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What makes a performance nutritionist effective within elite sport?

Christopher Rosimus

A thesis submitted for the Degree of Professional
Doctorate

School of Sport and Exercise Sciences, University of
Kent

University of
Kent

Declaration

No part of this thesis has been submitted in support of an application for any degree or other qualification of the university of Kent, or any other university or institute of learning.

Dedication

This thesis is dedicated to my wife Caroline and my daughter Karla.

I love you both with all my heart.

I hope this makes you both proud.

To my Mum, Dad and brother, I love you all and I hope this achievement
makes you proud.

Abstract

Introduction: Modern-day performance nutritionists are working more intimately with coaches and athletes in the field rather than in the consultation room. This requires a high level of soft skills that are rarely published in scientific literature and difficult to measure. The purpose of this thesis is to investigate through a thematic analysis process, what makes an effective performance nutritionist within elite sport, from the perceptions of athletes (n=2), multi-disciplinary colleagues (n=8) and performance nutritionists (n=9). Moreover, we will explore how non-technical skills of performance nutritionists currently trained in the United Kingdom, and to investigate the development of a performance nutrition specific coaching model. **Results:** From the perspective of service users (n=9) and providers (n=8), the top five perceived traits of effective performance nutritionist are; 1) being able to flex (adapt) their communication style (80%); 2) good strategist (73%), 3) can influence behaviour (67%), 4) Builds good relationships (67%), and 5) Trustworthy (53%). Sixty-nine percent of undergraduate courses offer both work placements and non-technical skill development at undergraduate degree level. 23% of the courses offered either a work placement or integrated non-technical skills modules, but not both, and 8% offered none of these elements within their programme. 59% of postgraduate courses offer both work placements and non-technical skill development at postgraduate degree level. 24% of the courses offered either a work placement or integrated non-technical skills modules, but not both, and 18% offered none of these elements within their programme. All performance nutritionists expressed the creation of an effectiveness checklist and coaching framework would have both positive and negative impacts on their practice. **Conclusion:** Strong non-technical skills are key determinants of effective performance nutritionists. There are varied opportunities for performance nutritionists to develop these areas at all levels of their development. The creation of specific coaching framework could be required for performance nutritionists who operate within high-performance environments.

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Abbreviations

| | |
|--------------|---|
| EIS | The English Institute of Sport |
| SENR | Sports & Exercise Nutritionist Register |
| IOC | International Olympic Committee |
| UKVRN | UK Voluntary Register of Nutritionists |
| BASES | The British Association of Sports and Exercise Sciences |
| BDA | British Dietetic Association |
| TTM | Trans-Theoretical Model of Change |
| HMB | The Health Belief model |
| TRA | The Theories of Reasoned Action |
| TPB | Theory of Planned Behaviour |
| COM-B | Capability, Opportunity and Behaviour Model |
| CPD | Continued Professional Development programme. |
| NOTSS | Non-Technical Skills for Surgeons |
| ANTS | Anaesthetists' Non-Technical Skills |
| NTS | Non-Technical Skills |
| LJMU | Liverpool John Moore's University |
| MMU | Manchester Metropolitan University |
| SE | Supervised experience |
| UCAS | Universities and Colleges Admissions Services |

Glossary of terms

| | |
|---|--|
| Performance nutritionist | Sports nutrition is the application of nutrition principles to improve training, recovery, and performance. |
| Behavioural science | Behavioural sciences look to address why and how people do what they do. |
| Coaching | Coaching can be defined as the process of training somebody to play a sport, to do a job better or to improve a skill. |
| Effectiveness | The degree to which something is successful in producing a desired result. |
| Flex communication style | a deliberate attempt of the service provider to adjust his or her communication style to suit the personality of the service user. |
| Knows when to 'push & pull' | Understanding when the time is right imparting your knowledge on an individual, and when not to. |
| Going on a 'whim' | Sudden desire or change of mind, especially one that is unusual or unexplained |
| Performance focused | focus on identifying and applying principles that facilitate peak sport performance. |
| Stakeholder engagement | The process by which an organization involves people who may be affected by the decisions it makes or can influence the implementation of its decisions. |
| Non-technical skills | interpersonal skills which include communication skills; leadership skills; team-work skills; decision-making skills; and situation-awareness skills. |
| Technical skills | Knowledge needed to perform specific tasks. In this context, they relate to academic or scientific knowledge. |
| Strategic skills | Ability to plan for the future and the capacity to prepare strategies and conjure ideas that will both cope with changing environments and consider the various challenges that lie ahead. |
| Training camp | A training camp is an organized period in which athletes participate in a rigorous and focused schedule of training in order to learn or improve skills. |
| Build rapport | Building a connection or relationship with someone else. |
| Translate complex to simple | Ability to break down scientific knowledge to create content that is clear, consistent and concise. |
| Understand culture of a sport | The values, attitudes, and goals about the sport, competition, and relationships. |
| Influencing the 'one to one' situation | Something that is in a one-to-one relationship with another person who positively influences the way that the other person behaves. |

1: Introduction and literature review

The purpose of this thesis is to investigate what makes an effective performance nutritionist within elite sport, to understand what athletes, coaches and practitioners expect when working alongside a performance nutritionist, and to investigate the development of a performance nutrition-coaching model. Moreover, I will explore the academic route to becoming an elite sport performance nutritionist. This document provides more detail regarding the proposed study “What makes an effective performance nutritionist within elite sport? This thesis will provide an in-depth background into the research area, the methods proposed for the study, and ethical considerations.

1.1 Background

The English Institute of Sport (EIS) practitioners provide over 4,500 hours of support each week, helping elite athletes improve performance through the expert delivery of science, medicine, technology, and engineering and are the team behind many of Great Britain's most successful sports. Performance Nutrition is one of these services. Olympic athletes, for example, plan their lives in four-year cycles aiming for that next Olympic Games. During this time, they will compete anywhere between 20-100 times, train 2000-4000 times depending on their sport, and eat or drink 8000 times (EIS, 2016).

With a mission to promote excellence in their discipline through evidence-based practice, performance nutritionists are encouraged to ascertain accreditation on the Sports & Exercise Nutritionist Register (SENR). However, modern-day performance nutritionists are working more intimately with coaches and athletes in the field rather than in the consultation room. This requires a high level of soft skills that are rarely published in scientific literature and difficult to measure. It is of my opinion that the modern-day performance nutritionist should be equipped with a strong set of coaching and NTS to enable them to maximise their impact with coaches, support staff and athletes in any high-performance environment. This is reflected in the job descriptions of recent profile roles where these are essential knowledge for the role (appendix 9).

1.1.1 Introduction

I have chosen to write the personal positionality narrative using autoethnographic vignettes and reflexivity as an alternative method in qualitative research. This methodology has been defined as an autobiographical and reflective genre of writing and research that displays multiple layers of consciousness, connecting the personal to the cultural (Ellis, 2000). All citations within this text have been added using the Harvard referencing style using the Mendeley referencing programme.

1.1.2 Personal Background

My journey as an applied sports science practitioner was unconventional. Having left school in 1999 with no aspirations for higher education, I followed my brother's footsteps into my father's business of gas fitting. It lasted 6 months. Six months later (the prior months were taken up working at my uncle's conservatory roof fabrication business in Bolton whilst I pondered what 'trade' I would pursue next), I was offered a modern apprenticeship in fire and security system installations, where I would go on to work as an alarm engineer for the next 6 years of my life. Career sorted. Although I enjoyed my job as an alarm fitter, I believed that I possessed a much greater set of skills that would be better suited to 'something else', but at this stage of life, I had no idea what the 'something else' would be. In 2003, this started to become clearer when I was asked to assist my best friend in coaching junior football in my local community. "I'll do it this once and once only...." Was my initial reply to my friend's request. I was resistant and lacked the confidence to accept responsibility. After one session, however, I was hooked. It was an amazing buzz to witness these young footballers hanging on my every word whilst I helped them improve their football skills and build their self-confidence. I was good at it! Although I did not realize this at the time, this would be the most important step in my life. Over the next few years, I would go on to take my football coaching badges and work as a part-time junior football coach for professional football clubs alongside my day job.

Whilst coaching in professional football, I would educate the players on various topics, one of which was nutrition. This was very inspiring, particularly when player's parents would comment about how 'their son's diet has improved' and 'my son seems to concentrate in school much better because he now eats breakfast'.

This feedback was incredibly satisfying and captured my imagination. I then realised how much I enjoyed coaching people, and that I was good at it. I wanted to leave behind the alarm engineer and become a sports nutritionist. In 2006 I enrolled in a degree in Human Nutrition at Manchester Metropolitan University and followed a new path.

In 2011, the vision became a reality when I was employed as a performance nutritionist for the EIS. The EIS supports elite athletes to improve performance through the delivery of sports science, medicine, technology, and engineering. Here I was assigned to work with the England Cricket Team, where I would work for 6 years before leaving to take up my current post as head of performance nutrition at The Football Association. During my fledgling years of practice, I would recall and recite the theoretical sports nutrition wisdom that I harvested during university and follow the classic one-to-one consultation process that we were taught from the Manual of Dietetic Practice when dealing with a client. These sessions would focus on goal setting, dietary evaluation, energy expenditure and the application of an intervention tailored to their needs (Webster-Gandy, 2006). Although this was a sound, textbook approach, I never felt it was maximizing my effectiveness and having a genuine influence on behaviour. It didn't feel authentic. Moreover, this approach can often leave the athlete feeling uninspired, as this structured approach can be too "business-like" and not supportive enough emotionally, and "like working with a robot that weighs you and gives you a pass/fail grade" (Endevelt and Gesser-Edelsburg, 2014). This was when I had an epiphany. The process used as a nutritionist to influence an outcome is no different from being a football coach. Ultimately, both roles are attempting to change the behaviour of a person.

1.1.3 Positionality

Football coaching taught me the basic principles to help an individual improve across the following areas; tactically, technically, physically and mentally. The term coaching refers to "the process of training somebody to play a sport, to do a job better or to improve a skill" (Seniuk, 2013). During my time as a football coach, other coaches and I would be encouraged to use 'the guided discovery theory' and to 'build rapport and connect quickly', 'let the game be the teacher', 'be invisible', 'be clear and concise', 'use your personality', 'give good demonstrations', 'dominate the 1v1 situation', 'flex your style', 'think in the now' and 'be an actor' (Partington, Cushion and Harvey, 2014). I found that if these cues were applied consistently, then the players would benefit by learning at their own pace and we would coach them more effectively. It was apparent that the concepts and processes used when coaching a child to dribble the football past a defender is no different from coaching an experienced athlete to improve their diet.

My current practice as a performance nutritionist utilises these same coaching principles to build adult understanding and appreciation of nutrition and has enabled me to have a greater influence on the athletes that I work with. This approach has been well received and successful, as evidenced by the high-profile roles that I have subsequently secured in international cricket, professional football, elite level squash, and professional cycling. In each role, I have successfully managed to establish and enhance the performance nutrition service and positively influence the nutrition culture of each 'dressing room' environment from a vague understanding of the discipline to a much broader appreciation of the performance impact of nutrition. This has been achieved through an effective coaching process and a collaborative approach with my peers and colleagues.

1.1.4 Redefining 'success'

Success is commonly considered to be the accomplishment of an aim or goal (<http://www.oxforddictionaries.com/definition/english/success>, 2016). This is true for performance nutritionists and dieticians who are well-placed to play a role in helping an individual achieve an outcome (Webster-Gandy, 2006). Traditionally, sports science practitioners carry out hypothesis-driven research, with rigorous study design, packaged in scientific text (Rao, 2019) and deliver the intervention to the athlete. However, this rigid approach does not take into consideration the interpersonal coaching skills that are necessary to make an intervention effective. For this to be successful, the practitioner must be able to influence behavioural change. Although there is no clear definition of behavioural coaching, the term suggests a behavioural approach to accomplishing the goals of coaching (Seniuk *et al.*, 2013).

The recall of my first application is best illustrated through a vignette which attempts to provide a sense of nervousness, excitement and a test of my relationship-building skills came early into my role with England Cricket, where I found myself in the changing room, meeting the players for the first time during an international test match at Edgbaston Stadium, Birmingham, England.

1.1.5 Vignette 1: Making a connection

My hands are sweating like mad. I need to wash them before I shake any hands. Great, there's the toilet, I can wash my hands and compose myself before I walk in. Deep breathe, here goes. My colleague (and only friendly face) announces me to the room, "Lads, meet Chris. He's our new performance nutritionist.". You could hear a pin drop. I look around and all I can see in front of me are big, tall

international cricket stars weighing me up. My heart rate is through the roof at this point, and I feel like I'm going red in the face as this pack of wolves stalks my every move as I awkwardly position myself in the small space between two senior players on the tiny sofa. Although I tried not to show it, I was nervous and incredibly self-conscious. Not really knowing what to do and desperately wanting to avoid the dreaded uncomfortable silence, I default to the subject I know best, football! "So, what football team do you support?" I did my homework and knew that some of the players liked football. "Newcastle...what about you?", " I'm a Bolton fan". Suddenly, as if somebody flicked a switch, I felt more relaxed. Heart rate felt good, my face didn't feel like beetroot and my hands less sweaty. This is ok! Thirty minutes later I'm drinking coffee and talking about all sorts of things, none of which I should add are to do with sports nutrition. Bingo. Connection made.

This is a story of connection. Connecting with those we work with means being able to build a bond that stimulates trust, interest, engagement, challenge, high standards and loyalty (Kyndt, 2012) which are key characteristics of a strong relationship. To achieve meaningful success in the high-performance environment is largely down to high-quality working relationships (Kyndt, 2012). Although this notion is often referenced and talked about positively, I haven't dedicated any recent personal development to this area despite my background in coaching, therefore often wonder if performance nutritionists genuinely dedicate sufficient time and energy into maximising the potential of this skill. In my opinion, this ability is equally, if not more important than the technical knowledge that one possesses. Ultimately, connecting well in a one-to-one situation with those whom we work with is essential if we are to be successful (Kyndt, 2012).

If making a connection and being accepted into the group was my first test, then I passed with flying colours. If only it started and ended with that. My next vignette is a recollection of an early consultation where merely 'making a connection' was not going to be enough.

