness of basing decisions on a familiar instance, they said: "Just because something worked for one person and this situation that you present me with looks very similar to that doesn't mean that it's actually going to work".

Integrating Research-Based and Practice-Based Knowledge

The intersection between using research evidence and drawing on experience and tacit knowledge involved practitioners managing the contextual barriers to applying research evidence to the practice environment. The application of evidence was often restricted by the reality of real-world practice. Whether money, athlete access, time scale, or another barrier, participants had to make flexible decisions, treating frameworks as frameworks, rather than rigid instructions to be followed. The participants described the importance of their skill, flexibility, and creativity during the process of integration to ensure they were using their knowledge effectively to design an intervention that addressed the needs of the athlete. P12 compared their creativity in practice with the creativity required for cooking:

> There is a chef who is Michelin starred chef, and he has a great quote in one of his books 'creativity is a bad idea if you know nothing'. To me that bedrock of

> knowledge enables you to be creative and bespoke and adjust the way that you would use something in a way that a chef would adjust how they season something or the amount of time they would cook it for. They've got the same ingredients, but they use it in a creative way once they have the knowledge about those ingredients… With the analogy being the ingredients are the theory and research and evidence base, once you've got that, then you can be creative.

Reacting to New Information

All participants expressed that implementation of the intervention was not the end of the process as they continued to receive new information that impacted on the decisions they made regarding the intervention. Practitioners continually reacted to new information and modified the intervention. The development of an optimal and appropriate intervention was therefore not recognised as a sequential process, but rather a dynamic and fluid interaction between the practitioner, the athlete and the athlete's support system:

> When you work with people, they're constantly bringing new information so you're bouncing back to doing a needs analysis, it isn't a neatly sequential process… It's a collaboration, it's a toing and froing of me absorbing information, observing, and getting new information. –P12

In addition to reacting to new information from the athlete, most practitioners remained open to new developments within the literature and adjusted decisions accordingly:

> I look for recent papers on the technique that I've chosen that I haven't read before just to see if there's any good things I've forgotten, or any new ideas people have put across. –P9

Discussion

The aim of the study was to gain a conceptual understanding of the decision-making processes that sport psychology practitioners follow in the design of performance

enhancement interventions. Our findings present integration as the core category constructed from the data that supported practitioners in incorporating various sources of evidence from the athlete, research, and experience and tacit knowledge. Integration was achieved through the processes of tailoring to the individual and context, treating every athlete as an individual, and integrating research-based and practice-based knowledge. The model developed in this study extends research regarding the types of decisions practitioners make when designing interventions (e.g., the nature of the intervention goal and client relationship; Martindale, 2005) and considers the thought processes that go into arriving at these decisions. The model illustrates the types of evidence that influence decisions for intervention design and the social processes practitioners follow to ensure decisions are based on the best available evidence. Although the abundance of evidence may not always be equal, the model demonstrates how integrative social processes can be used to facilitate the formation of decisions that lead to the construction of interventions that are most suitable for the client. For example, a practitioner may have substantial information on their clients' experiences with performance anxiety and may be well read in performance anxiety research, but they have limited experiences of managing performance anxiety in practice. In this instance, the practitioner may think more about tailoring the intervention to the athlete and context by speaking to members of the support staff within the environment to consider how a research intervention from the performance anxiety literature can be moulded to the client's needs.

When beginning a new consultation, participants in this study recognised the idiosyncratic needs and demands of each athlete; this is an important process when aiming to provide the best possible service to improve an athlete's performance outcomes (Smith & Keegan, 2023). Decisions were also influenced by giving the athlete power; working collaboratively with the athlete has been shown to contribute to the effectiveness of an athlete-practitioner relationship (Sharp et al., 2015). Sharp et al. (2015) described the athlete-

practitioner relationship as a partnership, whereby both individuals understand and agree upon the goal of the relationship that all subsequent decisions for the intervention are based on. However, sport psychology practitioners must be aware of the many complexities in pursuit of goal agreement that can influence subsequent intervention decisions. For example, practitioners must consider whether the goals are likely to change and require a flexible approach from the practitioner (Tod et al., 2022). Furthermore, the multidisciplinary perspectives employed by participants in this study allowed practitioners to draw on the experiences and expertise of other relevant professionals to guide decisions. This is common within team sports environments where decisions are based on the practitioners' understanding of the team, its players, and staff members (Sharp & Hodge, 2013).

