

Exploring Evidence-Informed Decision-Making in Applied Sport Psychology

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Abstract

Adopting a pragmatic approach to research, four studies were conducted to investigate how evidence-informed decisions are made in applied practice and provide training guidance for developing evidence-informed decision-making competence in trainee Sport and Exercise Psychologists. The first study found that although attitudes towards research utilisation were generally positive, differences existed between trainee and qualified Sport and Exercise Psychologists regarding research utilisation skills and behaviour. Building on the recognition that evidence in applied psychology must include more than just research (Drapeau & Hunsley, 2014), study two explored the processes involved in making evidence-informed decisions when designing a psychological intervention for performance enhancement. The study demonstrated the nuanced 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 proposed intervention goal. Study three then examined the career experiences of Sport and Exercise Psychologists to identify the factors that influenced the construction of these decision-making processes. This study found that supervision during training was a strongly influential factor in developing evidence-informed decision-making processes. Finally, study four interviewed Sport and Exercise Psychology trainees and training supervisors to establish the key evidence-informed decision-making competencies for trainees to develop and how supervision can support their development. The findings illustrated the essential role of one-to-one, group, and peer supervision in providing a safe learning environment for trainees to build awareness of how they make evidence-informed decisions through discussion, reflection, and practice. Future research can investigate constructivist and collaborative learning strategies to support the growth of evidence-informed decision-making processes and competence in the training and development of Sport and Exercise Psychologists.

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Chapter 1: Introduction

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1.1 Introducing Evidence-Informed Decision-Making

From its initial conceptualisation, the discipline of Sport and Exercise Psychology has involved an interaction between research and practice; Coleman Griffith, a significant pioneer of the profession, outlined three objectives of sport psychology in his 1925 article titled “Psychology and Its Relation to Athletic Competition”. These objectives were to:

1. Systematically record observations of outstanding coaches to understand effective use of psychological principles that can then be taught to novice coaches
2. Apply information in the published literature to sport
3. Use scientific method and experimental studies to discover new knowledge to aid the practitioner in the field.

Through these objectives, Coleman Griffith established a frontier for both knowledge development and knowledge application within the discipline. This emphasis on research and practice continued to grow with the professionalisation of the discipline. In 1985, the Association for the Advancement of Applied Sport psychology (AAASP) was formed and recognised as an organisation dedicated to both the development of research, and also the enhancement of applied practice (Vealey, 2006). This introduced changes to the regulation of both the research and practice strands of sport psychology. Firstly, the establishment of new applied journals helped to assess the adequacy of scientific evidence in justifying the use of psychological interventions in sport. Secondly, the creation of the “certified consultant” designation in Sport and Exercise Psychology provided ethical guidelines for professionals to practice within (Silva, 1989).

Today, we see that research and practice remain fundamental components of the applied profession (Smith & Keegan, 2022). This is often referred to the evidence-based

practice approach to applied practice and is the notion that applied practices should be based on scientific evidence (Winter & Collins, 2015a). It was first introduced into medicine to improve the decision-making capabilities of medical professionals in informing actions that have desired impact (Kohatsu et al., 2004). Within psychology, evidence-based practice has been defined as the application of theories, constructs, research findings, and intervention techniques across psychological domains (Smith & Smoll, 2011). Its objective is to ensure researchers and practitioners maintain a connection between the research and practice domains, through which they inform and influence each other to achieve better athlete outcomes (Winter & Collins, 2015a). To promote evidence-based practice, professional organisations such as the American Association of Applied Sport Psychology and the Division of Sport and Exercise Psychology in the British Psychological Society have established codes of ethics that detail the professional standards and ethical responsibilities all members are expected to abide by; these documents outline that researchers have a professional responsibility to use valid and reliable methods to produce scientific knowledge that is based on research and advances the applied field. Furthermore, the codes state that practitioners have an ethical duty to their athletes to employ evidence-based interventions that improve performance and/ or athlete well-being (Code of Ethics and Conduct | BPS, n.d.; ETHICS CODE: AASP Ethical Principles and Standards | AASP, n.d.).

The evidence-based practice approach provides practitioners with an extensive knowledge base for applied practice and is supported by the many systematic reviews that have found psychological skills interventions demonstrate experimental efficacy for improving performance (e.g., Brown & Fletcher, 2017; Greenspan & Feltz, 1989; Martin et al., 2005; Vealey, 1994; Weinberg & Comar, 1994). However, it must be acknowledged that there are many complexities within applied practice that often make it difficult to transfer evidence-based knowledge to practice, such as the often daunting wealth of literature to

consider within the evidence-based practice approach (Holt et al., 2017). For example, a practitioner working with an athlete experiencing pre-performance anxiety could make a choice between implementing an imagery intervention or a self-talk intervention. Both imagery and self-talk have received considerable attention within the applied sport psychology literature base (e.g., Simonsmeier et al., 2021; Tod et al., 2011). Through the evidence-based practice approach, a practitioner could make their choice based on their knowledge of what is most effective. However, as applied sport psychology involves engagement with individuals, practice decisions can be influenced by a multitude of factors other than research. These influences include: the issues and goals of the athlete, the athlete's historical, social, and cultural background, the sporting context the athlete competes in, and the philosophical position and skill of the practitioner (Keegan, 2015). Understanding how to make decisions that are based on the best available evidence and also consider contextual influences can be a challenge for applied practitioners adopting an evidence-based practice approach.

With the challenges of adhering to evidence-based practice principles, there has been much debate within the literature as to how effectively evidence can inform practice. Although intervention research provides support for the experimental efficacy of psychological interventions, the interventions literature has been criticised as lacking demonstrations of real-world effectiveness due to methodological concerns in conducting rigorous and robust intervention studies (Gould, 2016). These include, but are not limited to, the use of non-athletic samples, contrived or laboratory settings, and testing mental skills practice rather than directly measuring the effect on competitive performance (Bishop, 2008). This lack of transferability to real world settings has led to practitioners reporting dissatisfaction with the literature and therefore stating they make limited use of it in their practice (Winter & Collins, 2015a). When we reconsider that applied sport psychology was

founded on an interaction between research and practice, the research and practice branches of the profession must continue to influence and inform one another to achieve improved athletic performance.

Other evidence-based professions have challenged the notion of evidence-based practice. For example, Nevo and Slonim-Nevo (2011) suggest social work interventions should moved away from the idea that decisions are to be based on evidence, and towards the construction of evidence-informed solutions; rather than implementing concrete research evidence-based interventions, practitioners follow decision-making processes that are informed by the best available evidence to construct appropriate interventions. In nursing, the nature of evidence to be applied to practice decisions has been contested (Rycroft-Malone et al., 2004). If we consider the following definition of evidence-informed decision-making in public health practice, Belita et al. (2022) states that it “involves the identification, appraisal, and application of evidence related to research, along with professional expertise, local context, and client and community characteristics, needs, and preferences”. In contrast to evidence-based practice, intervention decisions made through evidence-informed decision-making are enriched by research but are not limited to it (Epstein, 2009). Evidence-informed decision-making is a creative and flexible process that continually meets the changing needs of the client and the context (Kumah et al., 2019).

The works in this thesis explore the concept of evidence-informed decision-making within the applied sport psychology context. In the literature to date, there have been limited investigations into the processes involved in making evidence-informed decisions during sport psychology service delivery (Smith & Keegan, 2022). This line of inquiry has the potential to provide a more systematic approach to managing competing evidence sources when constructing an intervention that addresses the needs of the athlete, works pragmatically within the applied context, and improves athlete performance outcomes. It is

important to recognise that evidence-informed decision-making models are often more difficult to conceptualise in the social and applied sciences fields because of the context-dependent nature of social science data (Hallstrom & Hvenegaard, 2021). Therefore, evidence-informed decision-making literature from medicine and public health will support the research process in this thesis, but the context of applied sport psychology will remain the prioritised consideration throughout.

1.2 The Purpose of the Thesis

Reflecting this contextual introduction and the related concerns around the role of evidence in practice, the purpose of this thesis was to explore the relationship between research and practice in applied sport psychology by focusing on evidence-informed decision-making. This is represented by an overall aim and divided into distinct but interrelated objectives for all four studies within this thesis.

Aim:

To explore the process of evidence-informed decision-making in applied sport psychology and subsequently understand how training can facilitate the development of evidence-informed decision-making competence.

Objectives:

1. To investigate qualified and trainee Sport and Exercise Psychologists' attitudes, skills, and behaviours towards research utilisation in applied sport psychology
2. To explore the evidence-informed decision-making processes early career and experienced Sport and Exercise Psychologists follow when designing a performance enhancement intervention

3. To identify the career experiences of Sport and Exercise Psychologists that influence the development of evidence-informed decision-making processes for intervention design
4. To investigate the competencies needed for effective evidence-informed decision-making and explore how supervision during training influences trainees' development of evidence-informed decision-making competence for intervention design

1.3 The Structure of the Thesis

Following the introduction, this thesis is comprised of a literature review, a methodology chapter, four empirical studies and a general discussion. The literature review provides a rationale for the use of evidence-informed decisions within applied sport psychology by exploring the nature of evidence and the advantages this approach can have for improving performance outcomes.

Chapter 3 provides a justification for the methodological decisions that drove data collection for the programme of research within this thesis. It describes why and how the pragmatic philosophical approach was adopted as the overall methodological approach for the thesis and explores the philosophical assumptions underpinning each individual study.

Chapter 4 (study 1) introduces the first study within the thesis that attempts to address the first objective outlined in the introduction. The initial study surveyed trainee and qualified Sport and Exercise Psychologists to investigate their evidence-informed decision-making processes, and their attitudes, skills, and behaviours towards research utilisation. It also highlights enablers and barriers to the application of research to the applied practice domain.

Objective 2 of the thesis is addressed in chapter 5 (study 2) and is the first of three qualitative research studies presented in the programme of research. Study 2 involved interviews with early career and experienced Sport and Exercise Psychologists to explore the

social processes involved in making evidence-informed decisions when designing a psychological intervention for an athlete.

In chapter 6 (study 3), interpretive phenomenological analysis is used to investigate the third objective of the thesis. Re-analysis of data from study 2 provides a phenomenological understanding of how the career experiences of Sport and Exercise Psychologists influenced the construction of their evidence-informed decision-making processes.

The final objective of this thesis is then explored in chapter 7 (study 4). This final study involved interviews with trainee Sport and Exercise Psychologists and training supervisors, analysed through IPA. The aim was to understand the competencies trainees need to develop to support them in making evidence-informed decisions in practice, and the mechanisms through which supervision develops these competencies.

The thesis then concludes with a general discussion of the four studies to summarise the findings, outline the significance that findings contribute to the applied sport psychology literature, and propose applied recommendations and future research directions for the field.

Chapter 2: Literature Review

Chapter 2: Literature Review

2.1 Overview of Aims

A literature review provides a basis for consolidating research and demonstrates clear indications of current progress, limitations, and future directions of the research stream (Cronin et al., 2008); the initial aim of this literature review therefore was to gain an understanding of applied sport psychology, specifically the nature of its research and how applied sport psychology works in practice. Although this may appear to be a very general beginning for the literature review, it is important to explore the research and practice domains of applied sport psychology to comprehend how these domains work and subsequently explore what may be missing from current research and/or practice methods. As with many applied professions, research often guides the work of those practicing within the applied field. It is therefore the duty of research and the researcher to produce evidence that demonstrates impact within the applied setting to ensure practice remains grounded in theory and that clients receive the best support available throughout the profession's evolution (Martindale & Collins, 2013). The secondary aim of this literature review therefore was to understand the nuances of the relationship between research and practice in applied sport psychology, exploring how research is used in the applied context.

2.2 Introduction

Over the past 50 years, applied sport psychology has grown considerably; every year sport and exercise psychology researchers and practitioners are developing new and innovative techniques aimed at enhancing the performance of athletes (Beauchamp et al., 2012). This work has been supported through the professionalisation of applied sport psychology; the establishment of the Division of Sport and Exercise Psychology (DSEP) within the British Psychological Society (BPS) and the formation of the Association of

Applied Sport Psychology represent professional bodies that govern the ethical principles and standards of researching and practising within applied sport psychology (Sly et al., 2020). Moreover, many sport psychology journals, textbooks, and national and international conferences now exist to facilitate dissemination of academic findings and applied practice experiences to academia and the wider world (Winter & Collins, 2016). There has also been tremendous investment in the training and development of competent Sport and Exercise Psychologists that has contributed to the growing recognition of Sport and Exercise Psychologists as professionals in many countries around the world (Tod & Andersen, 2005).

Before diving into this review, it is important to establish what is meant by the profession of applied sport psychology. Academics that have previously tried to establish the history of the profession have often been challenged by the overrepresentation of literature that exemplifies the academic discipline, rather than the applied practice (Aoyagi & Portenga, 2010). This may stem from the fact that the professionals that conduct research and teach applied sport psychology within academic institutions may not necessarily practice sport psychology. Over the last 20 years, researchers have tried to examine and critique the development of a true profession in applied sport psychology (Anderson & Lavallee, 2015; Aoyagi et al., 2012; Winter & Collins, 2016); discourse on this topic suggests that challenges to clarification of professional standards and competencies result from failure to appropriately answer the question of “what does the *practice and profession* of sport psychology entail?” (Portenga et al., 2017, p.2). By establishing a definition of what applied sport psychology actually is will provide clarity on the distinctive core identity of applied sport psychology that separates it from other similar professions. Furthermore, understanding what Sport and Exercise Psychologists actually do will support professional training by delineating the competencies required for effective sport psychology practice.

If we first consider sport psychology, attempts to define it have predominately focused on the academic discipline. For example, the European Federation of Sport Psychology (FEPSAC) stated that “sport psychology is the study of psychological basis, processes and effects of sport” (Jarvis, 2006, p.1; Position Statement of FEPSAC: I. Definition of Sport Psychology., 1996). However, such a broad and vague definition that primarily represents the research of Sport and Exercise Psychologists are less relevant and potentially misleading when applied to the practice of sport psychology (Winter & Collins, 2016). In an attempt to integrate the research discipline and applied practice of sport psychology, the term applied sport psychology was introduced and is recognised as having gained professional status (Tod & Andersen, 2005). Sport psychology has experienced much transformation since its early conceptualisation by leading pioneers such as Coleman Griffith, the first known sport psychology practitioner (Vealey, 2006). In the 1920s, Griffith regarded his work as unique to other psychological professions because he focused on the psychological factors related to athletic performance. Although his work would not be expanded upon until the 1960s, the focus of sport psychology began to expand to addressing athletes’ “psychological problems” (Murphy, 1995, p.3), in addition to performance and enjoyment in sport. Current definitions of applied sport psychology encompass the use of psychological treatment to facilitate improved performance, enjoyment, and well-being. For example, the current definition of applied sport psychology from AASP is (AASP, n.d., p.1):

“Applied sport and exercise psychology involves extending theory and research into the field to educate coaches, athletes, parents, exercisers, fitness professionals, and athletic trainers about the psychological aspects of their sport or activity. A primary goal of professionals in applied sport and exercise psychology is to facilitate optimal involvement, performance, and enjoyment in sport and exercise.”

The definition proposed by AASP is useful in that it provides a wide picture of what the profession entails. However, sport psychology and exercise psychology represent interrelated but distinct domains of applied psychology; the former focuses on competitive

sport and the latter deals with the psychological effects of physical exercise (Portenga et al., 2017). In trying to encompass both sport and exercise psychology into one definition, it sacrifices accuracy and clarity. Furthermore, researchers have argued that performance psychology should be adopted as the umbrella term of the profession because current principles of the profession can also be applied to performing arts, business, medicine, and high risk-occupations (e.g., Aoyagi et al., 2012; Hays, 2012; Moyle, 2012). Based on the recognition that sport is a domain within performance psychology, Portenga et al. (2017) provided the following definition of applied sport psychology that presents what the profession is and what Sport and Exercise Psychologists do:

“The application of psychological principles of human performance in helping athletes consistently perform in the upper range of their capabilities and more thoroughly enjoy the sport performance process. Sport psychology practitioners are uniquely trained and specialized to engage in a broad range of activities including the identification, development, and execution of the mental and emotional knowledge, skills, and abilities required for excellence in athletic domains; the understanding, assessment, and managing of the psychological, cognitive, emotional, behavioural, and psychophysiological inhibitors of consistent, excellent performance; and the improvement of athletic contexts to facilitate more efficient development, consistent execution, and positive experiences in athletes.” (p.6)

To provide a homogenous perspective on the nature and development of the profession, this literature review, and to a further extent this thesis, will focus on the sport context the profession was first situated within.

One common characteristic across all established definitions of the profession is that the act of applying sport psychology involves the application of theory and research to practice contexts. This is mirrored by Kremer and Moran (2008) who described applied sport psychology as the “the application of psychological theory and methods to the understanding and enhancement of athletic performance” (p.1). The notion that practice is informed by theoretical and empirical evidence represents a requirement for scientific knowledge to be applied in a way that respects the consumer, adheres to ethical standard, and acknowledges

the limits to current technique (Gardner, 1991; Winter & Collins, 2016). As such, the roles and responsibilities of Sport and Exercise Psychologists have been outlined by three connected focuses: (1) research into the theoretical and applied aspects of sport psychology (2) educating athletes, students, and other individuals about sport psychology, and (3) assessing and applying psychological interventions to sporting contexts.

Winter and Collins (2015a) suggest that the relationship between theory, research, and the application of knowledge is an example of translational research that follows a working model of theory-research-practice to enhance athletic performance. This idea is recognised as the evidence-based practice approach and has gained prominence in the applied professions (e.g., Camargo et al., 2018; Chambless & Ollendick, 2001; Gambrill, 2013). Specifically within applied sport psychology, the importance of basing practice on empirical evidence has been a prominent component of the profession's development. It emphasises a focus on the recording, analysis, interpretation, critical evaluation, and application of research-based knowledge (Carlstedt, 2012). However, when you compare the professional research dedicated to uncovering the skills and knowledge required for effective evidence-based practice, it has received far less attention within applied sport psychology than other neighbouring helping professions. Growing the literature base on the evidence-based practice approach to applied sport psychology may support Sport and Exercise Psychologists in understanding how to use the best available evidence to facilitate improvements in athletic performance. To achieve this, it is first important to gain an understanding of the development of the evidence-based practice approach and learn how extant literature within neighbouring applied fields can advance the profession of applied sport psychology.

2.3 Evidence-Based Practice

Evidence-based practice is defined as “the conscientious, explicit, and judicious use of current evidence in making decisions about care of individuals” (Sackett, 1997, p.71) .

When applied to the helping professions, this definition has been adapted to fit their individual contextual setting. For example, the Canadian Psychological Association tailored the definition to “evidence-based practice of psychological treatments involves the conscientious, explicit, and judicious use of the best available research evidence to inform each stage of clinical decision-making and service-delivery” (Dozois et al., 2014, p.155).

Despite differences in context of delivery, evidence-based practice within all treatment-based professions involves the diligent, direct, and appropriate application of research evidence to the practice context. Since the original conceptualisation of evidence-based practice in the 1960s, many authors have attempted to construct evidence-based practice approaches to the medical professionals (e.g., DiCenso et al., 2005; Dufault, 2004; Melnyk et al., 2010). The approach for evidence-based practice in nursing established by DiCenso et al. (2005) outlined five-steps that provided methodological guidelines for applying research to clinical practice. This approach involves formulating and searching for research evidence, appraising findings, applying findings, and evaluating outcome. However, this approach has received criticism for potentially providing medical students with misleading education on how this approach works in practice (Nevo & Slonim-Nevo, 2011). For example, formulating questions should be based on the client’s question, and not on empirically favoured questions. Melnyk et al. (2010) later suggested a seven-step model that included inquiry, questioning, finding the best evidence, critically appraising evidence, integrating evidence with expertise, evaluate outcome, and disseminate findings. In contrast to the DiCenso et al. (2005) model, this model takes into account the population sample and not just the research evidence.

There are many benefits to adopting the seven-step process when making evidence-based decisions for practice in medical professions. Findings suggest that systematic

approaches improve patient outcomes, lower healthcare costs, and promote quality and efficacy of interventions (Gillam & Gillam, 2008). Despite these advantages, the seven-step process has also received criticism regarding its effectiveness in ensuring practical decisions are based on the best available evidence. Rubin (2007) highlighted key disadvantages to using evidence-based practice. Firstly, they suggested that the evidence base was too mechanical, inundated with methodological flaws, and did not consider real-world application. Secondly, they reported that the literature did not account for the unique characteristics of both clients and practitioners working in practice. Thirdly, the literature was too difficult to implement due to resource limitations such as time, training, and supervision. In line with criticisms from Rubin (2007), this literature review focuses on three questions to consider the effectiveness of the evidence-based practice approach: These are:

1. Does the evidence-base demonstrate experimental efficacy and real-world effectiveness?
2. What is the nature of evidence in evidence-based practice?
3. Do professionals have the knowledge and skill required for evidence-based practice?

The next section of this chapter considers each of these questions in turn. Understanding the facilitators and barriers to the evidence-based practice approach within other applied professions may support the development of evidence-based practice for applied sport psychology practice.

2.3.1 Experimental Efficacy and Real-World Effectiveness

As part of the model for evidence-based practice in nursing, DiCenso et al. (2005) suggested that the purpose of research journals is to use predefined criteria to identify the best research on the “meaning, cause, course, assessment, prevention, treatment, or economics of

health problems managed by nurses and on quality assurance” (p.6). Randomised controlled trials are the most common research design for demonstrating treatment effectiveness within the evidence based of medical applied professions. They are so often implemented in public health because of their statistical reliability, capability to minimise confounding factors and biases, and the opportunity they provide to compare different treatment effects (Hariton & Locascio, 2018). As the wealth of evidence-based health care research has increased, researchers have conducted systematic reviews to summarise the findings of all methodologically sound experimental interventions that address the same research question (Page et al., 2021). These reviews have helped to assess both the experimental efficacy and real-world effectiveness of treatment-based interventions for improving patient outcomes. One notable study includes Jepson et al. (2010) review of reviews on the effectiveness of interventions to change health behaviours. For the effectiveness of interventions on changing physical activity engagement, most interventions reported moderate effectiveness of improving physical activity within the short term, but these effects were not sustained over a long period of time. However, effectiveness findings could only be used with caution; the reliance on motivated volunteers resulted in a sample that potentially did not reflect the reluctant behaviours nurses face when implementing behaviour change interventions to improve chronic illness. Furthermore, real life practice may involve the combination of interventions, yet comprehensive comparisons between interventions (i.e., singular interventions and multi-modal) were not made. Although there is support that the medical evidence-base provides support for intervention design, exemplary findings from Jepson et al. (2010) suggest generalisations can only be offered tentatively due to methodological barriers.

2.3.2 The Nature of Evidence in Evidence-Based Practice

The traditional models of evidence-based practice (e.g., DiCenso et al., 2005; Dufault, 2004; Melnyk et al., 2010) rely primarily, and in some instances completely, on scientifically generated evidence. Moreover, the research evidence used within this approach are often used within a hierarchical manner. For example, systematic reviews and randomised controlled trials are perceived as higher than qualitative and observational studies (Nevo & Slonim-Nevo, 2011). Although this may provide medical practitioners with the most accurate, valid, and reliable sources of evidence to base decisions on, they are found to be the hardest to interpret as they do not allow for flexibility when applying to clinical contexts. To address these challenges, researchers have debated the relative merit of drawing on non-propositional knowledge to support evidence-based decisions, in addition to scientifically generated research evidence.

Non-propositional knowledge has previously been described as ‘practical knowledge’, ‘professional craft knowledge’ or ‘practical know-how’ and is often experiential, tacit, and intuitive in nature (Titchen, 1998). In addition to medical professionals relying on their own experience within non-propositional knowledge, they also draw upon the expertise of others to inform their practice (Thompson et al., 2001), which could itself be described as research-based. Despite the importance of non-propositional knowledge, there remains an underlying assumption within evidence-based practices that such sources of knowledge are subject to bias and thus lack credibility (Green, 2008). In relation to clinical disciplines however, Rycroft-Malone et al. (2004) proposes that the delivery of client-centred, evidence-based healthcare requires professional craft knowledge and reasoning to integrate the different types of knowledge within the contextual boundaries of the clinical environment. To achieve this, it is vital that experiential and tacit knowledge are made explicit for findings to be disseminated, critiqued, developed, and appropriately applied to practice. (Stetler et al. 1998)

referred to this as affirmed experience, through which the construction of an account is submitted for peer-reviewed verification or modification.

2.3.3 Attitudes, Knowledge, and Skills for Evidence-Based Practice

To ensure medical professionals can effectively use the evidence-based practice approach, they must develop the knowledge and skills associated with evidence-based practice. Many barriers have been identified that limit the knowledge and skill development of evidence-based practice for nurses, examples include: lack of time, misconceptions about evidence-based practice, lack of access to resources, poor understanding of statistics and critical appraisal, and inconsistent basic knowledge and experience with research (Estabrooks et al., 2003; Fink et al., 2005; Kajermo et al., 2008). In contrast, academic degree, education, availability of relevant research, time, and positive attitudes have all been shown to positively influence a nurse's intention to use research (Kajermo et al., 2008). Furthermore, students and professionals have reported difficulties trying to read and interpret research as they often find the structure and language of publications complicated and inaccessible (Heikkilä et al., 2019). Research findings need to be communicated in clear and concise ways for medical professionals and students to exercise their critical thinking skills. A relationship has also been demonstrated between knowledge and practice; positive attitudes towards research facilitated by educational interventions can be effective methods for improving the knowledge and skill of medical professionals (Brown et al., 2009).

The evidence-based practice approach has the potential to support medical professionals in providing better services and improved patient outcomes by ensuring decisions are based on the best available evidence. However, this section of the chapter has highlighted the three main barriers to achieving this, namely: a lack of real world effectiveness, contention regarding the nature of evidence in evidence-based practice, and

lack of the knowledge and skills in implementing the evidence-based approaches to practice. To consider the usefulness of the evidence-based practice approach in supporting performance enhancement of athletes, the next section considers current literature on the evidence-based practice approach within applied sport psychology and evaluates whether the three most common barriers to its implementation are causing potential issues for its application by Sport and Exercise Psychologists.

2.4 Evidence-Based Practice for Applied Sport Psychology

Rigorous, systematic, and empirical research is recognised as the essential catalyst for the development of any applied profession (Kazdin, 2006). Simply put, evidence-based practice within applied sport psychology involves Sport and Exercise Psychologists searching, reading, interpreting, and critically evaluating professional literature that can be effectively applied to the practice context (Moore, 2003). To establish an evidence-base for psychological treatments that improve performance, researchers conduct rigorous and iterative processes of conceptualisation, development, and testing in experimental and real-world settings. This promotes the use of ‘empirically validated’ assessment and intervention to drive the practice of applied sport psychology (Ivarsson & Andersen, 2016). However, Carlstedt (2012) has suggested that the reality is that limited practitioners truly adhere to scientifically based and validated psychological interventions for practical application. These individuals also rarely engage in producing outcome studies that assess the efficacy of the interventions they are applying. Within applied practice, it can be challenging to manage the rigorous demands of intervention protocol and assessment due to practical constraints, financial barriers, and trying to meet methodological requirements for implementing effective psychological interventions with athletes (Stambulova & Johnson, 2010). Furthermore, these barriers inhibit researchers from generalising findings and protocols to real world practice.

For example, without relevant participants in sufficient numbers, it can be difficult to replicate intervention methodologies and demonstrate their efficacy and effectiveness.

2.4.1 Experimental Efficacy and Real-World Effectiveness of Performance Enhancement Interventions

Across the development of the applied sport psychology profession, considerable effort has been spent on the evidence-based practice approach, this is most evident through the development of empirically investigations into psychological skills interventions within the literature (Greenspan & Feltz, 1989; Vealey, 1994); this area is specifically focused on developing effective interventions for practitioners to base interventions on evidence that works and provides practitioners with the resources necessary in ensuring clients receive consultation based on the best possible evidence (Ivarsson & Andersen, 2016). While Cropley et al. (2010) suggested that engaging in evidence-based practice should be placed at the forefront of issues regarding the provision of applied sport psychology, there continues to be ongoing debate regarding how much evidence can and should guide the applied profession due to difficulties faced in its application (Drapeau & Hunsley, 2014a). For example, delivering sport psychology services based on the best available evidence can be difficult when considering the individual needs of the client (Hill, 1992). Martindale and Collins (2013) stated that the client's needs are the most significant contributor to the practitioner's construction of the goal for support. Congruently, the move towards holistic and humanistic approaches to consultation emphasises the central role the client plays in the client-practitioner working alliance (Friesen & Orlick, 2010). Whilst no one would argue against the delivery of client-centred consultation based on the best available evidence, one has to consider whether the best possible evidence currently exists within the applied sport psychology literature to facilitate attainment of this goal. To assess whether Sport and

Exercise Psychologists have sufficient evidence to achieve evidence-based practice, systematic reviews are commonly implemented to assess the effectiveness of psychological skills interventions on enhancing performance ((Ivarsson & Andersen, 2016).

Psychological skills are self-regulation strategies that are utilised to create or enhance psychological states such as attentional focus, confidence, and optimal arousal to achieve optimal performance in competition, physical skill development in practice or the improvement of mental and physical wellbeing (Gardner & Moore, 2006). Two terms that have proved useful in the validation of mental skills research are efficacy and effectiveness (Faulkner et al., 2006). In the context of applied sport psychology, efficacy describes whether an intervention works in a controlled, experimental setting and effectiveness refers to whether an intervention works in a real world, applied practice setting (Hunsley & Lee, 2007). Much of the psychological skills intervention literature has shown experimental demonstrations of efficacy that assess the outcome of interventions on athletic performance (Weinberg & Comar, 1994). However, these are often demonstrated on students instead of athletes, conducted in contrived settings or laboratories and show improvement on motor performance and mental practice, thus lacking experimental demonstrations of effectiveness in a real-world, applied context (Martin et al., 2005). Problems such as these often make it difficult for practitioners to draw conclusions about whether treatments are effective or not.

Throughout the development of the Applied Sport Psychology profession, there have been multiple systematic attempts at evaluating the effectiveness of psychological interventions in achieving performance enhancement. Greenspan and Feltz (1989) were the first academics to publish a review that considered the effectiveness of psychological interventions on improving the performance of athletes in competitive situations. Similar inclusion criteria were later used by Vealey (1994) and Weinberg and Comar (1994) to

follow up on the effectiveness of interventions in competitive sport settings. Subsequent intervention reviews have focused on interventions assessed through single-subject, experimental, and single-case designs, such as Martin et al. (2005). As the number of intervention studies have continued to grow, reviews have been published that focus on specific psychological interventions, such as self-talk (e.g., Tod et al., 2011) and mental imagery (e.g., Simonsmeier et al., 2021). The most recent reviews have broadened their focus by evaluating the effectiveness of psychological, social, and psychosocial interventions, rather than just mental skill techniques (e.g., Brown & Fletcher, 2017; Lochbaum et al., 2022). These later reviews of the applied sport psychology evidence base have contributed to the continual advancement of the field by applying other systematic designs, such as meta-analyses, to evaluate the effectiveness of applied sport psychology interventions. The following section focuses on the overarching reviews of the effectiveness of applied sport psychology interventions in enhancing athletic performance over the last 30 years. The aim of this section was to investigate whether Sport and Exercise Psychologists have sufficient evidence to base decisions on when designing interventions for performance enhancement.

Table 2.1 Summary of findings from Greenspan and Feltz (1989) systematic review of psychological skills interventions literature

Author(s) (Yr)	Interventions	Participant information	Type of Sport/ skill	Type of Intervention	Design - Control Used?	Effective-ness of interventions compared?	Results	Future Directions
Greenspan & Feltz (1989)	19 Published papers	3 National / Elite	83% individual sport or	Educational (74%)	39% Used a form of control group	22% of studies compared	Positive results in all 11 restructuring interventions (remedial)	Research with elite, young and minority athletes
	23 Interventions	2 Youth	individual skill within a team sport	Remedial (26%)	26% Single Participant Design	3/5 studies demonstrated greater effects using a combination of strategies	Positive results in 7 relaxation- based interventions Educational)	Consider unpublished studies to avoid misrepresentation and/ or overestimation
	Relaxation training 9	16 Male 6 Female						Single case studies do not infer causality, more single-subject design
	Behavioural techniques 3	1 study used males and females in the same design					Causality inferred in 11/23 interventions (8 of which were shown to enhance performance)	Compare interventions
	Cognitive Restructuring interventions 11	Majority of the studies used 10 or less collegiate level athletes					No studies used a follow-up procedure	Intervention manuals available Assess nontargeted performance components (e.g. cognitive changes)
								Increase use of follow-up assessment

Table 2.2 Summary of findings from Vealey (1994) systematic review of knowledge development and implementation of sport psychology

Author(s) (Yr)	Interventions	Participant information	Type of Sport/ skill	Type of Intervention	Design - Control Used?	Effective-ness of interventions compared?	Results	Future Directions
Vealey (1994)	12 Studies	5 college athletes	75% of the inter- ventions were conducted with individual sport athletes	Remedial (75%) (intervention was individualise d and based on the needs of the athlete)	8 used a single subject design	1 study compared the efficacy of different treatments	9 interventions effective in enhancing performance (causality inferred in 7/9)	Better integration of science and practice
	12 interventions	3 elite athletes						Accounting for individual and situational moderators
	Cognitive 7	3 youth athletes			4 used group design with treatment and control groups		Positive performance in: 5/7 cognitive interventions	Appropriate training modules
	Cognitive- behavioural 3	1 club level athletes		Educational (25%)				
	Behavioural 2				10 employed controls		2/3 cognitive- behavioural interventions	
	67% of interventions used multi- modal interventions				2 case studies		Both behavioural interventions	
							3 studies used a follow-up procedure (examined maintenance of treatment effect over time)	

Table 2.3 Summary of findings from Weinberg and Comar (1994) systematic review of effectiveness of psychological interventions in competitive sport

Author(s) (Yr)	Interventions	Participant information	Type of Sport/ skill	Type of Intervention	Design - Control Used?	Effective-ness of interventions compared?	Results	Future Directions
Weinberg & Cromar (1994)	10 studies	4 used elite athletes	8 individual sports	5 remedial	6 used a group design	No studies reportedly compared the effectiveness of different interventions	90% reported significant improvements in performance	Effective intervention:
	4 Cognitive (developing or restructuring thoughts to enhance performance)	2 used college athletes	2 team sports (based on tournament/ season perform- ance)	5 educational	4 used single subject (intra- individual control) or case study design		Causality inferred in 6/9 studies	Individualised, systematic, over time, using a variety of techniques
	6 Cognitive behavioural (cognitive restructuring and behavioural plan or routine that was systematically practised)	4 used youth athletes of differing abilities			6 studies employed a control group			Issues with balancing external (generalisability) and internal validity (cause and effect)
	Combination of techniques (8/10 employed different interventions)							A lack of-Manipulation checks Publication bias Follow-up assessment Control groups Ethnic and cultural variation

Table 2.4 Summary of findings from Martin et al. (2005) systematic review of experimental studies of psychological interventions with athletes in competitions

Author(s) (Yr)	Interventions	Participant informatio n	Type of Sport/ skill	Type of Intervention	Design - Control Used?	Effective-ness of interventions compared?	Results	Future Directions
Martin, Vause & Schwartz man (2005)	1 imagery	10 Male	4 individual	Not directly stated	8 group design	2 studies compared efficacy of different types of interventions	14 interventions with positive effects	Generalisability offered with caution
	5 imagery	5 Female	sports		7 single subject design		9 with substantial impact	Intervention comparisons needed
	relaxation & self- instruction	8 College athletes	8 individual skill					
	1 imagery with observation							
	1 relaxation	2 Youth athletes	3 team behaviours within team sports		6 studies employe d a control group		Single subject design: 5/7 sizeable improvements	Other sports, real athletes, real competition and elite and youth participants
	1 goal setting						4/7 all participants improved	No demonstrations of positive intervention effects on non-targeted behaviours
	2 goal setting & feedback	2 High School athletes	(4 studies met standards for					
	1 self-monitoring and instruction		interobserver variability					
	1 self- instructional attentional cue script	3 Adult (recreationa l competitors)	assessment of the performance measure)				Group studies: All 8 higher mean performance than control	No demonstrations of durable follow up effects of intervention
	1 biofeedback, imagery rehearsal, cognitive restructuring	No national, internationa l or professional level athletes	13 assessed performance only at competition				2 studies assessed follow up and to a limited degree	
	1 checklist, coach and delayed feedback							

Table 2.5 Summary of findings from Brown et al. (2017) meta-analysis of the effects of psychological and psychosocial interventions on sport performance

Author(s) (Yr)	Interventions (P psychological, PS psychosocial)	Participant information	Type of Sport/ skill	Type of Intervention	Design - Control Used?	Effective- ness of intervention s compared?	Results	Future Directions
Fletcher & Brown (2017)	2 Activation(P)	3 female	1 Archery	All remedial	34	Comparison made between type of intervention	8 included follow-up assessment.	Generalisability offered with caution
	5 Attentional focus (P)	17 male	2 Australian Football	46 psychological	Random- ised controlled trials			
	1 External statements (P)	12 both	1 Baseball					
	5 Feedback (P,PS)	3 not reported	5 Basketball and	12 psychosocial		Comparison made between single or multiple part intervention	Moderately positive effect on sport performance found.	Intervention comparisons needed
	3 Goalsetting (P)	15 local	wheelchair basketball		1 Crossover			Other sports, real athletes, real competition and elite and youth participants
	1 Hypnosis (P)	2 regional	2 Cycling	Interventions delivered as an individual level	individual random- ised controlled trial			
	5 Imagery (P)	6 national	1 Field hockey			Type of intervention influenced effect size. Psychosocial interventions more effective than psychological		No demonstrations of positive intervention effects on non-targeted behaviours
	2 Motivational video footage (PS)	1 inter- national	2 Golf					
	4 Multi- intervention (P,PS)	11 mixed	1 Gymnastics					
	8 Multimodal pre- performance routine (P)		1 Martial arts(karate)			No difference between single or multiple part intervention in the observed effects		No demonstrations of durable follow up effects of intervention
	9 Perceptual training (P,PS)		2 Shooting					
	1 Post-performance questioning		7 Soccer					
	5 Relaxation (P)		3 Tennis					
	6 Self-talk (P,PS)		2 Ten-pin bowling					
	1 Stress inoculation		3 Track and field					
			1 Volleyball					
			1 Weight- lifting					

Table 2.6 Summary of findings from Lochbaum et al. (2022) systematic review of meta-analyses that assess the effectiveness of interventions on performance

Author(s) (Yr)	Interventions	Participa nt informati on	Type of Sport/ skill	Type of Intervention	Design - Control Used?	Effective- ness of intervention s compared?	Results	Future Directions
Lochbaum et al. (2022)	30 meta-analyses	13 described participant s as athletes	Range of individual and team sports	All remedial and psychological	Experimental designs	Not directly stated	Moderate beneficial effect on performance for variables hypothesised to enhance performance	using multiple base line indicators of performance
	6 Mental practice/ imagery				Correlational designs (summarising effects of psychological construct on performance)			measure effectiveness on elite athletes
	4 anxiety							
	3 confidence							
	3 cohesion	27 mix of athletes (including: elite, recreation						provide more detail when reporting studies to explain how the effect on performance was achieved through the intervention mechanism.
	3 goal orientation	al, college, children and					Small negative effect on performance for variables hypothesised to be detrimental to performance	
	3 mood	adolescent s, adult exercisers)						
	1 emotional intelligence							
	1 goal setting							
	1 interventions							
	1 mindfulness							
	1 music							
	1 neurofeedback training							
	1 perfectionism							
	1 pressure training							
1 quiet eye training								
1 self-talk								

Greenspan and Feltz were the first researchers to review the literature base on participants and their performance in competitive situations. Description of the types of interventions included in the review can be found in Table 2.1. They agreed with Dishman that without knowledge on the effectiveness of an intervention in competition, “it is not clear to what extent contemporary sport psychology possesses a clearly defined and reliable technology for interventions in applied settings” (1983, p. 127). Through their systematic review, Greenspan and Feltz (1989) showed that interventions used to enhance the performance of athletes in competitive situations were associated with improvements; causality of 11 out of 23 interventions were inferred with eight indicating performance enhancement, this went as far back as including interventions on downhill skiers (Suinn, 1972). Remedial cognitive restructuring interventions and educational relaxation-based interventions were the most effective with positive findings in eleven and seven interventions respectively. However, Greenspan and Feltz acknowledged numerous restrictions and limitations that may limit the application of findings; they expressed that the low number of published literature at the time that fit the inclusion criteria for their review may have misrepresented, or overestimated, the effectiveness of psychological interventions with athletes. Specifically, they recommended that more research on elite, youth and minority athletes was required to assess the effects of interventions on specifically those under researched populations. The authors also recommended that the use of single subject designs needed to be better implemented, different psychological skill interventions needed to be compared against each other, future research could focus on non-targeted performance assessments (e.g. cognitive changes), and the use of follow up assessments was needed to build an accurate knowledge of immediate and long term effects of interventions on athletes.