1.1.6 Vignette 2: Dominating the one-to-one

"I want football players who can dominate any 1v1 situation!" The head coach used to tell me. "Why?" I would ponder. The answer was simply because the best footballers are those who often are triumphant in the 1v1 situation. This scenario played out in my head when reflecting on my early consultations. The consultation room was set up and I had a sound, rehearsed structure in place. I sat rather anxiously in the sterile consultation room at the National Performance Centre awaiting the arrival of our injured superstar fast bowler.

"Hi mate, did you see the match last night?" Connection made and life is good. Forty-five minutes later the session ended and off he went. It went ok, but not great. I just didn't engage him...I didn't know why. I look back on that session and know exactly why. For a start, the session was scheduled at the end of the day and I had asked the athlete to meet me in my 'comfortable' environment. A drive to the National Performance Centre was probably not at the top of his list of things to do. Secondly, the consultation room was sterile and stuffy. Finally, the quality of the nutrition plan I yielded was as engaging as a plain white piece of paper can be with a seven-day meal plan etched on it. How on earth did I expect to influence and dominate this one-to-one situation with tactics like that?

This vignette illustrates that being able to connect is one thing but being able to piece all the components together to be successful in the 1 on 1 situation takes

more thought, skill and effort to achieve a positive outcome. It is of my opinion that all these elements must be in place to create a positive coaching environment.

1.1.7 Performance Nutritionists

The field of performance nutrition is dynamic (Kalman and Campbell, 2004).

Sports nutrition is the application of nutrition principles to improve training, recovery, and performance (Beck *et al.*, 2015). Knowledge and practice of sports nutrition have become increasingly sophisticated over the last 50 years (Burke, 2007), from glycogen loading to today's scientifically validated ergogenic aids (Kalman and Campbell, 2004). Today, we expect bespoke nutrition information for a variety of sports. In addition to the academic fundamentals, it is imperative that sports nutritionists understand the sport in which their individual participates. This sport specific understanding should manifest itself in fuel utilization, mechanics of movement, as well as psychological processes that motivate the participant to perform optimally (Kalman and Campbell, 2004).

The role and responsibilities of a performance nutritionist will typically include individual nutritional analysis and consultations, developing and delivering group education sessions, menu planning, body composition analysis, supplement provision, implementation and monitoring of nutritional interventions, supporting teams during competition and/or training camps, and liaising with external organisations. Furthermore, modern-day performance nutritionists are working more intimately with coaches and athletes in the field rather than in the consultation room. This requires a high level of soft skills that are rarely published in scientific literature and difficult to measure due the subjective nature of data that can challenge reliability and validity of the findings (Elsay et al, 1998).

Unlike dietetics, the law does not protect sports nutritionists and is not regulated by a statutory body, with many organisations supplying certification examinations for sports nutrition. Sport and exercise nutritionists can promote nutrition by working in sport, fitness, and health to promote sports performance. However, with a mission to promote excellence in the practice of sport and exercise nutrition, for the benefit and protection of all, from the elite to the recreational athlete, nutritionists have been encouraged to register on the UK Voluntary Register of Nutritionists (UKVRN). More recently, sports and exercise nutritionists are expected to ascertain accreditation on the SENR (SENR, 2017).

1.1.8 The Sport & Exercise Nutrition Register

The SENR is a voluntary register designed to accredit suitably qualified and experienced registrants, who have the competency to work autonomously as a Sport and Exercise Nutritionist with performance-oriented athletes, as well as those participating in physical activity, sport, and exercise for health.

SENR provide three routes to registration: full, graduate and academic associate. Like the British Association of Sport and Exercise Science (BASES) application to accreditation, full registration applicants are required to submit a portfolio; including an evidence base of the competencies outlined by SENR, an up-to-date CV, character references, and certificates of academic qualifications. However, different from BASES, SENR do not provide supervised experience. Instead, they encourage individuals with appropriate academic knowledge (minimum undergraduate degree) but limited practical experience to apply for graduate registration. These graduates are expected to work towards the full registration within three years, during which time they gain the necessary applied practice, ensuring they meet the necessary

competences in the areas identified by SENR. Within the EIS, registered dietitians or those with sports nutrition qualifications are considered for performance nutrition jobs. In addition, all applicants are expected to be a minimum of graduate on the SENR.

The register is expected to help in; public protection, namely the sport and performance-focused exercising community, protection and promotion of standards of services and education, professional development of individuals, and developing the profession and its knowledge base.

The SENR outlines professional standards and competencies for Sport and Exercise Nutritionists. In so doing it guides the development of Sport and Exercise Nutrition curricula provides career development pathways for aspiring Sport and Exercise Nutritionists and promotes the recognition of registered individuals as professionals within a valued specialism.

SENR is concerned with the setting, maintaining and enhancing professional and ethical standards in Sport and Exercise Nutrition. High standards are promoted in two ways; 1) Through the SENR Registration process, which serves as a quality assurance mechanism. Assessment of qualifications and competences helps to ensure that the level of service received by a particular client is based on the best available knowledge and practice,

2) Registered Sport and Exercise Nutritionists must adhere to a strict SENR Code of Professional Conduct. Violation of this code of conduct can result in removal from the register. The code of conduct serves to ensure a minimum level of service to individuals or groups who make use of services offered by a Registered Sport and Exercise Nutritionist.

1.1.9 International Delivery of Sports Nutrition

The delivery of sports performance nutrition is not limited to the UK. The discipline is delivered worldwide by sporting institutes such as the sports nutrition department within the Australian institutes of Sport (AIS). They recognise the importance of nutrition in an athlete's health and performance. It directly supports several activities to enhance the knowledge and practice of sports nutrition by high performance athletes.

Similarly, Team USA have their own department called The United States Olympic & Paralympic Committee's (USOPC) sport nutrition team who play a collaborative role in ensuring athletes' needs are met both on and off the field. The USOPC's have their own sport nutrition register that lists vetted sport nutrition providers who serve as referral resources for Olympic and Paralympic athletes and National Governing Bodies. To be considered for the registry, providers must: be a Registered Dietitian (RD), have a minimum of two years' experience working with Olympic, Paralympic, collegiate, professional and/or competitive recreational athletes, have professional liability insurance and have two professional references within the field of sport.

Finally, whereas the UK have the own nutrition society, The International Society of Sports Nutrition is a non-profit academic society that is open to anyone. Their mission is to promote the science and application of evidence-based sports nutrition and supplementation.

1.1.10 Dietitians

Registered Dietitians are a performance nutritionist closest relative and have choices to work within clinical dietetics, nutrition support, research, outpatient or private counselling and many other economical beneficial areas (BDA, 2017). A

clear distinction has been made between nutritionists and dietitians; the main distinction is the profession of dietitians are the only nutrition professionals that are regulated by the Health and Care Professions Council (HCPC), through the British Dietetic Association (BDA); the title 'dietitians' has been protected by law since 2003. The qualification route to becoming a dietitian is through undertaking an approved HCPC undergraduate degree which takes 3-4 years. On completion of the undergraduate degree, graduates are eligible to register with the HCPC. A postgraduate masters is optional, but available. During the undergraduate degree candidates embark on a combination of theory and practical work; with 28 weeks of placement spread throughout the training programme in hospital and community settings where individuals have the chance to apply knowledge into practice in the field.

However, despite the distinction of roles between the dietitian and nutritionist, there is a professional association for those professionals interested in sport. The BDA have a specialist group for dietitians and nutritionists working in sport; with the aim of the group to provide professional development and provide resources for those working in the area of sport and exercise nutrition. Moreover, the BDA encourage all those working in the field, whether they are dietitians or nutritionists, to register with the SENR. A register which BDA members sit on the board, with an aim to strengthen the role of sport dietitians and nutritionists regardless of whether they hold a protected title by law. Despite being a voluntary register, the SENR aims to promote professional standards in sports nutrition with a competency-based assessment.

Dietitians are the only qualified health professionals that assess, diagnose and treat dietary and nutritional problems at an individual and wider public health level. They

work with both healthy and sick people. Dietitians use the most up-to-date public health and scientific research on food, health, and disease, which they translate into practical guidance to enable people to make appropriate lifestyle and food choices. Moreover, they must be registered with the statutory regulator, HCPC. The BDA (2017) states statutory regulation is essential to practice as a dietitian in the UK, and as such all dietitians are registered with the HCPC, and they work in partnership with the public and other groups, including professional bodies. Dietitians are the only nutrition professionals to be regulated by law and are governed by an ethical code to ensure that they always work to the highest standard (Bda.uk.com, 2017).

1.1.11 Nutritional therapists

Another occupation working within the industry is Nutritional Therapy. Law does not protect nutritional therapists, and anyone can refer to himself or herself as a nutritional therapist. Their works encompass the use of recommendations for diet and lifestyle to alleviate or prevent ailments, often based on complementary 'medicine' recommendations not recognised as a valid treatment in conventional medicine. These recommendations may include guidance, colonic irrigation, the avoidance of ingestion or inhalation of 'toxins' or 'allergens' and the use of supplementary nutrients (SENR, 2017).

1.1.12 Professionalisation of nutritionists

The concept of professionalism is not a new one, but it has become more important than ever that healthcare practitioners do not just know how to be a professional, but can show how, and demonstrate professionalism and expertise in action. (Bda.uk.com, 2017). Expertise in action refers to the use of competencies in the form of services, care or advice delivered to meet explicit outputs or outcomes that society or employers desire and will pay for (Landman and Wootton, 2007)

Nutritionists in the UK are at the start of an exciting time of professional development following the establishment of the Association for Nutrition in 2010 (Associationfornutrition.org, 2017), and the professionalisation of nutritionists has been a subject of debate for many years. In 1941, a group of leading physiologists, biochemists, and medical scientists recognised that the emerging discipline nutrition needed its own society, and the Nutrition Society was established (Lanham-New et al., 2011). In 1981, John Waterlow delivered the Sixth Boyd Orr Lecture on a 'crisis of identity for nutrition'. (Waterlow, 1981) stated that nutritionists had 'no recognised or required qualifications other than those for dietitians', pointing out that in the UK there was 'virtually no career structure except in a handful of university departments or research institutes. One of the key questions posed by Waterlow (1981) was 'Is 'nutritionist' a profession for which entry qualifications have been defined and are required?' This stimulated the Nutrition Society's drive to professionalisation and has led to the Association for Nutrition's inception of the UKVRN, and more recently, the SENR. This UKVRN register is designed to distinguish nutrition practitioners who meet rigorously applied training, competence and professional practice criteria. Its purpose is to protect the public and assure the credibility of nutrition as a responsible profession (Associationfornutrition.org, 2017). SENR is a voluntary register designed to accredit suitably qualified and experienced registrants, who have the competency to work autonomously as a Sport and Exercise Nutritionist with performance-oriented athletes, as well as those participating in physical activity, sport, and exercise for health (SENR, 2017).

SENR Accreditation and approval promote high standards of education and services in sports and exercise nutrition. Any education that is undertaken therefore needs to meet the standards identified by the SENR. Once an individual meets the criteria for SENR accreditation, they are eligible to become a member of the BDA where knowledge, networks, and resources can be accessed. To obtain accreditation, individuals must meet all the criteria outlined in the SENR competency framework. This framework encompasses a combination of scientific knowledge and professional application-based competencies, including a dedicated section to communication skills (Appendix 1).

Competencies are a useful foundation for a professional body since they can be used to define the profession for practitioners at different levels of experience and should be part of continuing professional development (Cade et al., 2012). This approach is demonstrated in other professions including public health, where the Dreyfus model of skills acquisition has been used to define seven levels of professional behaviour from entry-level practitioners through to capable, competent, proficient, expert, advanced expert and luminary (Koo & Miner, 2010).

Given that knowledge and practice are evolving concepts, it is not sufficient, in any profession, to rely on the information that was provided in primary or even specialised training courses (Burke, 2007). Competencies, such as the ones outlined by the SENR, are a useful foundation for a professional body since they can be used to define the profession for practitioners at different levels of experience and should be part of continuing professional development (Cade et al., 2012). Even with this foundation, each sport nutritionist needs to have his or her plan for staying abreast with new developments in research, education, and practice (Burke, 2007) and must appreciate that knowledge and practice must constantly evolve, and the role of an expert is to continually remodel the landscape of their field (Davis et al., 2015).

1.1.13 Influencing Behaviour

Application of Sport and Exercise Nutrition in professional practice involves the translation of knowledge about nutrition and sport as well as exercise and physical activity, into practical advice for individuals and groups of individuals. Professional application of Sport and Exercise Nutrition requires the integration of scientific knowledge with an understanding of the social and psychological aspects of motivation and human behaviour. Professional Sport and Exercise Nutritionists require proficiency in communication and education about their subject to be able to give and formulate advice that is appropriate and relevant to an individual or group (SENR 2019).

A sports nutritionist, dietitian or nutritional therapist must attempt to influence behaviour to achieve an outcome. In the context of elite sport, those who achieve excellence in high-performance sport, have to be very good at influencing others (Kyndt, 2012). Influencing can be defined as the capacity to affect the character, development, or human behaviour of someone or something, or the effect itself (Oxford Dictionaries | English, 2017). Human behaviour has been defined as the product of individual or collective human actions, seen within and influenced by their structural, social and economic context. These actions produce observable social, cultural and economic patterns, which limit – or enable – what individuals can do (Nice, 2017). For practitioners to maximise the potential efficacy of interventions and to strive for individual buy-in, it is necessary to understand behaviour and have a theoretical understanding of behavioural change (Davis et al., 2015).

1.1.14 Behaviour Change Theory

Behavioural change theories are a key element to dietitians and healthcare professionals. Dietetics was originally based on the traditional medical model of expert-led advice-giving with the expectation that once people are told what to do, they will follow this advice. However, research has shown that giving advice alone does not automatically change behaviour (CANT and ARONI, 2009) . The challenge for dietitians and other healthcare professionals is to develop an understanding of what influences health behaviour and to acquire the necessary skills that will enable them to facilitate change. As outlined in the Manual of Dietetic Practice, traditional medical care has moved towards a client-centred model that considers the psychosocial aspects of care, as well as the clinical picture (Kaba and Sooriakumaran, 2007) and setting the stage psychologically is of prime importance when helping others alter their behaviour (Brownell and Cohen, 1995). Also, it is necessary to have some understanding of a person's previous experience and how they think and feel about their situation. An appreciation of their attitudes, beliefs, individual learning styles and the social, cultural, religious and economic situation, are important factors to consider, as these will influence their behaviour. Fundamentally, if performance nutritionists are to improve the practice of an individual, they will need to change their behaviours in some shape or form to get better. This section starts to dig a little deeper into some of the main aspects to consider when trying to change human behaviour. The area of behaviour change is a complex science, but a basic level of understanding is critical to successfully deliver and change behaviour for the better.