The use of research evidence played a significant role in the decision-making process for intervention design. Cropley et al. (2010) suggested the application of research is fundamental for the provision of sport psychology services as it enables knowledge, research, and interventions to support one and other. In the current study, participants that worked in both an applied and academic setting, their research specialism was often reflected in their intervention decisions. Furthermore, the more abundant an area of literature, the more knowledgeable participants felt regarding that area of the evidence-base and decisions were more likely to include such strategies. However, Winter and Collins (2015b) have found that experienced practitioners are half as likely to use certain attentional-based techniques in practice when compared to their trainee counterparts. The reasonings for the disparity were attributed to experienced practitioners recognising from their experiences that those techniques were ineffective and thus opted for an alternative solution, or that the experienced practitioners (most of which consulted full time outside of academia) were overlooking present literature-based techniques. Research utilisation literature in public health has shown a link between research activities and attitudes towards using research in practice; the more a

professional engages with research activities, the better their attitude towards research, and the more likely they are to implement research in their practice (Mehrdad et al., 2008). Although a positive attitude does not determine behaviour change, it can help practitioners believe that new research can and should inform practice decisions.

When trying to access available resources, participants expressed that contextual conditions such as time constraints and a lack of access to information impacted on the participants' capability to make the most informed decisions for intervention design. Thompson et al. (2004) described the notion of 'decisional complexity' relative to time imperatives. Participants in this study would opt to use readily available, lower levels of information when time was limited as the skill and time it takes to seek out and interpret literature could limit their capacity to apply evidence-informed information to their decisions. Lauber et al. (2011) suggested that access to scientific information relates directly to the amount of funding, personnel, and resources available to that individual. Similarly, participants in the current study who worked for a university, national governing body, and/or sporting institutions reported better access to research than those working in private practice. In situations where access to literature is challenging, the model illustrates the social processes that practitioners can follow to ensure decisions remained informed by research, such as using familiar evidence and integrating research-based and practice-based knowledge. Furthermore, there is a growing wealth of open access to scientific publications that support the application of research within practice (Anglada & Abadal, 2023).

Participants also expressed that the literature lacked the types of research evidence that would be most useful in aiding the applied decision-making process. Randomised controlled trials are often privileged above case studies and field work as 'evidence' of good practice (Ivarsson & Andersen, 2016). Although such trials demonstrate efficacy and offer internal validity in testing interventions, there also exists issues surrounding real world

application. This issue of transferability is not unique to the sport psychology domain; clinical professions, within which the use of evidence-informed decisions has much credence, also struggle to make the connection between what is experimentally tested and what will work in real life (Belita et al., 2022). In an attempt to address the disconnect, clinical psychology researchers have questioned the philosophical underpinning of evidence research. Rather than focusing on how evidence is implemented into contexts, it reframes the focus onto the processes and practices through which evidence, intervention, and context come to be (Rhodes & Lancaster, 2019). Employing this type of approach in sport psychology intervention research could support practitioners in integrating research-based and practice-based knowledge by drawing on researched interventions that are applicable to real-world practice.

The integrative process that connected information from the athlete and research evidence was tailoring to the individual and context. The sporting setting and context of the athlete's environment have been highlighted in the literature as reasons underpinning practice decisions (Brown et al., 2005). The social process of tailoring to the individual and context considers how research interventions can be moulded to suit the time and access the practitioner has with the client and make adjustments based on potential changing needs of the client. Through this process, practitioners can increase their confidence of applying research interventions into sporting contexts by earning legitimacy, trust, and respect (Brown et al., 2005).