Vealey (1994) recognised the continued need for a review of the effectiveness of the psychological skills intervention literature and therefore reviewed the then 8-years-old ‘The

Sport Psychologist' Journal. Description of the types of interventions included in the review can be found in Table 2.2. This is an applied practice journal dedicated to disseminating research findings in sport and exercise psychology. Interestingly, cognitive-behavioural interventions were the most effective. Nine out of the eleven studies significantly enhanced performance, however causality could only be inferred in seven out of the nine. Positive performance effects were found in five of seven cognitive interventions, two of three cognitive-behavioural interventions and both behavioural interventions. Consequently, findings were consistent with Greenspan and Feltz (1989) and addressed previous weaknesses; a larger majority of studies examined treatment effect over time, there were more interventions studied on youth and elite athletes (Barnett et al., 1992; Cohn et al., 1990) there was an increased use of single-subject designs (Bryan, 1987), and more remedial-based approaches were taken to intervention implementation (Heishman & Bunker, 1989).

As a follow up to Vealey's analysis, Weinberg & Comar (1994) identified ten studies that met the criterion for athletes in competition and reviewed the effectiveness of cognitive and cognitive-behavioural interventions in the enhancement of performance. Description of the types of interventions included in the review can be found in Table 2.3. Ninety percent of the studies reported significant improvement in performance, with causality inferred in six of the nine interventions. They concluded that with the continued demonstrations of effectiveness, Sport and Exercise Psychologists had a growing body of empirical evidence to draw from in the design and implementation of a psychological intervention. However, issues in methodology and interpretation were still present; in attempting to provide external validity, Weinberg & Comar, (1994) expressed that internal validity (cause and effect) can be compromised. In addition, they found there was still a lack of adequate manipulation checks to ensure the degree of intervention effectiveness (e.g., Grouios, 1992)). There may still be studies out there that found negative performance effects but have not been published, and

the implementation of follow-up assessments was not comprehensive enough to assess the immediate and long-term effects of intervention effectiveness.

Ten years on from the previous systematic review, Martin et al. (2005) identified a requirement to update the general understanding of psychological skills intervention effectiveness and whether barriers to application had been resolved. Description of the types of interventions included in the review can be found in Table 2.4. An important point the authors identified was that in the 1989 review, and in subsequent reviews, studies were included even if they were case reports and/or if the dependent measure assessed was in mock competition. This study therefore reanalysed the nineteen studies reviewed by Greenspan and Feltz (1989) and subsequent populations to reflect a true illustration of the effectiveness of psychological interventions on competitive athletes in real-world competitive situations. Only fifteen studies were found that met the inclusion criteria, unfortunately no studies were found that fit the inclusion criteria with national-level, international-level, or professional-level athletes. In addition, only four articles studied youth athletes. Elite and youth athletes were two under researched populations pointed out by Greenspan and Feltz after their first review, and still the effectiveness of interventions with such athletes were being inadequately tested. When considering the results, fourteen of the fifteen studies reported the impact of interventions to have a positive effect, with nine of those effects being substantial. However, as with Weinberg and Cromar, the authors reported that the literature was still facing barriers first reported in 1989; findings indicated that there was minimal comparisons between interventions, no demonstrations of positive intervention effects on non-targeted behaviours, limited demonstrations of durable follow up effects of interventions, and a lack of studies testing the effectiveness of interventions on elite and youth athletes. Due to these limitations, and the small number of published experimental studies compared, Martin et al. (2005) expressed that generalisations could only be offered with caution.

Although Gardner and Moore (2006) publication was not included in this review due to their inclusion of studies that used analogue participants, they documented the same issues in providing generalisations, stating that even with the encouragement within the literature that supports the use of psychological interventions, it is difficult to justify their use. Some of the reasons provided were intervention effects only being supported by studies with methodological weaknesses and wrongful assumptions that generalisations can be made among populations regardless of age, physical skill, competition level, intra- and interpersonal factors, and developmental, transitional, or clinical issues. In addition, they suggested that from their analysis, the empirical research on these interventions provided little guidance for the practitioners interested in best-practice procedures. Regarding systematic reviews that assess the effectiveness of singular psychological skills interventions (i.e., just imagery or just self-talk), they have supported the effectiveness of psychological interventions for improving performance but there still remains many barriers to practical application. In Toth et al. (2020) twenty-four year follow up of the effectiveness of mental practice on enhancing performance, they found the most common measure of effectiveness to be self-report questionnaires, rarely were objective measures of motor capability evaluated. They also highlighted the issues with the randomised controlled trial pre-test, post-test study design; they felt the simplistic design limited the potential to investigate the nuances in how mental practice affects performance.

A more recent review of psychological and psychosocial interventions on sport performance was a meta-analysis conducted by Brown and Fletcher, (2017) The rationale of this review was to overcome limitations of previous reviews that inhibited generalisability and external validity of the findings for sport performance. For this review, only studies that had high internal (i.e., conducted with controlled, experimental, and randomised designs) and external validity (i.e., sample sport athletes and evaluate direct performance effects) were

included in the analysis. In addition to published papers, the search included books, book sections, conference presentations, unpublished manuscripts, and theses, however only published papers met inclusion criteria. There were 35 studies included in analysis, with 58 interventions delivered across the total number of studies. These included 46 psychological interventions and 12 psychosocial interventions. Description of the types of interventions included in the review can be found in Table 2.5. Psychological interventions refer to treatments based on theory of psychological functioning, whereas psychosocial interventions are informational activities, techniques, or strategies that target biological, behavioural, cognitive, emotional, interpersonal, social, or environmental factors with the aim of improving performance (Brown & Fletcher, 2017). Findings indicated that interventions had a moderate positive effect on sport performance and suggest both psychological and psychosocial strategies can enhance performance outcomes. This effect was generally larger than previous reviews and reviews that focus on certain types of psychological interventions.

Lasting effects on performance were found at least a month after the intervention had finished. The potential explanations offered for this were: residual benefit, continuing with implementation, smaller decrements in performance than the control group, or the alteration of intermediary psychological variables, such as self-efficacy, that require more time to influence performance. However, follow-up findings were offered cautiously because only 8 out of a possible 35 studies measured effect size, meaning 80% of studies within the review did not examine the enduring effect of interventions. Sensitivity and moderator analyses were used to address the imprecision in post-test mean effects and variability between the studies; participant sex, the intervention provider, and the intervention type accounted for 28% of the unexplained variance in the intervention effect collectively. Despite this, heterogeneity stayed significant and suggests that other factors, such as psychological determinants, may provide further explanation for the effect of interventions on performance. Differences in

effectiveness between sexes may be due to the fact that the majority of samples used in existing literature involve assessment of intervention effects on males. This could be causing the development of interventions that are suitable for enhancing the performance of male athletes, but not athletes who identify as other genders.

When we compare this review to previous reviews regarding participants used, there was more variety in level of competition of athletes and less reliance on college level athletes. Further findings suggest that level of competition and the intervention delivery (i.e., singular, or multi-modal), and the performance measure (e.g., overall performance in competition or technical tasks) do not moderate intervention effect, therefore potentially justifying for generalisations to be made to athletes of varying levels, using different modes of implementation or on different performance outcomes. One notable limitation was that the review only included interventions implemented at an individual level because there are currently no cluster randomised controlled trials in the literature that evaluate intervention effectiveness on sport performance for teams or organisations. Finally, a large number of studies were excluded from the analysis because of the lack of detail inherent in the poor standards of reporting. For Sport and Exercise Psychologists to evaluate the effectiveness of an intervention and understand the mechanisms through which it causes an effect, researchers should be encouraged to prepare work in accordance with established reporting guidelines (e.g., American Psychological Association journal article reporting standards) and make use of online supplementary materials.

The most recent review of literature was conducted by Lochbaum et al. (2022). Description of the types of interventions included in the review can be found in Table 2.6. The aim of the review was to synthesise the extant literature on meta-analyses evaluating the effectiveness of psychological interventions to provide insight into the overall impact of sport

psychology on sporting performance. Generally, findings provide support that the use of applied sport psychology techniques do enhance performance and confirm that differences in psychological constructs do relate to differences in athletic performance outcomes. The overall positive effect on performance was 0.51. There were some psychological interventions that demonstrated large beneficial effects on performance, for example mindfulness and task cohesion. However, the majority of beneficial effects were in the small to moderate range, and some were in the small to negligible range. Furthermore, some hypothetically negative constructs were found to improve performance outcomes, but only to a negligible extent. Lochbaum et al. (2022) suggested that even interventions with the smallest demonstrated effect on performance may provide useful evidence as they could be the difference between success and failure in sport, especially at the highest level of competition.

Findings from the Lochbaum et al. (2022) review suggested that the evidence-base provides more rigorous evidence for the effectiveness of psychological interventions than what was previously available. Nevertheless, application of interventions with demonstrated effect must be carefully considered due to the heterogeneity of observed effects. Interventions must control for confounding influences by: using multiple base line indicators of performance to increase probability of identifying performance enhancement derived from an intervention, assess intervention effectiveness on elite athletes as they are likely to have smaller gains in performance and thus demonstrate intervention effects more clearly, and provide detail when reporting studies to explain how the effect on performance was achieved through the intervention mechanism.

Whilst the psychological skills intervention literature has previously experienced methodological shortcomings, more recent reviews suggest that interventions are gaining

real-world relevance, with interventions potentially offering generalisability regardless of level of competition and performance measure assessed. However, the reviews outline recommendations to ensure psychological interventions provide Sport and Exercise Psychologists with an understanding of the effect on performance and the mechanisms through which interventions can have an effect. These strategies include: more interventions using follow up assessments, more interventions evaluating the effectiveness on performance for female and other gendered athletes, more research into the effect of interventions on the performance of teams and organisations, and more detail prescribed in the reporting of intervention effectiveness studies.

2.4.2 The Nature of Evidence in Evidence-Based Applied Sport Psychology

Within the applied sciences, evidence has been interpreted in relation to notions of proof and rationality (Rycroft-Malone et al., 2004); regardless of how the evidence is constructed, it must be independently observed and verified (Davies et al., 2000). This affirmation that all research-evidence that is used to inform practice is subject to scrutiny should place all forms of evidence as equal in value, regardless of the source or construction method. However, Ivarsson and Andersen (2016) reported that some types of sport psychology research evidence seem to carry more weight (eg., randomised controlled trials) than others (e.g. case studies). This review has demonstrated that within many applied practice professions including applied sport psychology, randomised controlled trials have assumed pre-eminence as the gold standard of evidence, with systematic reviews and meta-analyses being favoured for their unlikelihood of providing ‘misleading’ information about the effect of an intervention (Garbi, 2021). However, when sub-optimally executed, its suggested that randomised controlled trials that make up the majority of the psychological

skills intervention literature provide only tenuous, incomplete, and cofounded evidence for what practitioners choose to do in their practice (Ivarsson & Andersen, 2016).

It is important to consider that other research designs for the construction of evidence are valuable in producing psychological intervention research-based evidence. The single-subject design was first introduced to sport psychology research in the 1970s and there has been on going call for more of these designs throughout the development of the applied sport psychology profession (Hrycaiko & Martin, 1996; Martin et al., 2017). Furthermore, case studies and ethnographic research were among examples of research designs with the potential of supplying evidence for the effectiveness of psychological interventions, as suggested by the American Psychological Association's Presidential Task Force on Evidence-Based Practice (Goodheart et al., 2006). These approaches offer the potential to test, examine and explore what sport psychology practitioners do in practice, beyond the narrow remit of the favoured randomised controlled trial approach, and may supply better evidence for practitioners to base their consultation decisions on.

In contrast to propositional knowledge derived from research evidence, other applied professions have considered the merits of non-propositional (or personal) knowledge (Rycroft-Malone et al., 2004). Both propositional and non-propositional knowledge are recognised as fundamental to reasoning and decision-making and thus central to professional practice (Cleak, 2000). Whilst propositional knowledge has gained higher status, knowledge represents an awareness of familiarity gained by experience, therefore non-propositional knowledge has the potential to support applied sport psychology practice when it is discussed, debated, and contested through the wider communities of practice when generating theory (Higgs & Titchen, 2001). To practice a client-centred, evidence-based approach to consultation, it may be that Sport and Exercise Psychologists should draw upon and integrate

multiple sources of both propositional and non-propositional knowledge, whilst considering the contextual complexities of applying this knowledge within the practice environment and to their athlete(s). The dissemination of this type of knowledge could facilitate evidence-based practice in applied sport psychology by supporting practitioners in designing interventions that fully consider the interaction between evidence sources that practice decisions are underpinned by.

It is apparent that the most powerful use of propositional and non-propositional knowledge is potentially when the research-evidence matches the practical experience of the Sport and Exercise Psychologist and the needs and context of the athlete. Within evidence-based public health, client's experiences were also recognised as a source of evidence to base intervention decisions on. When these evidence sources do not align, the use of research-evidence specifically has been shown to vary across all applied disciplines (Ferlie et al., 1999). Furthermore, even in instances where the client's needs are synonymous with the research evidence, practitioners may still not apply research findings to their practice (Rycroft-Malone et al., 2004). This suggests that improving practice requires more than accessing new knowledge; it requires skills in reasoning to integrate that knowledge into practitioners' existing knowledge frameworks and plan interventions based on this knowledge and the needs and context of the athlete. However, there is limited research as to whether Sport and Exercise Psychologists have the attitude, knowledge, and skill to effectively implement the evidence-based practice approach.

2.4.3 Attitudes, knowledge, and Skills for Evidence-Based Practice of Applied Sport Psychology

The many systematic reviews of psychological skills interventions highlight the difficulties in producing appropriate guidelines regarding the optimal combination of

psychological techniques to achieve performance enhancement. The difficulties faced when attempting to conduct well-controlled, valid intervention studies in competitive situations has led to a wide variety of opinions concerning the use of research-based evidence by sport psychology professionals; some sport psychologists have argued that using the empirical evidence of the psychological skills intervention literature is the most important influence when trying to achieve athletic success for elite athletes (Moore, 2007), whereas others doubt the usefulness of the intervention literature when trying to apply them practically (Winter & Collins, 2015a). Holt et al. (2017) suggested that this is manifested in the disconnect between the relevance of research studies and the applied sport context, a lack of time and capacity within sporting institutions to read, engage with, and apply research evidence, and the complexities of understanding research and judging its credibility.

Although there is much dispute regarding the usefulness of taking an evidence-based practice approach to sport psychology consultancy, the proportion of practitioners favouring evidence-based practice, and those against it, is unknown. There is much evidence to suggest that taking an evidence-based practice approach helps when understanding, conceptualising, assessing, and intervening with athletes (Gardner & Moore, 2006). Practitioners have expressed feeling ‘uncomfortable’ when not using a theory-research-practice approach because it ensures their practice remains evidence-based when the effectiveness of their practice is hard to measure (Winter & Collins, 2015a). However, within the same qualitative study, other participants did not perceive the academic literature as useful; they expressed that the literature was not relevant to the actual practice that they did as it was not up to date and therefore fell short in its influence on decisions made regarding intervention design. Moreover, some practitioners within the study described certain areas of the literature as “a bit of a mess” (Winter & Collins, 2015a, p.40). As a result, some of the more experienced

sport psychologists participating in the study stated that they only made limited use of the sport psychology literature to inform their practice.

As a possible explanation for the dissatisfaction with the literature, researchers have suggested that there is an obvious difference between the aims of sport psychologists who wish to practice (i.e., to apply theoretical and empirical evidence to the improvement of performance) and those who wish to specialise in research (i.e., to conduct research into the effectiveness of psychological strategies for enhancing performance), thus generating two distinctly different types of knowledge that focus on application and theoretical advancements respectively (Collins & Kamin, 2012; Silva et al., 1999). This explanation however does not represent a better way of integrating research and practice, but rather sets a trend towards separate goals in sport psychology for those who conduct research in sport psychology and those who apply principles of applied sport psychology to athletes (Silva et al, 1999). Another explanation for dissatisfaction with the literature is that Sport and Exercise Psychologists may not have the knowledge or skills to effectively implement an evidence-based practice approach to designing interventions for performance enhancement.

In their study on Sport and Exercise Psychologists' subjective reasonings underpinning practice, Winter & Collins (2015a) identified the literature underpinning professional practice as a defining characteristic. However, in their evaluation on the knowledge and behaviours of qualified and trainee Sport and Exercise Psychologists' implementation of evidence-based psychological interventions, qualified practitioners were shown to use attentional-based techniques less than trainee practitioners, and that trainee practitioners could more accurately describe the theoretical and mechanical underpinning of attentional-based techniques. Trainee practitioners were also more likely to state they would apply a psychological intervention without fully comprehending the theoretical and

mechanistic knowledge behind the intervention. The apparent decrease in knowledge between trainees and experienced practitioners represents a challenge for experienced practitioners to want to stay up to date with advancements in the profession and continually use them to improve their practice rather than relying only on their experiences and pre-existing knowledge.

The action of trainee Sport and Exercise Psychologists implementing interventions without fully understand how and why they work may represent a lack of skill in reading, interpreting, critically evaluating and applying psychological interventions appropriately. These skills are recognised within the evidence-based practice literature of other professions as research utilisation skills and are commonly documented as lacking in the students and trainees of the applied professions (e.g., Heikkilä et al., 2019). Furthermore, Aoyagi et al., (2012) suggested that training programme were inadequately preparing trainees for the interdisciplinary nature of the field. Typically, programmes and educators will prepare trainees in the discipline they specialise in and only offer cursory exposure to other areas. The separation of sport -based and psychology-based training development also does not support trainees in developing the skills to practically apply psychological principles to sporting contexts. For example, the British Psychological Society and the British Association of Sport and Exercise Sciences require trainees to have completed a psychology undergraduate degree, an MSc psychology conversion course, or the Open University ‘Investigating Psychology 2’ module, in addition to, and separately from, an MSc in Sport and Exercise Psychology. To continually advance the credibility of the profession of sport psychology, it is imperative that trainees are given the tools and support required to implement empirically validated approaches to practice (Carlstedt, 2012). Portenga et al. (2017) emphasised this message by proposing that developing ‘competence in the psychology of performance (including theories

of performance excellence) and performance enhancement' should be recognised as mandatory criteria for performance psychology training.

2.5 Considering Evidence-Informed Decision-Making

With the barriers of the literature still struggling to demonstrate real-world effectiveness, contention regarding the nature of evidence, and a lack of positive attitude, knowledge, and skill to implement evidence-based practices by applied professionals, research must explore methods to facilitate applied professionals in implementing evidence-based approaches to practice. This is an important consideration within the applied professions because practice that is continually based on the best available evidence is more likely to lead to improved service provision and has the potential to improve client outcomes (Mackey & Bassendowski, 2017). An area of research that has gained momentum in addressing these barriers within medicine and public health is evidence-informed decision-making (Nevo & Slonim-Nevo, 2011). Evidence-informed decision-making transitions away from the evidence-based practice approach of basing decisions on the most appropriate intervention to implement with a client, and towards the social construction of an intervention that is informed by the best available evidence and is most appropriate for addressing the client's specific needs (Epstein, 2009). Evidence-informed practice is defined as an ongoing process that integrates evidence from research, practical experience, client preferences and other available resources to guide practice decisions (Belita et al., 2022). Evidence-informed decision-making may be beneficial for applied sport psychology practice because it ensures the intervention addresses the athlete's needs, works pragmatically within the applied context, considers potential limitations to resources such as money, time, and access, and supports decisions being made on the best available evidence (Liang et al., 2012).

Since it was first debated in the 1990s, evidence-informed decision-making has been offering a more inclusive approach to making decisions in multiple fields including medicine (Culyer & Lomas, 2006), public health (Gillespie et al., 2015), education (Yost et al., 2014), social work (Hallstrom & Hvenegaard, 2021), and health services management (Liang et al., 2012). Unlike evidence-based practice, evidence-informed decisions are enriched by research, but are not limited to it. Evidence-informed decision-making addresses many of the pitfalls documented within the literature regarding the evidence-based practice approach. Firstly, rather than adopting an inflexible, ‘cookbook’ approach to the application of interventions, evidence-informed practice distinguishes practitioners as critical thinkers (Nevo & Slonim-Nevo, 2011). Secondly, existing models of evidence-based practice rely heavily on scientific evidence (e.g., DiCenso et al., 2005; Dufault, 2004; Melnyk et al., 2010), whereas evidence-informed practice models place additional importance on the clinical context, patient values and preferences, and practitioner’s knowledge and experiences (McTavish, 2017). Thirdly, evidence-informed practice provides an integrative model that considers all forms of research evidence, rather than recognising some types of evidence as more useful than others (Epstein, 2009). Finally, evidence-informed decision-making is an ongoing, integrative process of applying evidence, rather than the stepwise approach of evidence-based practice that limits a practitioner’s capability of addressing the on-going demands of client needs and working context (Poot et al., 2018). As demonstrated in the previous section of this chapter, similar pitfalls to the evidence-based practice approach make it difficult for practitioners to design performance enhancement interventions directed by the best available evidence. Therefore, the next section considers current knowledge on evidence-informed decision-making within the context of sport psychology and whether it is supporting practice.

2.6 Evidence-Informed Decision-Making in Applied Sport Psychology

Evidence-informed decision-making has not currently been explicitly investigated within applied sport psychology. Considering decision-making of Sport and Exercise Psychologists more generally, much of the research has focused on developing the skill of professional judgement and decision-making (Martindale & Collins, 2005). This area of research has explored how the nature of decision content and a practitioner's intention for impact influences the assessment, reflective practice, professional development, and training of Sport and Exercise Psychologists (Martindale & Collins, 2007). Professional judgement and decision-making findings have demonstrated influences on some of the most fundamental decisions made by practitioners during consultation. For example, Martindale and Collins (2013) proposed that the goal of the intervention should be primarily driven by the needs of the client and the context they are working in. Furthermore, they suggest that the client-practitioner relationship is most strongly influenced by the practitioner's theoretical orientation and professional philosophy (Martindale & Collins, 2011). These investigations have been vital for developing understanding of how professional judgement and decision-making skills can bridge decision content into forming specific decisions in practice.

Although evidence-informed decision-making and professional judgement and decision-making may share some similar characteristics (e.g., the client's needs may be recognised as decision content for both concepts), there still remain substantial differences. Where professional judgement and decision-making has been described as a skill (Smith et al., 2019), evidence-informed decision-making specifically focuses on the social processes involved in integrating sources of evidence to make informed decisions when designing interventions for performance enhancement. It considers, what types of evidence to use, and how information from those sources of evidence can be gathered, interpreted, and integrated to inform the most appropriate intervention to improve the performance of an athlete (Bowen et al., 2009). Within applied sport psychology practice, limited research exists on how

multiple types of decision content influence practitioner decision-making. It has been demonstrated within nursing that decisions made to enhance treatment outcomes are the result of an interaction between many sources of decision content, such as research, clinical expertise, practical experiences, and client preferences (Rycroft-Malone et al., 2004). There is relative merit in exploring the evidence-informed decision-making principles from medicine and public health within an applied sport psychology context as all the professions are aimed at improving client outcomes through implementation of evidence-informed interventions. Medical and public health researchers have demonstrated that developing evidence-informed decision-making competence of applied professionals supports better provision of services and leads to improved client outcomes. Similarly, it is hoped that exploring the evidence-informed decision-making processes of Sport and Exercise Psychologists may lead to an increase in decisions being driven by the best available evidence, that consequently results in improved service delivery and enhancement of performance outcomes.

2.7 Conclusion

This review of literature has hopefully provided a justified basis for exploring evidence-informed decision-making within applied sport psychology. This rationale included highlighting the importance of evidence-informed decision-making in neighbouring applied professions and identification of the current gaps in the evidence-based practice approach of applied sport psychology that evidence-informed decision-making may be able to address. Specifically, it has emphasised three challenges that inhibit the application of the evidence-based practice approach for effective sport psychology practice. These were: (1) the challenge of producing research that demonstrates real-world effectiveness for Sport and Exercise Psychologists to base intervention on, (2) contention regarding the nature of evidence that could contribute to the design and implementation of evidence-based

interventions, and (3) a lack of positive attitude, knowledge and skill of Sport and Exercise Psychologists in applying evidence-based principles to applied practice. It is hoped that exploring the concept of evidence-informed decision-making within the context of applied sport psychology practice within this thesis will develop conceptual knowledge on how evidence is integrated within the decision-making processes of practice, rather than simply selecting, and applying evidence-based interventions. Furthermore, to advance the continual professionalisation of the field, it is hoped that the research will provide support for guiding professional development and training programmes into developing Sport and Exercise Psychologists with competence in making evidence-informed decisions for intervention design.

To address the investigation of evidence-informed decision-making in applied sport psychology in this thesis, four studies were conducted. The aim of study one was to identify the evidence-informed decision-making processes of qualified and trainee Sport and Exercise Psychologists and investigate their attitudes, skills and behaviours towards research utilisation specifically. The aim of the second study was to develop a conceptual understanding of the evidence-informed decision-making processes of experienced and early career Sport and Exercise Psychologists when designing interventions for performance enhancement. The aim of the third study was to explore the learning experiences throughout the career of Sport and Exercise Psychologists to highlight the experiences that influence construction of evidence-informed decision-making processes. The fourth study was conducted to identify the competencies required for evidence-informed decision-making competence and understand the methods through which supervision facilitates their development.

Chapter 3: Methodology

Chapter 3: Methodology

3.1 Introduction

The previous chapter introduced the background to the relationship between research and practice within applied sport psychology and formulated a rationale for the collection of studies which comprise this thesis. This chapter now seeks to provide an overview of the research paradigm and methodology of this thesis. The chapter will begin by discussing the pragmatic paradigm the thesis is situated within and its suitability for addressing the objectives of this thesis. It will then consider the ontological, epistemological, and methodological assumptions underpinning the mixed-methods sequential explanatory design adopted for this thesis.

3.2 Pragmatism

Before starting any research project, it is useful to be aware of our paradigmatic assumptions and beliefs about the world because these impact the way in which we conduct research (Weed, 2009). This is because those beliefs and assumptions underpin an individual's world view and shapes the way we see and understand the world (Guba & Lincoln, 1994). Within a research context, the term paradigm is used to describe a researcher's world view (Smith & Sparkes, 2016). Morgan (2016) describes research paradigms as shared beliefs within a research community regarding what questions are most meaningful and which methods are most appropriate for addressing them. To position the research in this thesis within a research paradigm, I considered the influence of my own worldview on the way I conduct research and what paradigm may be best suited to explore the researched phenomenon. Demonstrating philosophical comprehension in this way facilitates justification of decisions made throughout the research process and helps the reader to understand and critic the philosophical position of the research (Charmaz, 2014).

The primary aim of the thesis was to explore the process of evidence-informed decision-making in applied sport psychology. While considering potential research paradigms, I familiarised myself with literature from other applied sciences to understand their approaches to bridging the gap between research and practice. During this process, I was drawn to the research translation literature within healthcare and their shift toward more pragmatic approaches. The pragmatic approach to conducting research is centred on linking practice and theory (Glasgow, 2013). Within health research, this approach is concentrated on issues and data relevant for making decisions and taking action and is strongly aligned with a focus on patient-centred outcomes (Selby et al., 2012). This emphasis on the patient is shared with the focus on athletes in the applied sport psychology profession, therefore a pragmatic approach to this thesis was deemed appropriate.

One of the most common criticisms of pragmatism is the perception that an untenable position is created when conflicting beliefs and assumptions are applied within the same research. This is based on the perception that pragmatism involves simply selecting the method that works best as opposed to basing methodological decisions on the philosophical position that addresses the research question and aligns with the researcher's worldview. If the latter is achieved, Cresswell (2009) suggests that such tension may benefit the research process as opposing ideas can contribute to new insights and new understandings. For example, the quantitative research within study 1 of this thesis was unable to incorporate the lived experiences of participants, therefore the following qualitative studies deepened and enriched the quantitative findings. Furthermore, the pragmatic approach allows for flexibility in designing research, allowing for the combination of different aspects of different types of research that can contribute to the most informative results. To facilitate my capabilities in conducting research in this way, I spent much time understanding the philosophical

underpinning of pragmatism and reflecting on the influence of my own world view on the pragmatic research process.

When trying to understand the philosophical position of a research paradigm, it is important to consider their ontological and epistemological underpinning (Weed, 2009). The relationship between these philosophical concepts has been described as forming the building blocks of social research (Blaikie, 2007). However, it can be difficult to understand their relationship because authors use the same words to describe different philosophical terms and researchers often have competing or contradictory views on the philosophical underpinning they believe certain methods should be situated in (Heaviside, 2017). Following my own navigation of research philosophy, I have come to understand ontology as the nature of being. It questions whether reality is objective (realist) or subjective (relativist) (Scotland, 2012). Furthermore, I see epistemology as the nature of knowledge. It questions whether it is possible to gain knowledge of the world through direct objective observation (positivism), or whether knowledge is constructed through a process of interpretation because observations and accounts of the world provide indirect indications of what we encounter (constructivism and interpretivism; Williams, 2000).

Relating what I have learned about philosophy to pragmatism, it can be seen as an approach that places emphasis on shared meanings and joint actions (Morgan, 2016); it does not make researchers choose between producing research findings that are specific to a particular context (constructivism) or designing research within a generalised set of principles (positivist). Pragmatism is based on the belief that “theories can be both contextual and generalisable by analysing them for transferability to another situation” (Cresswell, 2009, p.4); it addressed the apparent paradox that ‘complete objectivity’ and ‘complete subjectivity’ are impossible to gain when conducting research. I found pragmatism aligned with my own

world view because it draws on constructivist concepts and in doing so acknowledges that the choices we make as researchers are influenced by our own history, social background, and cultural assumptions (Kelly & Cordeiro, 2020). However, it also incorporates the positivist perspective as it accepts that a sufficient level of mutual understanding must be achieved with research participants and among the individuals that read and review the research.

Pragmatism adheres to the notion that no method or technique is inherently better in knowledge generation (Biesta, 2010), more that selecting and collaboratively using methods and philosophies supports further knowledge generation. This combination of quantitative and qualitative research methods is known as mixed-methods research. The next section introduces the mixed-methods research design adopted throughout this thesis.

3.3 Mixed-Methods Research

Mixed-methods research is an abductive process that combines both qualitative and quantitative methods to investigate the same phenomenon (Smith, 2010). Researchers may choose to mix research methods to improve the generalisability of findings, provide context to findings, and/ or support the credibility of findings if both qualitative and quantitative data converge (Mungai, 2022). There are four main mixed methods research designs: convergent parallel (data collected at the same time but analysed separately), embedded (data collected and analysed simultaneously but within a larger design), explanatory sequential (quantitative methods followed by qualitative methods), and exploratory sequential (qualitative methods followed by quantitative methods). In this thesis, the inductive goals of the qualitative data collection phases (studies 2, 3 and 4) were initially based on the deductive results of the initial quantitative study (study 1), therefore demonstrating a mixed-method sequential explanatory design. This choice was informed by the overall aim of the research within this thesis which was to explore evidence-informed decision-making in applied sport psychology; the first quantitative study provided a general understanding of the relationship between

evidence and practice, while the following qualitative studies provided context, depth, and meaning to the use of evidence in practice.

Although the combination of methods can provide new insight into phenomena, researchers must be cautious of how these are applied to ensure equal weight is given to the value of both qualitative and quantitative findings (Dawadi et al., 2021). In order to be deemed a mixed-method study, there must be a true integration of research findings to explain how the quantitative and qualitative research findings inform and influence each other. Furthermore, researchers adopting a sequential explanatory research design are at risk of diminishing the qualitative contributions to a ‘side line role’ rather than research that shares equal importance to the quantitative findings. Epistemologically, this may demonstrate a more post-positivist paradigm as opposed to a pragmatic one (Cameron, 2014). To address this, this thesis clearly situates each study within the philosophical position that was appropriate for researching the phenomena and helped to construct the study aims. This is shown in the next section of this chapter through explanation of the specific research paradigm adopted for each of the four studies and establishment of the rationale for each study’s methods.