1.1.15 What is behaviour?

Understanding behaviour and how individuals behave in response to an environmental stimulus is an integral piece of the puzzle when intervening in the areas of recovery, sleep, and nutrition (or any aspect of football performance, for that matter). Despite its importance, typically very little attention is given to behavioural sciences. In simple terms, behavioural sciences look to address why and how people do what they do. Whilst this may seem a simple question to address and understand, behaviour is a highly complex construct that is multi-faceted and dynamic and consists of multiple components that all interact with one another e.g., emotions, cognitions, and the environment.

1.1.16 Behaviour science frameworks/models

A model attempts to understand and describe what factors affect behaviour and from this, specific approaches and applications are developed to effect or influence change. Several models contribute to the understanding of human behaviour concerning health. The models that have had the most influence on dietetic clinical practice are the Helping Model (Egan, 1998) and the Trans-Theoretical Model of Change (TTM) (Prochaska, DiClemente and Norcross, 1992). Other models used by healthcare professionals include Health Coaching, The Health Belief Model (HBM) and The Theories of Reasoned Action (TRA) and Planned Behaviour (TPB).

1.1.17 The Helping Model

The Helping Model is a three-stage model for use within a consultation to help guide a dietitian through an interview in a structured way. Stage one is an initial assessment where the practitioner sets an agreed agenda with the client, stage two involves goal setting with stage three being the action and follow-up stage.

1.1.18 Trans-Theoretical Model of Change (TTM)

The TTM was developed by Prochaska and DiClemente (1986) and is closely linked to the desire of its originators to integrate and enhance the effectiveness of psycho-therapeutically oriented efforts to address and reduce the harm caused by tobacco smoking (Cilliers, Schuwirth and van der Vleuten, 2015).

1.1.19 Health Coaching

Health coaching training is a patient-centred approach wherein patients, at least partially, determine their goals, use self-discovery and active learning processes together with content education to work towards their goals, and self-monitor behaviours to increase accountability all within the context of an interpersonal relationship with a coach. The coach is a healthcare professional trained in behaviour change theory, motivational strategies, and communication techniques, which are used to assist patients to develop intrinsic motivation and obtain skills to create sustainable change for improved health and wellbeing (Palmer, Tubbs and Whybrow, 2003).

1.1.20 The Health Belief Model (HBM)

The Health Belief Model (HBM) is a health-specific social cognition model (Ajzen, 1998), the key components and constructs of which are: perceived susceptibility, perceived severity, perceived threat, perceived benefits, perceived barriers, self-efficacy, expectations, cues to action and demographic and socio-economic variables.

1.1.21 The Theories of Reasoned Action (TRA) and Planned Behaviour (TPB)

The historical development of The Theories of Reasoned Action (TRA) and Planned Behaviour (TPB) are closely associated. The Theory of Reasoned Action was formulated towards the end of the 1960s, and in some respects may be seen as refining and taking forward approaches embodied in the HBM. At that time psychologists were concluding that attitudes have very limited validity as predictors of future behaviour (Michie, Atkins and West, 2014). As expressed in its final form, the TRA combines two sets of belief variables, described under the headings of 'behavioural attitudes' and 'the subjective norm'. At the time of writing this piece of work, we are unaware of any existing models that are specific to the work of a performance nutritionist working in elite sport.

1.1.22 Ease of change vs. motivation to change

The Fogg Behaviour Model (Fogg, 2020), is a two-dimensional framework (figure 1), where individuals will ask themselves two questions before deciding on whether to perform a behaviour or not. These are 1) how easy is it to perform the behaviour and 2) how much do I want or need to carry out the behaviour? This framework requires an understanding of the behaviour that is being prescribed, the concept of motivation, and an understanding of the player or squad of players that are being asked to perform the behaviour. Using this two-dimensional framework, it is possible to identify how likely a player(s) is going to perform the behaviour, or where a player(s) is lacking in terms of their likelihood of performing a behaviour, and what to target to increase their likelihood of performing the behaviour (e.g., make performing the behaviour easier for a player(s) or increase their motivation). A stylised representation of this model is outlined in Figure 1.

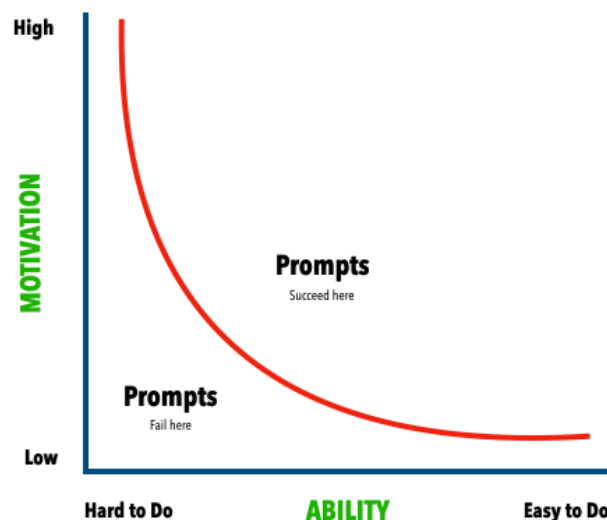


Figure 1. Adaptation of the Fogg Behaviour model (Ease of change vs. motivation to change graph).

1.1.23 Ethos, Logos and Pathos

Ethos, Logos and Pathos are Often referred to as artistic proofs introduced by the Greek philosopher, Aristotle, the basic framework is used to this day in understanding behaviour and when influencing others through storytelling. Whilst all three concepts are interconnected, they can be each amplified or dampened according to the audience you are looking to influence. Each are defined separately below and illustrated in figure 1.1.

Ethos – the word 'ethos' refers to one's credibility. An example of this could be when someone from outside the squad comes into to present to the team on a topic. To come across as credible the newcomer would tell a story of his achievements and the emergence of their expertise in a topic e.g., "this guy knows his stuff". Moreover, the individual may change the language they use to appeal to the team they are presenting to come across as credible.

Pathos - the word pathos refers to 'emotion'. This involves trying to understand what the receiver of your idea or concept wants to feel, and then appealing to that emotion. A coach who is passionate about football (and not sport science) would much rather receive a story of how an area of sleep, recovery or nutrition improved their ability to play football, than how you can enhance a player's sleep or diet.

Logos – this refers to 'logic' or 'reason', whereby the use of statistics and presentation of 'the science' or theory and logical argument are used to persuade others of an idea or concept. Whilst some receivers may not connect to the use of more advanced language, nonetheless, the use of logic in an appropriate manner can be powerful. For example, when talking to a coach, who you know prefers logic, you may present facts and figures around a topic.



Figure 1.1. Ethos, pathos & logos.

1.1.24 Cialdini's 6 'shortcuts' to persuasion

Dr Robert Cialdini (The 6 Principles of Persuasion by Dr. Robert Cialdini [Official Site], 2020), describes 6 'shortcuts' that can be used to guide human behaviour and ultimately influence others. He describes that due to people's busy lives short-cuts or rules of thumb are sought to help us make decisions. These 'short-cuts' are described below:

Reciprocity – this describes that people are likely to give back others the form of a behaviour they have received in the first instance. An example of this is a restaurant where a sweet or chocolate is left with the bill – the idea, here, is that the bill payer will tip more due to the gift on the table

Scarcity - this refers to people wanting to have more of the things they can have less of. Another way of putting this is, making people think what they are going to lose should not engage in the behaviour and pointing out what is so unique about the behaviour you are describing.

Authority: Like 'credibility' described in the model above, people are more likely to follow guidance presented by experts.

Consistency: this describes that people like to be consistent with the things they have previously said and done.

Liking: simply put people prefer to say 'yes' to those that they like compared to those that they do not like.

Consensus: people will look to the behaviours of others when they are uncertain regarding whether to perform a behaviour or not

1.1.25 The Capability, Opportunity, and Behaviour Model

As described (Atkins et al., 2017) when trying to change behaviour the below questions require consideration; what is the problem you are trying to solve, what behaviours are you trying to change, and what will it take to bring about the desired change? These can be addressed by using the Capability, Opportunity and Behaviour Model (COM-B). The COM-B model describes that changing the likelihood of any behaviour of an individual or group or population involves changing one or more of the following: capability, opportunity, and motivation relating to either the behaviour itself or behaviours that compete with or support it. The model can be seen in Figure 1.2.

Capability: the player(s) must know and (or) possess the skills to perform the behaviour. This could be described as having the physical capability or doing something or knowing how to perform the skill. Therefore, a player can have physical and psychological capability to perform a behaviour. An example of being capable is a player knowing that an ice bath after a match is good for their overall recovery (psychological), and physically be able to get in the ice bath and stay immersed for 10-15 minutes (physical)

Opportunity: this states that players must have the physical and social environment to perform the behaviour. So, a player is less likely to perform a behaviour if they cannot access the equipment they need, it isn't socially accepted by the squad, or if they do not have time. An example of having opportunity can be described with napping. Players are likely to nap in the daytime if they have the time in their schedule to do so, others are also napping, and they have a space in which they can nap.

Motivation: This part of the framework describes motivation as being reflective (e.g., evaluating a situation) or automatic (e.g., acting on impulse or needs).

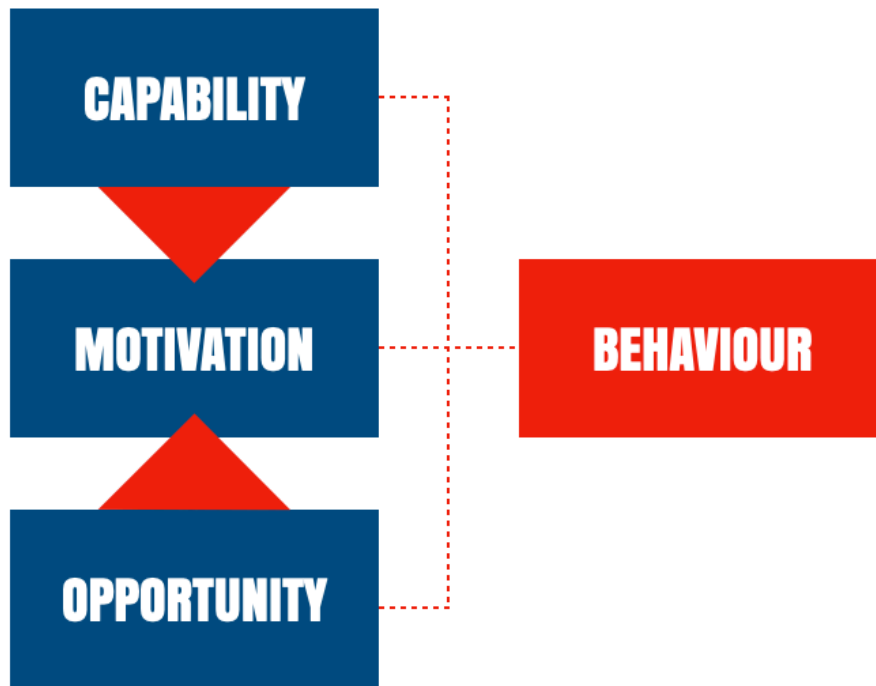


Figure 1.2. COM-B model of behaviour change

1.1.26 Non-technical Skills Education for Undergraduates

Given the statements to support the importance of strong non-technical skills, such as communication, coaching, and influencing, as key determinants of a successful practitioner, this appears to be reflected in the training of medical professionals, where some universities & institutions place greater emphasis on non-technical skills within their study & Continued Professional Development programme (CPD).

The positive impact of non-technical education with medical students and medical professionals has been demonstrated in several pieces of literature. A recent study by Hagemann et al., (2017) demonstrated the effectiveness of a single seminar on non-technical skills in improving students' non-technical skills. The purpose of this study was to evaluate the effects of a tailor-made, non-technical skills seminar on medical students' behaviour, attitudes, and performance during simulated patient treatment. All participating students completed the same simulated resuscitation scenario at the beginning of the study, which served as baseline measurement in week one. The following week, they attended either a 90-minute seminar entitled "Factors influencing successful teamwork" (NTS group) or a medical seminar unrelated to the non-technical skills to be tested. The NTS seminar aimed to sensitise students for teamwork-supporting behaviour and attitudes towards leadership and assertiveness as well as dealing with mistakes and stress. Topics covered included situation awareness, teamwork, shared mental models and strategies, communication and feedback rules. Students were also familiarised with possible obstacles which might impair communication such as perception and selectivity and discussed rules for successful communication. They found that when seventy-seven students were randomized to either a non-technical skills seminar or a medical seminar, non-technical skills concerning situational awareness and teamwork improved from simulation alongside improved decision-making and reduced perception of stress.

A similar study (Doumouras et al., 2017) identified that deficiencies in non-technical skills (NTS) have been implicated in avoidable operating theatre errors. This study sought to characterize the impact of the surgeon's and anaesthetist's non-technical skills on time to crisis resolution in a simulated operating theatre. Non-technical skills were assessed during 26 simulated crises (haemorrhage and airway emergency) performed by surgical teams. Teams consisted of surgeons, anaesthetists, and nurses. Four trained assessors using the Non-Technical Skills for Surgeons (NOTSS) and Anaesthetists' Non-Technical Skills (ANTS) assessed behaviour. NTS were assessed using the previously validated NTS for Surgeons (NOTSS) and Anaesthetists' Non-Technical Skills (ANTS) rating systems (Yule, 2006). Categories for NOTSS include situational awareness, decision making, communication/teamwork and leadership, whereas those for ANTS include task management, team working, situation awareness and decision-making. They observed that higher NTS ratings resulted in significantly faster crisis resolution, suggesting that a higher level of NTS of surgeons and anaesthetists led to quicker crisis resolution in a simulated operating theatre environment. This work identified a substantial impact of NTS on time to crisis resolution. Specifically, the difference in resolution time between scenarios where highly rated NTS were demonstrated compared with those where average NTS were shown was in the order of minutes, a considerable and clinically relevant time during an operating theatre crisis. This work also found Significant differences in NTS performance based on the phase of the scenario. NTS performance was significantly lower during the crisis than before it. Finally, there was a significant positive interplay between the NTS of surgeons and anaesthetists during the haemorrhage crises; an increase in NTS for one practitioner conferred a significant increase on the other.