Drawing on experience and tacit knowledge was also an important process for evidence-informed decision-making. Similar findings have been reported within other psychological disciplines. In a study of 508 members of APA Division 12, respondents expressed modest agreement that controlled research on psychotherapy is relevant to their practice (Stewart & Chambless, 2007). Past clinical experiences and colleagues' advice were

perceived as more influential in decisions for treatment outcomes. Rycroft-Malone et al. (2004) argued for a widening definition of what counts as evidence in evidence-based practices by placing importance on non-propositional, practice-based knowledge. In the current study, participants treated their own experience as evidence through the process of repeating past successes and the intuitive process of doing what feels right. These are examples of processes that form non-propositional knowledge that is informal, implicit, and derived primarily through practice. However, it is important to acknowledge that this type of evidence is insufficient when decisions are based on practitioner experiences alone. For experience and tacit knowledge to be recognised as a credible evidence source, it must become propositional knowledge. Through articulating, debating, contesting, and verifying experiences with the applied sport psychology practice community, theory can be generated and used to inform practice (Williams, 2007). Participants in this study achieved this through developing practice-based evidence by recording their own data, verifying findings, and reflecting on the decision-making process. The concept of developing tacit knowledge through experiential learning and discussion is well established within the reflective practice literature in applied sport psychology (e.g., Cropley et al., 2010). Reflective practice allows practitioners to learn from their own experiences and adapt subsequent decision-making processes accordingly. The evidence-informed decision-making model of this study can be used as a reflective tool for practitioners to consider and challenge their own thought processes when reflecting on their experiences and knowledge.

Treating every athlete as an individual described the integration between assessing the athlete's needs and drawing on experience and tacit knowledge. When practitioners encounter one issue repetitively, they may find behavioural patterns that can be addressed using the same or similar interventions (Winter & Collins, 2015b). However, treating every athlete as an individual argues that practitioners must be careful when repeating past successes; what

595 may have worked for one athlete may not be appropriate for implementation with another
596 athlete, or could be potentially damaging to that athlete. This concept advocates for a more
597 individualised and person-centred approach to the construction of interventions (Black &
598 McCarthy, 2020). Rather than choosing from a list of pre-existing solutions to address
599 generic issues, practitioners could use the model to consider constructing a truly bespoke
600 intervention for their athlete.

601 The integration of research-based and practice-based knowledge plays an important
602 role in every scientific discipline that focuses on client-centred services. For example,
603 'balancing evidence-based knowledge with practice-based knowledge' is the core
604 phenomenon of decision-making in wound management (Gillespie et al., 2015). Rather than
605 being presented as a balance, this study visualises the interaction between research-based and
606 practice-based knowledge as an integration; participants used their prior practical knowledge
607 to shape research-based interventions into practical activities that addressed the needs of the
608 athlete, worked pragmatically within the applied context, and had the desired outcome on the
609 performance goal. It is important that education programmes emphasise the teaching of this
610 process to ensure trainees develop the competencies necessary to use theory, research, and
611 practice experience to inform intervention design (McEwan & Tod, 2015). However, training
612 programmes have been taught on the assumption that trainee practitioners are able to obtain
613 the knowledge of concepts and skills required to then translate them effectively into the
614 context they are practising within (Gilbert et al., 2009). Yet Winter and Collins (2015b)
615 found that neophyte practitioners often implement techniques without knowing the theoretical
616 or mechanical underpinning of the technique. Without this knowledge, trainees may struggle
617 to understand what needs to be targeted for interventions to have effective outcomes on
618 athlete performance. Rather than teaching based on the assumption of knowledge obtainment
619 and retention, integration of the evidence-informed decision-making model as a reflective

tool in supervision shifts the focus onto the construction of knowledge based on experience. Providing trainees with a guide of the types of thought processes they could consider will support the development of independent sport psychology practitioners that are competent and confident in making intervention decisions based on the best available evidence.