3.4 Paradigms in this Thesis

Although the overall philosophical framework of this research was pragmatism, each individual study was clearly situated within a specific paradigm as they offered specific beliefs and understandings from which practices of the research projects could operate within. For each of the study’s research aim, paradigmatic considerations helped to guide selection of an appropriate methodology for addressing the aim, and implementation of the most suitable method.

3.4.1 Study 1: Post-positivism

Following on from the initial findings of the literature review, the aim of the first study in this thesis was to gain a general understanding of the attitudes, skills, and behaviours Sport and Exercise Psychologists had towards using research as evidence during evidence-informed decision-making. I first interpreted this aim as trying to capture, as far as possible, social reality within the context of applied sport psychology. The post-positivist stance acknowledges that only approximations of reality can be obtained; it ascertains that although research can be used to measure, classify, and understand phenomena, this is only true to a certain extent (Fox, 2008). Researchers must be aware that their interpretations may be based on assumptions and biases that can influence the research process (Panhwar et al., 2017). Due to its alignment with my developing awareness of my worldview and suitability in addressing the study aim, post-positivism was the specific paradigm applied to the first study of the thesis.

As the aim of study 1 was to develop a general understanding of the relationship between Sport and Exercise Psychologists and their attitudes, skills, and behaviours towards research utilisation, a survey was deemed an appropriate post-positivist research method to explore the research aim. The use of surveys underpinned by post-positivism are recognised as an example of social scientific research aimed at understanding the operation of relationships in social reality (Babbie, 2011; Punch, 2003; Sapsford, 2007). Survey items that participants responded to offered indicators of the variables under consideration, so that when responses were statistically analysed, I could identify whether relationships existed between these variables. When designing the survey, I was conscious of the epistemological considerations of surveys outlined by Zachariadis et al. (2010); I wanted to ensure the survey items did not place quantification as more valuable than other sources of information by acknowledging the role of social construction. Therefore, final items in the survey involved open text responses to provide context to statistical results. Furthermore, by placing the

quantitative study within a mixed-methods programme of research, the quantitative findings are positioned as a place to start rather than a place to end; consequent qualitative studies in this thesis are underpinned by social constructivism to help explain and elaborate on preliminary quantitative findings.

3.4.2 Study 2: Constructivism and grounded theory

Once I had gained a general understanding of the relationship between research and practice, the aim of the second study was to elaborate on this by exploring the role of evidence in the decision-making processes Sport and Exercise Psychologists follow when designing interventions for athletes. There are many models for investigating decision-making, however the social constructivism model offers a theoretically unique decision-making approach. Rather than placing the decision-maker as a psychological ‘entity’ who makes a decision in isolation, social constructivism places the decision within the social context itself (Cottone, 2001). This approach recognises that the decisions practitioners make are actions taken within a social context that emerge through their social relationships. Within applied sport psychology, the decisions Sport and Exercise Psychologists make are largely dependent on the context they are working in and the relationships they build with athletes and stakeholders (Brown et al., 2005). Exploring decision-making through social constructivism therefore allowed me to examine social processes and their influence on designing interventions for athletes.

After establishing that the focus of this study was to explore an evidence-informed decision-making process through social constructivism, I then had to consider an appropriate methodology to action this through. Like many early career researchers, I had been introduced to grounded theory within my programme of study and was beginning to understand its appropriateness for studying people’s understandings of the world and how

these relate to the social context (Charmaz & Belgrave, 2012). Grounded theory has previously been linked to a philosophical underpinning of pragmatism (Wuest, 2012); in the qualitative section of a mixed-methods study, grounded theory adds a theoretical model to explain quantitative results through a process of understanding patterns and relationships (Guetterman et al., 2017). In the context of the second study of this thesis, grounded theory helps to explain the factors that influenced evidence-informed decision-making processes during intervention design for athletes. Although grounded theory was not initially considered within ontological and epistemological contexts when first introduced, during its development over the years assumptions have been addressed (Charmaz, 2006; Strauss & Corbin, 1994) and three main variants have emerged. Namely, these are Glaserian (positivist), Straussarian (post-positivist), and Constructivist grounded theory approaches.

Based on the relativist and constructivist philosophical positions that aligned with the social constructivist research paradigm of the study and my own world view, constructivist grounded theory was deemed the most appropriate variant of grounded theory to adopt. The constructivist approach is grounded within the participants' own words and experiences and is constructed by both the researcher and the participants (Romm & Litt, 2013). It also allows the reader to interpret findings in their own way and choose which findings to integrate into their own practice (Thornberg & Charmaz, 2014). Another strength of adopting this process was that it is flexible; there is no one correct way to do it, but it provides guiding principles to conduct a methodologically rigorous study (Charmaz, 2008). It remains important to remember that the philosophical concepts of relativism and interpretivism are based on a continuum, therefore the level of intensity of the ontological and epistemological beliefs will vary for every researcher. For instance, my belief does not extend to the point of accepting absolutely nothing has objective value. However, Weed (2009) argued that grounded theory methodology should be treated as a total methodology; researchers cannot pick and choose

parts of the method to adhere to because their beliefs are in line with those parts only. This further establishes the strength of adopting a flexible approach that aligns with my philosophical beliefs. Chapter 5 will go into more depth regarding the details of the method adopted.

3.4.3 Studies 3 and 4: Constructivism and Phenomenology

In order to improve development of evidence-informed decision-making process in training, studies 3 and 4 aimed to identify the experiences that influenced the construction of evidence-informed decision-making and the mechanisms through which they work. For Sport and Exercise Psychologists, the experiences they face during their career can differ drastically from one and other. This may be a result of the training qualifications they completed or the context and cultures they work in. One philosophical approach that takes into the consideration the differences between people's experiences is phenomenology. Phenomenology is a philosophy of experience that uses qualitative methodologies to explore individuals' beliefs, motivations, and reasoning behind social interactions (Brocki & Wearden, 2006). Phenomenology shares the same philosophical underpinning as constructivist grounded theory; ontologically, it holds the belief that multiple realities exist, and epistemologically, it holds the belief that reality is subjective. However, rather than the grounded theory approach that focuses on how individuals navigate phenomena, phenomenology concentrates on meanings of lived experiences of phenomena.

One common methodology implemented under phenomenology is interpretive phenomenological analysis (IPA). IPA attempts to explore personal experiences and is concerned with an individual's personal perception or account of an object or event (Brocki & Wearden, 2006). IPA places the researcher at the centre of the research process by allowing them to engage in meaning making by interpreting each individual's subjective

experiences. This is achieved by the ‘double hermeneutic’ approach, through which the researcher attempts to make sense of the participant’s attempt to make sense of the world (Peat et al., 2019). Both study 3 and study 4 adopt an IPA methodology as the study aims were to explore lived experiences during career progression (study 3) and training (study 4). Concentrating on the individual and personal experience of human nature in both of these studies allowed for the identification of both similarities and differences between professionals of applied sport psychology at various stages of their career development.

According to Mills et al. (2006) researchers should ensure their research methodology fits their worldview and is appropriate for addressing the aim of the study; stating that doing this will enhance the strength of the inquiry. This consideration is especially relevant for the grounded theory and IPA studies because of the differences in their philosophical approach. I had to be aware of the dangers in ‘combining’ the two methodologies as study 3 involved the re-analysis of the original grounded theory data set through a phenomenological perspective. Rather than ‘combining’ methodologies, this mixed-methods research design used two different qualitative methodologies to answer distinct and separate research questions on a single phenomenon; grounded theory was necessary for study 2 as it aimed to explain the process of evidence-informed decision-making through the organisation and categorisation of data. In contrast, the IPA approaches of studies 3 and 4 aimed to provide insight on the multiple meanings of phenomena to develop new understandings of human experience (Crowther et al., 2017). The focus of study 3 was to understand and interpret the influence of lived experiences on constructing evidence-informed decision-making processes, and study 4 provided experiential accounts of training and development of evidence-informed decision-making competence.

3.5 Concluding thoughts

When implemented appropriately and coherently, the mixed-methods research design can result in four benefits to a research programme: (1) expansion, (2) triangulation, (3) complementarity, and (4) development (Smith, 2010). In the context of evidence-informed decision-making in this thesis, expansion has been achieved by providing empirical evidence on the approaches and skills required to make evidence-informed decisions in practice through implementation of different research methods. Triangulation referred to the different research methods (namely: surveys and interviews) that were used to explore diverse aspects of training and development of evidence-informed decision-making processes in applied sport psychology. Complementarity was demonstrated through implementing new methods that could enhance, elaborate, and clarify results from the study before (e.g., interviews were conducted through a constructivist paradigm in study 2 to elaborate on how participants constructed the beliefs, skills and behaviours explored quantitatively in study 1). Finally, development involved the results from previous studies playing an active role in the design and selection of the following studies (e.g. once I had established how participants constructed their decision-making processes through constructivist grounded theory, interpretive phenomenological analysis was required to understand the lived experiences that influenced construction of these processes).

In summary, pragmatism informed all decisions regarding the construction of research questions and selection of all methodologies for each study included in this thesis. The thesis used a sequential explanatory design to first provide general understanding of the research problem using a quantitative approach, and subsequently draws on qualitative data and analysis to explain and elaborate on statistical findings by exploring participant's views in more depth. The pragmatic approach allows for the integration of results from multiple paradigms; it is the connecting, comparing and contrasting inferences that emerge from both quantitative and qualitative findings in this study that help to extend knowledge on evidence-

informed decision-making in a richer way than a study using only a single approach could.

The following chapters will present each of the studies conducted as part of this thesis.

Chapter 4: Study 1

Chapter 4: Study 1

Qualified and Trainee Sport and Exercise Psychologists' Attitudes, Skills and Behaviours Towards Research Utilisation in Applied Practice

4.1 Introduction

Research utilisation is a complex process that has been widely discussed within the applied sciences literature (Griffiths et al., 2001; Oranta et al., 2002; Patiraki et al., 2004). Initially introduced within evidence-based medicine and evidence-based public health, research utilisation is defined as “the process involving the acquisition, critical reading (including evaluation), and application of research knowledge” (Heikkilä et al., 2019, p.185). Although the formal process of research utilisation has received limited attention in the applied sport psychology literature base, the use of research in practice is regarded as a core component of evidence-informed decision-making (Heikkilä et al., 2018), and is outlined within Sport and Exercise Psychologist training guidelines as a key competency for trainees to develop (DSEP | BPS, n.d.; SEPAR | BASES, n.d.) The literature review chapter of this thesis highlighted the many benefits in the application of research to practice, such as providing an underpinning behind the reasons why practitioners make certain decisions when designing interventions for optimal improvements in sporting performance and/or wellbeing (Winter & Collins, 2015b). However, it also highlighted the major challenges and debates that hinder the translation of research to the applied context.

When we consider the barriers to research utilisation in applied sport psychology, the literature review (chapter 2) outlined three main instances. Firstly, although the literature base has demonstrated the experimental efficacy of psychological interventions for improving performance, there remains difficulty establishing real-world effectiveness (e.g., Brown & Fletcher, 2017; Greenspan & Feltz, 1989; Lochbaum et al., 2022; Martin et al., 2005; Vealey, 1994; Weinberg & Comar, 1994). Secondly, practitioners have highlighted a lack of

satisfaction with the literature usefulness and are therefore make limited use of it in their practice (Winter & Collins, 2015b). With constraints to the time and access needed to effectively apply an evidence-based intervention to an applied context, practitioners may opt for experiential or tacit knowledge over that which is research-based as they are more pragmatic in light of such contextual and organisational barriers (Martindale & Collins, 2005a). Thirdly, there is much debate as to what constitutes ‘evidence’ within evidence-based practices. When we consider research specifically as evidence, some types of research evidence seem to carry more weight (e.g. randomised controlled trials; RCTs) than others (e.g. case studies) (Ivarsson & Andersen, 2016). This also extends to public health research where clinical experience is often perceived as evidence that can contribute to evidence-based practice (Drapeau & Hunsley, 2014).

Researchers in public health have tried to address barriers to evidence-based practice through creation of the BARRIERS scale (Hutchinson & Johnston, 2006). Evidence suggests that nurses do not always use the best available evidence to make decisions, therefore patients do not always receive the best care (Grol & Grimshaw, 2003). Therefore, the BARRIERS scale was created to measures the opinions of nurses on the barriers to using research in the practice context (Hutchinson & Johnston, 2006). From the 29 barrier items, ‘there is insufficient time on the job’ and ‘the nurse is unaware of the research’ have been reported as two of the most common barriers to research utilisation within multiple research studies that applied the BARRIERS scale (e.g., Bryar et al., 2003; Fink et al., 2005). Both time and access also represent barriers to research utilisation for professionals working within applied sport psychology (Holt et al., 2017). It is important to acknowledge that time barriers differ slightly between nurses and Sport and Exercise Psychologists. For example, nursing decisions often have to be made at speed and can have fatal consequences if the decision is not accurately made within appropriate time, whereas Sport and Exercise Psychologists rarely

have to make instantaneous decisions regarding critical care. However, every professional working in a treatment-focused practice has a duty of care to provide their clients with the best possible service, founded on the best available evidence (Bryden & Storey, 2011).

One of the most prominent determinants of research utilisation in nursing is attitudes towards research; a positive attitude has been shown to strongly predict implementation of research utilisation practices (Mehrdad et al., 2008). Nurses generally have a positive attitude towards research, but a favourable attitude alone is not necessarily enough to bring about the use of research in practice (Hutchinson & Johnston, 2006). Research utilisation skills of nurses and nursing students have commonly been shown to range between low to moderate, whether based on tests or self-assessment (Heikkilä et al., 2018, 2019, 2021). This included skills such as forming the questions to search for research knowledge, carrying out database searches, and critical appraisal and implementation of research findings. The attitudes and skills of medical professions have also been reported as impacting behaviours exhibited towards research utilisation. For example, if a medical professional does not find research useful and/ or if they do not have the skills required to implement research into practice, they are less likely to adopt research utilisation within their clinical practices (Sitzia, 2001).

To date, there has been limited empirical research that explores the skills, attitudes, and behaviours of Sport and Exercise Psychologists with regard to research utilisation. In their study on the transferability of four attentional-based techniques, Winter and Collins (2015a) assessed trainee and experienced practitioner knowledge and behaviour with regard to intervention implementation. Their findings indicated that for certain attentional-based techniques, trainees were more likely to implement the techniques and could more precisely describe the theoretical and mechanical underpinning of the techniques than the experienced practitioners. However, they also reported that trainees would often adopt an intervention without knowing the theoretical or mechanistic underpinning. Although the profession

advocates for the use of evidence in practice, it is clear from these findings that research-based techniques are not always being adopted in practice. Furthermore, the declining knowledge regarding the theoretical and mechanistic underpinning of psychological interventions from trainee to experienced practitioners demonstrates difficulties in ensuring practice is continually informed by research.

Using similar methods to the study of nurses' research utilisation, the aim of this study was to investigate qualified and trainee Sport and Exercise Psychologist's evidence-informed decision-making positions and attitudes, skills, and behaviours towards research utilisation in applied sport psychology. The objectives were to explore whether practitioners want to use research (attitude), whether they have the skills to use research (skill), and whether they are actually implementing research in their practice (behaviour). Similarly to Winter and Collins (2015a), this study will compare and contrast results of both trainee and qualified practitioners to investigate comparisons based on qualification status. A secondary aim of this study will be to explore practitioner opinions regarding barriers and enablers to research utilisation within applied sport psychology. Through the investigation of attitudes, skills, and behaviours towards research utilisation and exploration of the barriers and enablers to its use, this study will contribute to knowledge on how to improve evidence-informed approaches to practice.

4.2 Method

4.2.1 Philosophical approach

This study was conducted from a post-positivist perspective. The post-positivist stance ascertains that although research can be used to measure, classify, and understand phenomena, this is only true to a certain extent (Clark, 1998). Conducting surveys within a post-positivist research philosophy offers a window into the biographical information, social

positioning, and opinions, attitudes, and views of participants (Romm & Litt, 2013). This approach also takes into consideration that the interpretation of results is based on assumptions and biases of the researcher's social context, therefore participants are provided with opportunities to disclose qualitative context to quantitative results. For example, participants in this study were asked to complete open text questions regarding the barriers and enablers to research utilisation. This allows the reader of the research to interpret the findings based on their own assumptions and biases and apply the information to their research and/or practice contexts in a bespoke way.

4.2.2 Participants

Through the principles of voluntary sampling (Murairwa, 2015), fully qualified and trainee Sport and Exercise Psychologists were invited to take part in the study. The study was advertised on relevant Sport and Exercise Psychology social media platforms and via email invitation. To be considered a fully qualified Sport and Exercise Psychologist, the participants had to hold one of the following qualifications: British Psychological Society (BPS) Chartered Membership, British Association of Sport and Exercise Sciences (BASES) Accreditation and/or Health and Care Professional Council (HCPC) registration. To be considered a trainee Sport and Exercise Psychologists, participants had to be enrolled in one of the following training courses: MSc in Sport and Exercise Psychology (or equivalent), BPS Qualification in Sport and Exercise Psychology Stage 2 (QSEP), BASES Sport and Exercise Psychology Accreditation Route (SEPAR), or Professional Doctorate in Sport and Exercise Psychology.

Table 4.1. Demographic information for qualified and trainee respondents

Demographic	Qualified		Trainee	
	N	%	N	%
Gender				
Female	7	70.4	15	50.0
Male	19	25.9	15	50.0
Prefer not to say	1	3.7	0	0
Total	27	100.0	30	100.0
Age in years (mean \pm standard deviation)	43.5 \pm 11.4		30.1 \pm 9.7	
Nationality				
British	24	74.1	23	76.7
Other	1	8.6	7	23.3
Prefer not to say	1	8.6	0	0
Ethnicity				
White British	23	85.2	20	66.6
White and Black Caribbean	0	0.0	1	3.3
White Irish	0	0.0	1	3.3
Indian	0	0.0	1	3.3
Chinese	0	0.0	1	3.3
Any other white background	1	3.7	3	10.0
Any other mixed ethnic background	0	0.0	1	3.3
Any other ethnic group	1	3.7	0	0.0
Prefer not to say	2	7.4	2	6.6
Qualification				
BPS	22	81.5		
BASES	5	18.5		
HCPC	23	85.2		
Years of Applied Experience				
0-3 years	9	33.3		
4-6 years	3	11.1		
7-9 years	2	7.4		
10+ years	13	48.1		
Training Qualification				
BPS QSEP			7	23.3
BASES SEPAR			7	23.3
Professional Doctorate			4	13.3
MSc			12	40.0

A total of 63 respondents completed the survey. Due to incomplete data sets, six responses were removed and a total of 57 complete responses were recorded and included in data analysis. This included 27 fully qualified respondents and 30 trainee respondents. Table 4.1 reports more detail of the demographics of participants, including genders, ages, ethnicity and nationality. Of the 27 fully qualified respondents, 22 had Chartered Sport and Exercise Psychologists membership with the BPS. The remaining five respondents were accredited Sport and Exercise Psychologists with BASES. Three of these respondents had qualified through the BASES SEPAR accreditation route. Six of the participants had gained both BPS chartered membership and BASES accreditation through the BASES to BPS 1998 grandparenting clause. For the fully qualified respondents, 23 were also registered with the HCPC as a Scientist Practitioner. All fully qualified respondents engaged in applied practice and 66.7% had more than 4 years of experience in the applied field. Other employment roles and responsibilities included University teaching and research, leadership, and supervision. At the time of the study, there were a potential of 10 BASES accredited Sport and Exercise Psychologists that had qualified through the BASES SEPAR accreditation route and 120 Sport and Exercise Psychologists that had qualified through the British Psychological Society training pathway. Unfortunately, no data were found on the number of HCPC registered Sport and Exercise Scientist Practitioners, nor the total number of Sport and Exercise Psychologists involved in the BASES to BPS grandparenting clause. In the study, three of the BASES accredited respondents had completed the BASES SEPAR training route, therefore the response rate was 30% for BASES SEPAR respondents. The response rate for BPS qualified participants was 18.3% when you compare the 22 respondents in this study to the 120 potential respondents that qualified through the BPS.

Of the 30 trainee respondents, 50.0% (15) were female, and 50.0% (15) were male. The age of trainee respondents ranged from 21 to 58 (30.1 ± 9.7 years). For the trainee

respondents, 12 were enrolled in MSc Sport and Exercise Psychology Programmes of study, 7 were completing the BPS QSEP qualification route, 7 were completing the BASES SEPAR accreditation route, and 4 were enrolled on Professional Doctorate Programmes of Study in Sport and Exercise Psychology. For response rates of trainees, there were approximately 100-120 trainees enrolled on BPS QSEP and there were 98 trainees enrolled on BASES SEPAR at the time of the study. With 23 valid MSc Sport and Exercise Psychology courses in the UK, it was estimated that potential MSc cohort was 200-300 students, and no total number could be found for the number of trainees enrolled on professional doctorates in the UK. With an estimated potential response number of 110 BPS QSEP trainees and an actual response number of 7, the response rate was 6.4%. With a potential response number of 98 BASES SEPAR trainees and an actual response number of 7, the response rate was 7.1%. With an estimated potential response number of 250 students and an actual response number of 12, the response rate for MSc students was 4.8%.

4.2.3 Procedure

The research was approved by a university ethics committee. A descriptive study design was used. Participants were asked to complete an online survey through Qualtrics (Qualtrics, Provo, Utah, USA). The participant information sheet was provided at the start of the survey (prior to participant consent). This assured participants of their right to anonymity, confidentiality, and withdrawal at any time. Participants were then asked to confirm whether they agreed to participate or not through Qualtrics before they were given access to the survey. Participants were asked to provide demographic information, details of their evidence-informed decision-making processes for intervention design and attitudes, skills, and behaviours towards research utilisation. Participants were also asked about their opinions regarding the barriers and enablers to research utilisation within applied sport psychology using open text boxes.

For evidence-informed decision-making processes, participants were asked to tick one of five boxes that best described their current decision-making processes when designing interventions for performance enhancement. To create three categories for data analysis, the data for ‘rely primarily upon scientifically generated research evidence’ and ‘rely more heavily on scientifically generated research evidence than my own intuition and experiential knowledge’ were joined together. The same was done for ‘rely primarily on my own intuition and experiential knowledge’ and ‘rely more heavily on my own intuition and experiential knowledge than on scientifically generated research evidence’. For the 13 attitude statements and six skill statements regarding research utilisation, participants rated their level of agreement on a five-point scale. For data analysis, the data for ‘agree’ and ‘strongly agree’ were joined together and the same was done for all other responses (i.e., ‘neutral’, ‘disagree’, and ‘strongly disagree’) to create two categories. Similarly, participants were asked to rate level of extent on a five-point scale for six research utilisation behaviour statements. The data for ‘high extent’ and ‘very high extent’ are joined together and the same was done for all other responses (i.e., ‘moderate extent’, ‘low extent’, and ‘very low extent’) to create two categories (exact statements participants responded to can be found in the tables displayed in the results). Participants were also asked to complete open text boxes regarding the barriers and enablers to research utilisation within applied sport psychology practice.

The survey questions were developed based on prior literature regarding evidence-informed decision-making and research utilisation attitudes, skills, and behaviours in applied sport psychology (e.g. Winter & Collins, 2015a, 2015b) and literature within medicine and public health (e.g. Mehrdad et al., 2008) and management (e.g. Brockmann & Simmonds, 1997 ; Heikkila et al., 2018, 2019). The survey was piloted with two fully qualified and two trainee Sport and Exercise Psychologists. These data were not included in the final analysis. Minor amendments in wording and order of questions were made as a result.

4.2.4 Analysis

Quantitative data were analysed using SPSS (SPSS, n.d.). Frequency and descriptive statistics related with qualification status were computed. Mean, standard deviation, minimum and maximum values were calculated for age and years of practical experience. For each survey questions, a chi-square statistical test was conducted (McHugh, 2013). Chi-squared analysis was used to determine whether evidence-informed decision-making processes and research utilisation attitudes, skills, and behaviours were independent of qualification status. For the evidence-informed decision-making question, a 3x1 contingency table analysis was conducted for the total respondents (i.e. qualified AND trainees) to assess whether responses for were significantly different to the results that may be expected from an equal distribution. A second 3x2 contingency table analysis was conducted to assess whether evidence-informed decision-making processes were independent of qualification status. Where expected cell counts were lower than 5 per cell, the Likelihood Ratio was used to assess whether there was a non-random association between the categorical variables (Field, 2013).

For each statement within the research utilisation attitudes, skills, and behaviours questions, a 2x1 contingency table analysis was conducted for the total respondents (i.e. qualified AND trainees) to assess whether responses for were significantly different to the results that may be expected from an equal distribution. A second 2x2 contingency table analysis was conducted for each statement to assess whether research utilisation attitudes, skills, and behaviours were independent of qualification status. Fisher's exact test was used to assess the association when expected cell count was less than 5 per cell (Field, 2013). Bonferroni correction (Dunn, 1961) was applied to the alpha value to account for the number of comparisons being performed. The calculation for this was $P < 0.05 \div \text{number of statements per survey question}$. Bonferroni correction was applied to reduce the chances of obtaining

false-positive results (VanderWeele & Mathur, 2019). With 13 skill statements, the Bonferroni correction P value was $P < 0.004$. with six skill statements and six behaviour statements, the Bonferroni correction P values for those questions was $P < 0.008$.

Qualitative open text box data were analysed using thematic analysis (Braun & Clarke, 2012) to identify patterns in meaning across respondents' opinions towards the barriers and enablers towards research utilisation in applied sport psychology. Thematic analysis allows the researcher to generate new insights and concepts derived from the data (Maguire & Delahunt, 2017). This was a reflexive approach that involved examination of my own assumptions and biases to ensure they did not accidentally affect the data. To achieve this, I recognised my own positive opinion towards research and limited experience within the applied field. By acknowledging this during all stages of the research process, I was able to ensure I did not bias my interpretations with influences from my own social context and background. Thematic analysis followed the step-by-step process outlined by Braun and Clarke (2012). Initially, I familiarised myself with the data by reading the open text responses multiple times. I then created codes for shared patterns across participants and collated with supporting data. The final phases involved grouping codes into higher order themes to display trends across the data. These were then revised with the supervisory team to ensure each code had enough data to support them as higher order themes.

4.3 Results

Process of Evidence-Informed Decision-Making

The responses to the evidence-informed decision-making survey question are detailed in Table 4.2. Out of the 57 total respondents, 57.9% rely equally on research evidence and their own intuition and experiential knowledge when making evidence-informed decisions for intervention design, with 26.3% more likely to make decisions based on research evidence,

and 15.8% more likely to draw upon their own intuition and experiential knowledge in their decision-making. The 3x1 chi-square analysis showed that more respondents used an equal balance of scientifically generated research evidence, and intuition and experiential knowledge when making intervention decisions than what would be expected by chance, $X^2(1, N= 57) = 16.421, p < 0.001$. However, there was no significant association between qualification status and the respondents' evidence-informed decision-making processes, $X^2(1, N= 57) = 4.149, p = 0.126$.

Table 4.2. Percentage of level of agreement for evidence-informed decision-making processes

Statement	Total	Qualified	Trainee
Rely primarily / more heavily on research evidence than own intuition and experiential knowledge	26.3	22.2	30.0
Rely about equally on research evidence and own intuition and experiential knowledge	57.9	51.9	63.3
Rely primarily / more heavily on experiential knowledge than research evidence	15.8	25.9	6.7

Attitudes Towards Research Utilisation

The responses to 13 attitude statements on the Likert scale are detailed in Table 4.3. Generally, respondents had a more positive attitude towards research than what you would expect from an equal distribution. Specifically, the 2x1 chi-square analysis was significant for eight of the 13 attitude statements. All 100% of participants agreed that ‘research helps to build a scientific base for sport psychology’ and 96.5% believed that ‘research findings should be used in sport psychology practice’ ($X^2 (1, N= 57) = 49.281, p < 0.001$). Significant results were also found for ‘sport psychology research findings are usable in sport psychology practice’ ($X^2 (1, N= 57) = 24.018, p = < 0.001$), ‘I have access to the most relevant research-evidence that I need to inform my practice’ ($X^2 (1, N= 57) = 9.281, p = 0.002$), ‘having access to research evidence is useful for my practice’ ($X^2 (1, N= 57) = 49.281, p < 0.001$), ‘I understand how to make judgements about the quality of research-evidence’ ($X^2 (1, N= 57) = 42.123, p = < 0.001$), ‘I understand how to apply research-evidence to my practice’ ($X^2 (1, N= 57) = 35.267, p = < 0.001$) and ‘sport psychology research improves sport psychology practice and athlete performance outcomes’ ($X^2 (1, N= 57) = 29.491, p = < 0.001$). Statistical significance was also found for ‘it takes too much effort to apply research-evidence to my practice, with 73.7% of participants either stating a neutral position or disagreeing’ ($X^2 (1, N= 57) = 12.789, p = < 0.001$). However, for all 13 statements, there was no significant difference between qualification status and the respondents’ level of agreement. The nonsignificant chi-squared values ranged from 0.286 to 6.333 and the P values ranged from 0.012 to 0.593.

Table 4.3. Percentage of level of agreement and chi-square significance for research attitudes

Attitudinal Statement	Total		Qualified		Trainee	
	A	N / D	A	N / D	A	N / D
I believe research findings should be used in sport psychology practice*	96.5	3.6	96.3	3.7	96.7	3.3
Sport psychology research findings are usable in sport psychology practice*	82.5	17.6	81.5	18.5	83.3	16.7
Sport psychology research is designed based on sport psychology practice	35.1	64.9	29.6	70.4	40.0	60.0
Sport psychology research is not relevant to the everyday work in sport psychology practice'	64.9	35.1	55.6	44.4	73.3	26.7
I have access to the most relevant research-evidence that I need to inform my practice*	70.2	29.8	70.4	29.6	70.0	30.0
Having access to research-evidence is useful for my practice*	96.5	3.6	92.6	7.4	100.0	0.0
I understand how to make judgements about the quality of research-evidence*	93.0	7.0	100.0	0.0	86.7	13.3
I understand how to apply research-evidence to my practice*	93.0	7.0	100.0	0.0	86.7	13.3
Research findings are too complex to use in practice'	45.6	52.7	50.0	50.0	43.3	56.7
It takes too much effort to apply research-evidence to my practice'*	73.7	26.3	77.8	22.2	70.0	30.0
Research helps to build a scientific base for sport psychology*	100.0	0.0	100.00	0.0	100.0	0.0
I would change my practice as a result of research findings	66.7	33.4	85.2	14.8	50.0	50.0
Sport psychology research improves sport psychology practice and athlete performance outcomes*	86.0	14.1	88.9	11.1	83.3	16.7

' For statements 4, 9 & 10, disagree and neutral / disagree are reversed.

* 2x1 chi-square significance.

No 2x2 chi-square significance.

Research Utilisation Skills

The responses to six skills statements on the Likert scale are detailed in Table 4.4. For the research utilisation skills statements, findings indicated that more respondents felt they had the skills necessary to use research within their practice than what would be expected by chance. Specifically, 86% of participants felt they had ‘the capability to develop an appropriate strategy to search for research-evidence’ ($X^2 (1, N= 57) = 29.491, p <0.001$), and 84.2% agreed with the following four statements respectively: ‘I have the capability to use evidence-informed decisions to design an intervention to achieve performance enhancement’, ‘I have the capability to use evidence-informed decisions to design an intervention to achieve performance enhancement, and ‘I have the capability to participate in evaluating practice, based on research knowledge’ ($X^2 (1, N= 57) =26.684, p <0.001$ for all 3 statements).

When assessing the association between level of agreement with skill statements and qualification status, statistically significant results were found for statements three to six, $X^2 (1, N= 57) =9.619, p = 0.002$. All 100% of the qualified participants agreed that they had the capability to appraise the quality of research, had the capability to assess the applicability of research evidence to an applied context, had the capability to use evidence-informed decisions when designing interventions, and had the capability to participate in evaluating practice, based on research knowledge. Comparatively, only 70% of trainee respondents agreed with skill statements three to six. Nonsignificant P values comparing skill and qualification status for statements one and two were $P=0.427$ and $P=0.258$ respectively.

Table 4.4. Percentage of level of agreement and chi-square significance for skills towards research utilisation

Statement	Total		Qualified		Trainee	
	Agree	Neutral / disagree	Agree	Neutral / disagree	Agree	Neutral / disagree
I have the capability to formulate practice-based questions that I can use to search for research-evidence*	87.7	12.3	83.3	16.7	92.6	7.4
I have the capability to develop an appropriate strategy to search for research evidence*	86.0	14.1	92.6	7.4	80.0	20.0
I have the capability to critically appraise the quality of research evidence *#	84.2	15.8	100.0	0.0	70.0	30.0
I have the capability to assess the applicability of research evidence to an applied context *#	84.2	15.8	100.0	0.0	70.0	30.0
I have the capability to use evidence-informed decisions to design an intervention to achieve performance enhancement *#	84.2	15.8	100.0	0.0	70.0	30.0
I have the capability to participate in evaluating practice, based on research knowledge *#	84.2	15.8	100.0	0.0	70.0	30.0

* 2x1 chi-square significance

2x2 chi-square significance

Research Utilisation Behaviours

The responses to six behaviour statements on the Likert scale are detailed in Table 4.5. When considering the behaviours associated with research utilisation, the total respondents' data were only statistically significant from the expected normal distribution for the statement 'I assess the applicability of research evidence to an applied context' $X^2 (1, N=57) = 19.105, p < 0.001$. Participants assessed the applicability of research to a high extent. However, there was more of an equal distribution in the extent to which participants were using search strategies to find research, using research to inform decisions for intervention design, and using research to evaluate their practice. Nonsignificant chi-squared results ranged from 0.028 to 5.747 and P value ranged from 0.017 to 0.866. Assessing the applicability of research evidence to an applied context was also one of two statements that showed a significant difference between level of extent and qualification status. 'I evaluate my practice, based on research knowledge' was the other behaviour statement that showed significant difference between qualified and trainee respondents. For both statements, 85.2% of qualified respondents exhibited the behaviours to a high extent, whereas trainee responses were split with 50% high extent and 50% moderate to low extent $X^2 (1, N=57) = 7.917, p = 0.005$.

Table 4.5. Percentage of level of extent and chi-square significance for behaviours towards research utilisation

Statement	Total		Qualified		Trainee	
	High extent	Moderate to low extent	High extent	Moderate to low extent	High extent	Moderate to low
I formulate practice-based questions that I can use to search for research-evidence	54.4	45.6	55.6	44.4	53.3	46.7
I develop appropriate strategies to search for research evidence	56.1	43.9	55.6	44.4	56.7	43.3
I critically appraise the quality of research evidence	63.2	36.8	74.1	25.9	53.3	46.7
I assess the applicability of research evidence to an applied context*#	78.9	21.1	85.2	14.8	50.0	50.0
I use evidence-informed decisions to design an intervention to achieve performance enhancement	66.7	33.3	92.6	7.4	66.7	33.3
I evaluate my practice, based on research knowledge#	56.1	26.3	85.2	14.8	50.0	50.0

* One sample chi-square significance

2x2 chi-square significance

Presented in this section are the open text box responses to three questions of the barriers to research utilisation, enablers to research utilisation, and further support to improve the use of research in practice. During the analysis process, the latter two questions of enablers and further support were combined; conversations with my supervisory group recognised similarities in question description and the themes that were being generated from the data. No comparisons were made between qualified and trainee participants, open text box responses were analysed using all participant responses.

Barriers

The participants described various barriers to the use of research in practice that led to the construction of three higher order themes: practitioner skill, issues conducting research and access. Findings are displayed in table 4.5.

Table 4.6. Barriers to research utilisation in applied sport psychology practice

Higher order themes	Lower order themes	Codes
Practitioner skill	Lack of expertise	Inability to design, interpret and evaluate interventions Insecurity Lacking expertise Lack of translation skill
	Lack of understanding of biases	Understanding biases on decision making Lack of bias understanding
Issues with research evidence	Practical applicability	Difficulty applying lab-based studies Sample relevance No allowance for adjustment
	Quality	Poor rationale Poor design No pre / post measure
Access	Inaccessible presentation	Inaccessible language Inaccessible structure Inaccessible writing style
	Cost	Paywalls Cost of literature Cost of conferences
	Time and Effort	Time to conduct research Time to search for research Lacking effort to read research

Practitioner Skill. The higher order theme of practitioner skill places the practitioner as the one responsible for translating research to practice. Although quantitative findings indicated that participants felt they generally had the skills for research utilisation, a lack of expertise and lack of understanding of biases were still suggested as barriers to using research in practice for Sport and Exercise Psychologists. Without the expertise to “understand how to design, interpret and evaluate research”, it can be difficult for participants to make decisions on the best available research evidence. Furthermore, a “lack of awareness of one’s own biases as a practitioner” can be a barrier as practitioners may lack awareness of how they interact with athletes and how research application is involved in the process.