The growth of coaching can be seen in multiple fields across healthcare, and in particular nursing (Hess et al., 2013). In a national research study called the Nursing Leadership Edge, chief nursing officers, identified employee coaching and development as the number one leadership skill required in their jobs. As one chief nursing officer said, "Our success depends on having a support team that is successful and perceived by others as being successful. We need to develop our staff to ensure their success" (Newman and McDowell, 2016).

The United States has established 'the professional nurse coach'. This is a Registered nurse who integrates coaching competencies into any setting or specialty area of practice to facilitate a process of change or development that helps individuals or groups realize their potential (Hess et al., 2013). This novel approach equips nurses with the necessary coaching skills to maximize their effectiveness as part of their undergraduate training called "The clinical coach model". This involves placing a student nurse with an experienced, qualified nurse for 12 months of clinical experience during their degree. The student works the same schedule as the coach and attends training sessions conducted by the school of nursing faculty, using high-fidelity simulation with clinical scenarios (Bridges, Holden-Huchton and Armstrong, 2013). During this coaching period, coaches would act as a role model to students whilst helping the student to refine their skills and support their transition from graduate into the role of professional nurse. The nurses who participated identified the following themes post intervention, a) becoming independent, b) knowing the culture, and c) relationship with the coach. They expressed that the coaching process enabled them to, "never feel like a guest and feeling like a valued teammate." Moreover, they stated that, "they became more independent with time", and "the more time I spent with my

coach, I could demonstrate my ability to take on more complex tasks.”. Finally, reflection of the coach relationship included. “What I really liked about the coaching model is that we get to know our coaches, our coaches get to know us, and our coaches figure out how our personalities work.”

1.1.27 Non-technical Skill Development & Work Placements During Undergraduate & Postgraduate training of Sport Nutritionists

The nutrition industry is becoming increasingly competitive. Work experience may improve your employment opportunities but even work experience can be difficult to find (Association for Nutrition, 2020). Sports science and nutrition students have opportunities to learn non-technical skills at the undergraduate level where work placement opportunities are becoming an integrated component of both undergraduates and postgraduate degree programmes. A list of courses that offer placements & non-technical skill development at undergraduate and postgraduate level can be found in table 2.1.

Some examples of this include Liverpool John Moore's University (LJMU) who offer extensive work-based placement opportunities to Sport and Nutrition students (LJMU, 2020). A key feature of the LJMU undergraduate course is the work-related learning links embedded in all three years of the degree. Drawing on the guidance of their tutors, students can apply theoretical understanding to practical situations, make more informed career choices, develop professional networks and identify essential workplace skills. The LJMU MSc in Sports Nutrition students undergo a nine-week placement to practice and develop their non-technical skills. The placement aims to allow students to gain hands-on experience in working as a Sports Nutritionist. The integrated and critical nature of the programme promotes qualities and skills relevant to employability within the sports nutrition field. The degree is ideal for individuals looking to work as Sports Nutritionists with national governing bodies such as the EIS (LJMU, 2020). Similarly, some programmes offer a 'sandwich degree' to their students. Manchester Metropolitan University (MMU) BSC (Hons) Sport, Exercise and Nutrition programme provides students with the option to choose the sandwich year degree route, where they will spend year three of their studies on a placement in industry. Placement learning is a key element of their course as it allows them to apply university-based knowledge, skills, and understanding to the real world of work (MMU, 2020). Leeds Beckett University also facilitates students to put learning into practice through placement opportunities. This could include working within a professional sports environment, leading to many of their students taking advantage of sport volunteering opportunities, which have previously included global events such as the Olympics, World Athletics Championships and Commonwealth Games (Leeds Beckett, 2020). In addition, the Leeds Beckett

undergraduate programme in sport and exercise nutrition has embedded modules to enhance a student's soft skills designed to develop a range of personal, professional, and research-related skills that will be useful in every module studied throughout the degree.

The prevalence of specific soft skill/coaching/behaviour change Modules embedded into degree programmes are greater at the undergraduate level, however, some postgraduate courses include this in their syllabus. Many of these modules are varied forms of applied sport and exercise Nutrition Modules that focus on the development of the practical skills and knowledge base essential for designing, delivering and monitoring individually tailored nutritional interventions (University of Chichester, 2020) and generic practitioner skills that aim to prepare students for the professional demands they will be required to meet once practicing in a consultancy or team environment. This includes communication skills, and models for changes, compliance, and follow up that are needed and can significantly impact the outcome of nutritional interventions (Westminster, 2020). Whereas other programmes provide much more specific soft-skill modules as part of their student offer. For example, Birmingham University BSC (Hons) Sport, Exercise and Nutrition degree includes a Nutrition Referral & Behaviour Change Module in year three of their programme, designed to help students develop an understanding of long-term behaviour change. Similarly, University of Huddersfield BSC (Hons) Sport, Exercise and Nutrition degree provide modules focusing on the Foundations of Coaching and Instructing & psychology for Sport and Exercise Science during year one and two respective

1.1.28 Coaching Skills of Practitioners in Elite Sport

Modern-day sports science practitioners require a high level of non-technical skills to complement their technical competence to enable them to maximize their impact with coaches, support staff and athletes in any high-performance environment (Kyndt, 2012). The need for strong coaching skills, underpinned by an individual coaching philosophy is often cited as a valuable set of skills that a practitioner should possess. The coaching philosophy is quite focused on just the coach and athlete roles in the training and performance environment; however, they can also extend to expectations around attitudes and behaviour. Having such a philosophy is not unique to coaches, as many applied practitioners develop their practice (Kyndt, 2012).

Coaching can be defined as the process of training somebody to play a sport, to do a job better or to improve a skill (Seniuk et al., 2013). The traditional image of a coach, generally derived from sports, is where the coach is an expert. Modern-day coaches act more like facilitators, helping individuals to clarify their goals and ways to achieve them and require a range of skills to succeed in helping an individual or team to improve their performance (Jackson and McKergow, 2011). The roles and responsibilities of a coach are equally wide-ranging as their skills and qualities (Crisfield et al., 2003).

Although coaches may or may not have expertise in the skill area applied by the performer, another of their skills will be knowing how and when to use their expert knowledge. All coaches must be craftsmen, versed in techniques such as questioning and listening (Jackson and McKergow, 2011).

In team sports such as football, coaches are directly responsible for the team and have the major objective of enhancing both individual and team

performance (Brink et al., 2018a). Coaches are therefore involved with players daily, where a major part of the job is to conduct training sessions to get the most out of the team. Sport science can contribute to the body of knowledge that influences athletic practice and performance, which could have a significant and positive effect on the sports environment (Martindale and Nash, 2013). Despite the potential benefit from research, the transfer of knowledge from sport-related scientific research to sports coaches needs further improvement (Coutts, 2016).

This desire to possess these qualities is further evidenced by Kyndt & Rowell (2012) who share a case study regarding EIS physiologist Sarah Hardman. They explain that "her non-technical skills are just as highly valued as her technical expertise, if not more so. The ability to plan and organise, to build relationships, to influence at the highest level in the system and to gain the trust and confidence of all who work with her, whether athlete, coach or colleague, have marked Sarah out as one of the United Kingdom's leading applied physiologists." This has been supported by leading decathlon coach, Toni Minichiello, who outlined the following statement in the book, 'How to support a champion' (Ingham, 2019), scientists can use all the big words they like, but if they can't make their knowledge and methods useful, then it's no use to me. I don't need people to come in and be all 'Flash Harry', I need people to work with me, become part of the team and become part of the family working together to improve performance". In consideration of this comment, it clearly demonstrates this particular coach's preference when choosing his staff and it would suggest that a partitioners ability flex to their style could be important when building a relationship, however this must

compliment the delivery of their technical knowledge and not be of the detriment to the impact and quality of their applied work.

1.1.29 Coaching Frameworks for Performance Nutritionists

The results-driven nature of high-performance sport creates a high expectation on sports science practitioners to have an immediate positive impact. One of the greatest challenges for sports nutritionist is the cultural influence of the sport in which they are embedded. Burke (2007) comments that many sports provide a "closed environment" for their participants, promoting certain messages and values via the close interaction between athletes and the handing down of "knowledge" from coaches and trainers. This requires the content of sports nutrition education to be tailored to the culture of the individual or specific group, such as 'myth-busting' or targeting poor practices that have become 'the norm' within a sport and delivered using language that is familiar to those within the sport. This is supported by a recent study by (Brink et al., 2018b) which explored current sport science needs and perceived barriers among professional football coaches. They identified that football coaches predominantly gain information during informal activities with their peers, at coaching clinics and seminars, with only 5 coaches from 75 in this study had any academic background. Lack of academic background could hinder coaches in understanding methods and terms commonly used in science.

Working more closely with coaches could improve performance nutritionist's understanding of the practice, which may lead them to better connect with the coaching staff and work on more relevant questions that exist in the field (Brink et al., 2018b). This is also in line with the personal contact that most coaches prefer to gain scientific knowledge through (Reade, Rodgers and Spriggs, 2008). A short-term benefit for coaches would be direct access to

scientific knowledge via personal contact in an informal way. A long-term benefit may be that the collaboration may lead to scientific research that is better tailored to the real-world situation and, as such, easier to apply in practice (Coutts, 2016)

The SENR have recognized that strong non-technical skills are an important tool for performance nutritionist to possess. This is evident in the accreditation criteria outlined in the SENR competency framework that requires registrants to demonstrate effective communication skills (Appendix 1). The criteria require registrants to "Demonstrate proficient communication skills to elicit, interpret, integrate, assess and apply relevant information to provide safe and sound individualised advice". However, the criterion does not require evidence to support a practitioner's ability to effectively coach and influence behavioural change.

This contrasts with dietitians who are trained and equipped with literature and models to help them carry out structured consultations that are specific to their environment, whereas performance nutritionists do not have an articulated and validated framework to follow that is directly related to the unique, high performance-sporting environment. Performance nutritionist may attempt to adapt and follow behavioural change models that are directed at dietitians; however, these may be limited and their appropriateness to the day-to-day practice of a performance nutritionist should be questioned. In the absence of a set structure or framework to work from, it is common for performance nutritionists to rely on their ability and intuition when carrying out consultations with athletes in the most effective way. It could be argued that if sports nutritionists carry out the structured, linear process that dietitians and other

healthcare practitioners may follow, then their ability to have an impact and influence an athlete would be limited and may not be suitable to adopt within the fast-moving elite sports environment.

In contrast to the training sports and exercise science student, supervised experience is a programme run by BASES with a purpose to provide support for probationary sport and exercise scientists. It is considered a key steppingstone to becoming an accredited sport scientist. Supervised experience requires a minimum of two years whereby the candidates are expected to provide and document 500 hours of sport science delivery in their chosen discipline, of which 250 are supervised. In conjunction, it is expected that the candidate meets and documents regular case study meetings with their supervisor and engages in regular reflective practice. In addition, during SE attendance at several workshops are also required including entry, reflective practice, ethics and confidentiality, understanding your client and safeguarding welfare and two elective workshops and/or BASES conference attendance.

On completion of supervised experience, candidates will have provided documented evidence to demonstrate competency in 10 core proficiencies (incorporating 64 sub-competencies). The frameworks key competencies are; scientific knowledge, technical skills, application of knowledge and skills, understanding and use of research, self-evaluation and professional development, communication, problem solving and impact, management of self, others and practice, understanding of the delivery environment, professional relationships and behaviours. Generally, on completion of supervised experience candidates are expected to have completed a relevant postgraduate degree. Once supervisees have been formally notified that they

have successfully completed supervised experience, they may apply for BASES accreditation and chartered scientist status.

BASES accreditation is awarded to those practitioners who are deemed to have the minimum knowledge, skills and understanding necessary to be safe and fit to practice as a sport and exercise scientist. Although BASES recommend SE should be the route taken to becoming an accredited sport scientist; applicants with significant experience working in the profession could apply directly for accreditation. Even though BASES accreditation was established to regulate the sport science profession, there is no ruling to obtain BASES accreditation to practice as a sport scientist, and the current process is under review following heavy criticism. Moreover, it is unknown what evidence base the core competencies have been drawn from as there is limited available literature which specifically investigates the application of physiology in the high performance. Moreover, currently in the EIS physiology team out of twenty practitioners, only 2 are accredited, thus demonstrating a real gap between BASES being fit for purpose

This high-performance sports environment in which performance nutritionists operate is different from that of a dietitian for several reasons. Whereas a patient in the clinical setting has been referred to see a clinician or chose to attend a clinic for a pre-planned consultation with a dietitian, a performance nutritionist embedded within elite sport must often seek out the athlete. This typically happens during fast-moving environments, such as training camps, where the time available to sit down with the athlete can be limited due to busy schedules. In this context, consultations are generally held during targeted training camps where a performance nutritionist is competing for time

with other disciplines, such as strength and conditioning, psychology, performance lifestyle, physiotherapy, massage therapy and technical coaching sessions that the athlete must also attend. This diversity and expectation of the athlete, along with the cultural influences of their sport, have a direct impact on the athlete's ability to assimilate all the inbound elements of vital information, of which nutrition is only a small, yet very important element. These factors may affect how the athlete prioritizes performance nutrition and other sports science support services. With this in mind, these constraints do not afford practitioners the luxury of a 'time-rich' consultation window with an individual, particularly if a high volume of consultations must be carried in a relatively shallow timeframe, as time capacity during training camps cannot be stretched beyond a certain point. These factors often result in the practitioner being innovative when looking to borrow time from the athlete's schedule to carry out a consultation in a time effective and efficient way. This contrasts with the dietetic setting where a clinician follows a schedule of appointments where the patient is attending specifically to see the dietitian. The sporting environment is much more random and fast-moving, as opposed to the relative calm and boundary, captured a time that a clinician might have.