Finally, reacting to new information formed part of the integrative social processes that contribute to decision-making. Although evidence-informed decision-making in this study is presented as a process, we acknowledge that decision-making is not rigid and sequential; real life practice is a fluid and dynamic process that is much more interwoven. Whether new information from the athlete, updates in the literature or from their own experiences, participants were continually required to adapt the intervention design to ensure it addressed the athlete's needs. McCann (2000) suggested taking a partnership approach between athlete and practitioner allows for flexibility when interacting with athletes through constant feedback. The model provided within this study can form part of a practitioner's personal reflection when presented with new information to ensure subsequent decisions remain informed by evidence and support the design and delivery of effective interventions.

Applied Implications

The study has implications for applied sport psychology practice and translational research. Firstly, the limited publication of rigorous and informative research perceived by participants in this study must be addressed to ensure sport psychology practitioners are fully informed on how interventions are implemented and the mechanisms through which they enhance performance. Journal publication requirements ask for more transparency regarding practical relevance, for example authors are required to include applied implications for submissions to the Journal of Applied Sport Psychology (AASP, n.d.). However, Journal editors should continue to encourage the use of supplementary materials to provide detailed instructions of how interventions are implemented, in a given context, to support effective

translation into applied practice. The findings of this study also present a decision-making model that any practitioner can use to reflect on and develop their own evidence-informed decision-making processes. Specifically for early career practitioners that may not yet feel confident or competent in designing bespoke interventions, following the processes outlined in this study may support them in making more informed decisions that lead to better performance outcomes for their athletes. Experienced sport psychology practitioners may reflect on the model as a vehicle for continued professional development by challenging entrenched thought processes to ensure decisions are based on the best available evidence. Professional educators could integrate evidence-informed decision-making concepts to develop the skills and competencies trainee sport psychology practitioners need to support an evidence-informed approach to applied practice.

Limitations and Future Directions

This study provided a cross section of UK-based sport psychology practitioners that work across many different settings, but it is only based on the perceptions of those involved in the study, and not on sport psychology professionals who are not psychologists, or those that work outside the UK. To allow for conceptual transference, the use of theoretical sampling method enabled recruitment of participants that represented many different areas of practice (e.g., experienced and early career; private practitioner and working within an organisation; type of sport working in). This permitted diverse perspectives that supports the application of results to a broad range of practitioners that adhere to evidence-informed principles of practice and work in a variety of settings (Sharp et al., 2015). However, in interpreting the findings, the reader must consider their own context and the legislative, professional, and ethical boundaries they must adhere to. This study has contributed to the conceptual understanding of decision-making processes in intervention design, but to support training and development of practitioner decision-making capabilities, future research should

focus on the career experiences of sport psychology practitioners. Considering their practice and training experiences may shed light on how specific events throughout their career shapes the development of decision-making processes. For example, using research evidence was presented as a key theme in this study but only two (BPS QSEP Stage 2 and Professional Doctorate programmes) out of the three training routes for Sport and Exercise Psychology within the UK have a mandatory component for conducting research.

Conclusion

This study explored the evidence-informed decision-making processes involved in designing psychological interventions for performance enhancement. Our findings illustrate the importance of integrating a range of evidence sources to ensure the intervention suits the needs of the athlete, works pragmatically within the applied context, and has the desired effect on the end goal. This study presents a decision-making model that sport psychology practitioners can use to integrate both propositional knowledge and intuitive processes, regardless of working environment and level of expertise. Understanding the decision-making processes involved in applied practice can support training and development opportunities in improving sport psychology practitioners' decision-making capabilities and contribute to effective service delivery.

Data Availability Statement

The anonymised data that support the findings of this study are available on request from the corresponding author, [MW]. The data are not publicly available due to containing information that may comprise the participants' privacy.

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Figure 1

Model of Evidence-Informed Decision-Making when Designing Interventions for Performance Enhancement