Issues with Research Evidence. The higher order theme of issues with research evidence presents barriers regarding the practical applicability, quality, and inaccessible presentation of sources of research evidence. Firstly, participants felt research evidence often lacked applicability to the applied setting. They described that “there can be blurred lines at times between translating lab-based findings to the applied world of sport psychology”. Other barriers to practical application included “sample relevance” and “no allowance for adjustment mid-intervention”. Participants also criticised the quality of research, acknowledging the difficulties in designing and conducting rigorous and robust empirical intervention studies with practical relevance. Barriers to quality included “lack of control group, poor rationale and intervention design, and lack of pre-post designs”. The final barrier concerning issues with research evidence was inaccessible presentation, which included: the language of academic writing, the writing style, and the structure of academic publications. Participants described often finding potentially relevant papers that were “written more for an academic audience or were written in a style that made it unnecessarily difficult for practitioners to use”. One participant stated they felt “practitioners would rarely use the type

of language we see researchers using. I doubt for example many would call their work ‘interventions’”.

Access. The final barrier to research utilisation was access to sources of research evidence. Even if participants wanted to use research and had the skills to use research within their evidence-informed decision-making process, they could only apply that which was available to them. The “cost of research and conferences” was a specific barrier to access, with the profession “hiding research behind paywalls” and conferences being expensive to attend. Participants also expressed that it takes a lot of time and effort to read literature and consider how it can be applied, and practitioners rarely had the “time to read, comprehend, and apply findings”. One participant suggested “unrealistic expectations” from the profession regarding time and effort: “whether it's about the time spent reading for busy practitioners (e.g. I am self-employed, lots of additional responsibilities outside just Sport and Exercise Psychology training), or about the level of detail you need to get a thorough understanding of an area of research (e.g. reading a couple of papers vs reading 10)”.

Enablers / Further Support

The participants described various enablers that could facilitate research utilisation in applied practice. The three higher order themes for enablers were: practitioner development, improving resources, and further research. Findings are displayed in table 4.6.

Table 4.7. Enablers and further support to improve research utilisation in applied sport psychology practice

Higher order themes	Lower order themes	Codes
Practitioner Development	Building communities	Sharing best practice for evidence use Peer discussions Collaboration between researchers and practitioners
	Developing research utilisation skills in training	Highlight importance of research / EIDM during training Understand mechanisms to enhance performance Develop critical thinking capability
Improving resources	Accessibility of research	Open access Lower cost More time
	Literature clarity	Simple language Understanding how Clear and detailed methodology
	Methodological improvements	Better structured interventions Using a range of samples More case studies
Further Research	Practice-focused research	Conduct practical research Clearer practical application Contextual relevance
	Studies from experienced practitioners	More studies from experienced practitioners Advice from trained / experienced practitioners on how they do EIDM
	Models of evidence-informed practice	Framework / protocol to go alongside needs analysis Decision making of sport psychology practitioners Justifying with evidence Understanding WHY

Practitioner development. Through the higher order theme of practitioner development, participants suggested a combination of approaches, ideas and techniques that could help both trainees and qualified practitioners improve research utilisation through training and continued professional development. The first lower order theme involved building practice communities for practitioners to share best practice for research evidence use. “Sharing knowledge and papers between practitioners” provided practitioners with opportunities to discuss and critique research they may not otherwise have access to. These communities provided opportunities for “critical discussion of the evidence with fellow practitioners with regards to its utility/application to practice”. Developing research utilisation skills in training specifically was also highlighted as an important component for practitioner development. Emphasising the importance of research and evidence-informed decision-making at the earliest phases of development can help neophyte practitioners to develop their research knowledge and critical thinking capability, making it easier for them to understand the mechanisms used to enhance performance. This could involve “developing key skills such as IT literacy, critical thinking, and appraising research-evidence”.

Improving Resources. The second higher order theme involved improving research utilisation resources. Participants outlined improved accessibility to research, literature clarity and methodological improvements as lower order themes to enable them to make better use of research in practice. To improve access, participants suggested research resources should be open access or offered at a lower cost. One participant stated that “open access papers enable use of research evidence in practice but can be limited in number”. For literature to be clearer to participants, they felt simpler language could be used in journal articles. They expressed that it was “easier to use research evidence when written with a practitioner audience in mind, rather than an academic audience in mind”. Participants also found that research studies that were well designed were much easier to replicate; one participant stated

that “a sound methodology enables better performance enhancement”. Participants felt better structured interventions that used a range of samples could enable them to achieve research utilisation. Participants also requested improvements to specific types of publications such as case studies based in real world applied journals. One participant felt that case studies for applied sport psychology needed to be “much more reflective”.

Further Research. The final higher order theme of enablers that support research utilisation was further research. This theme detailed research directions that would be more likely to facilitate research utilisation. Further research was underpinned by three lower order themes, namely: practice-focused research, studies from experienced practitioners, and models of evidence-informed practice. Practice-focused research referred to research that was “written for the purpose of practical application”, and the practical application messages of the research-evidence were very clear to the reader and easily actionable within practice. Participants requested to see “increased contextual scene setting and clearer procedures, especially when interventions are being applied (this should include sharing the aims, objectives and activities used)”. Participants also wanted research that was contextually relevant to the applied setting. One participant defined this as “research evidence that has been conducted in an environment that bears similarity to the environment in which the findings will be applied (enhanced relevance and applicability)”.

Participants communicated that they wanted to see more research studies from experienced practitioners on how they make evidence-informed decisions and learn how experienced practitioners apply research to their practice. Finally, participants conveyed an increased need for research on models of evidence-informed practices within applied sport psychology. Establishing models for evidence-informed practices could help practitioners make decisions informed by the best available evidence, providing justification for why they designed a certain intervention in a specific way. This would also provide practitioners with a

decision-making audit trial to support the decisions they make. Some participants suggested that exploration into frameworks and protocols that could work alongside needs analysis to support intervention decisions could lead to better performance enhancement. One participant specifically suggested an “evidence-based team development intervention framework”. They suggest that this could help practitioners “determine a team’s needs and select an appropriate teambuilding strategy”.

4.4 Discussion

The aim of this study was to investigate the evidence-informed decision-making processes of qualified and trainee Sport and Exercise Psychologists, and their attitudes, skills, and behaviours towards research utilisation. This study found that just over half of all participants relied on an equal balance of research evidence and evidence from intuition and experience when making decisions to design an intervention for performance enhancement. Additionally, the study found that qualified and trainee practitioners had generally positive attitudes towards research utilisation, regarded themselves as having the skills to use research in practice and claimed that they do use research in practice. Differences between qualified and trainee participants were highlighted in skills and behaviours; a higher proportion of qualified practitioners perceived themselves to possess the skills to utilise research and that they do appraise and use research to inform their practice decisions.

Findings in this study suggested that for the majority of participants, decisions were made based on equal contributions from research evidence and evidence from intuition and experiential knowledge. In support of a more equal balance between research-based and practice-based knowledge, evidence-based public health researchers have debated the epistemological perspectives of the nature of evidence. Rycroft-Malone et al. (2004) suggested that evidence-derived from clinical experience, patients, clients and carers, and the

local context and environment may be considered just as important as research evidence. Evidence-based public health researchers acknowledge the importance of ‘practical knowhow’ but the interaction between research-based and practice-based processes need to be fully understood to ensure clients are receiving the best possible care, informed by the most appropriate evidence. As this study highlights the apparent importance of both research evidence and intuition and experiential knowledge for informing decisions in applied sport psychology, pursuing this line of inquiry could support the development of evidence-informed decision-making processes of qualified and trainee Sport and Exercise Psychologists.

Participants in the current study generally all held positive attitudes towards research irrespective of experience. The favourable attitudes were particularly apparent for ‘research helps to build a scientific base for sport psychology’ and ‘having access to research-evidence is useful for my practice’. Within neighbouring applied practices, positive attitudes towards research have been associated with the adoption of research utilisation (Heikkilä et al., 2019). Particularly, positive attitudes have been recognised as a predictor of research utilisation and identified as a means to potentially remove barriers to individual nurses’ research utilisation and ultimately improve nursing performance (Maljanian et al., 2000; Melnyk, 2002). Although research utilisation attitudes has not been explicitly explored in applied sport psychology, Winter and Collins, (2015a) found that negative attitudes can lead to reduced use of research in practice by Sport and Exercise Psychologists. It is apparent that attitudes must favour research for practitioners to want to apply research findings to their practice. Within nursing, engagement with research activities has been linked to improved attitudes towards research utilisation and better research skills (Murdoch-Eaton et al., 2010). When we consider this in applied sport psychology, full time applied practitioners will have less engagement with research when compared to individuals also working in academic

institutions, where conducting research may be a requirement of their role. Furthermore, in training, a professional doctorate candidate will have more exposure to research activities than a BASES SEPAR training candidate, within which there is no component for conducting research. Based on the findings from nursing, developing knowledge about research and its effect on improving decisions may encourage practitioners to adhere to evidence-driven models to practice and lead to improve performance outcomes (e.g., Murdoch-Eaton et al., 2010). However, it is also important to recognise that practitioners need more than just a positive attitude towards research to facilitate research utilisation as professionals may find it easier and safer to follow rituals and may find it difficult to stay up to date with literature (Mehrdad et al., 2008).

Findings of this study also suggest that all qualified and trainee respondents believed they had the skills for research utilisation. There is limited research in both exploring and testing the research utilisation skills for qualified and trainee practitioners; Winter and Collins (2015b) evaluated theoretical and mechanistic knowledge of attentional techniques but did not assess the skills required to apply those techniques to practice. Knowledge and expertise have been regarded within the applied sport psychology literature as vital for effective sport psychology consultancy (Smith et al., 2019). Research utilisation literature suggests that developing research utilisation skills is vital for bridging knowledge and expertise to the application of practice (Murdoch-Eaton et al., 2010). Specifically within this study, the majority of participants agreed they had the skills to assess the applicability of research evidence to an applied context and had the capability to use evidence-informed decisions when designing an intervention. Seemingly, knowledge on the psychological ‘tools’ for improving performance would be useless without the skills to use them.

All participants agreed they had the skills for research utilisation but level of agreement was significantly higher for qualified practitioners regarding the critical appraisal,

applicability, decision-making involvement of research, and the evaluation of practice using research. It is important that trainees develop the necessary skills for research utilisation to develop confidence and competence in making decisions informed by the best available evidence that leads to improved performance outcomes. In nursing, studies have found that nursing students perceive themselves as more information-literate than they actually were when tested, or that self-reported knowledge of evidence-based practice was higher than their objectively assessed knowledge (Heikkilä et al., 2018, 2019). As this study did not objectively measure trainee's skills and behaviours, we do not know whether participants' self-reported answers were inflated. It is possible that familiarisation with research utilisation terminology rather than awareness of research utilisation is what contributes to excessive rating of self-confidence in students (Heikkilä et al., 2018, 2019). Students may need more opportunities to improve self-assessment of research utilisation skills.

For the behaviour statements, only assessing the applicability of research was significantly different from the expected equal distribution. This study considers the use of research in any circumstance and demonstrates a more even split between high extent and moderate to low extent, showing that trainees and qualified practitioners are not exhibiting research utilisation behaviours to a significantly high extent. Low practice behaviours have been reported in other applied professions; despite having good internet access and national access to information, nurses are reportedly not using electronic databases to search for and apply research to their practice (Belowska et al., 2016). The explanations offered for this include lack of success, opportunity, time, and overwhelming workload (Belowska et al., 2018). Statements of assessing the applicability evaluating research with practice were significantly different between qualified and trainees participants, with trainee responses split 50/50 across high and moderate to low extent. This could be an outcome of trainees not yet

knowing how to use research in practice and/ or not having the opportunities to exhibit these specific research utilisation behaviours.

Nonsignificant findings regarding research utilisation behaviours could be a result of barriers that inhibit the application of research in practice. Although attitude statements were positive related to access and effort for research utilisation, participants reported the time and effort it takes to read, interpret, and apply research as barriers. Moreover, participants described practitioner skill as a barrier to research utilisation despite general agreement that participants had the skills to use research in practice. A potential explanation for the contradiction could be that participants perceived themselves to have the appropriate access and skills for research utilisation, but have observed colleagues, students, supervisees and peers experience barriers to access, time, and capability. Access specifically is a prevalent barrier to research utilisation across many applied professions and is a key component of the BARRIERS scale measuring perceived barriers to research utilisation in nursing (Bryar et al., 2003). With regard to barriers of time and effort, Bekker et al. (2017) suggested that knowledge translation can be a time-consuming and complex process that practitioners don't always have the time to dedicate to. Furthermore, research demonstrates that trainees within applied professions have limited skills in searching for research and critically appraising and interpreting research. Brooke et al. (2015) also suggested that students find research daunting and difficult to read and understand, which influences their attitudes, skills, and behaviours towards research.

To overcome the barriers to research utilisation, participants suggested methods for developing practitioner skill, improving research resources and future directions for research. Participants proposed that building practice communities and providing educational opportunities were important strategies for improving research utilisation. Evidence-informed decision-making workshops are recognised as effective mechanisms for improving evidence-

informed decision-making knowledge, skills, and behaviour (Yost et al., 2014). Research has demonstrated that intensive educational workshops run over a single day and a five day period significantly improve knowledge about the sources of information and concepts involved in evidence-informed decision-making (Awonuga et al., 2000; Forsetlund et al., 2003).

Participants also indicated that improving access, clarity, and rigour of research may support application of research to practice. The experimental research designs that make up the majority of sport psychology literature often show biased effects as they do not account for the external influences that will impact the implementation of an intervention in a real-world setting (Singal et al., 2014). Participants suggest that the use of simpler language and more detailed methodologies can help practitioners to understand the context of the intervention and consider if or how it can be applied to their athlete. Finally, participants expressed wanting to see more practice-focused research that had clear practical implications and contextual relevance. They also suggested that learning from the experiences of expert practitioners and gaining a deeper understanding of evidence-informed decision-making processes could facilitate their evidence-informed decisions. In support of this, Ivarsson and Andersen (2016) suggested that the field of sport psychology could be using other research designs that are useful for producing evidence in psychological interventions research. Specifically, they highlighted single-case experimental designs for providing contextual relevance and qualitative research for providing practitioners with the subjective, lived experiences of experts to inform their practice.

4.4.1 Applied Implications

The current study gives rise to several applied implications. To understand the relevance of evidence-informed decision-making in applied sport psychology, practitioners

should consider the sources of evidence they draw on to inform their practice, ensuring that practice decisions are based on the best available evidence. For qualified and trainee practitioners to want to use research in their practice, having a good attitude towards research utilisation is advantageous. Professional training organisations could emphasise the importance of research utilisation in practice. For example, they could provide opportunities to engage in research activities and deliver educational workshops of evidence-informed decision-making for trainees and qualified professionals. This could also focus on improving research utilisation skills of practitioners to ensure they are able to appraise, apply and evaluate research evidence. Improvement in evidence-informed decision-making awareness, attitudes, and skill could lead to more confidence in exhibiting research utilisation behaviours and result in research being applied to practice to a higher extent.

Research journals still need to overcome barriers to the use of research in practice to support practitioners in making research-informed decisions. By providing open access of journals where possible, practitioners are able to draw on a wide variety of research evidence sources to make the most informed decision on an appropriate intervention design.

Researchers publishing research should also focus on the accessibility of language and consider their audience. In instances where practitioner time is limited, articles with simple language and clear practical implications make it easier for the practitioner to decipher whether a piece of research evidence is relevant to the context of their athlete and whether it can contribute to improved performance. Furthermore, detail and clarity when describing research methodologies in journal articles can also support practitioners in applying research to their practice. Supplementary resources such as intervention workbooks and instructions on how to implement the intervention may make it easier for a practitioner to include in potential interventions.

4.4.2 Limitations and Future Directions

The first limitation of this study was that variables were measured using a self-report survey, therefore respondents' answers may have been influenced by social desirability bias (Nederhof, 1985). To address this, it was made very clear to participants before consenting to take part that their data would be kept confidential and only accessible to the research team. No identifiable information was taken and survey responses were not provided with identification numbers so that survey responses could not be linked to one individual. Secondly, the evidence-informed decision-making question of the survey involved selecting one process option, and the research utilisation attitudes, skills, and behaviours questions were assessed using Likert scales. I acknowledge that the closed type of questioning used restricted the answers that participants could give and that participants may feel none of the answers fit their opinion or situation. Regarding behaviour questions specifically, all participants would be required to use research in practice, however MSc students may only be practising this in mock class situations whereas full time practitioners have the opportunity to exhibit research utilisation behaviours every day. Consequently, it was important to distinguish the difference between responses for qualified and trainee participants due to their different circumstances. For the trainee participants, it also would have been advantageous to compare responses between qualification pathway due to the differing exposure to research within each of the training requirements, however the low response rates did not allow for such comparisons. Finally, it is important to bear in mind that cross-sectional research studies cannot be used to infer causality; for questions where there were significant differences between qualified and trainee responses, it demonstrated a relationship between qualification status and research utilisation variables, but it did not suggest that differences in research utilisation attitudes, skills and behaviours were due to qualification status. It is hoped that the qualitative results from the open text box responses of barriers and enablers to research

provide potential explanation for quantitative findings and support the reader in their interpretation of the results.

Current knowledge on evidence-informed decision-making is founded within medicine and public health (Nevo & Slonim-Nevo, 2011; Poot et al., 2018). To understand the relevance of evidence-informed decision-making in applied sport psychology, research should focus on developing an understanding of the processes involved in evidence-informed decision-making for intervention design and consider the interaction between sources of evidence other than research in informing practice. Furthermore, it has been supported within nursing research that engagement with research activities has a significant influence on the attitudes, skills, and behaviours of research utilisation for nurses (Mehrdad et al., 2008). Future research could explore the relationship between research activities and research utilisation variables for Sport and Exercise Psychologists that qualify through different training routes to see if a relationship exists. Finally, through their suggestions for research utilisation enablers, the participants in this study suggested future directions for research. Research that explores how experienced practitioners make decisions can help them to learn from the success and failures of others. Research that is focused on supporting advancements in the practice field could support their research utilisation skills and behaviours. Research that includes the use of samples and environments that have contextual relevance to practice are more likely to make effective contributions to the design of performance enhancement interventions for athletes.

4.5 Conclusion

According to the self-report data from this study, participants had generally positive attitudes towards research, with differences between qualified and trainee Sport and Exercise Psychologists occurring mainly for research utilisation skills and behaviours. The majority of

participants opted to make evidence-informed decisions influenced by an equal balance of research, and intuition and experiential knowledge. One explanation for this may be that practitioners are using their intuition and experiential knowledge to overcome research utilisation barriers and support the research utilisation process when making decisions on what interventions may lead to optimal improvements in performance. Findings in this study indicate that a lack of awareness exists regarding the relationship between research evidence and experiential evidence in the decision-making process for intervention design. Exploring a potential evidence-informed decision-making model for applied practice could support practitioners in making decisions that are informed by the best available evidence and have an optimal outcome on performance enhancement. It is therefore the purpose of chapter 5 to explore evidence-informed decision-making process within applied sport psychology.

Chapter 5: Study 2

Chapter 5: Study 2

Exploring the Processes of Evidence-Informed Decision-Making in Early Career and Experienced Sport and Exercise Psychologists

5.1 Introduction

To recap thus far, the first study of this thesis presented attitudes, skills, and behaviours towards research utilisation, identifying that although attitudes towards research were generally positive, practitioners need to develop the skills to support the use of research evidence in practice. Additionally, the study highlighted a balanced reliance on research evidence and evidence from intuition and experiential knowledge when making evidence-informed decisions for intervention design. Discussion of these findings led to the conclusion of a gap in knowledge regarding what evidence-informed decision-making processes are involved when designing interventions for performance enhancement. This chapter and the study within it attempt to understand the social processes involved in decision-making, and explore the specific relationship between research evidence and evidence from intuition and experiential knowledge.

Evidence-based practice within applied sport psychology is predominantly focused on the application of theories, principles, and techniques to practice (Smith & Smoll, 2011). It is the ethical imperative of all practitioners of psychology to employ evidence-based interventions that can lead to enhanced performance and/ or athlete well-being. This imperative is reflected in the profession's code of ethics, standards of professional conduct, and professional training accreditation criteria (e.g., ETHICS CODE: AASP Ethical Principles and Standards | AASP, n.d.). Further, the profession is recognised as both a scientific and applied discipline, with both strands informing and influencing each other (Moore, 2007). Accordingly, systematic reviews have supported the experimental efficacy of psychological skills interventions for the enhancement of psychological states and sporting

performance (e.g., Brown & Fletcher, 2017; Greenspan & Feltz, 2016; Lochbaum et al., 2022; G. L. Martin et al., 2005; Vealey, 1994; Weinberg & Comar, 1994). However, the application of research to practice is limited by methodological concerns in conducting rigorous and robust intervention studies (Gould, 2016). These include, but are not limited to: the use of non-athletic samples, contrived or laboratory settings, and testing mental skills practice rather than directly measuring the effect on competitive performance (Bishop, 2008).

The difficulties in conducting robust intervention research have led to disagreement between applied sport psychologists regarding the usefulness of the evidence-based practice approach. Moore (2007) found that some Sport and Exercise Psychologists valued an evidence-based practice approach, with the use of psychological skills intervention literature being perceived as the most important influence when trying to improve athletic performance. In contrast, (Winter & Collins, 2015a) found that experienced Sport and Exercise Psychologists were dissatisfied with the usefulness of the psychological skills intervention literature and made limited use of it when designing interventions aimed at performance enhancement. As a possible explanation for the research to practice gap in applied sport psychology, researchers have expressed that the field lacked “adequate guidelines of what constitutes a recommended approach to the optimal combination of techniques and methods used at different stages of the consultation process” (Poczwardowski et al., 2004, p.458). Holt et al. (2018) suggested that this could be due to the disconnect between the relevance of research studies and the applied context.

The perceived disconnect between the research and practice branches of the profession and lack of best-practice procedures has led to concern over whether the profession is providing sufficient evidence-driven models for consulting with athletes (Gardner & Moore, 2006). The professional judgement and decision-making literature is a growing area of professional development that has attempted to investigate how Sport and

Exercise Psychologists have an impact on an athlete or coach through studying the metacognitions of the Sport and Exercise Psychologists themselves (Martindale & Collins, 2005). Martindale and Collins (2005) have reiterated the influence of the athlete's needs and the practitioner's professional philosophy and theoretical orientation on decision-making during issue conceptualisation. They suggest that these examples of decision content can influence decisions regarding the nature of the goal for the intervention and the nature of the relationship with the athlete. Although this line of inquiry has furthered understanding of how professional judgement and decision-making can support practitioners in establishing their intention for impact, further research is required to understand the interactions between other sources of evidence, such as research evidence and evidence from intuition and experiential knowledge, within this process.

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 and Exercise Psychologists. They found that literature underpinning professional practice was a key influence on practice decisions and displayed the importance of practitioners understanding what they do and why they do it. Findings also presented the importance of the sport setting and context when making practice decisions. This finding extends the definition of evidence within evidence-based practice beyond scientifically generated research evidence to information from the athlete's environment. Another documented influence on practitioner decision-making includes tacit knowledge underpinned by experience, but its association with 'practical know-how' make it difficult to verbalise, teach and learn from (Brown et al., 2005). Existing literature within applied sport psychology demonstrates that making decisions for intervention design requires evaluation of a culmination of evidence sources (e.g., assessment of an athlete's needs, the sporting context, research and evidence from intuition and experiential knowledge) 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 an athlete or patient (Elwyn et al., 2012). 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 athlete 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 individual and constantly changing nature of applied sport psychology consultation make it difficult to propose straightforward and singular solutions. Secondly, attributing decision-making to tacit knowledge alone does not support the development of decision-making expertise in trainee Sport and Exercise Psychologists.

To truly understand the decision-making processes involved in applied sport psychology, it is important to acknowledge the philosophical nature of knowledge within this regard. We consider evidence-informed decision-making within a constructivist paradigm through which individuals actively construct knowledge and integrate new information based on their experiences of the world and personal reflections of these experiences. This 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 intention for impact, therefore focusing on one intention will provide a more homogenous investigation into practitioner decision-making.

The aim of this investigation was to explore the constructive process of evidence-informed decision-making when designing interventions for performance enhancement. Most of the existing literature on decision-making focuses on the processes followed by established and experienced practitioners as it provides less experienced practitioners with original and unique insights they can relate to their own practice (Sharp et al., 2015). Furthermore, much of the existing literature on neophyte practitioners focuses on practitioners in training (e.g., Verner et al., 2021), and not on recently qualified practitioners. Exploring the decision-making processes of practitioners with varying levels of experience but equal ethical and professional responsibility to their athletes will provide awareness of decision-making processes that can be utilised by all Sport and Exercise Psychologists at all stages of career development.

5.2 Method

5.2.1 Philosophical Approach

A social constructivist grounded theory methodology 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. Social constructivism focuses on co-constructed knowledge between the researcher and the participant and identified that all knowledge wherever it has come from is useful for developing theory. 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 (Mills et al., 2006).

5.2.2 *Participants*

Initially, ten early career Sport and Exercise Psychologists (3 female, 7 male) were purposefully sampled based on the limited research on this cohort within decision-making literature (Martin et al., 2022). Ten experienced Sport and Exercise Psychologists (2 female, 8 male) were later sampled based on principles of theoretical sampling; during analysis, categories related to the influence of practical experience required further investigation from individuals that had a wider breadth of experiences to draw on in their decision-making processes. Theoretical sampling allowed the first author to interview participant groups that maximise the possibilities of obtaining data and pursue leads for more data on the research question.

For Sport and Exercise Psychologists to be included, the participants had to have gained chartered status through the British Psychological Society (BPS), with Health and Care Professions Council's registration (HCPC). 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 also allowed for greater nuance to be explored relevant to the specific training qualification.

To be considered early career Sport and Exercise Psychologists, the participants had to be within three years of gaining Sport and Exercise Psychologist chartered status through the BPS with HCPC registration. Ages ranged from 29 to 49 years ($M = 35$ years; $SD = 5.2$). Experience as a sport psychologist 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, teaching and work in the

media. To be considered experienced Sport and Exercise Psychologists, participants had to have a minimum of ten years' experience post gaining BPS chartered Sport and Exercise Psychologist status and HCPC registration. Ages ranged from 35 to 52 years ($M = 45$ years; $SD = 5.9$). Experience as a sport psychologist 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.

5.2.3 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 through intensive, in-depth, semi-structured interviews. Seventeen were conducted using the video-call platform zoom, two over the phone and one in person. To ensure theoretical sensitivity, literature was addressed as sensitising concepts which aided the development of the initial research question and interview guide (Reay et al., 2016). Once initial questions and ideas for the interview guide had been developed, preconceived ideas were left to lie fallow during early data collection and were later incorporated as part of the iterative process of data collection and analysis (Weed, 2009).

The interview guide was developed based on previous sport psychology decision-making literature (e.g., Martindale & Collins, 2005, 2012) and medical evidence-informed decision-making literature (Moore et al., 2015). The interview guide consisted of four sections: (1) experiences of applied practice within sport psychology, (2) the process of designing an intervention for an athlete, (3) influences on the process of intervention design for an athlete, and (4) the role of evidence in informing the process of designing an

intervention for an athlete. Two pilot interviews were conducted prior to the study with an early career practitioner and a member of the research team who is a practising Sport and Exercise Psychologist. These were conducted to ensure appropriateness of the interview protocol and guide; these data were not included in the analysis. The interviews were conducted by the first author; I was a first year PhD student with limited experience of qualitative interviewing. Therefore, pilot studies also helped to develop my interview skills through experiential learning and reflection, and improved delivery and confidence of when and how to ask follow-up questions.

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 (Charmaz, 2014). As per theoretical sampling, the interview guide was subject to slight variation for experienced sport psychologist interviews to focus questions and gain additional data based on concepts developed through the iterative data analysis process (Coyne, 1997). Interviews lasted 37- 80 minutes. Interviews were recorded and transcribed verbatim by the first author. Names of participants were replaced with ID numbers, P1-10 denotes the early career practitioners and P11-20 denotes the experienced practitioners.

5.2.4 Analysis

Data analysis started following the first participant interview and continued throughout and after data collection. Two stages of coding were used during data analysis: initial and focused coding (Charmaz, 2014). Initial coding was conducted via line-by-line coding to ensure the researcher remained open to the exploration of all fundamental empirical problems or processes. This provided a contextualised basis for developing an initial description of phenomenon. The focused coding phase then used the most common or

significant codes from the initial phase to sort, synthesise, integrate, and organise large sets of data (Charmaz, 2014).

As data analysis was iterative, early career practitioners were first subjected to the processes of initial and focused coding to develop a series of concepts, sub-categories, and main categories. Experienced practitioner data were then coded into existing concepts, sub-categories, and categories that had been created from the early career practitioner data. However, it was important to remain open to new ideas throughout all stages of analysis (Charmaz & Belgrave, 2012). Therefore, any new codes that had significant presence throughout the experienced practitioner data were categorised separately and compared with the existing categories of the early career practitioner data sets. As the experienced practitioner data sets were iteratively coded, both data sets became amalgamated and similarities and differences between the early career and experienced practitioners were assessed using the constant comparison method.

The constant comparison method involved comparing data to other data and to emerging codes, concepts, and existing literature. This method helped to understand what participants viewed as influential to the decision-making process for intervention design and enabled the research team to treat it analytically. The use of memo writing also supported the iterative process to ensure the links between codes and concepts were constructed from the data (Saldaña, 2018). Theoretical saturation was achieved using Aldiabat and Le Navenec (2018) guidelines for memo writing; memos were used to reflect on the experience of data collection and analysis and advice was sought from a grounded theorist and the research team to support all decisions.

A final theoretical coding phase was conducted to further analyse the relationships between categories and codes constructed from the data (Thornberg & Charmaz, 2014).

Ideas, terms and abstract models from extant theories were used as analytical tools that helped to tell a coherent analytical story and add further explanatory power to the findings (Chun Tie et al., 2019).

5.2.5 Quality and Rigour

Quality criteria for social constructivist methodologies was assumed. First, the use of rich quotes in presentation of the results provide credibility and resonance; the reader is able to interpret findings and reflect on resonance to their personal experiences based on the phenomenon presented (Carter & Little, 2007). Second, data triangulation was employed to satisfy “appropriateness” of the tools, processes, and data in the study (Leung, 2015). Data were triangulated through interviewing different informants (experienced and early career sport psychologists) and combining participants’ ideas for a deeper understanding of the studied phenomenon (Willig, 2015). Between the research team and I, critical friends were employed for epistemological and personal reflexivity on philosophical position and the influence that had on the research process (Smith & McGannon, 2018). Critical friends were also used to discuss the development of research findings during all stages of the data analysis process with the research team. These discussions allowed for examination of how closely the concepts and theory ‘fit’ the phenomena they represented, and their ‘relevance’ in addressing the real concerns of the Sport and Exercise Psychologists involved in the process to which the findings apply (Weed, 2009).

5.3 Results

Following data collection and analysis, four key categories were constructed regarding decision-making processes for applied sport psychology practice. These were (a) gathering information about the athlete, (b) using research evidence, (c) drawing on experience and tacit knowledge, and (d) integration. These findings are represented in Figure 5.1.

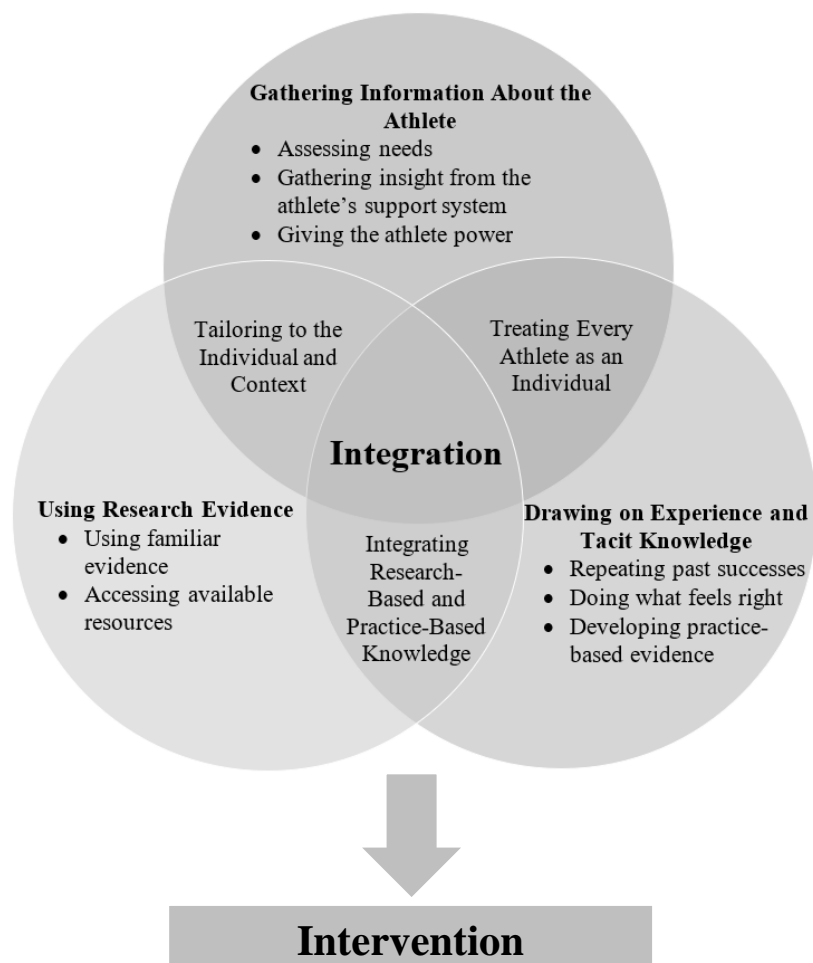


Figure 5.1. Model of evidence-informed decision-making when designing interventions for performance enhancement

Gathering information about the athlete

Gathering information about the athlete describes the process sport psychologists followed in acquiring knowledge that was specific to the athlete. This process ensured that intervention design decisions were based on the needs of the athlete. This process involved assessing needs, gathering insight from the athlete's support system, and giving the athlete power.

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 included in their intervention design:

“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.

“Sometimes if they’ve come with something specific like ‘I’ve got no confidence’, we might do another questionnaire around confidence.” (P4)

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. This theme encompassed using familiar evidence and accessing available resources.

Using familiar evidence. Participant decisions regarding what research evidence informed intervention design was influenced by their familiarity with certain evidence-based strategies. 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.” (P1)

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 participants noted difficulty in doing this and saw access as a barrier. Participants described research evidence “sitting behind paywalls” (P4) 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 in informing decisions:

“There’s literature out there that is definitely 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 stuff I would say." (P16)

Drawing on experience and tacit knowledge

Drawing on experience and tacit knowledge involved participants basing decisions on previous experiences and intuitive thinking. This process involved: repeating past successes, developing practice-based evidence, and doing what feels right.

Repeating past successes. Repeating past successes involved practitioners repeating interventions that has previously been successful when addressing a similar issue.

"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 presenting 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. For P13, they struggled to articulate the process through which their decision-making occurred; 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 or trying to get a more quantitative measure.”

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. These decisions were informed by combining information sources gathered from the athlete, context, research, and prior experience and tacit knowledge. An *Invivo* code that was mentioned by many participants was the idea of reaching an end point to information gathering and “painting a picture” of the athlete, their context, the issue, and the best way to address it. Being able to visualise the entire picture was an integral component in transitioning from gathering information into gaining an understanding of the maintaining processes of the athlete’s issue and making the most informed decisions for the intervention design.

“I guess there is a point in consultancy where you say ‘right I’ve seen enough in what’s being said and my understanding of a pattern based on previous experience that I’m quite content this is an appropriate intervention’.” (P17)

This category included processes of tailoring to the individual and context, treating every athlete as an individual, integrating research-based and practice-based knowledge, and reacting to new information.

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 8-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 gone into looking at journals and how it (mindfulness) is used in sport and I’ve been creative as well by working out methods that I can take from the 8 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, they also described remaining sceptical of the previous experiences they were drawing inspiration from when designing interventions. When working within different contexts, practitioners questioned the appropriateness of basing decisions on prior practice experiences.