1.1.30 Thesis aims and objectives

As explored above there is evidence to support the SENR competencies, however, these have been drawn from dietetics. Due to the fast-dynamic nature and continuing professionalisation of performance nutrition, there is requirement to validate and update the competencies required to practice. This, in combination with the professional practice problem of recruitment, has led to

the aims and objectives of this thesis, with an aim to investigate the knowledge, skills and qualities required to practice as an effective performance nutritionist. Moreover, how the knowledge, coaching skills and qualities are developed throughout the academic and applied career. With a desired outcome to produce new evidence-based competency framework with recommendations for the enhancement of the sector, and the development of a coaching model that is relevant to the work as an elite sport performance nutritionist. It is important at this stage to comment that the role of a 'sports coach' to that of a practitioner who may adopt behavioural change coaching techniques to influence change may have similar principles but should not be considered the same thing. For example, one might argue that the skillset required to be an excellent sports coach in say golf, or table tennis are very different to the skills required to be a nutritionist using behaviour change 'coaching' skills, which you could argue require more behaviour change and rapport development skills etc than is needed in sports coaching per se, however there may be crossover between the two.

The thesis will explore the whole of the professional practice landscape, from higher education to sector experts in applied performance nutrition. A needs analysis was conducted to generate standards and key roles and skills required to be an elite sport performance nutritionist. The research will be an audit of the participants to consolidate the requirements and understanding of how these are developed. A desired outcome was a systematic review and potential for a competency-based framework, which will be acceptable to the discipline sector by considering simplicity and addressing core issues. A further outcome was to create a reflective framework to inform CPD choices of performance

nutritionists. In addition, there is a potential to target more specific areas, for example, SENR to ensure the professional body provide more updated and relevant coaching models to support the work of their members.

Further outcomes of this research are to determine the profile of performance nutritionists who practice within elite sport (chapter 2), and to explore how performance nutritionist are currently trained in the UK at undergraduate and postgraduate degree level (chapter 3).

1.1.31 Conclusion

In consideration of the constraints in which an elite sports science practitioner must operate, knowledge and practice must constantly evolve, and the role of an expert is to continually remodel the landscape of their field. Although the sports nutrition profession is not a professional industry or regulated by law, positive steps have been taken to raise standards and improve the professionalism of the role through the inception of the UKVRN and SENR voluntary registers. However, more emphasis needs to be placed on the development and implementation of coaching and leadership training that is specific to their role and environment in which they work.

2: Methodology

2.1 Subjects

In order to gain a spectrum of perspectives to inform this research, a spread of participants ranging from industry experts, senior and entry-level practitioners, elite athletes and coaches, were interviewed (table 2.1). Participants were recruited via the utilisation of the lead researchers' professional network. Inclusion criteria can be found in appendix 1.

Table 2.1 Subject Demographic

| Performance Nutritionists | | | |
|----------------------------------|---------------------------|------------------------------------|------------|
| Level | SENR Accreditation | Industry Experience (years) | Age |
| Senior | High Performance | 5+ | 30 |
| Senior | High Performance | 5+ | 35 |
| Senior | High Performance | 5+ | 36 |
| Senior | High Performance | 5+ | 36 |
| Senior | Not registered | 5+ | 45 |
| Senior | Not registered | 5+ | 35 |
| Senior | High Performance | 5+ | 50 |
| Junior | Associate/graduate | 2-3 | 30 |
| Junior | Associate/graduate | 2-3 | 27 |
| Academics/Lecturers | | | |
| Position | Course teaching | Level | |
| University Lecturer/Practitioner | Sports Nutrition Specific | Undergrad, post-grad | |
| University Lecturer/Practitioner | Sports Nutrition Specific | Undergrad, post-grad | |

| Athletes | | | |
|--------------------------------------|-------------------|-------------------------------------|------------|
| Level | Sport | Currently playing/Practicing | Age |
| Professional/international | Squash | Yes | 36 |
| Professional/International | Cricket | Yes | 30 |
| Multi-disciplinary colleagues | | | |
| Discipline | Sport | Currently playing/Practicing | Age |
| Physiotherapist | Cricket | Yes | 45 |
| Exercise physiologist | Rowing/Track | Yes | 42 |
| Exercise physiologist | Athletics/Cycling | Yes | 41 |
| Exercise physiologist | Cycling | Yes | 52 |

2.1.1 Qualitative Research

Traditionally academic nutrition researchers conduct hypothesis driven research, with rigorous research design and statistical procedures, packaged in scientific writing (Morton 2009b). Qualitative research exploring social science is becoming increasingly popular (Gratton and Jones 2004). The authors consider this, a methodology revolution occurring in the social sciences over the past quarter of a century (Sparkes and Smith 2013). Qualitative research provides a methodology that focuses on the way in which people interpret and make sense of their experiences of the world they practice in (Sparkes and Smith 2013).

From my nutritionist's perspective what is most important is to consider the experience in the field. Arguably a move into the field requires an even higher level of understanding of the social reality of individuals, groups and cultures

to explore behaviours, perspectives and experiences of people in their daily lives, which will ultimately impact on service delivery. Poczwardowski, Sherman and Ravizza (2004) maintained that a prerequisite for a successful practitioner is an understanding of their own unique professional and personal philosophy, which can be discovered and facilitated through engagement in qualitative research methods.

For this research, all data was gathered using semi-structured interviews and online questionnaires (Appendix 2). All participants completed a semi-structured 30-minute interview via a recorded telephone call or a one-to-one meeting. The semi structured interviews followed a pre-planned interview schedule designed by the principal researcher and with the supervisor guiding the direction of the interaction (Sparkes and Smith 2013). The benefits of using this methodology are the potential for participants to demonstrate flexibility in order to articulate their opinions, ideas, feelings and attitudes around the topic area (Sparkes and Smith 2013); ultimately, revealing greater meaning around their experiences. There are some issues regarding the use of semi-structured as opposed to structured interviews. Qualitative interviews rely on respondents 'ability to accurately and honestly recall whatever details about their lives, circumstances, thoughts, opinions, or behaviours that are being asked about. Further, qualitative interviewing is time & labour intensive (13.2 *Qualitative interview techniques – Scientific Inquiry in Social Work*, no date).

2.1.2 Ethical considerations

Ethics was approved by the Research Ethics Advisory Group at The University of Kent. The ethics form can be found in appendix 3.

It is important to ensure that respondents were clear that participation in the interviews is voluntary. Voluntary participation was made clear in the participation information sheet (Appendix 4). Respondents were also informed that they are entitled to withdraw from the process at any point. Participants agreed to provide informed consent before they can participate. If the participant did not provide their informed consent, then they were screened out of the process.

To obtain informed consent, several measures where been implemented. The overall purpose of the research was provided for each participant (Appendix 5). By doing this the participant understood why their data is being sought and what might be asked of them, therefore limiting the possibility of deception or a lack of understanding as to the nature of the research. Furthermore, the potential benefits of participation in the research were outlined in the participation information sheet (Appendix 4). The benefits where detailed as being knowledge-based. The knowledge-based benefits were described as the individual's data helping to build the understanding of this topic area, which is currently underexplored. Contact information for the researcher was provided at the bottom of participation information sheet (Appendix 2). This enabled participants to ask any questions about the research should they have any queries, before they completed the interviews. How the data will be used has explained, as this enabled the participants to appreciate how their data will be used and whether they are happy to consent to this. This information was

provided in the participation information form (Appendix 3). Finally, the identity of the researcher and the institution represented was provided and could be found at the bottom of the participation information sheet (Appendix 4).

If it was not possible for participants to participate unless they have provided their informed consent. Informed consent was determined by whether participants select 'Yes, I give my informed consent' from the question 'Having read and understood your rights as a participant in this research, please confirm whether you are willing to participate in this research (Appendix 4).

No name is used to collect the data. Only my professional doctorate supervisory team and I will have access to the raw data.

2.1.3 Thematic Analysis

The purpose of the analysis was to be able to report the data in a literacy style which is rich in participant interpretations with an aim to arrive at an understanding of professional practice question from the perspective of those experiencing it (Lusardi, 1996). Thematic analysis was adopted as it provides the optimum method for identifying, analysing and report themes within the data (Braun and Clarke 2006). Moreover, this was achieved by breaking the text into relatively smaller themes of content (Braun and Clarke 2006). Thematic analysis was also adopted because of its flexibility, and as it provides a rich and detailed complex account of the needs analysis of the data with an aim to generate standards and key roles and skills required to be an applied physiologist (Braun and Clarke 2006). The phases of thematic analysis can be found in table 2.2 Moreover, this provides a purely qualitative, detailed account of the data which can then be utilised to produce a systematic review and

potential for a competency-based framework, and recommendations for the sector (Lusardi, 1996).

2.1.4 Transcription

Interview transcription is employed by many researchers across numerous fields; however, the advantages of its use may be relatively small in terms of verifying the accuracy of qualitative interview transcripts. Researchers are advised to carefully consider both the potential advantages and disadvantages of interview transcription before deciding to incorporate the practice within their qualitative study designs. All interviews are to be transcribed using a transcription analysis software (Transcribe, DENIVIP Group OOO). This method was selected due to its convenience and efficiency.

Table 2.2 Phases of thematic analysis

| Phase | Process Description |
|--|---|
| 1. Data familiarisation | Transcribing data, reading & rereading the data, noting ideas |
| 2. Initial code generation | Coding for interesting features of the data, systematically across the data set |
| 3. Identify patterns & themes | Reviewing codes & collate into potential themes across the data set |
| 4. Theme review | Checking whether the data supports the themes |
| 5. Theme defining | Refining the themes relative to specific topics & how these link to tell a story |
| 6. Data analysis | Selecting vivid extracts to illustrate themes & analysis of these in relation to the research questions |

2.1.5 Data Extraction

The subsequent analysis of this data is based on a common set of principles for interview data that includes: transcribing the interviews; immersing oneself within the data to gain detailed insights into the phenomena being explored; developing a data coding system; and linking codes or units of data to form overarching themes/concepts, which may lead to the development of theory (Braun and Clarke 2006). We extracted our data from semi-structured interview transcriptions to identify and develop each category leading to final themes which link to an overarching concept. Illustration of the thematic analysis of the data, including the development of early codes and final themes, and evaluation of the findings can be found in chapter 2.

2.1.6 Course Search

UCAS course search function within the Universities and Colleges Admissions Services (UCAS) website was used to determine how performance nutritionists are currently training within the United Kingdom at undergraduate and postgraduate level. Only courses that included 'human nutrition, sports nutrition or sports and exercise nutrition' as the course title were included in the study. Courses that included sports nutrition as strand of a sports and exercise science degree were not included as I was seeking subject specificity rather than generalisation.

3: Study 1: How are non-technical skills of performance nutritionists currently trained in the United Kingdom?

3.1 Introduction

Application of Sport and Exercise Nutrition in professional practice involves the translation of knowledge about nutrition and sport as well as exercise and physical activity, into practical advice for individuals and groups of individuals. Professional application of Sport and Exercise Nutrition requires the integration of scientific knowledge with an understanding of the social and psychological aspects of motivation and human behaviour. Professional Sport and Exercise Nutritionists require proficiency in communication and education about their subject to be able to give and formulate advice that is appropriate and relevant to an individual or group (SENR 2019).

A sports nutritionist, dietitian or nutritional therapist must attempt to influence behaviour to achieve an outcome. In the context of elite sport, those who achieve excellence in high-performance sport, must be very good at influencing others (Kyndt, 2012). Influencing can be defined as the capacity to affect the character, development, or human behaviour of someone or something, or the effect itself (Oxford Dictionaries | English, 2017). Human behaviour has been defined as the product of individual or collective human actions, seen within and influenced by their structural, social and economic context. These actions produce observable social, cultural and economic patterns, which limit – or enable – what individuals can do (Nice, 2017). For practitioners to maximise the potential efficacy of interventions and to strive for individual buy-in, it is necessary to understand behaviour and have a theoretical understanding of behavioural change (Davis et al., 2015).

The aim of this study is to understand how the non-technical skills of performance nutritionist are trained in the UK at both undergraduate and postgraduate level, and to ascertain whether non-technical development is available as part of degree programmes. The results outline the courses that offer placements & non-technical skill development at undergraduate and postgraduate level, their geographical location, and we highlight the courses that have achieved SENR approval.

3.2 Methods

3.2.1 Course Search

UCAS course search function within the Universities and Colleges Admissions Services (UCAS) website was used to determine what performance nutrition education programmes are currently available within the United Kingdom at undergraduate and postgraduate level. Only courses that included 'human nutrition, sports nutrition or sports and exercise nutrition' as the course title were included in the study. Courses that included sports nutrition as strand of a sports and exercise science degree were not included as I was seeking subject specificity rather than generalisation. This method resulted in a total of 30 courses that met the criteria (undergraduate n=13 and postgraduate n=17). The results of this search can be found in table 3.1 Furthermore, the geographical location of each course has been illustrated in figures 3.1 and 3.2 respectively. Finally, we identified which post-graduate and undergraduate courses are SENR approved degree programmes (tables 3.4 and 3.5 respectively), this information was obtained from the SENR website.

Table 3.1 A list of courses that offer placements & non-technical skill development at undergraduate and postgraduate level

| Undergraduate Courses | | | Postgraduate Courses | | |
|--|---|---|--|---|--|
| University & Course | Work Placement/Experience opportunities? | Specific Soft skill/coaching/behaviour change Modules included? | University & Course | Work Placement/Experience opportunities? | Specific Soft skill/coaching/behaviour change Modules included? |
| Birmingham City University BSC(Hons) Sport, Exercise and Nutrition | Live projects to work on with professional sports teams and the general public, as well as compulsory work placements, enabling you to gain first-hand experience and build your knowledge. | Year 3: Nutrition Referral & Behaviour Change Module: Develop understanding of long-term behaviour change. | Leeds Beckett University MSc/PgDip Sports & Exercise Nutrition | Students can able to apply for an internship in an applied sport science setting, working with elite athletes under the guidance of a registered SENr practitioner. | Research & Professional Practice Module: This module will equip you with an understanding of the skills and experience necessary to operate as a sport and exercise scientist in a range of professional settings. |
| University of Huddersfield BSC(Hons) Sport, Exercise and Nutrition | In your second year, you'll go on a work placement, which will provide you with the opportunity to apply your skills in a real-world context. | Year 1: Foundations of Coaching and Instructing Year 2: Psychology for Sport and Exercise Science | Ulster University MSc/PgDip Sports & Exercise Nutrition | No | Practical Sports Nutrition Module: This module considers the practical application of sports nutrition knowledge. The module provides the student with the opportunity to further develop their skills when working with a diverse range of athletes |
| University of Wales – Trinity Saint David BSC(Hons) Sport, Exercise and Nutrition | No | No | University of Westminster MSc/PgDip Sports & Exercise Nutrition | Opportunities for part-time work, placements and work-related learning activities are available to students | Practitioner Skills for Sports Nutrition Module: Prepare students for the professional demands they will be required to meet once practicing in a consultancy or team environment. This includes communication skills, and models for changes, compliance, and follow up that are needed and can significantly impact the outcome of nutritional interventions |
| Northumbria University BSC(Hons) Sport, Exercise and Nutrition | Students have the option of a work placement in a related area so you can put your knowledge and skills into practice. | Skills for sport & exercise scientists' module: Develop an understanding of the key skills required. You will achieve this through a variety of assessments including presentations and practical demonstrations. The module aims to develop your understanding of generic transferable skills, | Liverpool John Moores University MSc/PgDip Sports Nutrition | Students will undergo a nine-week placement to practice and develop these skills. The aim of the placement is to allow you to gain hands on experience in working as a Sports Nutritionist. | Practical Spots Nutrition Module: Designed to equip students with the practical skills essential to work as a Sports Nutritionist |

| | | | | | |
|--|--|---|--|--|--|
| University of Central Lancashire BSc (Hons) Nutrition and Exercise Sciences | Opportunities to work with professional sports clubs and athletes. You'll also have the opportunity to undertake work experience or research opportunities as well as study abroad during year 2 via student exchange programmes. | Year 3: Psychology of Diet and Exercise | St. Mary's University MSc/PgDip Applied Sports Nutrition | Industry-relevant placements available (subject to student numbers) | Applied Nutrition Module: Equip students with an understanding of the skills and experience necessary to translate sports nutrition principles into practical professional advice in a range of sporting settings. |
| Manchester Metropolitan University BSc(Hons) Sport, Exercise and Nutrition | If students choose the sandwich year degree route, they will spend year three of your studies on a placement in industry. Placement learning is a key element of the course as it allows students to apply university-based knowledge, skills and understanding to the real world of work. | Year 2: Professional Practice Module: Develop key skills in nutritional practice with emphasis professional practice and communication. | Oxford Brookes University MSc/PgDip Sports & Exercise Nutrition | No | No |
| Hartpury University BSc(Hons) Sport, Exercise and Nutrition | Opportunities to work with student athletes in a range of sporting disciplines including rugby, football, equestrianism, netball, modern pentathlon, rowing and golf. You'll benefit from our links with the sporting industry as part of the work we do with local sporting professionals, teams and businesses. There's also the option to undertake an integrated placement year, | Introduction to Sports and Exercise Psychology: Learn the key theories in sport and exercise psychology to understand athlete behaviour | Sports Nutrition PgCert University of Glasgow | No | No |
| Kingston University BSc (Hons) Nutrition (exercise & health) | If students choose the four-year sandwich route of this degree, they will have a year's industry-related work experience between Years 2 and 3. | No | Sheffield Hallam University MSc Nutrition for Sport and Exercise | Shadowing/volunteering, working on live sports nutrition projects, attending sports nutrition conferences, events and workshops. | Behaviour Change In Nutrition And Health Module |
| Leeds Trinity BSc(Hons) Sport and Exercise Sciences (Sports Nutrition) | Professional work placements integrated into every degree. Students complete two professional work placements, which will provide the chance to graduate with up to three months' professional work experience without having to take a sandwich year out. | Applied sports nutrition module: Frameworks for working with athletes and developing rapport | University of Huddersfield MSc Sport, Exercise and Nutrition | Placement option module: Opportunity to gain real world experience in the field of sport and exercise nutrition. Placements will be organised in conjunction with the University, and you will be exposed to real world employment. | No |
| Liverpool John Moores University BSc(Hons) Sport Nutrition for Health University of Salford BSc Exercise, Nutrition and Health | Thanks to LJMU's links with over 450 different employers in the North West alone, they can offer superb work placement opportunities in all three years of the course. | No | London Metropolitan University MSc Human Nutrition (& sports nutrition) | Students will undertake a programme of practical professional practice relevant to nutrition. They will carry out a self-profiling of their skills/competencies, have regular meetings and contact with the module leader. The module will consist of a programme of seminars/workshops and students will be prepared for work placement by staff-led tutorials to agree learning objectives | No |
| | | | Applied Sport and Exercise Nutrition University of Chichester | With the developing links with professional sporting clubs / organisations in the locality including the University's own high performing teams, coupled with the expertise of current staff and current presence in Sports undergraduate programmes, there are a number of links enabling students to find appropriate | Applied Sport and Exercise Nutrition Module: Develop the practical skills and knowledge base essential for designing, delivering and monitoring individually tailored nutritional interventions. |

| | | | | | | |
|--|---|---|--|--|--|---|
| Solent University (Southampton) BSc Health, Nutrition and Exercise Science | Placement year can be integrated into the programme should students choose this option. | No | | MSc Sport and Exercise Nutrition Coventry University | placement opportunities and enhancing employability. Opportunities to undertake placements at a range of local professional and amateur sports clubs, as well as the University sports teams. | Postgraduate Certificate PgCert Applied Sports Nutrition Postgraduate Diploma PgDip Professional Practice Practical Skills for Sports Nutrition |
| Leeds Beckett University BSc (Hons) Sport & Exercise Nutrition | This course will enable students to put their learning into practice through a placement in a setting of their choosing. This could include working within a professional sports environment. | Yea 1: Personal, Professional & Academic Development Develop a range of personal, professional, and research-related skills that will be useful in every module studied throughout the degree. Yea 1: Human Behaviour in Sport & Exercise Discover the origins and foundations of sport and exercise psychology, otherwise defined as the scientific study of human behaviour within the contexts of sport and exercise. Yea 3: Professional Practice in Sport & Exercise Nutrition Using real world settings, students will reflect upon the scope of the role of the sport and exercise nutritionist. they will acquire an appreciation of professional regulation, standards and competencies required for maintaining safe and ethical practice, including the importance of establishing boundaries between practitioner and client, and how to seek out or refer on to relevant support agencies. | | MSc Sport and Exercise Nutrition Loughborough University MSc Sport and Exercise Nutrition Middlesex University MSc Sport Nutrition Manchester Metropolitan University Nutrition for Sport and Exercise MSc/PgDip Cardiff Met University | Limited opportunities to undertake applied placements. These opportunities vary on a yearly basis and do not constitute a formal component of the course. Placement opportunities can be very competitive and are undertaken alongside your studies. Work placements and practical training are integrated into the course, equipping you with significant experience in a professional setting. Students have the opportunity to gain experience of working with athletes, professional and amateur sports clubs, and community and public health settings Vocation modules in professional practice enable students to work with selected sports teams, clubs and individuals to improve their performance with nutrition. This is undertaken in a flexible manner to fit with the interests and career aspirations of each individual student. All work is supervised closely by registered practitioners to ensure clear skills development within the SENr code of professional conduct. | Practical Skills for Spots Nutrition Module No No Postgraduate Certificate (PgC) - Year 1 Applied Nutrition for Sport and Exercise Diploma (PgD)/MSc - Year 2 Professional nutrition practice Extended professional nutrition practice |
| Newcastle University Food and Human Nutrition with Placement BSc Honours | Students can apply to spend 9 to 12 months working in any organisation in the world. Work placements take place between stages 2 and 3 placements are subject to availability. | Year 1&2: Academic and Professional Skills for Nutrition | | University of Wales – Trinity Saint David MSc Sport, Exercise and Nutrition | No | No |

List of undergraduate and post graduate nutrition degree courses in the United Kingdom.

3.3 Results

3.3.1 undergraduate programmes

The results show what non-technical skills are currently available in the UK at both undergraduate and post-graduate level (figure 3.1).

Our analysis indicates that 69% of courses in the United Kingdom offer both work placements and non-technical skill development at undergraduate degree level. 23% of the courses offered either a work placement or integrated non-technical skills modules, but not both, and 8% offered none of these elements within their programme.

3.3.2 Postgraduate programmes

Our analysis indicates that 59% of courses in the United Kingdom offer both work placements and non-technical skill development at postgraduate degree level. 24% of the courses offered either a work placement or integrated non-technical skills modules, but not both, and 18% offered none of these elements within their programme (figure 3.2).

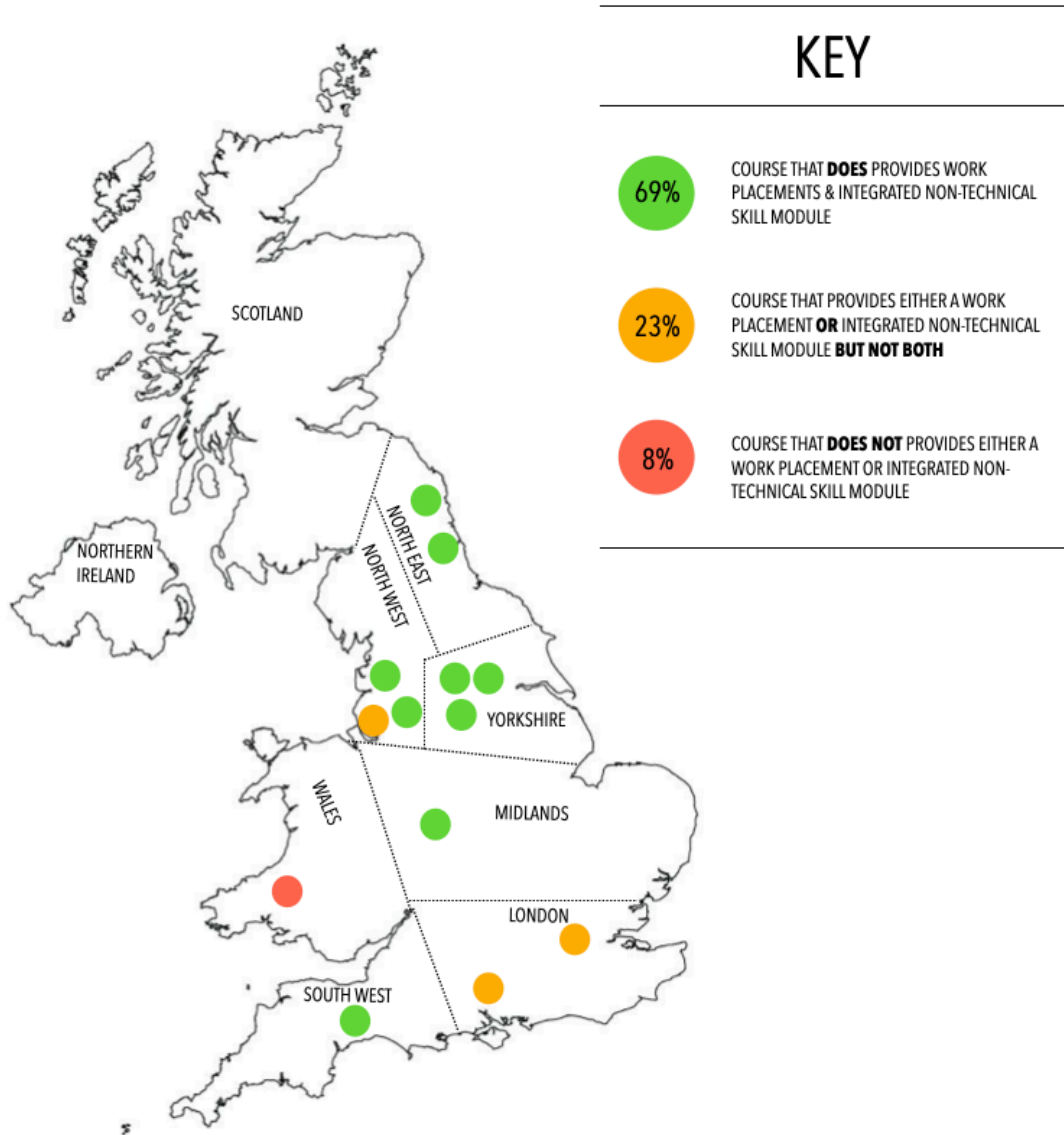


Figure 3.1. An illustration of courses in the United Kingdom that offer placements & non-technical skill development at undergraduate degree level

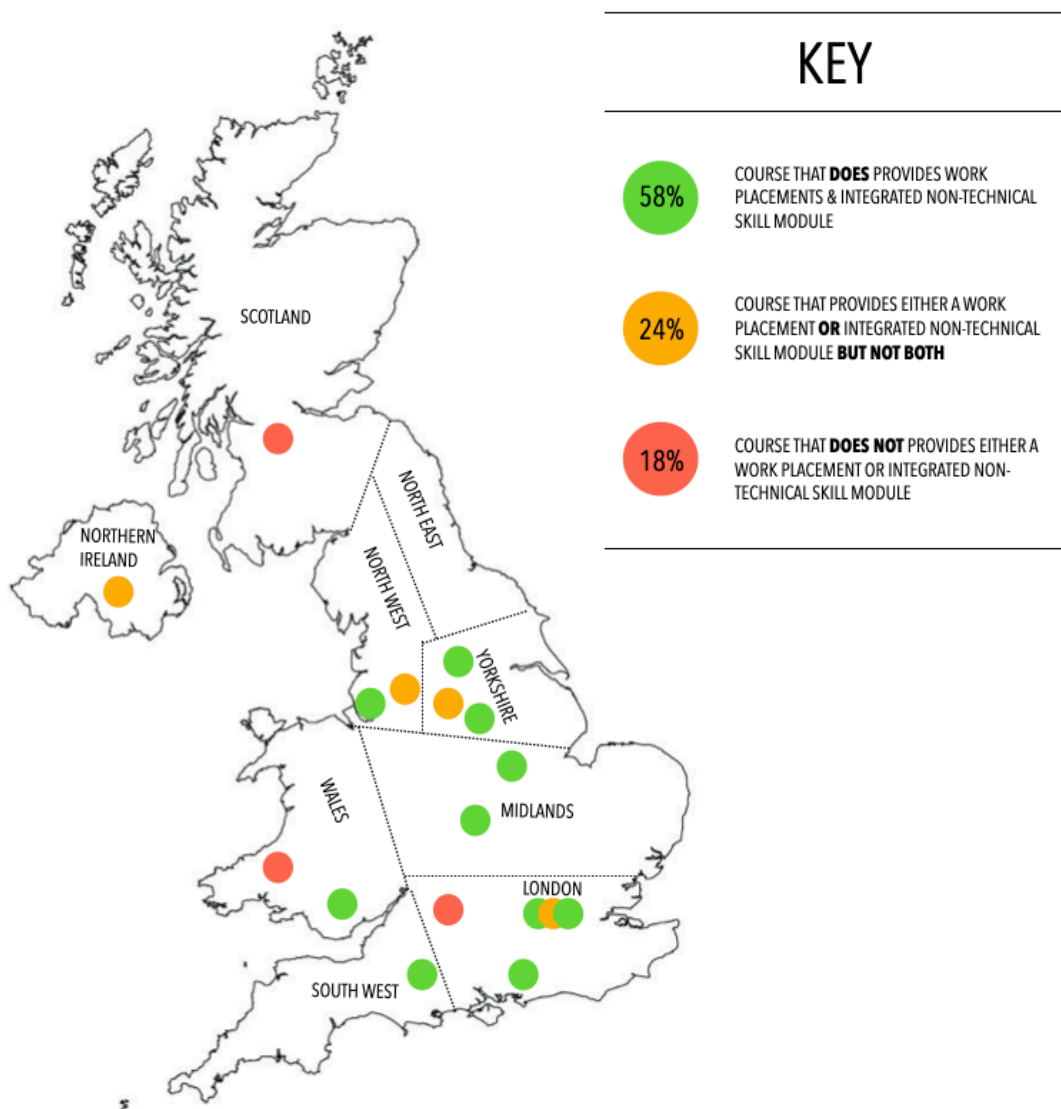


Figure 3.2. An illustration of courses in the United Kingdom that offer placements & non-technical skill development at postgraduate degree level