“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.” (P11)

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. Participants 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 participants remained open to new developments within the literature and adjusted decisions accordingly:

"I have an overall framework, but I am definitely updating it. I read a paper on self-talk and collective efficacy... I gathered that if you're trying to improve your performance or trying to target your anxiety, it's better to talk about self-talk using 'we' statements instead of 'I' statements. So not 'I can do this' but 'we can' I wouldn't have thought that." (P1)

5.4 Discussion

The aim of the study was to gain a conceptual understanding of the decision-making processes that Sport and Exercise Psychologists follow in the design of a performance enhancement intervention. The findings illustrate the pressures in producing an intervention that suits the needs of the athlete, works pragmatically within the applied context, is based on the best available evidence, and has the desired effect on the end goal. Intervention design

was underpinned by four decision-making processes: gathering information about the athlete, using research evidence, drawing on experience and tacit knowledge, and integration. With the importance given to evidence-based decisions within the profession, participants expressed they valued research to inform sport psychology delivery, but often felt that research was not specific enough to the applied context and thus decisions were also driven by experience and tacit knowledge derived from applied exposure. When faced with such contextual barriers, participants utilised their own skill, creativity, and flexibility derived from practice experiences to provide tailored evidence-based strategies.

When beginning a new consultation, participants always started by understanding the needs of the individual athlete, exploring the multitude of factors that represented both the athlete and their context. As with all applied psychological professions, “each problem must be addressed as it occurs in nature, as an open living process in all its complexity” (Peterson, 1991, p.426). 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 (Anderson et al., 2002). 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 & Hodge, 2013). (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. This mirrors (Bordin, 1979) concept of goal agreement, where the athlete and practitioner work collaboratively to achieve a set outcome.

Another influence on evidence-informed decision-making was the information gathered from the athlete’s support system. The participants would rarely consult in isolation; whether this included interactions with coaches, supporting staff members or family and

friends, incorporating multidisciplinary perspectives supported practitioner decision-making. Within this study, contextual decisions were based on insight from stakeholders and observations, both of which have been shown as important decision content within the health services literature (Gillespie et al., 2015). Similarly, within team sport environments, Sharp and Hodge (2013) found that decisions were made based on the practitioners understanding of the team, its players, and staff members. Incorporating multidisciplinary perspectives occasionally involved participants working within a team of sport psychologists that they could use their expertise to guide their decisions. However, a reliance on ‘human sources’ of information as a primary means of informing decisions can pose its own limitations as there is an assumption these resources are, and continue to be, based on reliable and valid evidence, which may not always be the case (Thompson et al., 2004).

The use of research evidence played a significant role in the decision-making process for intervention design. Authors have described the application of research as fundamental for the provision of sport psychology services as it enables knowledge, research, and interventions to support one and other and advances both the scientific and applied branches of the field (Cropley et al., 2010; Moore, 2007). Participants used research in their practice by implementing evidence-based strategies they were most familiar with. For 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. In the literature, experienced practitioners have been shown to be half as likely to use certain attentional-based techniques in practice when compared to their trainee counterparts (Winter & Collins, 2015b). The authors suggested two explanations: (1) the experienced practitioner had learned from previous practice that those techniques were ineffective and thus opted for an alternative solution or, (2) 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 stay committed to the idea that new research can and should inform practice decisions.

Through the sub-theme of accessing available resources, our findings illustrate 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 had access to research or could rely on evidence-based company frameworks and resources to inform intervention decisions compared to the limited available resources of those working within private practice.

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, and although they demonstrate efficacy and offer internal validity in testing interventions, there also exists issues surrounding a lack of transferability to the real world

(Ivarsson & Andersen, 2016). Other designs such as single-case experimental designs have begun to be used more frequently to help demonstrate the mechanisms through which interventions work (Barker et al., 2020). The issue of transferability is not unique to the sport psychology domain; clinical professions, within which the use of evidence-based decisions has much credence, also struggle to make the connection between what is experimentally tested and what will work in real life (Kazdin, 2008). In an attempt to address the disconnect, clinical psychology researchers have questioned the philosophical underpinning of evidenced research, by shifting away from thinking of evidence primarily as a matter of epistemology, towards thinking of evidence as a matter of ontology (Drapeau & Hunsley, 2014). 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). This shift in philosophical perspective can help bring to attention the real-world application of science and intervention as evidence-making practices.

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; regarding treatment-based outcomes literature, evidence suggests that clients do not always receive scientifically supported interventions and clinicians appear dubious of evidence-based practice (Lilienfeld et al., 2013). In a study of 508 members of APA Division 12, respondents' expressed modest agreement that controlled research on psychotherapy was relevant to their practice (Stewart & Chambless, 2007). Past clinical experiences and colleagues' advice were perceived as more influential in decisions for treatment outcomes, with current research regarded as modestly influential. This supports the argument of widening the definition of what is considered as evidence within evidence-informed decision-making. Rycroft-Malone et al. (2004) illustrates the importance of practice-based knowledge in informing clinical practice to achieve improved patient

outcomes in clinical practices. 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 (Eraut, 2000a). 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 reported similar processes by recording their own data, verifying findings, and reflecting on the process to achieve create practice-based evidence. Previous researchers have argued for the importance of practice-based evidence in informing applied decisions, however they also state that there is no set forum for sharing and communicating it (Winter & Collins, 2015a).

Integration made up the final process of evidence-informed decision-making.

Participants integrated evidence gained from the athlete, context, research, and their own experience to design a bespoke intervention. In line with this, Poczwadowski et al. (2002) believed that with the growth of sport psychology, the design of interventions that appropriately address specific problems would become a stable component of a practitioner's skill set which enables them to make decisions informed by the theory and practice of behaviour change. Tailoring to the individual and context describes the integration between gathering information about the athlete and using research evidence. Practitioners considered the practicality of research-based interventions and how they could be adjusted to suit the athlete's needs and the sporting context. The sporting setting and context of the athlete's environment has been highlighted in the literature as a reason underpinning practice (Brown

et al., 2005), whereby practitioners use their sport specific knowledge to tailor a research-based intervention into something that can be appropriately implemented within the environment. Through this process, practitioners earn legitimacy, trust and respect and therefore it is considered a strong predictor of real-world effectiveness on performance enhancement.

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 may have worked for one athlete may not be appropriate for implementation with another athlete, or could be potentially damaging to that athlete. This concept advocates for a more individualised and person-centred approach to the construction of interventions (Black & McCarthy, 2020). Rather than choosing from a list of pre-existing solutions to address generic issues, practitioners should consider a more humanistic approach to construct a truly bespoke intervention for their athlete that most effectively addresses the athletes needs and circumstance.

The integration of research-based and practice-based knowledge plays an important role in every scientific discipline that focuses on client-centred care. For example, 'balancing evidence-based knowledge with practice-based knowledge' is the core phenomenon of decision-making in wound management (Gillespie et al., 2015). Rather than being presented as a balance, this study visualises the interaction between research-based and practice-based knowledge as an integration; participants used their prior practical knowledge to mould research-based interventions into practical activities that addressed the needs of the athlete, worked pragmatically within the applied context, and had the desired outcome on the

performance goal. It is important that education programmes emphasise the teaching of this process to ensure trainees develop the competencies necessary to use theory, research, and practice experience to inform intervention design (Smith & Smoll, 2011). However, it has come into question whether trainees are developing the pre-requisite skills needed to construct effective evidence-informed decision-making processes; learning within applied sport psychology educational programmes is taught with the assumption trainee practitioners are able to obtain the knowledge of concepts and skills required to then translate them effectively into the context they are practising within (Gilbert et al., 2009). Yet research has suggested that neophyte practitioners often implement techniques without knowing the theoretical or mechanical underpinning of the technique (Winter & Collins, 2015). Without this knowledge, trainees may struggle to understand what needs to be targeted for interventions to have effective outcomes on athlete performance. Understanding how learning experiences can develop practitioner evidence-informed decision-making processes may support them in better informed and more effective decisions for practice.

Reacting to new information also formed part of integration. 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. Anderson and McCann (2000) suggested taking a partnership approach between athlete and practitioner allows for flexibility when interacting with athletes through constant feedback.

5.4.1 Applied Implications

The study has implications for applied sport psychology practice and translational research. Firstly, it remains evident that applied sport psychology literature still struggles to represent the dynamic nature of real-life practice. Journal requirements are beginning to ask for more transparency regarding practical relevance, for example authors are required to include a lay summary and applied implications for submissions to the Journal of Applied Sport Psychology (Writing and Submitting Your AASP Journal Manuscript: The Inside Scoop | AASP, n.d.). However, more detail of how the intervention is implemented is needed for practitioners to understand the specific mechanisms that can impact performance enhancement. This study recommends journals and authors make use of supplementary materials to provide detailed instructions of how interventions are implemented and provide information on the context they are delivered in to support effective translation into applied practice. The findings of this study also present a decision-making model that any practitioner can use to strengthen their evidence-informed decision-making capabilities. Specifically for neophyte 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. Professional educators could integrate evidence-informed decision-making concepts to develop the skills and competencies trainee Sport and Exercise Psychologists need to adhere to evidence-driven models for applied practice.

5.4.2 Limitations and Future Directions

This study provided a cross section of practitioners across many working environments, but it is only based on the perceptions of those involved in the study, not the majority of Sport and Exercise Psychologists across the United Kingdom. However, 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 and allowed for conceptual transference of results to a broad range of practitioners working in a variety of settings. 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 and Exercise Psychologists. Considering their experiences and narratives may shed light on how specific events throughout their career shapes the development of decision-making processes. This may support improvements to training and continued professional development opportunities in promoting adherence to evidence-informed models for practice. Further research may also consider whether findings from this study are synonymous across Sport and Exercise Psychologists from different training routes (e.g., BASES SEPAR and Professional Doctorates).

5.5 Conclusions

In conclusion, this study has developed understanding of the evidence-informed processes Sport and Exercise Psychologists follow when designing an intervention that suits the needs of the athlete, works pragmatically in the applied context, and has the desired effect on the end goal. Despite the evidence-based approach being consistently promoted as a means to improve the quality of sport psychology practice, Sport and Exercise Psychologists integrate a range of evidence sources to design the most appropriate intervention to achieve performance enhancement for their athletes. This study has shown that the process of intervention design involves the use of both propositional and intuitive processes which when used carefully together, can complement each other and lead to the production of effective interventions for implementation. Understanding these processes can support training and development opportunities in improving Sport and Exercise Psychologists decision-making capabilities.

Now that we have established a model for evidence-informed decision-making in applied sport psychology, further research should explore how these processes are constructed and what influences their construction. The study within the next chapter of this thesis moves away from studying social processes and towards lived experiences; Understanding the influence of experiences during the career of a Sport and Exercise Psychologists may support development of evidence-informed decision-making training and professional development programmes that help practitioners make more informed decisions and lead to better athlete outcomes.

Chapter 6: Study 3

Chapter 6: Study 3

Sport and Exercise Psychologists' Experiences of Developing Evidence-Informed Decision-Making: An Interpretive Phenomenological Analysis

6.1 Introduction

There has been development in research regarding evidence-informed decision-making within the applied sciences (e.g., Belita et al., 2022; Bowen et al., 2009; Ward et al., 2022). However, the complexity of its involvement in decision-making for sport psychology service delivery is still relatively underexplored. The previous chapter provided a conceptual understanding of how Sport and Exercise Psychologists make evidence-informed decisions for intervention design. The findings indicated that using research and drawing on experience and tacit knowledge were two influential decision-making processes for designing an intervention that suited the needs of the athlete, worked pragmatically within the applied context, and had the desired effect on the end goal. While practitioners described an integration between these processes, there was no consensus regarding the balance of decisions based on research evidence and decisions based on experiential knowledge; some practitioners indicated a preference for drawing on a variety of empirical evidence to guide decision-making, whereas others were led by experiential knowledge as they felt barriers to research access and quality prevented the application of research evidence to their practice.

The variation of interaction between decision-making processes may be attributed to the widening definition of what counts as evidence within evidence-based practice. Within evidence-based practices, such as nursing and medicine, it was previously assumed that evidence was research evidence and, more specifically, quantitative research evidence. This has led to quantitative research evidence becoming more highly valued than other sources in the delivery of health services (Hariton & Locascio, 2018; Sackett, 1997) The importance

attributed to research evidence has resulted in the neglect of the application of other forms of evidence in health services (Upshur, 2009). For example, the relationship between research evidence with contextual, individual practitioner and patient variables had been overlooked. Similar to nursing, the central component of sport psychology practice is the relationship an individual practitioner has with their athlete, thus the nature of evidence is wider than evidence derived from research and is derived from a variety of sources that have been subjected to testing and found to be credible (Higgs & Titchen, 2001) .

Considering a constructivist explanation for the varied interaction between evidence-informed decision-making processes, it suggests that knowledge making processes are specific to each individual; learners construct knowledge based on their experiences of the world and their personal reflections on it (Bettencourt, 2012). Sport and Exercise Psychologists may actively construct their decision-making processes, using previous knowledge as a foundation and build on it with new knowledge that they learn. Hence, there could be as many evidence-informed decision-making approaches as there are Sport and Exercise Psychologists due to the varied training and development experiences they encounter. Throughout their career progression, these experiences include the various interactions practitioners have with courses, programmes, people, and other experiences that influence decision-making development (McEwan & Tod, 2014). Smith et al. (2019) highlighted the importance of advancing practitioner decision-making skills and suggested that it should be a clear goal of training and development. However, there remains limited knowledge as to how such learning experiences shape the development of current evidence-informed decision-making processes in applied sport psychology practice (Tod, 2017).

Previous learning experience literature within applied sport psychology has focused on their contributions to developing service delivery competence (Tod et al., 2007). Learning experiences found to be beneficial included supervised placements, attending and presenting

at conferences, undertaking counsellor training, and personal involvement in sport (Tod et al., 2007). This mirrored findings from counselling psychology (Furr & Carroll, 2003; Orlinsky et al., 2007). Tod et al. (2007) also explored the mechanisms through which learning experiences can support trainee development and uncovered two main findings: supervised experiences helped trainees to gain service delivery experience, and social interactions between students and staff contributed to learning service-delivery-related skills and knowledge. Similar findings have been found within the study of professional judgement and decision-making; experience, analytical reasoning, and observation of other practitioners' practice was useful for developing professional judgement and decision-making expertise in Sport and Exercise Psychologists (Smith et al., 2019).

Regarding the teaching of research and theory as a learning experience, graduates have described research as being “too textbook” and only useful when readily applicable to the athletes they are working with (Tod et al., 2007, p.327). As a possible explanation, research suggests that inexperienced practitioner might be unable to apply theory and research unless the applied implications are made explicitly clear (Rønnestad & Skovholt, 2003). However, this demonstrates that current learning experiences are not helping trainees develop the skills and knowledge necessary for actioning evidence-informed decisions when working with athletes. Therefore, it appears necessary to identify the learning experiences important for developing evidence-informed decision-making processes and explore the mechanisms through which they achieve it. Furthermore, learning experience research within applied sport psychology professional development literature has predominately focused on learning experiences during training and has not often considered the learning experiences that span the full length of a Sport and Exercise Psychologist's career. From a constructivist perspective, the experiences, and social interactions that Sport and Exercise Psychologists

encounter following training could be just as important for ensuring their continued professional development in evidence-based practice.

With the varied interaction between decision-making processes, examination into the career experiences of Sport and Exercise Psychologists appears a vital step in understanding their influence on the construction of evidence-informed decision-making processes. This line of inquiry may help us to understand why a practitioner may choose to draw more heavily on experiential knowledge compared to empirical research evidence when designing psychological interventions for implementation with athletes, and vice versa. Investigating the subjective reasoning behind the construction of evidence-informed decision-making processes may help to identify the critical phases of career development and the mechanisms through which they may support the development of evidence-based practices. Consequently, the aim of this study was to explore how the experiences throughout the career of a Sport and Exercise Psychologist influences the development of evidence-informed decision-making processes when designing interventions for athletes. Exploring the experiences and narratives of Sport and Exercise Psychologists should provide a better understanding of the learning experiences pivotal for developing evidence-informed decision-making processes and may inform future training and professional development guidelines.

6.2 Method

6.2.1 Philosophical Approach

An interpretive phenomenological analysis (IPA; Smith & Osborn, 2015) was adopted through a constructivist philosophical perspective, acknowledging the existence of multiple realities among individuals. IPA allows for detailed examinations of personal lived experience (Alase, 2017). IPA places the researcher at the centre of the analysis process, allowing the researcher to engage in meaning making by interpreting each individuals'

subjective experiences (Smith, 2018) . This was achieved by the ‘double hermeneutic’ approach, through which the researcher attempts to make sense of the participant’s attempt to make sense of the world (Peat et al., 2019). Furthermore, concentrating on the individual and personal experience of human nature allowed for the identification of both similarities and differences between participant’s experiences (Smith & Osborn, 2015).

6.2.2 Participants and Procedure

IPA is an idiographic approach that looks in detail at the lived experience for each participant, therefore, only a small sample size is required (Reid et al., 2005; Smith et al., 2009). Eight interview transcripts were selected from the original dataset based on the principles of analytical generalisability (Smith, 2018). Analytical generalisability describes instances where researchers re-examine concepts in a study through a different methodology and subsequently produce new conceptual and theoretical understandings of a topic (Smith, 2018). The conceptual generalisations from this study are seen as fluid ideas for making sense of the world and people’s lives (Atkinson, 2017). Therefore, the re-examination of practitioner transcripts through IPA helps the researcher understand the development of decision-making concepts from study one by exploring the lived experiences throughout the career of a Sport and Exercise Psychologist in this current study.

According to principles of naturalistic generalisability, the research should bear familiar resemblances to the readers’ experiences, settings they move in, events they have observed or heard about, and people they have talked to (Smith, 2018). This study purposefully selected participant transcripts from study two based on their differences in evidence-informed decision-making processes. The purposeful sampling of participants with different decision-making positions satisfied naturalistic generalisability as it provided the reader with relevant, varied and detailed accounts of Sport and Exercise Psychologists

experiences of developing evidence-informed decision-making processes. The interview transcripts selected for re-examination included the transcripts of four early career Sport and Exercise Psychologist's and four experienced Sport and Exercise Psychologist's transcripts. Within each group, participants were selected based on the different positions of their current decision-making processes, these were: a Sport and Exercise Psychologist who mainly drew on research evidence, a Sport and Exercise Psychologist who mainly drew on experience and intuition, and two Sport and Exercise Psychologists that drew on a balanced amount of research evidence and experiential knowledge.

The four early career participants were two females and two males (age: 38.0 ± 10.1 years). To be considered early career Sport and Exercise Psychologists, the participants had to be within three years of gaining their full sport and exercise psychology accreditation through the British Psychological Society (BPS), with Health and Care Professions Council's registration (HCPC). Their mean years of experience was 1.0 ± 0.7 years post accreditation. Two were full-time sport psychology practitioners and two had additional employment responsibilities including lecturing roles at a university and roles within the media. The four experienced participants were two females and two males (age: 42.0 ± 8.4 years). To be considered experienced Sport and Exercise Psychologists, participants had to have a minimum of ten years' experience post gaining BPS chartered Sport and Exercise Psychologist status and HCPC registration. Their mean years of experience was 14.0 ± 4.8 years post accreditation. Two were full-time sport psychology practitioners, and the other two had additional responsibilities within academic institutions.

6.2.3 Analysis

Analysis followed Smith et al. (1999) guidelines. To develop familiarisation with each practitioner's accounts, transcripts were read several times by myself (first author) and

annotations were made based on what was interesting or significant about what the participant said. This helped to develop the researcher's understanding of the participant's accounts and allowed them to focus on the significance of experiences rather than the frequency of their occurrence. The first round of annotations was then used to guide emergent themes, condensing the original descriptions but capturing the meaning of accounts. Themes were then clustered together based on shared meaning or central concepts. In line with the idiographic nature of IPA, this process was initially conducted for each individual separately before assessing the divergence and convergence between the themes derived from each participant's transcript. During this stage of comparison, subordinate themes that did not have enough support from the transcripts were dropped and higher order concepts that linked practitioners' experiences were developed into superordinate themes. Names of participants were replaced with ID numbers, P1-4 denotes the early career practitioners and P5-8 denotes the experienced practitioners.

6.2.4 Quality and Rigour

As IPA analysis has its origin in the philosophical tradition of phenomenology, knowledge obtained through its use is mediated and constrained by individual perspectives, purposes, language, and culture (Camic et al., 2003). This philosophical perspective rejects the notion of discovering an objective reality, and thus quality considerations associated with positivism (belief of an objective reality) such as reliability and validity are inappropriate for assessing the quality and rigour of the current IPA study. Instead, Yardley (2017) suggested four other general guidelines for enhancing and demonstrating the quality of qualitative research: sensitivity to context, commitment and rigour, transparency and coherence, and impact and importance. Sensitivity to context involved the researcher understanding the social-cultural environment of sport psychology consultation and how existing literature regarding the use of research in practice could lead to preconceived ideas that may influence

the research process. The first author therefore took a reflexive approach to the collection and analysis of data and regularly discussed these pre-existing assumptions with the research team. Commitment refers to prolonged engagement with the research topic, the development and competence and skill in methods used, and immersion in the relevant data (Yardley, 2017). This was achieved through the first author taking courses on the methods used to develop their competence in the application of IPA analysis.

Rigour addressed the completeness of the data collection and analysis. Initially, this depended on the adequacy of the sample, hence rigour was adhered to through the use of a sample that was appropriate for addressing the research question and could provide relevant insight. Rigour also includes the comprehensiveness of the interpretation, which should address all the variation and complexity observed (Yardley, 2017). This was achieved by having multiple levels of analysis, with discussions involving the research team regarding the emergence of subordinate and superordinate themes. Transparency and coherence refer to the reader's ability to see clearly how the interpretation was derived from the data. Analysis was conducted by myself (the lead researcher) and an audit trail was kept, ensuring transparency and coherence by providing documentary evidence of the sequence of decisions made during the emergence of themes. Finally, importance and impact refer to the requirement for all research to generate knowledge that is useful, whether in terms of practical utility, generating hypotheses, or even changing how we think about the world. This study hopes to identify the mechanisms through which learning experiences can support evidence-informed decision-making to improve training and development of competent and confident evidence-based practitioners.

6.3 Results

The Sport and Exercise Psychologists' personal experiences of developing evidence-informed decision making throughout their career was influenced by a range of factors. The analysis revealed three superordinate themes across all participants, these were labelled as 1) acquiring knowledge, 2) sport psychology community support 3) engaging in research. These themes and their corresponding subordinate themes are displayed in table 7.1.

Table 6.1. Superordinate and subordinate themes for experiences that influence the construction of evidence-informed decision-making processes

Superordinate themes	Subordinate themes	Codes
Acquiring knowledge	Masters training experience	Gaining theoretical knowledge Underpinning knowledge Managing training expectations
	Early practice experiences	Practising pre-qualification Applied experience during training Developing an approach
Sport psychology community support	Supervisory relationship	Positive supervisory experiences Negative supervisory experiences
	Peer support	Supervisory group during training Learning from one and other
	Working environment support	Researcher and practitioner collaboration Provision and opportunity
Engaging in Research	Training research component	Developing research competencies Maintaining research skills Building research confidence
	Continuing with higher education	Pursuing postgraduate education Working within higher education Continued access
	Engaging in research through publication	Giving back Research with impact Connecting research and practice

Acquiring knowledge

Acquiring knowledge refers to the participants' developing knowledge of the applied sport psychology evidence-base and how they use such knowledge to design interventions. Participants used the phrases of "always learning", "continuously developing" and "developing over time" to describe how the acquirement of knowledge was a constant process as they moved through the varying stages of their career progression. This process was driven by the importance of absorbing, storing, understanding, and consequently translating knowledge into their applied practice. There were two periods within the participants' careers that were particularly prevalent for the acquirement of knowledge: Master's training experience and early practice experiences.

Masters training experience. All participants explicitly described how influential their training was in shaping the way they used evidence to inform their practice. The theoretical knowledge gained from their Masters degree provided them with the empirical underpinning necessary to plan and deliver appropriate interventions and was useful in having "some kind of theory to fall back on" (P8) when making decisions. Furthermore, practitioners that had attended higher education institutions that promoted a collaborative relationship between research and practice were more likely to use research evidence to inform their decisions:

"When I was back in my days of graduate school, we were always talking about the gap between research and practice and how we bridge that gap between research and practice." (P5)

For some of the early career participants, they did not recount positive experiences from their Masters. These participants expressed feeling overwhelmed by the capacity of theoretical content that they were taught and expected to digest. These participants described being out of their depth and felt let down by their masters training; they did not feel it had prepared them to meet the standards and expectations that awaited them in the applied field.

Some experienced practitioners that worked as supervisors on the Sport and Exercise Psychologist training pathway described witnessing trainees “fall off the cliff in term of their experience” (P6) once the trainee realised how out of depth they were when working in an applied setting. For those early career participants, they experienced feelings of anxiety and confusion that caused them to overthink when trying to understand and apply research evidence to practice:

“I was in that anxious place, ‘God I don’t know what I’m doing, I really need to read everything’. I would be an avid reader where I would get all the self-help books in the world, I would look at lots of different research articles, I started to create these crazy drawings with spider diagrams and mind maps to try and make sense of it all. It was just a hell of a lot.” (P2)

Early Practice Experiences. Two early career participants described encountering many challenges during their early career experiences. These early experiences encompassed both applied experiences during stage two of the BPS training pathway and early experiences following receipt of full accreditation. These participants described themselves as “neglectful” (P2) and a “worse practitioner” (P3) during these instances. They felt they were delivering interventions without an underpinning as to why the techniques may be beneficial for the athlete during these early applied experiences. These participants referred to this as “throwing the mental skills book” (P3) at the athlete or team they were working with:

“I started with the standard mental skills approach that you learn on your masters, and it was very much focused on the individual, going in and working with the athlete. You might get coach coming to see you and saying, ‘oh this athlete has a problem, can you sort them out?’. At which point I would nod vigorously and say, ‘yeah of course I’ll do that’, even if in my head I’m going ‘I don’t know what I’m going to do yet’. I go in with the athlete and nine times out of ten I would sit there and wonder what the hell am I going to do and throw the kitchen sink at them in terms of the different tools to varying limited successes.” (N2)

In contrast, the early career experiences gained by P1 during their masters training helped them to incorporate evidence into their decision-making process for intervention design. By working through role play exercises in their masters training and delivering voluntary sport

psychology consultation to their local sports club, they developed an understanding of what practice involved, gained feedback on their development, and were able to connect what they were learning to the practice environment:

“I would say to athletes at my local club ‘the skills that I’m learning in my masters, can I practice doing sessions with you?’. They knew I wasn’t qualified, they didn’t pay me, but I got feedback from them about running a session, which I found invaluable. I recommend that to a lot of people, as long as you’re honest about your qualification, you’re learning the masters stuff at the same time. So by the time I started stage two, I’d done quite a lot of that.”

Sport Psychology Community Support

Sport psychology community support refers to the interactions participants had with other Sport and exercise Psychologists throughout their career and how these influenced their evidence-informed decisions for intervention design. There were three subordinate themes through which this influence occurred: supervisory relationship, peer support, and working environment support.

Supervisory relationship. Participants’ experiences of supervision were divided based on whether those experiences were positive or negative. Regarding supervision during training, some participants developed a good relationship with their supervisor whereas others either received poor quality supervision or had a limited amount of contact with their supervisor. Participants with positive experiences of supervision felt comfortable taking advice from their supervisor and respected their professional opinion. When considering what evidence to draw into their practice, the approaches promoted and most often used by a supervisor often made their way into the professional work of the supervisee:

“With my supervisor, who does a huge amount within REBT, I’ve learned, as I’ve gone along to not to follow everything to the letter and find my way a bit with it more.” (P1)

However, both P2 and P3 experienced supervisors who did not fully provide them with the support they needed. P3 had a “hands off supervisor who didn’t really push me”. For P2, their supervisor was more academically focused and did not provide them with the support they needed to transfer their teaching to the applied setting:

“In stage two I didn’t really have peer support. My supervisor was purely for academics, like writing reports, no actual applied support. I might be bouncing ideas off a few peers, but I really felt unsupported.”

The influence of supervision on developing evidence-informed decision-making was described as mutually beneficial for both the supervisor and supervisee. Alongside their practice, all four experienced participants provided supervision to trainee Sport and Exercise Psychologists. When playing the role of supervisor, the experienced participants encouraged staying up to date with literature to ensure trainees remained aware of current practices and new developments. In addition to promoting this notion themselves, working as a supervisor allowed the experienced participants to stay up to date with the field’s ever-developing evidence base. This was especially prevalent for P7 who works full time within the applied field and has limited access to the literature.

“I’m not in an academic setting now so my regular access to what’s being published is reduced. But I supervise candidates on BPS stage 2, so I learn of research through them.”

Experienced practitioners valued engaging in supervision themselves, and ensured that the organisations they worked for supported them with the opportunity to seek clinical supervision. P8 found this helped them to have a broad perspective of psychological lenses to approach practice situations through:

“It’s really expensive just as an individual practitioner to get clinical supervision, it’s something the *sporting organisation* funds and it’s something that everyone in our team gets, which is really good and useful.”

Peer support. Participants found engaging in peer supervision helpful when developing evidence-informed decision-making processes. The types of people providing support were colleagues within the same sport psychology company (working together or mentors), peers during training, communities built from conferences, CPD opportunities, and social media groups. These individuals offered emotional support, professional advice, collaborative opportunities, and resources. Experienced participants spoke both about engaging in peer supervision during their current practice and mentioned how beneficial it was to go through their training amongst a supervisory group. P4 had a network of peers they met monthly to discuss literature and practice:

“I’m off in a minute to meet twelve other applied practitioners. We do a day every couple of months where we do peer supervision and we talk through an article and we talk through issues that we’re dealing with, some issues we’ve had and it’s really beneficial.”

This support was also received through the sharing of one and other’s ideas and physical resources. Participants “nabbed” (P1) resources from colleagues and peers that they would bring into their practice. As per the two-way relationship of supervision described above, P5 mentioned utilising resources that their supervisees had adapted from the literature to suit the applied context:

“I use a modified version of the Partington and Orlick self-evaluation questionnaire on sport psychology consultancy. And then I’ve just sort of midwifed that a little bit. Actually it was from one of my stage two trainees, and I thought it was really good.”

Working Environment Support. The working environment of the practitioner involved the setting, social features, and physical conditions within which they practiced. The importance of this sub-theme was in understanding how participants’ working environments operate and the influence that had on the provision and opportunity to support the use of evidence-informed decisions. Participants expressed the usefulness of collaborations between researchers and practitioners within their working environment for supporting the evidence

informed decisions. Some experienced participants had worked within environments that produced research that answered key practice questions.

“They (sporting organisation) consider themselves to be at the forefront of innovation and creativity in terms of how they go about their practice, but what was really pleasing to see was how research-driven that process had become. There are practitioners there that get asked to conduct research, so the sport will say ‘let’s look at what’s important to our sport, what the key performance questions are’, and then the sport psychologist coordinates that research.” (P5)

However, despite E7 engaging in a research and practice collaborative study themselves, they admitted that research did not play a vital role in their practice:

“I have been involved in research projects where I’ve tried to explain my approach with a couple of collaborators. I’ve given researchers some questions which say I use *approach*, let’s see how other people use *approach* to make people in the field think ‘yeah ok maybe I’ll use the *approach* a little more as there’s this bunch of people saying they use it’. So of course, research has its uses, but for me it’s not a vital part of what I do.”

Engaging in Research

Engaging in research refers to participants conducting research and personally contributing to sport psychology literature; involvement in the research process increased the likelihood of research-evidence playing a role in evidence-informed decision-making. The subordinate themes represent the four main stages through which the participants engaged and produced literature, whether to fulfil training requirements, as part of employment responsibilities, or from personal choice. These four stages were conducting research in training, continuing with higher education, engaging with research through supervision, and engaging with research through publication.

Training research component. Most experiences discussed during this stage of practitioner development referred to the stage two research component of the BPS Qualification in Sport and Exercise Psychology (QSEP). Participants felt the research

component of their training allowed practitioners to conduct good quality research that had applied impact.

“I did my research project on X and looked at Y and collated that with A to see if it was having an impact on B. It was fascinating. A really good piece of research, I really enjoyed doing it. I think because I worked with athletes, I was able to design questions that they would get.” (P4)

Experienced participants also felt conducting research helped trainees to develop the skill and confidence required to make research-led decisions in practice.

“The research component to the training process for me is important because you’re helping supervisees utilise data and interpret data, make use of it, but also they’re continuously engaging in the research and how it changes and develops and hence how that gets into your practice.” (P5)

Continuing with higher education. For one early career participant and two experienced participants, pursuing further education and working within higher education provided them with access and opportunities to continually engage with research. For P3, embarking on a PhD was a turning point in their career through which they started to underpin their practice with the framework of their research:

“When I got my PhD, I started consistently using an underpinning framework (in practice) rather than just throwing techniques and skills at the athlete.”

Engaging in research through publication. Continuing to engage and conduct research following training was reported as important by most participants as they felt it helped them to develop their practical competencies and become a better practitioner. Both P1 and P4 mentioned a preference for reading and using research in their decision-making that focused on personal experiences of implementing psychological strategies within an applied context. Both participants had published their own practitioner accounts as they felt that type of research would have been useful when completing their training.

“I’ve just submitted something that basically talks about my journey to see if it gets published. I’m really doing it because I think that’s what I would have wanted to read.” (P1)

For the four experienced participants, their roles as supervisors allowed them to stay in touch with both research and practice activities of the applied sport psychology profession. For P5, their involvement in a PhD project helped them to continually make connections between the research and practice domains, facilitating their evidence-informed decision making.

“I was involved in a PhD on *X*. We were able to take that knowledge base on the process of *X* and how athletes want to engage in it, and then were able to come up with an applied model in the way that you would do a session with an athlete around that.”

6.4 Discussion

The aim of this study was to investigate how experiences throughout the career of a Sport and Exercise Psychologist influences the development of current evidence-informed decision-making processes when designing psychological interventions for athletes. Three main themes emerged from the analysis illustrating the participants’ lived experiences: acquiring knowledge, sport psychology community support, and engaging in research. The findings illustrate that the educational programmes, people, research experiences, and environments practitioners encounter during the phases of their career development influence the development of evidence-informed decision-making when designing interventions for athletes.

A key element of the first theme acquiring knowledge was how training experiences influenced the development of evidence-informed decision-making processes. Participants reported both positive and negative experiences of MSc programmes. Higher education is a pivotal time point for students training to work within high skilled employment such as applied sport psychology (Suleman, 2018). In regard to the use of research as evidence

specifically, Lawson (2010) suggested that constructively aligned teaching approaches taught within higher education can support students in developing knowledge translation and research utilisation; these are two skills that have been linked to strengthening evidence-informed decision-making capabilities in medicine, nursing, and clinical and counselling psychology professionals (Squires et al., 2011; Younas, 2022). These methods recognised that learning occurs not from the knowledge itself, but from the way the learner structures and reconstructs the information (Barab & Plucker, 2002). These methods can support trainee sport psychologists in learning how to make decisions that are informed by a range of evidence sources, rather than prescribing “rigid ‘expert’ problem-solving techniques”. (Tod et al., 2009, p.S7)

Despite overwhelming support for the effectiveness of using constructive teaching methods, the current study found that masters training is still too focused on teaching the ‘know-what’ rather than ‘know-how’. Participants felt their MSc training inadequately prepared them for applied employment, leading to early experiences of “throwing the kitchen sink” of evidence-based strategies they had learned, rather than applying them in a bespoke way that addressed the athlete’s needs. Traditional teaching methods, that remain largely dominant within higher education, are aimed towards transmitting information and the retention of fact, instead of transforming information and achieving reconstructed understanding of material (Lawson, 2010). These traditional teaching methods have been found to be ineffective for developing evidence-informed decision-making skills such as critical thinking and problem solving (Razzak, 2016; Beckem & Watkins, 2012). In a study on what trainees want to learn from supervision, Hutter et al. (2015) were surprised to find that trainees still wanted to learn know-how processes such as assessment methods and intervention techniques despite receiving comprehensive training on observation methods and intervention methods prior to the supervised practicum. They offer two possible explanations

for this: trainees may have been taught but did not learn the skills and knowledge for service delivery and thus begin learning during supervision. Or trainees may learn the skills and knowledge for service delivery but lack the competence and confidence to apply them when working with athletes. Regardless of the explanation, it is evident that early training programmes could better reflect real life practice to support trainees with the reconstruction of knowledge into evidence-informed decision-making processes.