3.3.3 SENR approved course

UCAS course search function within the Universities and Colleges Admissions Services (UCAS) website was used to determine course content of currently available programmes within the United Kingdom at undergraduate and postgraduate level. This method resulted in a total of 30 courses that met the criteria (undergraduate n=13 and postgraduate n=17). Of this total, we found that 38% of undergraduate courses, and 35% of postgraduate course are approved by the SENR (table 3.4 and 3.5).

Table 3.2 SENR Approved Postgraduate Courses

| SENR Approved Postgraduate Courses | |
|---|---------------------------------------|
| University | Course Title |
| Leeds Beckett University | MSc/PgDip Sports & Exercise Nutrition |
| Ulster University | MSc/PgDip Sports & Exercise Nutrition |
| University of Westminster | MSc/PgDip Sports & Exercise Nutrition |
| Liverpool John Moores University | MSc/PgDip Sports Nutrition |
| St. Mary's University | MSc/PgDip Applied Sports Nutrition |
| Oxford Brookes University | MSc/PgDip Sports & Exercise Nutrition |

Table 3.3 SENR Approved Undergraduate Courses

| SENR Approved Undergraduate Courses | |
|--|---|
| University | Course Title |
| Leeds Beckett University | BSc (Hons) Sport & Exercise Nutrition |
| Birmingham City University | BSC(Hons) Sport, Exercise and Nutrition |
| University of Huddersfield | BSC(Hons) Sport, Exercise and Nutrition |
| University of Wales – Trinity Saint David | BSc Sport and Exercise Science (Sports Nutrition) |
| Northumbria University | BSC(Hons) Sport, Exercise and Nutrition |
| University of Central Lancashire | BSc(Hons) Nutrition and Exercise Sciences |

3.4 Discussion

This section dealt with the findings from the UCAS course search function within the UCAS website. The results outlined the courses that offer placements & non-technical skill development at undergraduate and postgraduate level, their geographical location, and we highlight the courses that have achieved SENR approval.

This process indicates that many sports and exercise nutrition related courses in the UK offer their students the opportunity to develop their NTS competency through the inclusion of soft skill related modules integrated into their curricula. The purpose of this was to simply baseline whether NTS and placements were part of education programmes or not, therefore I did not carry out an audit the effectiveness of these modules or look at what the NTS element involved.

Alongside this, these courses also provide work placement options as part of their student offer. This is an encouraging sign that suggest today's undergraduate and post-graduate degree programmes understand the value of NTS and applied experience for aspiring performance nutritionists.

However, a much smaller percentage of both undergraduate (38%) and postgraduate (35%) courses have been approved by the SENR. However, our research did not explore whether the work placements offered by these institutions have procedures in place to ensure that placements are relevant and valuable and meet certain criteria that will result in development of these key skills. It is important for courses to seek this approval as the endorsement process recognises that the course programme has been mapped to the SENR knowledge competencies at an introductory and basic level (SENR, 2020).

Although few of these courses have undergone SENR approval, course who

achieve this status may appeal to prospective students aspire to have a career as a sports and exercise nutritionist. For example, Leeds Beckett University was the first course in the UK to be approved by the SENR. According to their website, their course will help students 'gain a thorough understanding of the multidisciplinary aspects of sport and exercise nutrition, and on completion you will be able to apply for graduate registration with the SENR'. Furthermore, they also note that 'whether you aspire to work in high-performance sport or in the promotion of physical activity, exercise and good health practices, nutrition workshops and applied sessions will provide you with the opportunities to develop your practical skills and apply your expertise'. Finally, they also offer students the opportunity to apply for an internship in an applied sport science setting, working with elite athletes 'under the guidance of a registered SENR practitioner'. Similarly, Liverpool John Moore's undergraduate programme may also offer advantages to students due to their SENR approval status. Those who 'study on a course which is accredited by the SENR allows graduates direct entry onto the SENR graduate register'. The quality assurance provided by SENR course approval could suggest that SENR approval of degree programmes may provide a suitable learning pathway for those who wish to pursue a successful career as a sports and exercise nutritionist, although the level of teaching and student transition from these courses into sports and exercise nutrition roles was not explored in the study.

Our analysis shows that the majority undergraduate courses who offer both NTS and applied placements appear to be in Northern England (North-west, North-East and Yorkshire), whereas postgraduate courses are distributed across various regions, but we did not explore the reasons behind this. Although NTS is

embedded in many nutrition courses, this does not provide enough insight or detail regarding what is required to work as a performance nutritionist in elite suggesting these may not be fully understood or documented in current literature.

3.5 Conclusion

The results show that most sports and exercise nutrition related courses in the UK offer their students the opportunity to develop their NTS competency through the inclusion of soft skill related modules and/or work placements that integrated into their curricula, although a smaller percentage of institution's offer a combination both elements as part of their student offer. Furthermore, only small fraction of these courses has undergone SENR approval, suggesting that those who wish to gain the richest learning experiences are limited to a relatively shallow quantity of options.

4: Study 2: Understanding performance nutritionists who practice within elite sport.

4.1 Introduction

The field of performance nutrition is dynamic (Kalman and Campbell, 2004). Sports nutrition is the application of nutrition principles to improve training, recovery, and performance (Beck et al., 2015). The role and responsibilities of a performance nutritionist will typically include individual nutritional analysis and consultations, developing and delivering group education sessions, menu planning, body composition analysis, supplement provision, implementation and monitoring of nutritional interventions, supporting teams during competition and/or training camps, and liaising with external organisations. In comparison with dietitians, modern-day performance nutritionists are work more intimately with coaches and athletes in the field rather than in the consultation room. This requires a high level of soft skills that are rarely published in scientific literature and difficult to measure.

The primary aim of this chapter is to explore and understand performance nutritionists who practice within elite sport. This chapter will detail the process by which the thematic analysis was undertaken to enable us to understand the role from the perspective of performance nutritionist, MDT colleagues and athletes. Here I demonstrate how the interview transcriptions have been analysed, the generation and refinement of early descriptive codes, leading to the development of final themes and common overarching concepts. Moreover, this process enabled me to understand more about performance nutritionists who operate within in sport, presented in the form of personal vignettes from our study subjects. This process paved the way for more granular analysis of the data later observed in this chapter, where we ascertain the profile of effective performance nutritionists. In this chapter the results of the study are presented and discussed with reference to the aim of the

study, which was to determine what makes an effective nutritionist within elite sport, and to identify what key skills are required to be an effective performance nutritionist.

4.2 Methods

4.2.1 Development of broad themes and descriptive codes for both users and providers.

The early descriptive codes (table 4.1) were generated from the semi-structured interview questions (appendix 2) developed to guide the researcher during each interview. These codes were chosen to help the researcher create a picture of each subject, leading to the identification of the broad themes; 'Insight into journey and level of practitioner', 'role perception', 'traits of a nutritionist', 'soft skill development', 'development of a coaching framework', and 'how to improve the future nutritionist'.

4.2.2 Early descriptive coding for service providers.

Once the interview transcription process was complete, we were able to refine the early descriptive codes and create a group of separate codes for the service providers who participated in the study (table 4.2). This led to the creation of the following new codes; 'personal background/journey', 'early experiences', 'effective characteristics and soft skills', 'how to improve the training of nutritionists', 'coaching', and 'SENR'.

4.2.3 Early descriptive coding for service users.

Once the interview transcription process was complete for service providers, we replicated the process for service users (table 4.3). Here we created another group of separate codes that led to the creation of the following new codes; 'description of a performance nutritionist', 'effective characteristics', 'ineffective characteristics',

'How to improve the training of nutritionists', and experiences working with nutritionists.

4.2.4 Transcription analysis

The purpose of the analysis was to be able to report the data in a literacy style which is rich in participant interpretations with an aim to arrive at an understanding of professional practice question from the perspective of those experiencing it (Lusardi, 1996). Thematic analysis was adopted as it provides the optimum method for identifying, analysing and reporting themes within the data (Braun and Clarke 2006). Moreover, this was achieved by breaking the text into relatively smaller themes of content (Braun and Clarke 2006). Thematic analysis was also adopted because of its flexibility, and as it provides a rich and detailed complex account of the needs analysis of the data with an aim to generate standards and key roles and skills required to be an applied practitioner (Braun and Clarke 2006). Moreover, this provides a purely qualitative, detailed account of the data which can then be utilised to produce a systematic review and potential for a competency-based framework, and recommendations for the sector (Lusardi, 1996)

Table 4.1 Development of broad themes and descriptive codes for both users and providers.

| Early Descriptive Codes | Broad Theme |
|---|---|
| Personal background Education background & experience | <i>Insight into journey and level of practitioner</i> |
| What is the primary role of a nutritionist? How has the role of a nutritionist changed? What are important to help you do your job well? | <i>Role perception</i> |
| What are the characteristics of effective nutritionists? What are the skills that you feel are required to be effective? Bad experiences with nutritionist Examples of good practice and bad practice Effective traits In-effective traits | <i>Traits of a nutritionist</i> |
| How are soft skills developed? Flexing style Soft skill definition Soft skill training Soft skill training postgraduate Soft skill training at undergraduate On-going CPD/soft skill development | <i>Soft skill development</i> |
| SENR & coaching frameworks Thoughts on the term 'nutrition coach' Coaching definition Coaching Creation of a coaching framework for nutritionist | <i>Development of a coaching framework</i> |
| What would you add to training of undergrad nutritionists? What would to add to the future training of nutritionists? Future nutritionist Balance between soft skills and academic skills | <i>How to improve the future nutritionist</i> |

Table 4.2 Early descriptive coding for service providers.

| Theme | Descriptive Codes |
|--|---|
| Personal journey/background | <i>Nutrition or sports science related undergrad followed by master's degree, phd, clear goal to work in sport,</i> |
| Early experiences | <i>Mentorship, work experience, coaching roles, voluntary work, community work, working with youth teams, reactive, offering basic advice</i> |
| Effective Characteristics & soft skills | <i>Flexing style, communication, people management, one to one, push and pull, building rapport, work ethic, self-awareness. Self-reflection, mentors, performance focused, technical knowledge, knowledge delivery, self-confidence, influence behaviour</i> |
| How to improve training of nutritionists | <i>Reflection, observations, making mistakes, immersive, on the job learning, online learning, reading, structured learning, conferences, mentorship, education, better knowledge & application, coaching</i> |
| Coaching | <i>Frameworks, models, rigidity,</i> |
| SENR | <i>Value, minimum standard, competency framework, quality assurance</i> |

Table 4.3 Early descriptive coding for service users.

| Theme | Descriptive Codes |
|--|--|
| Description of performance nutritionist | <i>Role, definition, perception, role evolution, dietitian led, types of delivery</i> |
| Effective Characteristics | <i>Simple strategies, see me as a person, good rapport, relationships, flexing style, communication, people management, one to one, push and pull, building rapport, work ethic, self-awareness, Self-reflection, performance focused, technical knowledge, knowledge delivery, influence behaviour, focus on the basics, listening skills, coaching skills, strategic, balance between academic and soft skills</i> |
| In-Effective Characteristics | <i>Forces conversation, strict, lack of scientific underpinning, going on a whim, isolated, not integrated, strict</i> |
| How to improve training of nutritionists | <i>Reflection, observations, making mistakes, immersive, on the job learning, online learning, reading, structured learning, conferences, mentorship, education, better knowledge & application, coaching, industry creditability, high academic v soft skills,</i> |
| Experiences working with a Nutritionist | <i>No support, little structure, small bits of advice, not performance focused</i> |

4.3 Results: Theme development

4.3.1 Service providers: Vignettes from performance nutritionists that informed descriptive codes and theme development.

The following section provides a series of statements taken from the interviews with our service providers with reference to the early descriptive codes and themes.

These statements will be presented in a series of vignettes relative to each theme.

4.3.1.1 Personal background/journey

Participants (service providers) discussed their personal journey and background (table 6). They described that a desire to work in professional sport was a prominent driver and studying a nutrition specific course was not their primary goal when undertaking their undergraduate degree. Furthermore, our subjects also talk about early work placements that shaped their future career direction. For example, one of our subjects describes how their desire to work in sport shaped their education choices (see Table 4.4, Vignette A2). This extract identifies that a passion for a career in sport, initially as an athlete, was the main driver for a subsequent decision to go to university and pursue an academic career. He also draws on making an early connection for the need for higher education was required to realise this ambition. Another example from one of our subjects, who recalls how education opportunities to pursue a career in nutrition were limited that led to him seeking out relevant opportunities (see Table 4.4, Vignette A1).