Participants who engaged in sport psychology services during their masters had clearly established evidence-informed decision-making processes. They were able to begin developing these processes through early experiences of delivering mental skills workshops to local sports clubs and participating in class role plays under the supervision of university lecturers. Researchers propose that the majority of essential skills required within high skilled employment come from experiential learning, whereby students learn by doing and reflecting on the experience (Spanjaard et al., 2018). Adopting these techniques helps students recognise, understand, and develop the soft and work ready skills needed to apply theoretical knowledge within professional practice, such as problem solving, critical thinking, and knowledge translation and transfer (Martin et al., 2008). It is important for aspiring Sport and Exercise Psychologists to recognise, understand, and develop these skills that support their decision-making processes as they are the skills most valued by science, technology, engineering, and mathematics (STEM) employers but are most severely lacking in STEM graduates (McManus & Rook, 2019). Early practice experiences provide trainees with an opportunity to shape their decision-making processes within an alternative and authentic environment that reflects real life within professional body regulations for trainees (Heavyside et al., 2018).

The second superordinate theme was the influence of the sport psychology community. This considers how interactions with other Sport and Exercise Psychologists

influences the development of evidence-informed decision making throughout a practitioner's career. Notably, interactions with participants' BPS QSEP stage two supervisors played a pivotal role in their professional development. Supervision is vital for the growth of trainee Sport and Exercise Psychologists as it develops trainee service-delivery competence by primarily focusing on the appropriate, ethical, and beneficial delivery of applied sport psychology services (Sharp et al., 2019). In this study, supervision influenced the development of Sport and Exercise Psychologists decision-making when a strong supervisory relationship existed. Trainees with "hands off" supervisors that did not meet their educational needs felt unsupported and reported experiences of neglect as an early career practitioner, failing to take a structured approach to consultation and intervention decisions. Within clinical and counselling psychology, there is a focus on creating a collaborative supervisory relationship (Foltz et al., 2015). The optimal learning environment for supervision is facilitated by supervisors who show no judgement, trust the supervisee, provide guidance, and collaborate with the supervisee (Vana Hutter, 2014). In this study, trainees with a good supervisory relationship felt comfortable taking the advice of their supervisor and considered their guidance in their decision-making processes. The supervisory relationship was also reported as a mutually beneficial relationship; in this study, participants who supervised trainees reportedly learned from their trainees as trainees are continually keeping up to date with advances in the field and sharing this knowledge with their supervisor. Research has shown that supervision is an important component of the continuing professional development of Sport and Exercise Psychologists as it ensures ethical accountability, respectability, and effective quality control of their own applied practice (Andersen & Williams-Rice, 1996; Aoyagi & Portenga S, 2010).

Participants discussed the benefit of engaging in peer and group supervision for developing decision making, both during training and during early experiences as a qualified

practitioner. Peer supervision has been discussed as a valuable resource for Sport and Exercise Psychologists but neophyte practitioners have reported a lack of peer mentoring following qualification, leading to feelings of isolation (Hings et al., 2019). In the current study, peer supervision was important for receiving social support, sharing physical resources, sharing experiences, and discussing and reflecting on how research evidence can be translated into the applied setting. McCormack et al. (2015) found that frequent use of informal peer supervision provides Sport and Exercise Psychologists with much needed social support while monitoring their mental health and developing their practice. Furthermore, the environment is viewed as a less threatening approach to self-examination and professional growth than formal one-to-one supervision (Gokhan & Atik, 2019). Foltz et al. (2015) found trainees appreciate various modalities of supervision (i.e. formal, group and peer) because it allows them to receive supervision and feedback from a variety of sources, providing insight into the provision of sport psychology from varying perspectives. Understanding how others make decisions can facilitate understanding and development of their own evidence-informed decision-making processes as they learn from one and other about instances they may have never experienced.

The final superordinate theme was the influence of engaging in the research process throughout three important stages in a practitioner's career: training research component, continuing with higher education and publishing research. Participants were more likely to use research evidence to inform their decisions if they had positive experiences of conducting research or were continuously involved in conducting research projects. Although limited research exists on the influence of conducting research on developing evidence-informed decision-making processes, similarities can be drawn from other evidence-based practice disciplines. Researchers have found that nurses with higher education degrees were more likely to use research findings, were better prepared to cope with research activities, and held

more positive attitudes towards research (Ehrenfeld & Eckerling, 1991). Although providing education on evidence-based practice may improve knowledge, it does not necessarily lead to a behaviour change of prioritising evidence-based decisions (McCluskey & Lovarini, 2005). Closs & Cheater (1994) proposed that research-based curriculums should go beyond simply teaching theory and include a means of demonstrating the critical appraisal of research evidence and its practical application to support practitioners in forming evidence-informed decision-making processes.

6.4.1 Applied Implications

The current study has contributed to the literature on applied sport psychology training by providing empirical data on the career experiences that contribute to the development of evidence-informed decision-making processes of Sport and Exercise Psychologists. Findings imply that the courses and people that Sport and Exercise Psychologists interactive with during their career influence the construction of evidence-informed decision-making processes. If the goal of training and professional development within the discipline is to produce qualified practitioners that are dedicated to delivering evidence-driven models for practice (*Code of Ethics and Conduct / BPS*, n.d.), this study suggests three main career milestones that training organisations can focus on to facilitate evidence-informed decision-making development. Firstly, educational institutions and training organisations should focus on providing positive learning experiences that both broaden the knowledgebase of the student and allow the student opportunities to apply that knowledge to practice. Secondly, it is advantageous for Sport and Exercise Psychologists to engage with the applied sport psychology community to build supporting relationships with supervisors, peers, and their working environments. Positive relationships with other professionals in the discipline provides Sport and Exercise Psychologists with opportunities to consider how they use evidence to inform their decisions, making comparisons against the

processes of others and considering multiple points of view. Finally, the study recommends that continual engagement with research activities throughout the career of a Sport and Exercise Psychologist has three different implications: (1) during early career, it helps to improve research utilisation skills that support knowledge transfer, (2) continuing with higher education provides trainees with continual access and supports development of practice philosophy, and (3) publishing research allows sport and exercise psychologists to give back to the profession and produce the types of literature they think would be most beneficial for apply to practice.

6.4.2 Limitations and Future Directions

One limitation documented within IPA research is the difficulty in generalising results to entire populations because of the small sample size (Peat et al., 2019). In answer to this, Smith (2018) argues the case for naturalistic generalisability; this is the generalisation process through which the reader gains insight by reflecting on the details and descriptions within the research and its relevance to their own life. The IPA studies of chapter 6 (study 3) and chapter 7 (study 4) provide a rich use of anonymised quotes to ensure the reader has access to the narratives of the participants and are able to make their own interpretation of findings. Additionally, this study focused on the lived experiences of early career and experienced Sport and Exercise Psychologists with British Psychological Society Chartered Membership. The use of a homogenous sample provided an understanding of a particular group in-depth, but further research may wish to make comparisons between Sport and Exercise Psychologists that have qualified through different routes as the learning experiences they encountered may differ and therefore influence the construction of decision-making processes in a different way.

The people Sport and Exercise Psychologists interact with and the actions they take during training and through professional development strongly influence the development of evidence-informed decision-making processes. Similar to Hutter et al.'s (2015) study on what trainees want to learn from supervision, practitioners that felt unprepared for applied practice could have failed to learn the skills and knowledge required for evidence-informed decision-making, had not developed the competence or confidence to implement evidence-informed decisions, or other factors could have influenced the evidence-informed decision-making skill and knowledge development. In order to continually advance the evidence-based nature of the field, further insight is needed to identify the specific skills and knowledge required to make evidence-informed decisions. Furthermore, exploring the mechanisms through which peers and supervisors provide the emotional and technical support needed to make evidence-informed decisions could improve trainee competence and confidence in doing so.

6.5 Conclusion

To summarise, through analyses of Sport and Exercise Psychologists career experiences, we have gained valuable insight into how learning experiences influence the development of evidence-informed decision-making processes when designing interventions for athletes. This research serves as a basis for more detailed exploration into the skills and knowledge required to form effective evidence-informed decision-making processes, and the mechanisms through which learning experiences may support practitioners in achieving evidence-informed decision-making competence. This line of inquiry may help trainees and practitioners better understand their own learning needs and the courses and individuals that may best facilitate their growth as an evidence-based applied practitioner.

To advance the future directions outlined within this study, the next chapter will investigate the competencies that trainees and supervisors feel practitioners need to develop

to be able to make evidence-informed decisions for intervention design. This will be further supported by exploring the mechanisms through which experiences and interactions during supervision support development of these specific competencies.

Chapter 7: Study 4

Chapter 7: Study 4

Experiences of Developing Evidence-Informed Decision-Making Competence in Trainee Sport and Exercise Psychologists: Supervisor and Supervisee Perspectives

7.1 Introduction

To recap the works of this thesis, study 1 explored research utilisation attitudes, skills, and behaviours, identifying the balance between research evidence and evidence from intuition and experiential knowledge for informing intervention decisions. Study 2 then demonstrated how evidence-informed decision-making enables practitioners to provide psychological interventions for athletes, based on the best available evidence. This approach involves the interpretation and application of a range of evidence sources, such as the athlete and their context, research and experience and tacit knowledge. From study 3, we learned that the capability to effectively integrate these sources into evidence-informed decision-making is influenced by many learning experiences that practitioners encounter throughout their career, including training, supervision, early practice experiences and the working environment. In some instances, practitioners reported that they felt unprepared to make effective evidence-informed decisions in real life practice, despite the prior education they had received. Smith et al. (2019) highlighted the importance of advancing trainee decision-making skills and suggested it should be a clear goal of training and development. However, research is required to understand the exact skills and knowledge that trainees need to develop to support evidence-informed decision-making processes, and how training can help trainees to develop the confidence and competence to use them in practice.

Following master's degree training, there are three routes to becoming a Sport and Exercise Psychologist in the UK: the British Psychological Society's Qualification in Sport and Exercise Psychology (BPS QSEP; Stage 2), the British Association of Sport and Exercise

Sciences' Sport and Exercise Psychology Accreditation Route (BASES SEPAR) and Professional Doctorates in Sport and Exercise Psychology (DSportExPsy). Sport and Exercise Psychologists are recognised as helping professionals engaged in the process of psychological service-delivery, hence the purpose of these training courses is to enable practitioners to develop service delivery competence (McEwan & Tod, 2015). Service delivery competence is defined as the application of suitable psychological theory through the use of appropriate skills and interventions that meet the athlete's needs (Tod et al., 2009). From this definition, we see that the application of theory and evidence plays a fundamental role in effective service delivery. Identifying and understanding the skills and knowledge required for evidence application to practice can help trainees employ better evidence-informed approaches to service-delivery, but inclusion of evidence-informed decision-making competence development is limited within the literature (McArdle & Moore, 2012) and within training requirements. For example, 'justifying decisions using research' and 'offering a research overview to athletes' are the only competencies listed under the skill of 'understanding and use of research' within the BASES SEPAR competency checklist (Sport and Exercise Psychology Accreditation Route (SEPAR) | BASES, n.d.)

Research into the skills and knowledge required for evidence-informed decision-making in neighbouring fields such as public health services has received much attention. Although not an exhaustive list, the required skills and knowledge for evidence-informed decision-making of health professionals include: asking the question, searching for the best available evidence, using critical appraisal to assess the quality of the evidence, interpreting the evidence, determining the relevance of the evidence to practice, and acting on the evidence if and when appropriate (Ciliska, 2008; Yost et al., 2014). As both sport psychology and healthcare are applied professions aimed at improving performance outcomes, there may be overlap in the skills required in the two domains. For example, critical thinking and

evaluation have been discussed with reference to the evidence-based practice of applied sport psychologists (Moore, 2007). Even with the credence given to evidence-informed practices, research demonstrates applied trainees often lack the skills and knowledge required for effective evidence-informed decision-making (Belita et al., 2022; Winter & Collins, 2015a).

With the apparent lack of trainee skill and knowledge, it is necessary to understand how strategies can be implemented within training programmes and professional development initiatives to improve the use of evidence-informed decision-making. Within the research area of professional judgement and decision-making, sharing and examining previous experiences with supervisors, other practitioners and trainees was identified as a tool for developing analytical reasoning skills required to make decisions and judgements within naturalistic settings (Martindale & Collins, 2013). In the study, knowledge elicitation strategies provided trainees with an understanding of the rationale behind the experiences being shared, rather than just providing information on what was done. These findings however were based solely on the perspectives of trainees; given that supervisors have been identified to influence trainee decision-making, it may be helpful to explore supervisor perspectives.

To gain an understanding of how evidence-informed decision-making knowledge and skills are developed, researchers in the healthcare professions have conducted several systematic reviews examining the effectiveness of interventions to increase evidence-informed decision-making (Lane et al., 2013; Sarkies et al., 2017). Within these reviews, strategies included: reminders, educational outreach, opinion leaders, and audit and feedback. Results reported only small to moderate improvements in evidence-informed decision-making behaviours and patient outcomes. Furthermore, a review of educational strategies on the specific use of research evidence within evidence-informed decision-making found insufficient evidence to support the use of educational meetings for increasing research use

among nurses (Fink et al., 2005). However, group supervision may be a useful tool for bridging the gap between theory and practice as well as fostering competent nurses (Mackey et al., 2022). Similarly in applied sport psychology, interactions between trainees, other trainees, and supervisors have been identified as useful learning relationships for developing service delivery competence in trainee Sport and Exercise Psychologists (McEwan & Tod, 2014).

Exploring the skills and knowledge required for evidence-informed decision-making and the strategies that facilitate their development is a complex but critical matter within the applied professions. This study has the potential to expand current understanding of how learning experiences can support development of evidence-informed and appropriate decisions that result in performance enhancement. The overall aim of this study was to understand how supervision during training influences trainees' development of evidence-informed decision-making competence for intervention design. Within this aim, there were two specific objectives: 1) to explore what competencies trainees and supervisors want to develop for evidence-informed decision-making of trainees, 2) to explore how supervision supports the development of evidence-informed decision-making competencies in trainees.

7.2 Method

7.2.1 Philosophical Approach

The philosophical approach was the same interpretive phenomenological analysis as outlined in chapter 3 (methodology) and chapter 6 (study 3). Please refer to these chapters for more information.

7.2.2 Participants

IPA is an idiographic approach that looks in detail at the lived experience for each participant, therefore, only a small sample size is required (Reid et al., 2004). Twelve

participants were interviewed to explore trainee and supervisor experiences of developing evidence-informed decision-making competence during training. The first phase of data collection sampled six trainees (3 female, 3 male). Two trainees were on the BPS QSEP training route, three were on the BASES SEPAR training route, and one trainee was completing a professional doctorate. The average age of trainees was 26.7 ± 1.9 years and their average time through completion of their training was 1.4 ± 0.9 years. The second phase sampled six supervisors (3 female, 3 male). Two supervised only on the BASES training route, one supervised only on the BPS training route, two supervised on both BASES and BPS training routes, and one supervised on BPS, BASES and professional doctorate training routes. The average age of supervisors was 44.7 ± 14.2 years and their average duration of supervision experience was 19.5 ± 4.2 years.

7.2.3 Procedure

The research was approved by a university ethics committee. Participants were invited via email to take part in the study. Written consent was gained prior to the participants' engagement with the study. Data were collected through in-depth, semi-structured interviews. An interview guide was developed based on professional development and training literature in applied sport psychology (e.g., Martindale & Collins, 2005; Martindale & Collins, 2013; Smith et al., 2019) and the processes involved in evidence-informed decision-making (e.g., Liang et al., 2012; Liang & Howard, 2011; Nevo & Slonim-Nevo, 2011; Poot et al., 2018). Interview questions focused on experiences of developing evidence-informed decision-making competencies during training and through supervision. All interviews were conducted by myself (first author)le, using the video-call platform zoom. Interviews lasted 57-99 minutes. Interviews were recorded and transcribed verbatim by the first author. Names of participants were replaced with ID numbers, S denotes the supervisors and T denotes the trainees.

7.2.4 Analysis

Analysis followed the same guidelines as outlined in chapter 6 (study 3). Please refer to that chapter for more information.

7.2.5 Quality and Rigour

As identified in study 3 (chapter 6), IPA rejects the notion of discovering an objective reality, and thus positivistic and objective quality considerations such as reliability and validity are inappropriate for assessing the quality and rigour of the current study. Instead, Yardley (2017) suggested four general guidelines for enhancing and demonstrating the quality of qualitative research: sensitivity to context, commitment and rigour, transparency and coherence, and impact and importance. In the quality and rigour section of chapter 6, I showed commitment by taking courses on the methods used to develop my competence in the application of IPA analysis. Within both IPA studies, taking a reflexive approach to the collection and analysis of data through regular discussions with the research team ensured sensitivity to context; it helped me to manage the influence of preconceived ideas on the research process and understand the social-cultural environment of sport psychology consultation.

Rigour addressed the completeness of the data collection and analysis. Rigour was first addressed by recruiting an adequate sample that could provide relevant insight on the research question (i.e. speaking to trainees and supervisors about training experiences). Rigour was also considered through employing a comprehensive analysis process; analysis occurred on many levels and each level involved discussions with the research team on the emergence, convergence, and elimination of superordinate and subordinate themes. The final quality considerations of transference and coherence refers to the reader's capability to see clearly how the interpretations were derived from the data. To demonstrate this, an audit trial

provides documentary evidence of the sequence of decisions made during the emergence of themes. Finally, importance and impact refer to the requirement for all research to generate knowledge that is useful; this study hopes to provide a holistic perspective of decision-making development that can be used by trainees and educator to improve competence in service delivery.

7.3 Results

The participants discussed various experiences of developing evidence-informed decision-making competence during supervision. This section presents the perspectives of both trainees and supervisors because the narrative accounts of participants' lived experiences coalesced around similar salient themes. However, quotes will be identified with a 'T' (trainee) or 'S' (supervisor) to provide verbatim details of the participant's voices. The results are split into two sections: evidence-based competencies developed during supervision to support evidence-informed decision-making, and how competence in evidence-informed decision-making is developed through supervision. In total, six superordinate themes emerged, three for each aim. Tables 6.1 display each superordinate theme and their corresponding subordinate themes.

Table 7.1. Superordinate and subordinate themes for evidence-informed decision-making competencies and methods for how the competencies are developed

	Superordinate themes	Subordinate themes
Evidence-Informed Decision-Making Competencies	Understanding the athlete and environment	Interpersonal skills Contextual intelligence
	Research utilisation	Broadening Knowledge Critical Evaluation Knowledge Translation
	Self-awareness	Understanding beliefs and Values Professional Judgement
	Knowledge exchange	Discussing research Learning from the experiences of others
	Exploring thought processes	Providing a safe space Being challenged Reflective practice
Development of Evidence-Informed Decision-Making Competencies	Self-development	Tailored Supervision Practising Practice

Evidence-Informed Decision-Making Competencies

Understanding the athlete and the environment

The superordinate theme of understanding the athlete and the environment involved trainees developing competencies to support the gathering of information from the athlete and the environment to support evidence-informed decision-making. Participants emphasised the importance of exploring the context, history, and cause of the athlete's issue by "leaving no stone unturned" (T12). This superordinate theme comprises two subordinate themes: interpersonal skills and contextual intelligence.

Interpersonal skills. Developing interpersonal skills was discussed by all participants and refers to the skills trainees used in practice to communicate with athletes and build a professional and trusting relationships that facilitated information gathering and in turn intervention design and delivery. Trainees developed communication, listening, and observational skills to understand, and be empathetic of, the athlete's needs and prioritise the athlete's voice. This allowed them to make a suitable decision based on their interpretation of the athlete's experiences.

"A lot of that (gaining information from the athlete) will be through different layers of listening; I'll have a superficial layer that is the content of what they're saying. Then there's a layer underneath in terms of feelings and their emotional experience. And then there's a layer underneath around their beliefs and the deeper motivations." (T6)

Supervisors expressed that despite their importance, the interpersonal skills needed to understand the athlete were most commonly lacking in current trainees. For some supervisors, having a good level of interpersonal skills was a pre-requisite for taking on a trainee to supervise. However, S8 expressed disappointment when they were informed by their supervisee that another potential supervisor had told them they did not have the skills necessary to pass the qualification. T5 talked about their experience of being "selected" by their supervisor based on their existing interpersonal skills:

“I said to them ‘why did you pick me over everyone?’ They said ‘because you have the soft skills of being a practitioner, you had the genuine interest, you’ve got the warmth, the character, the caring nature about you. You’ve got the humour if you need to, the hard skills can be taught later down the line.’”

Trainees also found it was important to understand how to communicate the evidence-informed interventions to athletes for their intervention to be effective. They described finding a balance between pitching too low or too high:

“This is where our next supervision conversation is going, knowing where you pitch stuff. You’re using the evidence behind you but how do you then not go too evidence heavy in the pitching.” (T11)

Contextual intelligence. Contextual intelligence involved trainees developing knowledge on the sporting environment they were working in, understanding the culture and language, building relationships within the sport, and using those relationships to gain evidence to inform decision-making. Examples of contextual knowledge were: understanding the history of the sport, the challenges of the sport, the different phases of competition, and the types of people and personalities that work in specific sports. Contextual intelligence helped trainees to understand what the potential intended and unintended effects of an evidence-informed intervention could be.

“The big thing with my supervision so far would be context. Do you recognize the context? Do you appreciate everything that goes on to know this is the right thing for this person?” (T5)

Research utilisation

The superordinate theme of research utilisation was comprised of competencies that facilitate the use of research to inform decisions in practice. All participants agreed that applying research evidence to practice was fundamental to their effectiveness as a practitioner, but often felt this capability was impeded by the lack of transferability of research findings to the applied field. Research utilisation encompassed three subordinate

themes: broadening knowledge, critical evaluation, and knowledge translation. S1 described all three sub-themes in their description of developing research utilisation:

“Something that we do as part of my supervision meetings is looking at research. Helping the BASES trainees understand research and increase their research literacy skills. They’re then able to read through a study that's been peer reviewed and take the information needed to ground it within their own evidence-based interventions and approaches.”

Broadening knowledge. Trainees and Supervisors expressed that BSc and MSc programmes were useful in helping trainees to begin to develop their knowledge, but trainees needed to continue to learn about the field and stay up to date with new developments. This involved reading within and beyond the applied sport psychology literature and looking at research within neighbouring fields such as exploring clinical and counselling psychological approaches. Participants discussed developing a base knowledge of many approaches and techniques to support them in constructing an intervention that suited the athlete’s needs.

“It's always beneficial for practitioners to enhance their knowledge of approaches and intervention strategies but they're not a necessity, you don’t need to strictly understand every one completely. Dependent on the athlete or situation you’re working with, you’ll be able to figure out what one would be useful. Then once you single out what strategy would be beneficial, that’s when you go straight into research and understand that.” (T12)

Some trainees expressed interest in gaining a stronger breadth of knowledge and expertise in one specific area, T5 described this as developing “T-shaped expertise”. Half of the trainees were either already enrolled in, or expressed interest in, pursuing further research education, such as a PhD, to further their understanding of a certain topic and the research process.

“There's a lot of talk at the minute about being a T-shaped employee, where you have a breadth of knowledge about your discipline or other disciplines, but then you've got a real depth of knowledge in one particular area that you are kind of known for.” (T5)

Critical evaluation. Critical evaluation involved trainees developing competence in identifying strengths and weaknesses of research, evaluating its validity, usefulness, and application to practice. Participants expressed that MSc programmes had helped trainees to develop foundational skills in critically evaluating research, but supervision supported critical evaluation with relevance to practice application. This covered reading full articles and identifying key points such as what was done, why it was done, how it was done, in what context it was done, what the outcome was, and how it relates to applied practice.

“It’s evaluation of what you read. It’s not just a question of being negative, it’s a question of thinking about how that paper will apply to what you’re doing yourself that’s so critical.” (T4)

Knowledge translation. Developing knowledge translation helped trainees to understand how to apply a piece of research to the trainee’s specific context rather than just to practice generally. Trainees were learning how to take the information they had critically evaluated and mould it into an intervention that they could deliver within the specific environment they are working in.

“It’s my job to spend time looking for the questions or understanding what questions I’m trying to answer and just being able to read a paper, read an intervention and understand how it applies and how it doesn’t apply to my own personal context.” (T3)

P2 felt that knowledge translation was one of the hardest competencies for trainees to develop due to the lack of manualised sport psychology literature to assist in the translation of research. They felt that the actual practice of delivering an intervention that was based upon research evidence was more difficult than digesting and remembering the content:

There’s one thing being able to remember the information and being able to feed it in a non-judgmental way or even just being able to do the soft skills of how you close a conversation, of how you restart it, noticing things after a couple of sessions and that’s not in the literature. The skills might be there but there’s one thing reading about it and there’s another thing being able to actually do it.

Self-Awareness

The development of self-awareness involved developing insight on the trainee's beliefs, feelings, and behaviours and how these influence the evidence-informed decisions they make. Focusing on self-awareness allowed trainees to develop independence in one's thoughts and the capability to act based on their own values and professional standards.

“I'm a big believer in that I'm there to kind of help and support, but I have to sign them off as independent at the end of two to four years, so I tend to like part time people because they've got a bit more time.” (S2)

However, many of the participants expressed difficulty trying to achieve autonomous decision-making by the end of a qualification's minimum completion time, with some supervisors preferring to take on part-time students as they have more time to develop. There were two subordinate themes: understanding beliefs and values and professional judgement.

Understanding Beliefs and Values. The development of self-awareness involved trainees becoming conscious of different aspects of the self, particularly understanding the beliefs, values, assumptions, and biases they held about the world and the influence this had on the evidence-informed decisions they made in practice. Understanding their beliefs and values was often described by participants as a key part of developing their professional philosophy. Supervisors emphasised that beliefs and values can change throughout one's career, with trainees trying to understand their own beliefs and values and begin to align this with the interventions they were designing. Supervision provides a space for trainees to discuss the relationship between professional philosophy and making an evidence-informed decision.

“We discuss how does your philosophy match to your evidence and what you're perceiving? One of the things that happens a lot more when you're less experienced is your philosophy doesn't necessarily match to the intervention which doesn't then match to the evaluation or measures that you use.” (S9)

For trainees, understanding the importance of their beliefs and values helped them to build confidence, take responsibility for their actions, and make more informed decisions:

“There is a reason we’re trainee sport psychs, we’re supposed to be learning about our philosophies and our approach to all this work. So, what works for us, what doesn’t work for us, and not sort of going too far away from ourselves as people in our practice and try and do stuff that suits us as people.” (T12)

Professional judgement. Developing the skill of professional judgement involved the development of a trainee’s capability to judge the credibility of individual sources of information and begin to consider how they could be integrated together. For trainees, professional judgement predominately involved being aware of the strengths and weaknesses they had in relation to their skills and knowledge and using this information to integrate evidence sources that would support them in making the most informed decision. Competence in the skill of professional judgement was required to facilitate evidence-informed decisions throughout all stages of the intervention delivery. In situations where trainees experienced having to make time pressured decisions, trainees needed to develop capabilities of knowing when and how to adapt interventions to the constantly changing needs of the athlete and/or environment.

“It’s a really tricky thing to make a decision and I suppose that’s professional judgment and decision-making. There are so many influences on how you make a decision, is it one thing or the other? Whereas actually you’re trying to make sense of everything together to make one simple movement.” (T5)

Being able to judge the credibility of a source of evidence was also highlighted as an important competency when making evidence-informed decisions. In the instance below, “common sense”, “Buddhist wisdom” and “experience” represent T6 using their professional judgement to make sense of all sources of evidence together:

“I would consider, I don’t know what you would call it, whether it’s my common sense, or my Buddhist wisdom, or experience over time of being able to realize the athlete doesn’t know everything, you have to go with what they feel but they don’t know everything. But I don’t know everything either, and we were working on

assumptions. I try and work by generating hypotheses rather than me saying ‘well, this is the answer’. That helps me integrate additional sources of evidence, whether that's a conversation with a coach or a teammate or whether that's something I've read or other observations.”

Development of Evidence-Informed Decision-Making

This next section presents the superordinate themes and subordinate themes participants discussed relating to how evidence-informed decision-making competencies were being developed in training.

Knowledge exchange

The superordinate theme of knowledge exchange encompassed activities within supervision that involved discourse between trainees, supervisors, and other relevant individuals to share evidence-based knowledge. Trainees and supervisors use supervision to build networks between trainees, supervisors, and researchers, listening and respecting the lived experiences and knowledge of others within 1-1 and group supervision environments. Knowledge exchange was comprised of two sub-themes: discussing research and learning from the experiences of others.

Discussing research. Discussing research occurred most commonly through group supervision, both in person and over video chat platforms. All trainees and supervisors were members of supervisory groups or ‘communities of practice’ within which trainees engaged in evidence-based presentations and discussed topics with their supervisor and their other trainees. Supervisors tended to play a background role in these sessions, allowing trainees to lead conversation but would step in occasionally to moderate and support. Trainees listened and learned from the expertise of their peers, often questioning and debating the merits of research and evidence-based approaches. This helped trainees to broaden their knowledge, practice their critical evaluation skills, and develop their professional judgement by considering the perspectives of others. This consideration of multiple perspectives also

supported development of knowledge translation through understanding how other trainees implement an evidence-based strategy into their working environment.

“One of the things that we do quite a lot, we do have research journal clubs. I think for me, it’s not necessarily about educating the guys about the literature per say, its more about allowing them to challenge the literature... what does this intervention say? Would it work in your environment? Why would it work in your environment? Why wouldn’t it? What can we learn from it in the way that we work?” (S9)

Learning from the experiences of others. This subordinate theme involved trainees listening and learning from the lived experiences of their supervisors and peers. This supported the development of gaining contextual intelligence and understanding of the interpersonal skills needed to interact with athletes; trainees were able to learn from the successes and failures of others by understanding the concerns and challenges they have faced when engaging with athletes and working in certain environments. Some trainees chose their supervisor based on their wealth of experience as they wanted to learn from the stories shared by their supervisor.

“Most of my initial supervisory meetings were around ‘give me some stories that you’ve had around certain topics, just so I can learn from them’, because I was at a stage where I hadn’t experienced much.” (T5)

During peer and group supervision, trainees would exchange experiences of their own. It was these experiences that trainees connected and empathised most with as they were similar to their own experiences but set in different environments and cultures they could learn from. However, one supervisor expressed that trainees should focus on supporting each other by sharing and discussing experiences rather than offering each other advice as they are still engaged in the learning process.

“Having discussions with other trainees or neophyte psychologists around these topics and hearing what their experiences are and what are the lessons and what would they do is so helpful because it helps me develop too... the point isn’t to provide advice and guidance, it’s more to present a topic and see what people’s experiences are like around it.” (T3)

Exploring Thought Processes

Exploring thought processes incorporated activities within supervision that helped trainees to understand how they formed and organised their thoughts within the evidence-informed decision-making process. This superordinate theme mainly contributed to the development of self-awareness competencies, helping trainees become aware of how their beliefs, values, assumptions and biases impacted their thought processes and strengthened their capabilities in making independent and appropriate professional judgements. There were three subordinate themes: providing a safe space, being challenged, and encouraging reflection.

Providing a safe space. Supervisors assisted trainees in exploring their thought processes by first establishing a good relationship and providing a safe space for trainees to discuss their thought processes in the absence of judgement. Trainees developed confidence in all evidence-informed decision-making competencies when they felt comfortable sharing their thoughts openly and honestly with their supervisor; they felt they could make mistakes, learn from them, and have their supervisor guide them to a better solution rather than judge them for their error.

“I wanted to keep with someone (a supervisor) who knew me, someone who I could be whole heartedly honest with in terms of ‘I’ve not got a clue what you mean can you explain in more detail?’, without having the embarrassment of pretending that you know something.” (T3)

In addition to one-to-one supervision, supervisors also established this safe space for trainees to explore thought processes within group supervision and encouraged other trainees to support their peers in understanding how they arrive at decisions without judgement. Trainees felt like their supervisors were dedicating time and effort to their development and felt comfortable working in collaboration with them; supervisors would respond quickly to ad hoc conversations with the trainee to discuss their thought processes for a current practice

situation. Some supervisors had experienced poor supervision during their training due to the lack of contact time with their supervisor, and therefore wanted to ensure they were providing the trainee with enough support.

“My supervisor is really flexible. They say ‘as long as you tell me and give me notice, I will be able to facilitate those conversations.’ Even at points you might ring them at eight o’clock in the evening and say look, this is my thoughts about something that is going on right now that I’m going to be going through tomorrow and they’ll answer the phone and we’ll go through it.” (T10)

Within this safe space, supervisors offered support and reassurance that trainees were making appropriate decisions for their athletes. T11 described this as their supervisor being a “cheerleader” for them:

“I think knowing I have those strengths, magnifying those strengths and actually being a cheerleader sometimes. Knowing the right thing to say, knowing when I need a bit of a boost, like actually ‘you know what you’re talking about’ but also ‘come on, get your head down you need to think of what you need to improve on and what you need to kind of reflect on here and go back to the literature’. They’re just really good at knowing what I need in that situation at the time.”

Being challenged. Being challenged involved supervisors asking trainees how they arrived at an evidence-informed decision and asking them to defend that decision. T10 described having ‘verbal diarrhoea’ in sharing every thought that they had about a situation and then the supervisor would question the trainee on their decisions in a polite and helpful manner, highlighting blind spots and getting trainees to consider questions and different perspectives.

“So I’ll come to them with a question and they’ll say ‘okay what about this?’ and I’m like ‘oh okay how am I thinking about this?’ So they’re asking a lot of open probing questions. As they’re doing that they’re checking my thinking and then they will bring in the answer based on what I’ve said. So they’ll either validate what I’ve said or they’ll provide an alternative, or they’ll challenge what I said.” (T6)

Challenges and questions often led trainees to experience awkward silences followed by epiphanies, where they may not have an instantaneous solution, but they have realised

something they have missed or have seen the situation from another perspective and can gather more information and adjust their decisions accordingly.

“We started calling them oh shit moments. They ask me a question and I missed that out. For example, I’m with a athlete, I’ve said this is the issue, pre-performance anxiety, I found this research to inform the intervention strategy, what do you think? Then (supervisor) would ask me something like ‘what are the historical events that have made this athlete develop this anxiety?’ And then I’d be like ‘oh shit I don’t know’. So I’ve not developed a systemic case to get all the information together.” (T12)

Reflective Practice. Separate to challenging the trainees thought processes, supervisors encouraged trainees to reflect on their evidence-informed decision-making and what they have learned from it. For example, trainees were constantly encouraged to reflect on their beliefs and values and the influence this may have on their evidence-informed decisions. This was encouraged through one to one supervision via getting trainees to keep reflective diaries in addition to reflections required for assessment. Reflection also occurred within group supervision for trainees to express their thoughts, feelings, and opinions about the shared experience of training. Within groups, they were able to reflect on how different their experiences could be within a similar situation, taking away key learnings about each other’s thoughts processes and consider how it may support their own thought process development in their future practice.

“They’ve been really good at encouraging reflective practice. Particularly after all the role plays that we do... We’ll always do a debrief and a reflection across the room and that’s encouraged reflective practice for all of us. I’m quite a reflective person anyway, but getting to that level of critical reflection, where you can actually learn from what you’re doing and really just understand how it all makes sense.” (T3)

Self-development

Self-development involved supervisors supporting trainees in the conscious pursuit of personal growth by improving personal skills, competencies, and knowledge related to

evidence-informed decision-making. Trainees achieved self-development through the following two subordinate themes: tailored supervision and practising practice.

Tailored Supervision. All supervisors agreed that they wanted to support the development of confident and competent Sport and Exercise Psychologists at the end of the qualification who could make independent decisions supported by evidence. To achieve this, supervisors tailored supervision to the individual trainee, guided by the trainee's needs and requests. This helped trainees to develop self-awareness around how they were developing as a practitioner and identified the competencies they needed further support to improve.

“In our one-to-one sessions, from the start, my supervisor was quite clear in a very empathetic way that you get what you want out of it. So if I ask, they will give, but it's my baby. It's up to me to set the agenda to ask for whatever I feel is necessary that month.” (T6)

Other supervisors took a more hands on approach and would structure mandatory sessions, but the content was driven by the trainee's progress. Two trainees described being asked to construct their own competency checklist separate from the qualification requirements so that they could work with their supervisor on the competencies they felt would help them to become an independent practitioner.

“We've been tasked to make our own (competency checklist). So it's actually put on us to say ‘ok, what are the competencies of sports psychologists and how are we working through those things?’ Rather than saying ‘right I've got a checklist here of things that I'm assessing you on’.” (T5)

Practising practice. The subordinate theme of practising practice involved taking time in supervision to practice consulting and delivering interventions with supervisors and peers before trying it within an applied setting. The focus of this subordinate theme was to develop interpersonal skills by building trainee confidence when working with athletes and also help them to see how their beliefs and values impacted their approach to consultation. Discussing “if then what” scenarios and participating in role plays with supervisors and peers

in group supervision allowed trainees to try different consultation and delivery techniques in the absence of consequence. They also received feedback highlighting their strengths and what areas of their practice that they could improve on to facilitate behaviour change in an athlete.

“I’m a big believer of if you’re doing one-on-one skills, you’ve obviously got the consultancy skills, but then, when we start thinking about planning interventions, I don’t want them planning interventions with real people for the very first time without practicing. As part of the role play, the first sessions were just getting skills, but now they have to do a full needs analysis, full case formulation and then plan out the intervention through the role play.” (S2)

7.4 Discussion

The aim of this study was to identify the competencies required for evidence-informed decision-making in applied sport psychology and explore the learning methods within supervision that contribute to competence development. The initial findings illustrated the importance of developing the skills and knowledge necessary to integrate sources of evidence to inform decision-making. These competencies were: interpersonal skills, contextual intelligence, research utilisation and self-awareness. The secondary findings of this study highlighted strategies that contributed to development of evidence-informed decision-making competencies during supervision. These strategies included: knowledge exchange, exploration of thought processes, and self-development. With the apparent link between required skills and knowledge and learning methods adopted in supervision, this section of the chapter discusses evidence-informed decision-making competencies and development methods in turn.

The first theme of competencies that trainees and supervisors wanted to develop involved gathering information from the athlete and their environment. Developing interpersonal skills such as building professional relationships and communicating effectively with the athlete were competencies that trainees and supervisors prioritised developing to

support evidence-informed decision-making. Communication and collaboration are examples of 21st century skills recognised as essential for success in education, work, and health (Lavi et al., 2021). Strong interpersonal skills have been shown to contribute to service delivery competence in neophyte Sport and Exercise Psychologists; trainees with strong interpersonal skills are able to build open and trusting relationships, listen to athletes more effectively, and gain a better understanding of the issue raised, subsequently offering more tailored and collaborative solutions (McEwan et al., 2019; Tod et al., 2009).

In this study, some of the supervisors reported a lack of interpersonal skills in trainees, despite the credence given to interpersonal skills for developing evidence-informed decision-making competence. This mirrors findings within science, technology, engineering and mathematics (STEM) with graduates expressing a lack of preparation for what present-day STEM professions require (Lavi et al., 2021). It is apparent that training programmes need to reflect the demands of sport and exercise psychology job opportunities to achieve career readiness for trainees. This study has shown that BPS QSEP, BASES SEPAR and professional doctorate educators are aware of the 21st century skill gap incoming trainees may have and are attempting to address it. For example, one of the consultancy skills listed on the BASES competency profile is to recognise the need to use interpersonal skills to encourage active participation of service users in consultancy sessions.

Providing trainees with simulated practice opportunities, such as role plays, were recognised as an effective method for developing the interpersonal skills needed to gain information from the athlete and their environment. Findings suggested that role plays and other experiential learning activities such as discussing “if then what” scenarios allowed trainees to practice consultation and intervention delivery skills in safe environments, where they could cause no harm to athletes and not feel judged if they made a mistake. Role plays have been found in previous research to improve trainee anxiety (Tod et al., 2007). Role

plays act as support mechanisms that increases trainee confidence and teaches them how to cope with their anxieties and take responsibility for their decision (Huntley & Kentzer, 2013). Role plays were also described as effective when combined with group reflective practice. Trainees described attaining a level of critical reflection with other trainees to learn from the decisions they made and why they made them. Although group based reflective practice is not a training requirement for Sport and Exercise Psychologists, findings from this study showed that supervisors and trainees are starting to grow networks of trainees through which trainees can relate to and learn from the experiences of their peers and supervisor. Through these groups, trainees may be comforted to learn most practitioners share similar experiences and emotions when developing as a professional (Tod et al., 2011).

Contextual intelligence was the other competency related to understanding the athlete and the environment to enhance evidence-informed decision-making. Brown et al. (2005) described this as knowing the culture of the specific sport setting, in addition to understanding the historical and philosophical evolution of the sport, its political structures, decision-making processes and values and attitudes of its people at all levels of the organisation. The current findings are in agreement with Mellalieu (2017); observing individuals within their natural environment is an invaluable source of evidence that allows trainees to design interventions that suit the culture and context of the athlete's environment. Developing contextual intelligence is a competency best developed through immersion in the sporting organisation (Holder & Winter, 2017), but there are many potential contexts trainees could work in and not enough time to immerse themselves within them all. Learning from the experiences of others through formal and peer supervision provided trainees with an opportunity to learn about other contexts, the cultural challenges other trainees have faced and the approaches they took to overcome them. Similar findings have been presented in counselling psychology, where trainees benefitted from vicarious learning when the sharer

presented clear critical cues regarding the purpose and decisions made (Crandall et al., 2006). Smith et al. (2019) argued that listening to the experience of others increases the experience base trainees can draw upon when designing interventions, such as developing the capability to ‘pattern match’ behavioural instances across different athletes and consider whether previously successful solutions can be implemented with their current client. However, trainees must remain sceptical of their previous successes and must not ignore the unique personal experiences of the athlete.

Research utilisation was the second theme of competencies that trainees and supervisors wanted to develop to support evidence-informed decision-making. Research has the potential to strongly guide decision-making, but it must be effectively implemented for it to be helpful (Winter & Collins, 2016). For trainees to be able to do so, participants expressed that developing competence in broadening knowledge, critical evaluation and knowledge translation were required. Firstly, broadening knowledge involved trainees continually learning about the field and keeping up to date with new developments in the literature. Trainees must stay current in knowledge to meet the profession’s requirements for continued professional development (Fletcher & Maher, 2013; Ngulube, 2021). Within this study, the prioritisation of broadening knowledge as a competency shows promise that trainees and supervisors remain dedicated to the notion that applied practice is informed by sport psychology literature. The broadening of knowledge was developed through both formal and group supervision. Group supervision has been shown to create communicative environments that facilitate opportunities for knowledge sharing (Reschke et al., 2021). To achieve this, supervisors invited guest speakers to supervision groups and recommended different areas of literature for the trainee to read.

Critical evaluation of research was another important competency that enhanced evidence-informed decision-making of trainees. Competence in critical evaluation engages

the skills of analysis and interpretation, in addition to helping trainees critically appraise research and evaluate its validity and usefulness within the applied context (Altinay et al., 2020). Critical evaluation builds the foundations for decision-making, as one must first differentiate between good and ineffective practices when selecting evidence to inform intervention design. These findings are synonymous with other evidence-based practice professions such as nursing, whereby the capability to think critically supports clinical decision-making and assists students and nurses in thinking beyond routines and protocols (Erickson-Owens & Kennedy, 2001). The findings of the current study also share similarities with nursing research regarding the development of critical evaluation competence; supervisors have developed ‘communities of practice’ to discuss research in the same way that nursing organisations implement journal clubs (Goodfellow, 2004). These environments nurture curiosity within trainees, helping them question research and challenge what they hear, observe, read, and experience. Furthermore, the supervisor did not always have to be present; peer supervision provides an opportunity for trainees to discuss new developments, widen their perspectives on sport psychology research and practice, and increases mentoring among peers (Grant, 1969). It has been suggested that there are challenges to developing critical evaluation competence in this way (e.g., time, effort, resources), but the increased use of video chat platforms is helping supervisors to overcome such challenges.

Knowledge translation was the final competency under research utilisation that facilitated evidence-informed decision-making. This is known as the process of using knowledge generated through research to make informed decisions in applied practice (Holt et al., 2018). The translation of sport psychology knowledge to applied practice can be time-consuming and complex due to the apparent gaps between research and practice (Chalip & Hutchinson, 2017; Holt et al., 2016). It is down to the skill of the practitioner to move knowledge from where it was first created to where it can have an impact on applied practice

and athlete outcomes (Kitson & Straus, 2013). This was a competency trainees and supervisors prioritised but found it one of the hardest to develop. Education research for evidence-based medicine have reported similar difficulties trying to teach the knowledge and skill that underpin knowledge translation; epistemologically, the knowledge of knowledge translation is tacit, meaning it is based on ‘know-how’ (the practical knowledge on how to accomplish something) and is intertwined with the situational context the knowledge was generated from, making it difficult to express and extract. In this study, value was gained from listening to the stories of others and understanding how they translated knowledge into their own applied contexts. This is in agreement with Martindale and Collins (2007), who suggested that applied cognitive task analysis could be used to make cognitive demands visible to the listener and maximise the shared experiences between supervisors, trainees and peers. Martindale and Collins (2013) provided evidence that this technique supports development of trainee professional judgement and decision-making; if trainees can identify how others make decisions, they can begin to visualise what that thought process may look like for themselves.

The final theme of competencies required to support evidence-informed decision-making was self-awareness. Trainees were becoming aware of aspects of the self and how that influenced the person they are and the practitioner they wanted to be. The competency of understanding beliefs and values was vital to decision-making as the beliefs, values, assumptions, and biases trainees held about the world impacted on the evidence trainees drew on and the subsequent decision they made. For example, a practitioner adopting a humanistic approach would put the athlete’s voice above all other forms of evidence (Poczwadowski et al., 2004). This is demonstrated in the hierarchical structure of professional philosophy, which sees personal core beliefs and values lie at the bottom of the triangle, informing all subsequent decisions regarding the construction of professional philosophy. To develop this,

supervisors placed trainees at the centre of the training process and tailored their approach to their needs and requests. Getting trainees to create their own competency checklist is an example of a constructivist learning method through which trainees play a central role in mediating and controlling learning (Greenhalgh & Russell, 2006). Furthermore, providing a safe space through which supervisors were challenging and not judging their supervisees helped them to construct the knowledge they were gaining and the experiences they were having into strengthening their decision-making thought processes. This is aligned with constructivist learning approaches to knowledge translation which suggest that the learner's previous knowledge construction, beliefs, and attitudes should be considered in the knowledge construction process (Greenhalgh & Russell, 2006).

7.4.1 Applied Implications

The current study offers several practical implications. Firstly, trainees should be aware of the competencies they need to develop to support evidence-informed decision-making. For example, if trainees are aware of the types of research utilisation skills required to apply research evidence to practice, they may seek out more training opportunities that develop these skills and subsequently facilitate their decision-making processes. Similarly, if trainees recognise the importance of developing interpersonal skills in helping them to retrieve and interpret evidence from their athletes, they may engage more with opportunities that develop these skills and lead to the planning of more bespoke and appropriate interventions.

This study suggests that supervisors should adopt constructivist teaching methods to reflect the competencies of the constructivist evidence-informed decision-making development process. The cooperative learning experiences described within this study, such as learning from the experiences of others and discussing research within communities of

practice, expose trainees to alternative viewpoints. This helps trainees to understand how others make decisions based on their backgrounds and biases and use that to question whether they construct their own decision-making processes in similar or different ways. Furthermore, supervisors could implement role plays to develop evidence-informed decision-making competence. Similar suggestions have been provided by Smith, et al. (2019), who found that mental simulation activities helped trainees to practice using their experience and prior knowledge to manage situations that may arise with athletes. Both face-to-face and online role play sessions provide trainees with opportunities to work through their thought processes. Furthermore, this study suggests that combining role plays with group suggestion can enhance development of evidence-informed decision-making competencies. If supervisors are able to combine these two learning methods during group supervision, it provides trainees with an opportunity to gain real-time feedback and helps them to develop the 'know-how' for evidence-informed decision-making rather than focusing on the 'know-what'.

This study also suggests that through a tailored supervision approach, supervisors should support trainees in developing self-awareness of their decision-making processes. Trainees should play an active role in the mediation and control of their learning (e.g., creating a personal competency checklist). Supervisors should provide trainees with opportunities to develop understanding of their own beliefs and values and the influence they have on their decisions and judgements. Supervisors should provide trainees with a safe supervisory environment where they are constructively challenged by their supervisors and can learn from their mistakes. Finally, findings from this study provide training organisations with competencies that contribute towards development of evidence-informed decision-making processes. These findings can be used to guide the planning and delivery of training programmes to ensure they provide realistic and relevant opportunities to develop evidence-

informed decision-making competence. Training aimed at producing Sport and Exercise Psychologists with the skills and knowledge to make decisions informed by the best available evidence may lead to enhanced service delivery and improved performance outcomes for athletes.

7.4.2 Limitations and Future Directions

Although the current study has provided useful insight into the competencies needed for evidence-informed decision-making and the methods within supervision to help develop them, we acknowledge the limitation of generalisability for the small sample size of IPA research. This study provided many anonymised quotes from participant transcripts to support naturalistic generalisability (Smith, 2018). This study also provided a range of perspectives from trainees and supervisors from various training routes, but the sample was solely from the United Kingdom. Based on the limitation that this study only interviewed UK based trainees and trainee supervisors, it would be interesting to contrast the experiences presented in this study against the training experiences of trainees and supervisors from other nations. Furthermore, a comparison between training experiences of Sport and Exercise Psychologists against other evidence-based professions like nursing and clinical psychology could improve training and development content and delivery across all evidence-based fields. Lastly, future research could explore how the competencies and development methods presented in this study can be operationalised into trainee development and continued professional development opportunities. For example, training interventions that utilise constructivist aligned teaching methods could help trainees to become the central part of the supervisory process that focuses on knowledge construction, and not just retention.

7.5 Conclusion

In conclusion, this study has developed an understanding of the competencies trainees require to develop the skill and knowledge necessary to make evidence-informed decisions and how supervision can facilitate attainment of this goal. This study has helped identify the importance of developing skills and knowledge related to understanding the athlete and the environment, research utilisation and self-awareness to develop the processes needed to make decisions informed by the best available evidence. Moreover, the study has demonstrated how knowledge exchange, exploring thought processes and self-development strategies can be used in supervision to facilitate the growth of evidence-informed decision-making competence. Understanding this can help guide more supportive supervision guidelines for fostering independent Sport and Exercise Psychologists who are confident and competent in making evidence-informed decisions for intervention design.

Chapter 8: General Discussion

Chapter 8: General discussion

This thesis explored evidence-informed decision-making for performance enhancement intervention design in applied sport psychology. The objectives of the research were to: 1) investigate evidence-informed decision-making positions and attitudes, skills, and behaviours towards research utilisation in applied sport psychology, 2) explore the processes involved in evidence-informed decision-making, 3) identify the career experiences that influenced the construction of evidence-informed decision-making processes, and 4) identify the competencies trainees need to develop to make evidence-informed decisions and the mechanisms through which supervision can develop them. Four studies were conducted and results informed guidelines for the use of evidence-informed decision-making and training recommendations for the development of evidence-informed decision-making competence. Presented in the final chapter of this thesis is a summary of research findings, significance and contributions to knowledge, applied implications, strengths and limitations, and future directions for research.

8.1 Summary of Findings

To investigate evidence-informed decision-making positions and attitudes, skills and behaviours towards research utilisation, study 1 conducted a survey of qualified and trainee Sport and Exercise Psychologists. This study found that the majority of qualified and trainee Sport and Exercise Psychologists' practice decisions were informed by an equal balance of scientifically generated research evidence and evidence from intuition and experiential knowledge. The study also showed that both qualified and trainee Sport and Exercise Psychologists held generally positive attitudes towards research. However, differences existed between some trainee and experienced participants' skills and behaviours for research utilisation; a higher majority of experienced participants agreed they had the skills to use

research and expressed they were applying research to a high extent than the trainee participants. Qualitative findings presented participants' perceptions of the barriers and enablers to research utilisation. With barriers to research utilisation including access, time, practitioner skill, and research relevance, practitioners need to be aware of the evidence-informed decision-making processes to ensure decisions are based on the best available evidence that leads to improved performance outcomes for athletes. Furthermore, participants suggested that further research into the decision-making of Sport and Exercise Psychologists may help them adhere to evidence-informed approaches for practice.

Study 2 investigated the social processes that practitioners follow in the design of interventions for performance enhancement through interviews with early career and experienced Sport and Exercise Psychologists. Constructivist grounded theory analysis produced a model that highlighted the importance of integrative processes in designing an intervention that suits the needs of the athlete, works pragmatically within the applied context and has the desired effect on the performance goal. Specifically, gathering information from the athlete, using research evidence, and drawing on experience and tacit knowledge were the processes practitioners followed to obtain information from evidence sources. Treating every athlete as an individual, tailoring to the athlete and context, integrating research-based and practice-based knowledge, and reacting to new information represented the social processes that supported practitioners in combining evidence sources to make the most informed decisions when designing an intervention. The model proposed in this study provides Sport and Exercise Psychologists with an evidence-informed decision-making model to follow irrespective of experience, expertise and working environment, and also supports training organisations and educators in developing trainee awareness of the processes involved in making evidence-informed decisions.

The development of social processes is a constructive process influenced by experiences as a learner and interactions with the social world. Through the re-analysis of study 2 data from an IPA perspective, study 3 aimed to identify the career experiences of Sport and Exercise Psychologists that influenced the construction of evidence-informed decision-making processes. Findings highlighted the importance of gaining knowledge from Masters training, early exposure to applied practice, building good relationships with supervisors, peers and colleagues, and continuing to engage in research activities as influential to the development of evidence-informed decision-making. These findings suggested that providing trainees with early exposure to situations where they are required to make evidence-informed decisions was beneficial to their development, but they needed to have gained a good foundational knowledge from their masters to have the preliminary confidence and knowledge to make such decisions. Findings also indicated that positive experiences of supervision from both formal supervisors and peers gave trainees opportunities to learn from the experiences of others. Finally, continual engagement with research activities helped practitioners to remain aware of the research process, provided them with access, and supported them in publishing the research they would like to use in their practice. These experiences contributed to the construction of processes for evidence-informed practice decisions.

With the important influence of supervision for developing evidence-informed decision-making processes, the final study of this thesis sought to identify the competencies trainees need to develop for evidence-informed decision-making and the mechanisms through which supervision could support them in doing so. Through interviews with trainees and training supervisors, findings illustrated the need to develop interpersonal skills and contextual intelligence to gain evidence needed from the athlete and environment. Research utilisation skills including broadening knowledge, critical evaluation and knowledge

translation were identified as competencies important for using research evidence to inform practice decisions. Finally, self-awareness of beliefs and values in addition to professional judgement were highlighted as competencies that support practitioners through the processes of drawing on evidence from experience and tacit knowledge, and the integrative processes involved in combining evidence sources to make an informed decision.

In order to develop evidence-informed decision-making competencies, the secondary aim of the study helped to explore the mechanisms through which one-to-one, group, and peer supervision contributed to practitioner development. Group and peer supervision provided trainees with an opportunity to exchange knowledge through the discussion of research and learning from the stories and experiences of others. Trainees and supervisors built communities of practice through which discussions and shared experiences helped them to develop contextual intelligence of working in different settings, broaden research knowledge, and exercise critical evaluation through debating opinions on literature findings and current issues in applied sport psychology. Formal one-to-one supervision provided trainees with a safe space they could explore their thought processes in by being challenged and reflecting on this process. Trainees were also able to develop awareness of their processes through supervision that was tailored to their needs. Finally, practising consultation in classroom and video call environments within group supervision provided trainees with opportunities to practice client-consultant situations through role plays and in the absence of consequence. This helped trainees to develop interpersonal skills needed for consultation and build confidence and competence in making the professional judgements required for evidence-informed decision-making. Following this summary of findings, several contributions to knowledge, applied implications and future research directions can be drawn from the research presented in this thesis and are discussed in turn.

8.2 Significance of Findings and Contributions to Knowledge

The findings presented in this thesis contribute to literature on the evidence-informed decision-making processes Sport and Exercise Psychologists follow when designing interventions for performance enhancement. Over the last 30 years in medicine and public health research, there has been a gradual repositioning from the evidence-based practice approach into evidence-informed decision-making processes. This transition argues that the decisions made through the influence of evidence should be regarded as a process of gathering, assessing, and using evidence rather than simply choosing between two alternative interventions (Nevo & Slonim-Nevo, 2011). This thesis contributes to knowledge by considering the application of evidence-informed decision-making processes within the specific context of applied sport psychology; findings suggest that intervention design is a process of collecting, evaluating, and integrating evidence to design bespoke interventions rather than selecting the most appropriate psychological technique to apply.

Findings from the thesis suggest that research alone is not sufficient enough evidence to inform decisions independently; gathering information from the athlete and drawing on experience and tacit knowledge are also influential evidence sources when combined with research evidence. The integration of research-based knowledge and practice-based knowledge to inform treatment decisions is a common characteristic of evidence-informed decision-making processes across the applied professions (Gillespie et al., 2015). The evidence-informed decision-making model presented in this thesis provides practitioners and trainees with knowledge on the social processes that contribute to the integration of multiple evidence sources to design a fully informed intervention. Increasing awareness of trainee and qualified practitioners' evidence-informed decision-making processes has the potential to increase practitioner confidence and competence in making decisions informed by the best available evidence that may potentially lead to improved performance outcomes for athletes.

The evidence-informed decision-making model presented in this thesis was produced based on the narrative accounts of both experienced and early career Sport and Exercise Psychologists. Over their years of experience, experts develop specified knowledge of working in a profession and self-awareness of how they work that can be useful for less experienced professionals to learn from (Causer & Williams, 2013). However, the automaticity that develops after years of gaining expertise may cause experts to miss or ignore important information, and result in them repeating previously successful interventions, rather than seeking out new and potentially more effective solutions (Waring & Currie, 2009). Early career Sport and Exercise Psychologists on the other hand are still in the process of developing their self-awareness regarding decision-making and are more likely to draw from scientifically generated research evidence with supported experimental efficacy. This may explain why trainees were able to explain the theoretical and mechanistic underpinnings of interventions more accurately than experienced Sport and Exercise Psychologists (Winter & Collins, 2015b). Developing the evidence-informed decision-making model based on the narratives of both of these groups therefore provided relevant insight for practitioners at all stages of their career development to consider when designing evidence-informed interventions.

This thesis has contributed to the literature on Applied Sport Psychology training by providing qualitative data on UK trainees and supervisors experiences of developing evidence-informed decision-making processes and competence during supervision. Findings presented the competencies required to develop evidence-informed decision-making processes and suggested the constructivist learning strategies that can be used in supervision to develop evidence-informed decision-making competence. Table 8.1 presents the relationship between studies 2 and 4 of this thesis. It outlines the competencies required to

develop specific evidence-informed decision-making processes and the method through which the competencies and subsequent processes are developed in supervision.

Table 8.1. Relationship between evidence-informed decision-making processes, competencies, and development strategies

EIDM Process	EIDM Competency	EIDM Competency development method	How does the development method support advancement in EIDM competencies and subsequent processes?
Gathering information from the athlete	Interpersonal skills	Practising practice	Using role plays to practice practitioner-client interactions. Develop larger experience base of instances
	Contextual intelligence	Learning from the experiences of others	
Using research evidence	Broadening knowledge	Being challenged	Being challenged on research beliefs, assumptions and knowledge develops critical evaluation and decision justification
	Critical evaluation	Discussing research	Discussing research helps trainees to broaden knowledge, critically evaluate research, contest research relevance, and translate knowledge.
	Knowledge translation	Learning from experiences of others	Learning from experiences of others helps to understand the decision-making processes of others by picking up on critical cues.
	Professional judgement	Practising practice	Practising practice provides opportunities to translate research knowledge into pretend practice settings during role plays and scenarios.
Drawing on experience and tacit knowledge	Contextual intelligence	Reflective practice	Reflective practice allows trainees to reflect on their experiences and develop professional judgement regarding what evidence to use. Trainees also reflect on the influence their beliefs and values have on their previous experiences. Supervisors can provide safe environments and challenge trainees to help them explore their thought processes and consider how experience should be used to inform decisions in practice.
	Understanding beliefs and values	Provide a safe space	
	Professional judgement		
Integration	Knowledge translation	Tailored supervision	Tailored supervision caters to the needs of the individual trainee. Providing a safe space, being challenged and encouraging reflection provides an environment where trainees can voice their thought processes in the absence of judgement and consider how they can arrive at the most appropriate intervention through the supervisor's guidance.
	Understanding beliefs and values	Providing a safe space	
	Professional judgement	Being challenged Encouraging reflection	

It is important to acknowledge that certain processes and competencies are not explicitly linked to specific development methods in supervision; each development method has the potential to advance any of the evidence-informed decision-making processes and/or competencies. However, the items in Table 8.1 provide the most obvious demonstrations of how the development methods during supervision support improvement in evidence-informed decision-making processes and competence. For example, the process of gathering information from the athlete is facilitated by having the interpersonal skills to effectively communicate with athletes and their support staff, and this is developed when trainees practice consultant-client conversations in role play environments. The development of interpersonal skills is advantageous to the evidence-informed decision-making process as they are persistently found to be favoured characteristics for athletes seeking the services of a Sport and Exercise Psychologists (Woolway & Harwood, 2018). Furthermore, learning from the experiences of others increases a trainee's contextual intelligence by providing them with a wider base of contextual experiences to draw upon when working in unfamiliar sport settings (Martindale & Collins, 2005a).

Considering the process of drawing on experience and tacit knowledge specifically, Tod et al. (2007) suggested that role plays were useful for practising how to address specific athlete situations based on previous experience. In clinical healthcare, role plays have also been found to support development of evidence-based practices using research, with role plays increasing the likelihood that therapists will use evidence-based practice over the course of client treatment (Fairburn & Cooper, 2011). Role plays have been shown to be more effective than focused discussions, however observation and analysis of expert evidence-informed decision-making is regarded as most influential to the development of decision-making within therapy (Gelís et al., 2020). These findings do not suggest that role plays should replace discussions of practice. Discussion and feedback techniques still

continue to provide trainees with support regarding the growth of their decision-making capabilities (Hatala et al., 2006).

8.3 Applied Implications

The evidence-informed decision-making model produced in this thesis provides practitioners with evidence-informed processes to follow when designing interventions for performance enhancement, regardless of their experience, expertise, or their working environment. For trainee and early career practitioners, following the decision-making model may support them in developing awareness, confidence, and competence in using evidence-informed decisions when designing interventions. In contrast, experienced practitioners can compare their current practices against the evidence-informed decision-making model to ensure their intervention decisions continue to be informed by the best available evidence. Specifically, the evidence-informed decision-making model implies that practitioners should seek out a range of evidence sources to inform decision-making. They should focus on the processes needed to gather information from three core areas of evidence, namely: the athlete and their context, scientifically generated research, and experience and tacit knowledge. Practitioners should also be aware of the processes required to appropriately integrate these sources of evidence to make fully informed decisions regarding the most appropriate intervention, such as treating every athlete as an individual, tailoring to the athlete and context and integrating research-based and practice-based knowledge. During these processes, practitioners should remain open to new sources of evidence to ensure that implementation of the intervention is driven by the best available evidence and suits the needs of the athlete and context. Integrating evidence sources is a common characteristic of evidence-informed decision-making across applied professions. For example, the core concept of evidence-informed decision-making for wound management is “balancing evidence-based and practice-based knowledge” (Gillespie et al., 2015, p.6).

The findings in this thesis presented the challenges practitioners face when trying to transfer evidence into tangible interventions that can be implemented in practice settings. For example, although attitudes towards research utilisation were generally positive, Sport and Exercise Psychologists needed to overcome the barriers to research utilisation to result in increased research utilisation behaviours. Findings recommend that practitioners should focus on developing skills for making evidence-informed decisions and develop self-awareness of how their beliefs and assumptions influence this process. This could be achieved by trainees creating their own competency checklist to develop insight into the competencies they want to develop that can be shared with supervisors to tailor the supervision approach. Similar recommendations have been made in evidence-informed nursing and subsequent actions have involved developing educational curriculums and teaching methods to support students' learning of evidence-informed decision-making competence (Liang et al., 2012).

The study provides implications for practice regarding the usefulness of constructivist learning approaches during supervision in advancing evidence-informed decision-making competencies and subsequent processes for trainee Sport and Exercise Psychologists. The findings from this thesis imply that evidence-informed decision-making processes should be integrated into training programmes to foster independent, evidence-informed thinking in trainees. This is supported by Hickman et al. (2018) who found that integration of blended learning, small group work, role play, and structured debates enhance confidence and capability of evidence-informed practices for nurses in the clinical setting. The bullet points below list additional key characteristics of constructivist learning and teaching that were covered within study 4 of this thesis and can be used to advance evidence-informed decision-making skill development. These learning characteristics have been adapted from Greenhalgh and Russell (2006) and Murphy, (1997).

- Multiple perspectives and representations of concepts and content should be presented and encouraged
- Trainee plays central role in mediating and controlling learning
- Goals and objectives of supervision guided by trainee's needs
- Supervisors act as guides and facilitators of learning
- Activities and opportunities are provided to encourage reflection, meta-cognition (thinking about the learning process), and self-awareness
- Learning situations, environments, skills, content, and tasks are relevant, realistic and authentic to applied practice settings
- Primary sources of data, such as research and practitioner accounts, are used to ensure authenticity and real-world complexity
- Supervisors should emphasise the construction of knowledge, rather than the reproduction
- Trainee's construction of knowledge takes place in individual contexts and through social negotiation, collaboration, and experience
- The trainee's previous knowledge constructions, beliefs, and attitudes are considered in the knowledge construction process
- Supervisors emphasise problem solving, higher-order thinking skills, and deep understanding
- Discussing mistakes in practice provide the opportunity for insight into trainees' previous knowledge constructions
- Conceptual interrelatedness (such as the influence of evidence on other evidence) is emphasised and interdisciplinary learning is encouraged
- Collaborative and cooperative learning opportunities expose the trainee to alternative viewpoints

- Supervisor support enables trainees to function at the most advanced stage of their individual development

Tailored supervision emphasises the importance of the trainee in driving the supervisory relationship through the use of teaching methods that suit their learning style. Supervisors who asked trainees to construct their own individual competency check list ensured the goals and objectives of supervision were derived by the trainee. As supervisors from study 4 reported, they have to sign trainees off as competent practitioners that can make well-thought out and independent decisions by the end of their training. To help trainees reach this level of proficiency, supervisors need to support trainees in exploring possible solutions, rather than telling them what is right or wrong. This is in agreement with expertise literature in applied sport psychology who suggest training should shift away from a “correct” way to practice and towards an “it depends” approach to assessing the appropriateness of practice (Cruickshank et al., 2018, p.246). This has been further supported within the field of systemic therapies, where it has been proposed that supervision should be a “collaborative conversation that is generative and relational, through which supervisees create their own answers, and in doing so experience freedom and self-competence”(Anderson & Swim, 1995, p.1).

Through a tailored supervision approach, supervisors can follow the post-modern dialogical model suggested by Anderson and Swim (1995) to provide learning opportunities through discussion. Supervisors should be recognised as catalysts for learning, using the social process of supervision to support trainees in constructing evidence-informed knowledge. Supervisors need to become experts in the exploratory conversational process of supervision; supervisors should engage collaboratively with the trainee to support them with the telling, inquiring, interpreting, and shaping of the trainee’s narrative. Approaches to supervision should be specific to the individual trainee, with supervisors recognising they are not the expert on the trainee and that the trainee is the expert of their own narratives,

experiences, and knowledge. When conducted successfully, the collaborative approach provides trainees with enduring development of reflexivity, recognition of the authenticity of multiple voices, and helps them to navigate through uncertainty. Although introduced in 1995, this approach continues to be relevant within the supervision of healthcare professionals and across cultures (Baldiwalla et al., 2022). This thesis supports the relevance of collaborative supervision for advancing the training of Sport and Exercise Psychologists in the UK. It also places responsibility on the professional organisations that govern the training of Sport and Exercise Psychologists (Code of Ethics and Conduct | BPS, n.d.; Sport and Exercise Psychology Accreditation Route (SEPAR) | BASES, n.d.) to ensure supervisors have opportunities to develop the required skills and knowledge to facilitate tailored and collaborative approaches to supervision.

Findings indicate that engagement in peer and group supervision contributes to advancement of evidence-informed decision-making processes and competence. Constructivist learning approaches suggest that the construction of knowledge, in this case evidence-informed decision-making knowledge, takes place through social negotiation, collaboration, and experience (Ayaz & Sekerci, 2015). Peer and group supervision provide collaborative and cooperative learning opportunities that expose trainees to alternative viewpoints (Ibrahim, 2013). Supervisors can play both active and passive roles in the group supervision process specifically, by either choosing to guide conversation topics or allowing trainees the freedom to explore different perspectives based on their thought processes. During peer supervision, listening to the experiences of others, especially those who have overcome errors or mistakes, provides trainees with insights into the knowledge construction of peers and supervisors that they can compare to their own processes. Understanding and discussing the contexts that peers and supervisors have worked in can also assist trainees in building cognitive ‘maps’ that can support trainees in identifying critical contextual elements

that influence successful interventions when working in new sport settings. Finally, using peer and group supervision as a journal club provides trainees with opportunities to discuss and evaluate research evidence. This develops research utilisation competencies such as broadening knowledge, critical evaluation, and knowledge translation to promote the use of evidence-informed decision-making practices in applied contexts (Häggman-Laitila et al., 2016).

The study recommends that supervisors should provide trainees with opportunities to practice evidence-informed decisions in a safe environment, where decisions do not lead to adverse consequences for participants. The best way to achieve this is to engage in role play scenarios in both one-to-one and group supervision. Role plays provide trainees with an opportunity to practice analytical and intuitive thinking and have been documented as valuable for gaining service-delivery experience (McEwan & Tod, 2014). Furthermore, discussing practice-based scenarios during supervision can support the application of evidence to practice. Conversations should focus on the act of ‘doing’ sport psychology, discussing ‘if then what’ scenarios through which trainees can understand the influence of evidence on the decisions they make. In line with the constructivist learning approaches to supervision, supervisors should act as guides and facilitators of learning during role play and scenario discussions to provide trainees with opportunities to consider their meta-cognitions during the learning process and build awareness of their evidence-informed decision-making processes (Murphy, 1997).

There are applied implications for researchers and journal editors that may contribute to improvement of evidence-informed decision-making. There remains a requirement for research evidence to improve on aspects of applicability, quality, and accessibility. Ivarsson & Andersen (2016) highlighted that often randomised controlled trials are privileged above other sources of research evidence, but they are often inhibited by the difficulty of evaluating

efficacy, such as the reliance on pre- to post- treatment scores on arbitrary measurements. Instead, they recommended that sources of scientifically generated evidence including case studies and single-case experimental designs provide rigorous evidence that may be more applicable to the individual nature of applied sport psychology practice. Moreover, the authors suggest that there needs to be a collective effort from researchers and journal editors to ensure the dissemination of research findings are clear, detailed and practically relevant. Journal editors should encourage the use of uncomplicated language and the submission of supplementary materials that detail how the intervention was implemented and the context it was implemented within to facilitate application. Lastly, it is proposed that publication journals should continue to consider opportunities for open access to research literature to ensure practitioner evidence-informed decisions are not limited by barriers to resources. For over 20 years, there has been much debate regarding the challenges to providing a literature base which is “digital, online, free of charge, and free of most copyright and licensing restrictions” (Suber, 2012, p.4). Pinfield (2015) suggested that this could be a credible prospect and research needs to focus on how this can be achieved in practice. While this debate continues, researchers can contribute to improving the dissemination of their research findings by transferring their scientific writing into podcast episodes and blog entries. For example, podcasts have been shown to be an effective method for developing educational content and promoting research utilisation in palliative care (Nwosu et al., 2017).

8.4 Strengths and Limitations

This thesis had strengths that supported its findings and their applicability to the profession. Firstly, the use of a mixed-methods approach to research allowed the phenomenon of evidence-informed decision-making in applied sport psychology to be studied from different perspectives (Regnault et al., 2018). The subjective insights from the qualitative open-text box responses in study 1 provided context to the standardised and

generalisable quantitative data from the Likert responses. Furthermore, the use of constructivist grounded theory method and subsequent use of IPA methods explored both the social process of evidence-informed decision-making and the experiences that support its construction.

Secondly, the focus of this thesis on the practice processes of Sport and Exercise Psychologists provided findings relevant to professionals within applied sport psychology. This is known as having naturalistic generalisability and is evaluated on comparisons between the research findings and similarities and differences to the reader's experiences (Smith, 2018). In this thesis, the study of evidence-informed decision-making processes and further investigation into real life experiences provides findings that might resonate with the reader's personal interactions with the social world and unique life experiences. In all studies, I have tried to provide adequate evidence, such as interview quotations and rich contextual descriptions, to help the reader reflect on the connections between research findings and their own lives.

Despite its strengths, this thesis also has limitations. In the context of generalisability, transferability of findings is sometimes inhibited. Within the first study, low response rates, particularly between participants on different training routes, meant that there were not enough participants to run analysis on the similarities and differences between responses based on training route (e.g., Professional Doctorate, BASES SEPAR or BPS QSEP). Exploring the differences between research utilisation attitudes, skills and behaviours based on training route could provide insightful knowledge as all training routes have different levels of engagement with research activities. Additionally, research into the processes involved in evidence-informed decision-making was based on interviews with BPS registered Sport and Exercise Psychologists only. This provided a homogenous sample through which nuanced interactions between decision-making processes could be explored. However, it may

be worthwhile to compare the development of decision-making processes for Sport and Exercise Psychologists that qualify through different training routes to investigate potential similarities and differences between them. This can also be considered for the qualitative studies by interviewing additional individuals that may be able to provide relevant insight to the research topic. For example, interviewing qualified Sport and Exercise Psychologists who engage in peer supervision to understand the mechanisms through which that type of supervision influences development of evidence-informed decision-making.

Another limitation to this thesis was the use of voluntary sampling; this sampling method tends to recruit participants who likely favour the use of evidence-informed decision-making in practice as they will choose to participate based on their interest in the research topic (Murairwa, 2015). For example, if a Sport and Exercise Psychologist mainly used experiential knowledge to inform their practice, they may not have been interested in participating in studies that asked about research utilisation and the use of research evidence within decision-making. However, such individuals could have illuminated further barriers to research application that participants did not share. Finally, this thesis suggests that evidence-informed decision-making can facilitate interventions in leading to more effective performance outcomes for athletes but did not measure this directly. Evidence-informed decision-making literature in public health have demonstrated the difficulties in measuring the knowledge and skills required to make evidence-informed decisions and have therefore dedicated research into identifying the characteristics and psychometric properties of evidence-informed decision-making competence measures (Belita et al., 2022). This thesis provided a preliminary qualitative approach to exploring evidence-informed decision-making competence in applied sport psychology, but more research is needed to measure evidence-informed decision-making competence and its effectiveness on improving performance outcomes.

8.5 Future Directions for Research

The focus of this thesis was on conceptualisation of evidence-informed decision-making within the substantive area of applied sport psychology practice. This approach required exploration of the processes involved in evidence-informed decision-making, the competencies required to make evidence-informed decisions, and the methods to develop both evidence-informed decision-making processes and competence. Although it is generally agreed within the literature that evidence-informed decisions lead to improved client outcomes in clinical practices (Poot et al., 2018), further research could test the effectiveness of the evidence-informed decision-making processes outlined in this thesis on improved psychological services and performance outcomes within applied sport psychology. Future research that evaluates the effectiveness of interventions designed using the evidence-informed decision-making model could test three separate research questions: (1) do practitioners feel evidence-informed decision-making improves their practice? (2) do athletes rate psychological services as more effective when they receive an evidence-informed intervention? (3) does an evidence-informed intervention directly improve performance outcomes for athletes?

This thesis has established the processes involved in evidence-informed decision-making and the competencies required to make evidence-informed decisions for the design of interventions. Based on this foundational knowledge, future research could develop a tool to measure evidence-informed decision-making competence that can help identify professional development needs that could be addressed through training and continued professional development opportunities. Similar approaches have been taken within nursing (e.g., Belita et al., 2022). Development an evidence-informed decision-making measurement tool specific to applied sport psychology could provide insight into the knowledge, skills, attitudes, beliefs, and behaviours for the use of evidence-informed decisions among Sport and Exercise

Psychologists. This line of inquiry has the potential to clarify evidence-informed decision-making expectations within the profession and support construction of training and development opportunities to facilitate improved evidence-informed decision-making engagement.

This thesis did not assess the relationship between research engagement and research utilisation, however research indicates that engagement in research activities has a significant relationship with research attitudes (Aslam et al., 2004); positive attitudes towards research are associated with increased research utilisation behaviours, and development of evidence-informed practice skills (Scurlock-Evans et al., 2014). Considering that the three Sport and Exercise Psychologist training pathways have different requirements for engagement in research activities (i.e. Professional doctorates are very research intensive when compared to the BPS that requires one research project and BASES that has no requirement for trainees to conduct research), future research could explore whether a relationship exists between conducting research and improved skill in applying research for evidence-informed decision-making in applied sport psychology. This line of inquiry could facilitate construction of training programmes and requirements that best support trainees in developing the skills and knowledge needed to make evidence-informed decisions for intervention design.

Another suggestion for future research regards the recommendation for research to be conducted with the purpose of practical application in mind. Within clinical practices, the James Lind Alliance is an established programme aimed at identifying and prioritising unanswered questions that clinicians and researchers agree are the most important to investigate. This approach to selecting research topics brings patients, carers, clinicians, and researchers together in priority setting partnerships to decide on the top ten priorities for future research (Nygaard et al., 2019). Future research within applied sport psychology could explore this approach to ensure research being conducted is relevant to athletes (and other

participants), is useful for advancing applied practice approaches, and answers uncertainties that cannot be answered by existing research.

The adoption of tailored and collaborative approaches to supervision presented in this study may support the development of independent evidence-informed thinking in their trainees. However, limited research exists as to whether supervisors have the required skills and knowledge to deliver these approaches effectively (Andersen et al., 1994). Previous literature identified the importance of supervisors gaining experience as a supervisee and receiving training on the supervision process itself, but more recent research has focused on trainee experiences of supervision and what trainees want to learn in supervision (Cottrell et al., 2002; Hutter et al., 2015b), rather than assessing whether supervisors have the knowledge and skills to facilitate learning. Further research is required to support supervisor skill and knowledge development. Research into the challenges of supervision, current approaches to supervision, and interventions to support supervisors in providing effective supervision could advance knowledge on the role of supervision in developing trainee evidence-informed decision-making processes and competence. Further research may also look to implement collaborative learning interventions through supervision to assess the effectiveness of these approaches on developing evidence-informed decision-making competence of trainees. This evidence could then be used by training organisations, such as the BPS and BASES, to provide useful training opportunities and resources to support training supervisors.

This thesis displayed the importance of sharing experience to enhance research utilisation competence of trainees and support development of contextual intelligence of trainees. However, understanding the stories and experiences of others can be difficult because they represent tacit knowledge that is difficult to dissect and teach (Eraut, 2000). Future research may explore tools to capture ‘invisible thinking’ and understand the evidence-informed decisions described within a trainee or qualified practitioner’s shared

account. Advances have been made through the use of applied cognitive task analysis for professional judgement in sport; Mascarenhas et al. (2022) used cognitive task analysis to propose a decision tree for touch refereeing that prioritises cognitive decisions and can be used to support the training of referees. Although the relative merits of using applied cognitive task analysis to understand the cognitive processes of Sport and Exercise Psychologists have been discussed, research into this area of professional development is sparse. The use of in-depth interviews and cognitive mapping during peer and group supervision may allow trainees to access the judgements, decisions, critical cues, behavioural patterns, and problem solving strategies being made by the individual sharing their experience. Rather than simply stating the evidence used and the context it was applied in, knowledge elicitation strategies such as the critical decision method could capture detailed information on the interaction of these elements and bring to light the cognitive cues that influenced the decision-making process.

At present, engagement in peer and group supervision is not a mandatory requirement of Sport and Exercise Psychologists' training. Peer and group supervision have been shown to be effective mechanisms for emotional support during training, but its role in the development of trainee skill and knowledge remain relatively under explored in applied sport psychology (McEwan & Tod, 2015). Further research could explore potential guidelines for establishing communities of practice that facilitate practitioner development while also abiding by the profession's ethics and professional standards. Additionally, further research could also consider the role of peers in providing feedback to trainees when practising practice. Neighbouring professions such as clinical supervision have explored the content of peer feedback and found counselling students provided feedback about counselling performance and cognitive counselling skills most often in peer supervision sessions (Avent et al., 2015). Researchers have also found that the focus of feedback was related to their

development level (Borders & Brown, 2006). For example, a trainee at the start of their training development will focus on counselling skill feedback, whereas a trainee at the end of their training development may additionally focus on self-awareness issues, including transference and countertransference (Avent et al., 2015). Further research is needed to explore the feedback content of peer supervision for the training of Sport and Exercise Psychologists to ensure feedback offered from peers is safe, constructive, and beneficial for improving practice.

Finally, further research could explore the long term effectiveness of constructivist learning approaches and how their effectiveness may differ depending on the professional training pathway they are integrated within. This thesis has explored the similarities and differences between qualified and trainees, early career and experienced, and trainees and supervisors, often finding alignment of opinions between the different groups. As the training routes for Sport and Exercise Psychologists in the UK continue to grow, it may be useful to explore comparisons between trainees on different routes over a prolonged period of time. This line of inquiry may highlight the influence that different constructivist approaches implemented within different contexts may have on the development of evidence-informed decision-making processes and competence.

8.6 Conclusion

This thesis explored four aspects in understanding evidence-informed decision-making and how it can facilitate Sport and Exercise Psychologist' service delivery. Firstly, results indicated that although practitioners held mainly positive attitudes towards research utilisation, intervention decisions were informed by a balance of research evidence and evidence from intuition and experiential knowledge. The second study then presented the importance of following integrative social processes when combining sources of evidence to

make intervention decisions informed by the best available evidence. The thesis then identified the influential role supervision played in the construction of evidence-informed decision-making processes during the career progression of Sport and Exercise Psychologists. Finally, it was suggested that one-to-one, group, and peer supervision can provide a safe learning environment to build trainee awareness of evidence-informed decision-making processes and develop their competence in making evidence-informed decisions through discussion, practice, and reflection. In summary, this thesis endorses the use of evidence-informed decision-making within applied sport psychology practice. Findings suggest that improving Sport and Exercise Psychologists' awareness of evidence-informed decision-making processes and developing their competence in making them ensures decisions for intervention design are based on the best available evidence in attaining performance enhancement.

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Appendices

Appendix A: Example Ethical Approval. All Ethical Approval were obtained from the University of Essex Ethics Committee. Appendix A provides an example ethical approval from study 2. Full copies of ethical approval for other studies within this thesis can be requested.

Application for Ethical Approval of Research Involving Human Participants

This application form must be completed for any research involving human participants conducted in or by the University. 'Human participants' are defined as including living human beings, human beings who have recently died (cadavers, human remains and body parts), embryos and fetuses, human tissue and bodily fluids, and human data and records (such as, but not restricted to medical, genetic, financial, personnel, criminal or administrative records and test results including scholastic achievements). Research must not commence until written approval has been received (from departmental Director of Research/Ethics Officer, Faculty Ethics Sub-Committee (ESC) or the University's Ethics Committee). This should be borne in mind when setting a start date for the project. Ethical approval cannot be granted retrospectively and failure to obtain ethical approval prior to data collection will mean that these data cannot be used.

Applications must be made on this form, and submitted electronically, to your departmental Director of Research/Ethics Officer. A signed copy of the form should also be submitted. Applications will be assessed by the Director of Research/Ethics Officer in the first instance, and may then passed to the ESC, and then to the University's Ethics Committee. A copy of your research proposal and any necessary supporting documentation (e.g. consent form, recruiting materials, etc) should also be attached to this form.

A full copy of the signed application will be retained by the department/school for 6 years following completion of the project. The signed application form cover sheet (three pages) will be sent to the Research Governance and Planning Manager in the REO as Secretary of the University's Ethics Committee.

1. Title of project:
Investigating the Relationship Between Science and Practice in Applied Sport and Exercise Psychology

2. The title of your project will be published in the minutes of the University Ethics Committee. If you object, then a reference number will be used in place of the title.
Do you object to the title of your project being published? Yes ☐ / No ☒

3. This Project is: ☐ Staff Research Project ☒ Student Project

4. Principal Investigator(s) (students should also include the name of their supervisor):

Name:	Department:
Marie Winter	School of Sport, Rehabilitation and Exercise Sciences
Professor Ian Maynard	School of Sport, Rehabilitation and Exercise Sciences
Dr Murray Griffin	School of Sport, Rehabilitation and Exercise Sciences
Dr Paul Freeman	School of Sport, Rehabilitation and Exercise Sciences

5. **Proposed start date:** April 1st 2019 (subject to ethical approval)
6. **Probable duration:** 5 months

7. Will this project be externally funded? Yes ☐ / No ☒
If Yes,

What is the source of the funding?

8. Is external approval required for this project?

Yes ☐/ No ☒

If the answer is yes, please provide details of the approval(s) required and the approving body, e.g. MoDREC approval, HRA approval, MoJ approval, local government or other research governance approval.

9. Has the required external approval already been obtained?

Yes ☐/ No ☐/ N/A ☒

If the answer is yes, please attach evidence of approval.

If the answer is no, please confirm that it is being sought

Yes ☐

NB: Final authorisation of a project will not be granted until all approvals are in place.

Projects which have received approval from one of the following listed external ethics committees do not require a further ethics review by the University: (i) HRA NHS REC; (ii) MoDREC; (iii) Social Care REC; (iv) another UK university REC. If this is the case, applicants should complete this cover sheet and attach confirmation of approval from the external review body. You may also be asked to provide a copy of the full application for the University's records. If you have approval from a body that is not listed, please check with the Research Governance and Planning Manager to see whether a full application will be required.

Declaration of Principal Investigator:

The information contained in this application, including any accompanying information, is, to the best of my knowledge, complete and correct. I/we have read the University's *Guidelines for Ethical Approval of Research Involving Human Participants* and accept responsibility for the conduct of the procedures set out in this application in accordance with the guidelines, the University's *Statement on Safeguarding Good Scientific Practice* and any other conditions laid down by the University's Ethics Committee. I/we have attempted to identify all risks related to the research that may arise in conducting this research and acknowledge my/our obligations and the rights of the participants.

Signature(s): M.E. Winter

Name(s) in block capitals: MARIE ESTHER WINTER

Date: 15/03/19

Supervisor's recommendation (Student Projects only):

I have read and approved the quality of both the research proposal and this application.

Supervisor's signature: Theresa

Outcome:

The departmental Director of Research (DoR) / Ethics Officer (EO) has reviewed this project and considers the methodological/technical aspects of the proposal to be appropriate to the tasks proposed. The DoR / EO considers that the investigator(s) has/have the necessary qualifications, experience and facilities to conduct the research set out in this application, and to deal with any emergencies and contingencies that may arise.

This application falls under Annex B and is approved on behalf of the ESC ☐

This application is referred to the ESC because it does not fall under Annex B ☐

This application is referred to the ESC because it requires independent scrutiny ☐

Signature(s):

Name(s) in block capitals:

Department:

Date:

The application has been approved by the ESC ☒

The application has not been approved by the ESC ☐

The application is referred to the University Ethics Committee ☐

Signature(s): 

Name(s) in block capitals: ANORU BANU

Faculty: SNS

Date: 22/03/2019

Appendix B: Study 1 Survey Questions

Evidence-Informed Decision-Making Processes Question:

When making decisions regarding intervention design for performance enhancement I...

Please tick the box that best describes your current decision-making process.

- Rely primarily upon scientifically generated research evidence
- Rely more heavily on scientifically generated research evidence than on my own intuition and experiential knowledge
- Rely about equally on scientifically generated research evidence and my own intuition and experiential knowledge
- Rely more heavily on my own intuition and experiential knowledge than on scientifically generated research evidence
- Rely primarily on my own intuition and experiential knowledge

Research Utilisation Attitudes Statements

Please answer the following statements with regard to your level of agreement. 1 = 'strongly disagree' to 5 = 'strongly agree'

I believe research findings should be used in sport psychology practice

Sport psychology research findings are usable in sport psychology practice

Sport psychology research is designed based on sport psychology practice

Sport psychology research is not relevant to the everyday work in sport psychology practice

I have access to the most relevant research-evidence that I need to inform my practice

Having access to research-evidence is useful for my practice

I understand how to make judgements about the quality of research-evidence

I understand how to apply research-evidence to my practice

Research findings are too complex to use in practice

It takes too much effort to apply research-evidence to my practice

Research helps to build a scientific base for sport psychology

I would change my practice as a result of research findings

Sport psychology research improves sport psychology practice and athlete performance outcomes

Research Utilisation Skill Statements

Please answer the following statements with regard to your level of agreement. 1 = 'strongly disagree' to 5 = 'strongly agree'

I have the capability to formulate practice-based questions that I can use to search for research-evidence

I have the capability to develop an appropriate strategy to search for research evidence

I have the capability to critically appraise the quality of research evidence

I have the capability to assess the applicability of research evidence to an applied context

I have the capability to use evidence-informed decisions to design an intervention to achieve performance enhancement

I have the capability to participate in evaluating practice, based on research knowledge

Research Utilisation Behaviour Statements

Please rate the following statements based on the extent to which you complete the following behaviours, from 1 (to a very low extent) to 5 (to a very high extent).

I formulate practice-based questions that I can use to search for research-evidence

I develop appropriate strategies to search for research evidence

I critically appraise the quality of research evidence

I assess the applicability of research evidence to an applied context

I use evidence-informed decisions to design an intervention to achieve performance enhancement

I evaluate my practice, based on research knowledge

Barriers and Enablers to Research Utilisation

The following questions are about the barriers and enablers to research utilisation in decision making for intervention design and considerations for knowledge translation strategies for applying research into practice.

Please answer the following questions using the free text options provided.

Please describe what you think are the main enablers to research utilisation in decision making for intervention design.

Please describe what you think are the main barriers to research utilisation in decision making for intervention design.

What strategies do you think would be useful to increase the use of research utilisation in decision making when designing interventions for performance enhancement?

Appendix C: Study 2 and 3 Interview Guide

Interview Schedule

Investigating the Relationship between Research and Practice in Applied Sport and Exercise Psychology

Demographic Questions

Can you confirm that you have completed the informed consent form and are happy to participate in this study?

.....

First, what year were you born?

.....

What is your current employment status?

(Examples to prompt if needed: University Lecturer, full time practitioner, full time researcher)

.....

What Sport Psychology Accreditation do you hold and what year did you receive it?

.....

Since gaining your accreditation, how many years' experience do you have of working as a sport psychology consultant?

.....

Main Body Questions

I would just like to say that as an accredited BPS member, there are competencies and best practice guidelines the BPS (or relevant accreditation) suggest their members follow. However, today I am interested in what it is you do when working as a sport psychology practitioner, not what the best practices of the BPS/ HCPC are. Please consider this as you answer the following questions.

- 1) Could you give me an overview of your experience as a sport psychology practitioner?
- 2) Could you describe how your training has shaped your approach to sport psychology consultation, specifically when designing an intervention?

Prompts:

- Influence of Institutions (where they were trained vs where they work now)
- Influence of colleagues / mentors / teachers

- 3) Could you tell me the process you follow when designing and implementing an intervention for an athlete / team in competitive sport?
 - Is there a beginning / middle / end or is it more fluid?
 - How do you transition from profiling an athlete to planning the intervention?
 - Are there any differences to your approach depending on the ability of your athlete(s) (elite / non-elite)
 - Are there any differences to your approach depending on the age of your athlete(s) (adult / youth)
- 4) During the process of intervention planning, how does the psychological skills intervention literature play a role in your work as a sport psychology consultant?
 - Practical examples
- 5) How effective is the psychological skills intervention literature in informing your practice as a sport psychology consultant?

Prompts:

- Does the Psychological skills intervention literature allow you to make evidence-informed decisions?
 - How do you translate research to Practice?
 - Are there any gaps in the literature that impact on your ability to translate research into practice?
- 6) Is there anything else you wish to say and/ or questions you want to ask?

Appendix D: Study 4 Interview Guides

Interview schedule – supervisors

The role of supervision in developing evidence-informed decision making in trainee sport psychologists when designing interventions for performance enhancement.

Introduction

I would like to begin by thanking you for your participation in this study. Today I will be asking you some questions with the aim of understanding the role of supervision in the development of trainees' skills in evidence-informed decision making when designing interventions for performance enhancement.

Please take your time to consider each question carefully and provide detail within your answers. If there are any questions you would prefer not to answer, then you are under no obligation to do so. We can also stop the interview at any stage you wish.

Begins audio recording Commencing interview with.... (participant number)

Before we begin, are you happy for me to audio record this interview?

.....

Can you confirm that you have completed the informed consent form and are happy to participate in this study?

.....

Demographics

First, what is your age?

.....

What is your current employment status?

(Example prompts: University Lecturer, full time practitioner, full time researcher)

.....

What Sport Psychology Accreditation(s) do you hold and what year did you receive it?

(Example prompts: BPS Chartered Membership, BASES accreditation, HCPC registered)

.....

What year did you become an accredited supervisor and who do you supervisor for? (i.e. BPS or BASES)

.....

Main body

That concludes the demographic section of the interview. Now we will move onto the main body of questions. Firstly, I would like to begin by asking you to...

1. Please describe your approach to supervision.

Example prompts:

- overall aim
- underlying theory/framework
- development
- consistency

2. Please describe the key skills and knowledge that you think are important for trainees to develop and why?

Prompts:

- Professional standards
- Understanding and application of psychological theories
- Research knowledge and skills
- Communication

This next section focuses on the skill of evidence-informed decision making. Used synonymously with evidence-based practice, evidence-informed decision making involves the ‘conscientious, explicit, and judicious use of current best evidence in making decisions about the service provided to individual clients’.

3. Please describe your own attitudes and beliefs towards evidence-informed decision-making?

Prompts:

- academic research
- practice-based knowledge
- other forms of evidence.

4. Please describe the key skills and knowledge trainees need to develop to enhance evidence-informed decision-making skills in the design of interventions for performance enhancement.

Prompts:

- Accessing evidence
- Assessing evidence
- applying evidence
- Why?

5. Please tell me about how you educate and support trainees to make evidence-based decisions when designing interventions for performance enhancement?

Prompts:

- Individual and group supervision

- Specific techniques/strategies
 - When?
 - Why?
6. Please describe how you monitor and evaluate whether trainees are developing their skills and knowledge to make evidence-based decisions when designing interventions for performance enhancement.
- Prompts:
- Meetings
 - Portfolios/submissions
 - Specific indicators
7. Please describe how trainees could be further helped to develop the skills and knowledge to make evidence-informed decisions when designing interventions for performance enhancement?
- Prompts:
- your trainees
 - other trainees and supervisors
 - role of sport psychology organisations
8. Is there anything else you wish to say and/ or questions you want to ask?

Interview schedule – Trainees

The role of supervision in developing evidence-informed decision making skills in trainee sport psychologists when designing interventions for performance enhancement.

Today I will be asking you some questions with the aim of understanding the role of supervision on the development of trainee skills in developing evidence-informed decision making when designing interventions for performance enhancement.

Please take your time to consider each question carefully and provide detail within your answers. If there are any questions you would not like to answer, then you are under no obligation to do so.

Begins audio recording Commencing interview with.... (participant number)

Before we begin, are you happy for me to audio record this interview?

.....

Can you confirm that you have completed the informed consent form and are happy to participate in this study?

.....

Demographics

First, what is your age?

.....

What sport psychology qualification are you in the process of completing and what stage are you currently in?

(i.e. BPS QSEP Stage 2 or BASES SEPAR)

.....

How far through this section of your training are you? (in years and/ or months)

.....

Main body

That concludes the demographic section of the interview. Now we will move onto the main body of questions. Firstly, I would like to begin by asking you to...

1. Please describe your experiences with supervision to date.

Prompts:

2. Please describe the key skills and knowledge that you think are important for you to develop during training and why?

Prompts:

- Professional standards

- Understanding and application of psychological theories
- Research knowledge and skills
- Communication

This next section focuses on the skill of evidence-informed decision making. Used synonymously with evidence-based practice, evidence-informed decision making involves the ‘conscientious, explicit, and judicious use of current best evidence in making decisions about the service provided to individual clients’.

3. Please describe your own attitudes and beliefs towards evidence-informed decision-making?

Prompts:

- academic research
- practice-based knowledge
- other forms of evidence.

4. Please describe the key skills and knowledge you need to develop during training to enhance evidence-informed decision-making skills in the design of interventions for performance enhancement.

Prompts:

- Accessing evidence
- Assessing evidence
- applying evidence
- Why?

5. Please tell me about how your supervisor educates and supports you in the development of evidence-based decision making skills when designing interventions for performance enhancement.

Prompts:

- Individual and group supervision
- Specific techniques/strategies they teach
- Influence on practice

6. Please tell me about how peer supervision helps you in the development of evidence-informed decision making skills when designing interventions for performance enhancement.

7. Please describe how you could be further helped to develop the skills and knowledge to make evidence-informed decisions when designing interventions for performance enhancement?

Prompts:

- trainees
- other trainees and supervisors

8. Is there anything else you wish to say and/ or questions you want to ask?

Appendix E: Example Audit Trail from study 2.

Appendix includes examples of line by line coding, focused coding, early conceptualisation, memo-writing and research team meetings, later conceptualisation, and model generation

N7 Line by Line coding example

Layout References Mailings Review View Developer Help DocTools

Font 11 Paragraph Styles

Normal No Spacing Heading 1

Practitioner: So having a more direct approach.

Interviewer: So, if you could break down that profiling aspect, whats involved there?

Practitioner: The formulation profiling?

Interviewer: Um

Practitioner: Right, so, you've probably heard about it if you've done a few of these interviews already, I'm sure people would have brought it up. There's a lot of different ways of formulation, lots of different types you've got your 5p's which is quite a common CBT approach to formulating, you've got ACT approaches to case formulation, you've got systemic approaches, all of these different sorts. But I'm just going to give you what I do, I typically go with a couple of key areas, so I go with what are the key concerns of, lets say, this is often with the staff group as well so team formulation, so you'd bring in your coach that works with the athlete, maybe some support staff, could be a

performance lifestyle, a nutritionist, depending on if it's a Olympic sport or if it's just football, anyone that's really involved in them. You then share, collectively, some of the observations that we have, so we try and look at everyone adding a perspective and getting a full picture on the athlete

Interviewer: Um

Practitioner: And that might look at what are the concerns we are seeing at the moment, so what are some of the behaviours maybe that are stopping that athlete progressing in terms of performance or impacting on the wellbeing of that person or the wider group around us. And then you'd look at maybe what are the sort of things we're hoping for. So, concerns and then what's the end goal here, what are we actually trying to achieve with this athlete, how do we want the behaviours to shift? So, you've got a bit of a clear distinction. Then I start to look at what triggers that athlete maybe, so what triggers them when they're struggling, when they're showing more concerning behaviours but equally when are they doing well? What are the things that are happening when they actually show when we want to be seeing more? Then you might dig a little deeper and you go, what do we know about their life, their history, what experiences do they have in sport, perhaps what seems to be maintaining some of the problems, what seems to be some of the protected factors, and then at the end of that, you try and paint the picture.

Interviewer: Um

Practitioner: So between us, we try and join the dots and go ok, we're seeing a lot of this stuff with this person, let's put some psychological lenses on it, like your attachment lense, like you know maybe what do they view themselves, the others and the world as, a bit of a CBT approach, their potential beliefs, just try and help unpick what might be going on for that person, get an understanding of their perspective, understanding why those behaviours pop up in the first place, then we can put the action points in place at the end of that for everyone to hopefully be clear on and then start to go quite consistently in the approach from that point. Then we would check in and monitor at stages.

Marie Winter focusing on key concerns

Reply

Marie Winter using team formulation

Reply

Marie Winter formulating with the team (system)

Reply

Reply

Marie Winter understanding athlete's perspective

Reply

Marie Winter reasoning athlete's behaviours

Reply

Marie Winter being clear

Reply

Marie Winter actioning points

Reply

Marie Winter having a consistent approach

Reply

Marie Winter monitoring

Predictions: On Accessibility: Investigate Focus

N7 Focused Coding Example

Gathering information about the athlete

focusing on the individual

Recognising a high level athlete

Recognising where someone needs help

understanding the athletes background

understanding athlete experiences

understanding athlete beliefs

understanding athlete's perspective

understanding athlete needs

Understand athlete's level of self-awareness

Understanding athlete's history

Digging deeper

Wanting to dive deeper

- Giving the athlete power

Letting the athlete decide

Giving the athlete power

Pursuing based on athlete's request

- Incorporating support (outside the team)

Incorporating family

- Sharing (or not sharing) with the athlete

Knowing when to share a formulation (with an athlete)

Sharing with the athlete (at the appropriate time)

Holding back

Avoiding overwhelming the athlete

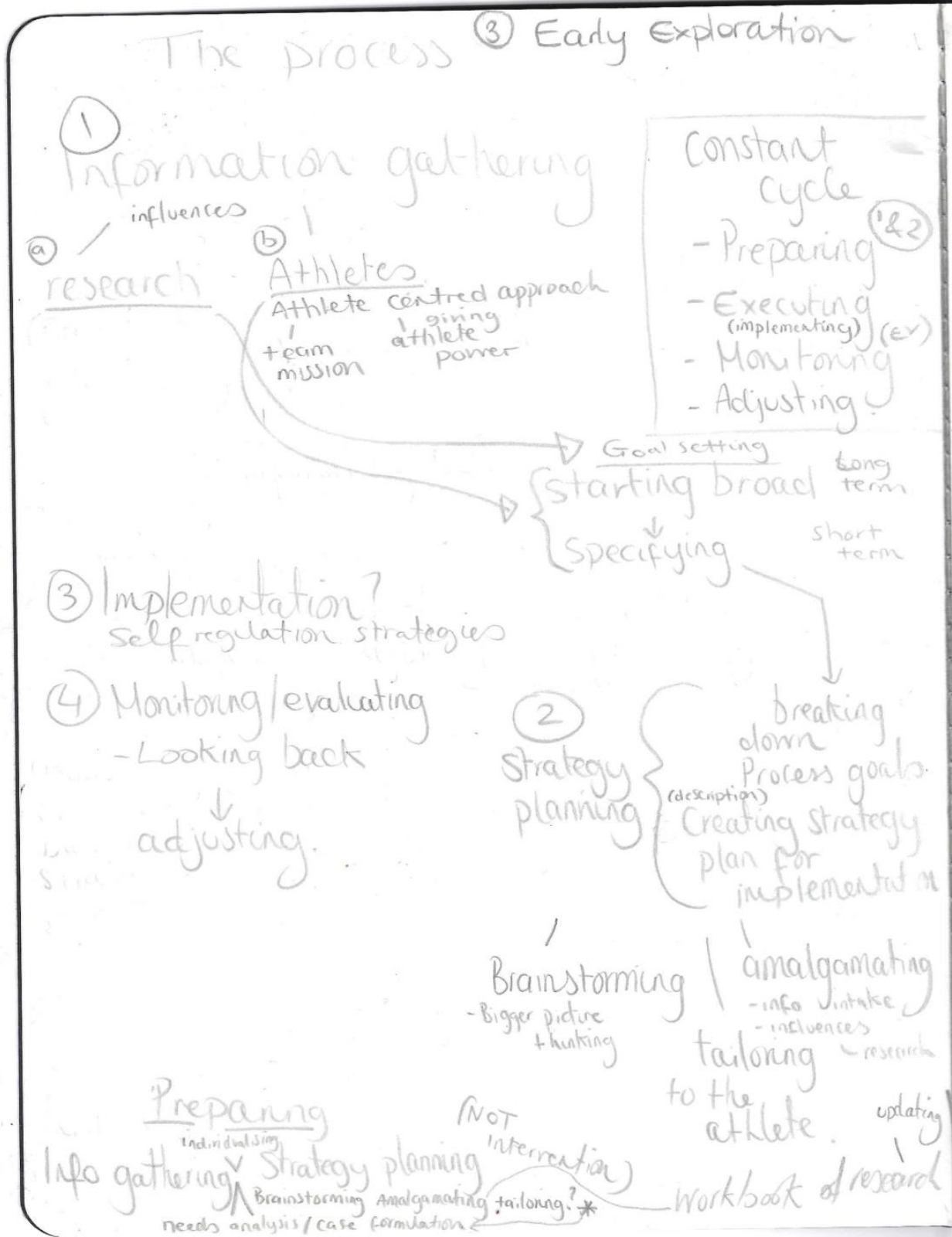
Helping the athlete to understand

Helping the athlete make sense of it

- Protecting

Protecting the athlete

Early Exploration Coding Example



Memo-Writing and Research Team Meeting Example

Study 1 (interim board) ^{results} (4) Memo-writing
 Study 1 results (interim board) Discussion with research team

Study 1 results notes from Meeting

Think - Does this influence decision-making?

Social process 1: Title?

- Gaining entry to the athlete to get the information needed.
- Understanding goal of practice.
(Feeling they can)
- Make a difference
- Understand goal of intervention

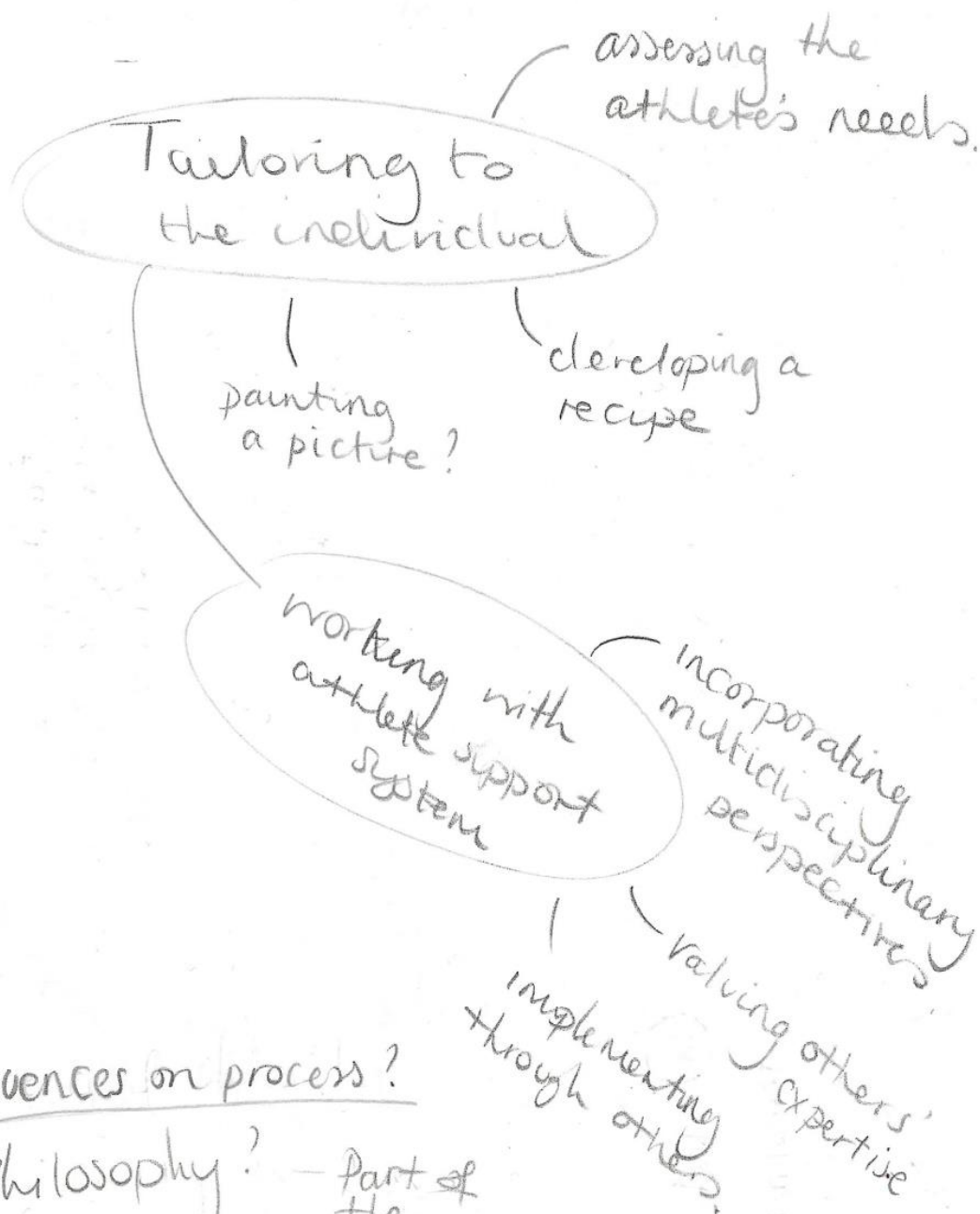
remote (influences on building a consulting relationship, NOT intervention design)

experiences

- use of literature in developing consulting relationship
- Mutual understanding of identity
- collaborative relationship

Later Conceptualisation

⑤ Later conceptualisation



Influences on process?

Philosophy? — Part of the process?
 — just an influence.

Model Generation