4.3.1.2 Early Experiences

In follow-up our subjects (service provider) personal journey vignettes, we now select some of the early experiences of our subjects (table 4.4). Here our subjects recall that gaining work experience early enabled them to gain more diverse experiences.

Furthermore, the value of mentorship, learning how to coach and reflections of early approaches to problem solving (see Table 4.4, Vignette B2, B3, B4 & B8).

4.3.1.3 Effective Characteristics & soft skills

The traits of effective performance nutritionists were discussed by both the service providers (table 4.4) and service users (multidisciplinary colleagues, table 4.5; and athletes, table 4.6). Service providers reflections range from; relationship building and communications skills, to being able to influence behaviour. Whereas service users (MDT colleagues) talk about the importance of establishing the basics of nutrition and able to influence the coaches they work with. Thoughts from the service providers whom we interviewed note that effective traits of nutritionists are exemplified below via selection of vignettes from our service providers and users have been captured (see Table 4.4, Vignette C1, C18 & C36).

4.3.1.4 How to improve training of nutritionists

It was suggested that the training of performance nutritionists (table 4.4) could be improved by the teaching of coaching principles and more effective communication techniques at degree level, and earlier exposure to elite sport environments would be of benefit. (See Table 4.4, Vignette D4, D10 & D25).

4.3.1.5 Coaching framework development

The development of a coaching framework specific to the role of a performance nutritionist was an element of discussion with our performance nutritionists. Some believe that this would be of benefit to them as practitioners, however some raised concern that such frameworks should not stifle personality through rigidity (see Table 4.4, Vignette E1, E4 & E7).

4.3.1.6 Perceptions of the SENR

The general perception of the SENR amongst the performance nutritionists was a recognition that the SENR has provided a level of quality assurance to the industry, but it does little to upskill its members from either technical or NTS perspective, with some questioning its importance to their practice (see Table 4.4, Vignette F1, F4 & F10).

4.3.1.7 Service Users: Vignettes from multi-disciplinary colleagues that informed descriptive codes and theme development.

The following section provides a series of statements taken from the interviews with MDT colleagues (n=7), with reference to the early descriptive codes and themes. These statements will be presented in a series of vignettes relative to each theme.

4.3.1.8 Description of performance nutritionist's role

From the perspective of MDT colleagues (n=7), their description of the role of the performance nutritionist presented some commonality, for example, it was cited how the role has evolved from being dietetics led practice delivered by consultants, to a performance focused service delivered by full-time nutritionists who are part of the MDT (see Table 4.5, Vignette A3, A10. A11 & A12).

4.3.1.9 Ineffective Characteristics

The traits of in-effective performance nutritionist were discussed with service users (MDT colleagues (n=7)). They expressed traits such as being too strict that led to a lack of player engagement, a lack of scientific rigour, and poor communications skills where common (see Table 4.5, Vignette B2, B5 & B8).

4.3.10 Effective Characteristics & soft skills

The traits of effective performance nutritionist were discussed with service users (multidisciplinary colleagues, table 4.5) MDT colleagues (n=7) talk about the importance of establishing the basics of nutrition and able to influence the coaches they work with (see Table 4.5, Vignette C1, C15, C18 & C21).

4.3.11 How to improve the training of performance nutritionists

When asked how to improve the training of performance nutritionists, MDT colleagues whom we interviewed suggested that the inclusion of coaching skills, effective communication skills alongside strong academic skills developed at degree level would be of benefit. (See Table 4.5, Vignette D1, D2 & D3).

4.3.12 Service Users: Vignettes from athletes that informed descriptive codes and theme development.

The traits of effective performance nutritionist were discussed with service users (athletes, table 4.6). The athletes (n=2) whom we interviewed note that effective traits of nutritionist include being able to build good relationships, getting to know the person and keeping the advice simple (see Table 4.6, Vignette B1, B2, B3 & B7).

4.3.13 Service Users: Vignettes from athletes that informed descriptive codes and theme development.

The traits of in-effective performance nutritionist were discussed with service users (athletes, table 4.6). The athletes (n=2) whom we interviewed note that in-effective traits of nutritionist include being too strict can lead to a lack of engagement with the athlete (see Table 4.6, Vignette C1, C2 & C3).

Table 4.4 Service providers: Personal vignettes from performance nutritionists that informed descriptive codes and theme development.

A. Personal Journey/background

A1) "Back home you couldn't do a sports nutrition degree, or you couldn't do a combination of sports science and nutrition/dietetics, so I moved to the UK to study sports science and nutrition in a major in nutrition and sports science. I moved to the UK I did conditioning and nutrition placement with the Irish rugby team 2017."

A2) "Always knew that I wanted to work in sport, and I think the moment that I knew I was going to make it as a professional athlete was when I was it was the lightbulb moment, that's when I decided to go to university as a mature student get my academic qualifications which for me was that was probably the start of the road to get to work in elite sport are highlighted that I needed that education."

A3) "I've been in professional sport, for years, such as Widnes rugby club, Warrington rugby club from the age of like 10 years of age. At Warrington rugby club I would be helping out on a matchday running on the and I used for changing play studs a 10-year-old (as my Dad was a coach there). I've played professionally for Warrington, not as many games as I wanted to, then I dropped down divisions and played a couple of years in the championship. Then at that time, I decided I was doing a degree in sports science."

A4) "I went to Liverpool as an undergraduate student and studied sports science then I went on to study metabolism & muscle physiology. Then I stumbled into nutrition carbohydrate manipulation & a set of proteins called heat shock proteins. It wasn't pure nutrition but the combination of muscle physiology in that study. We measured some components of training adaptation like mitochondrial proteins, and they changed them it's fair to say that it's that 1 paper that got me interested. Around that time, I was doing some voluntary work professional and amateur boxers."

A5) "I studied components alongside physiology biomechanics psychology and then honestly I wanted to go into neuropsychology. I then went on to do another course and a masters in sport and exercise science which had a branch of nutrition but had a Psychology with physiology as a base. So, I got my master's degree and then I ended up going in sports science then naturally my role started to move more towards nutrition. So, then I realised I'm heading in a direction I had no experience in, so I had to act as an intern and because my previous master's technically was sport and exercise science. I've ended up converting that into a second masters at the London Metropolitan University so that I had a specific master's in nutrition."

A6) "It was narrowed down to physiology & nutrition undergrad module and then a masters to PhD. And I got my little bit interested in sports nutrition during my Masters. Halfway through the subjects in my master's studies, I was doing about 10 days of nutrition in all sorts of forms in the field and that sparked my interest in doing that as a job. skills."

B. Early Experiences

B1) "I developed a breadth of experience quite early so my background was rugby as that was my passion."

B2) "I had quite a big breath and range of experience early and got a contact from British canoeing started working British canoeing, then developmental squads and then moved up to the senior squad that was probably my first introduction to elite sport."

B3) "I had a really good mentor, and his background was in exercise physiology and Performance science and it was a really good environment."

B4) "in Canada I suppose during that time I learn the art of being able to coach and instruct. Part of your level 3 qualifications was the art of pedagogy, so we were no longer teaching beginners how to snowboard it was teaching people how to teach others."

B5) "I was doing some voluntary work professional and amateur boxers and had a load of interviews for different positions in football clubs and never got the job because of lack of experience, then the person interviewing me with all of the next football clubs and recommend me for the next club and this went on for three or four interviews before I got a job."

B6) "I would give Presentations to 15-year-old kids and bring in the projector screen to the back of an old rusty gym."

B7) "I wasn't quite advising because I knew the advice to give, but I wasn't sure how to give it, so the first plans were a Word document with words on it."

B8) "I think early days. I was probably very guilty of seeing a problem fix problem without taking into consideration the factors that influence and for example trying to give all the information at once or and fix all the problems at once as opposed to seeing to seeing it as a process."

B9) "10 years ago, I would have just jumped straight in."

B10) "for the last 10-15 years have been combining an Academic role with an applied practitioner role."

C. Effective Characteristics & soft skills

- C1) "Work with people build relationships with people and show that you care about them as a person and not just an athlete, and that you understand their environment, context and their psychological profile is essential to our work."
- C2) "Some of us are innately better at working with people. It's very hard state the reason why. I haven't struggled with work as I can work in any environment or adapt to any environment pretty quickly and build relationships. Being able to listen to the person and not just treat them as an athlete, like I said I understand the bigger picture around their lives, and I've been able to have a conversation and use motivational interviewing."
- C3) "You must identify your opportune moments."
- C4) "Promote self-reliance, structure the environment."
- C5) "The ability to communicate well."
- C6) "Good at individual one to ones and the ability to control the group."
- C7) "Building a rapport with players building a rapport with the wider perform staff and you know everyone's got their own strengths and weaknesses, and strengths of mine was being able to build that rapport very quickly with players and external stakeholders."
- C8) "There's an element of strategy and planning and preparation and putting systems in place."
- C9) "There's still some definite fundamental pillars to be in place, one is the fundamental technical knowledge. First and foremost, you have to have knowledge. Otherwise, you can't coach anyone without any knowledge."
- C10) "Strategy, Communication and building trust - Being able to get your message across and gauge the mood in a room."
- C11) "Able to identify gaps in your knowledge."
- C12) "An effective performance nutritionist must improve performance."
- C13) "Have I got the knowledge to then change the delivery on the front line and it's something as simple getting a player to have a recovery drink 30 minutes after match. First of all, do you know what should be in a recovery drink? I want to make sure I have read a good percentage of those papers and fully understand them and what goes in that drink. I must be comfortable with the science."
- C14) "I work very closely with a colleague, so I think the two of us together for the last 10 years. We've done everything together. We share an office. We speak morning, noon and night."
- C15) "When to push and where not to push."
- C16) "I think it's different for different sports and different athletes relate to people differently, and some practitioner's technical knowledge sometimes is non-existent but are still effective on the front line."
- C17) "Emotionally intelligent and technically smart."
- C18) "Good communication is the number one trait."
- C19) "An authority at times so when we speak people listen and at times people listen to more of a soft approach. So, the ability to flex style is important."
- C20) "Knows when to speak and what to say and how to say something. For me a good practice is someone who can network, and good communication skills are someone who's confident when they speak and can read a room quickly, then able to change their sentence that soft and touches everyone."
- C21) "Strong work ethic and being adaptable – We can work long hours and then wash the water bottles! Then at the same time so you can go from the mundane jobs to the real thinking jobs almost within ten minutes. And be ready because it's hard on the road. You're away for 3 weeks. You can wake up one day and go, "I can't do this anymore", and miss being with the family day after day you almost got to set aside your own emotions for the good of the job. You've got to just get on with it."
- C22) "People management. How do we support our performance plan through people management?"
- C23) "Some people are cold, quite aggressive or opinionated and we need to know that when they behave like that there's a reason for it. So, once I got my head around that then I can change how I interact."
- C24) "Your goal is to improve performance with an athlete, so you have to go to the delivery side of things and focus on delivery."
- C25) "Trust is essential, that's why you get the successes that you get."
-

C26) "An appreciation of politics within the workplace."

C27) "I guess strong relationships with individuals that you're working with and other support staff and coaches etc, and also that the athlete. If there is a break in a relationship, it's going to be more difficult to influence them."

C28) "I was coaching any kids and so I guess one thing I probably did was simplify messages because you know education levels are quite different for every person."

C29) "I think it's really funny because we always naturally took around knowledge is a starting point and don't get me wrong, I think that you must have a good solid underpinning of education, but for me know when we get to this level that's just a given and I don't t, therefore put it as the main in most important thing in my opinion.'

C30) "You have to come into a sport and have a good self-awareness and emotional intelligence as to how you can best fit within that to optimise the people around you but secondly that links to behaviour change and you have to be a very good person and interact with people in a certain way to build a relationship so that they buy into a change in their behaviour."

C31) "Ones who understand the environment and understand the people that they work with and how to create changes in behaviour whether that is directly with the athlete or through other relationships that support the athlete."

C32) "The best practitioners in the ones who understand what an athlete needs understand what drives that individual to make the change."

C33) "Confidence in your ability to be able to say I think this is the direction that we go."

C34) "You can have all the knowledge in the world, but if you can't articulate in a certain way to an individual then It's pointless."

C35) "I think you have to be a really good listener to have quite a good level empathy as well."

C36) Yeah behaviour change is an interesting one because it's the psychology that sits behind the outcome. I do a lot of work linked to psychology, so I'll sit in the room with an athlete with our psychologist and that is quite normal because a person's beliefs are key."

C37) "Listen with genuine intent and being able to ask questions that are relevant to the person."

C38) "Build relationships that start with the building of relationships and with the Coach and athlete. It's really important and taking the time and effort to do that."

C39) "The ability to build relationships with people with an all-around ability to build a really good trusting relationship."

C40) "See performance as opposed to see your profession and adopt a performance first mindset to influence performance."

C41) 'I guess self-reflection."

C42) "Self-driven people. People who make it find a way – they are the ones you want."

D. How to improve the training of nutritionists

D1) "What's produced at the end is often a reflection of the quality of the supervisor."

D2) "Challenge students with tough questions. i.e., Will do what we do in this scenario? Make them do presentations every week on what's happening in their placement class. What have you learnt? What challenges?"

D3) "Reflective learning within peer groups."

D4) "Coaching principles should be taught at undergrad level in all sports science degrees."

D5) "Knowledge must be well taught and followed by application – the knowledge to application philosophy."

D6) "You need to be around the environment so you can handle yourself better. Even simple things like you know how to approach organisations and individuals that you interact with."

D7) "I think going and exploring different organisations, I guess things like motivational interviewing techniques."

D8) "Experienced practitioners must keep up to date with knowledge"

D9) "Basic graphic design."

-
- D10)** "Putting us in the environment where possible like a lot of courses in other disciplines. I feel if we do a placement, for example, it would have been huge for our development if we were to do 3 months somewhere."
- D11)** "Soft skill training as a core subject at the undergraduate level is required."
- D12)** "Thrown in at the deep end and observe and understand the environment and people within."
- D13)** "When you finish your qualifications you get your toolbox of skills, but you do come in and you think I've just got to throw all these tools at them (athletes), and it took me probably 3 years to realise that that's not the way it works in the spotlight."
- D14)** "So I think you know if somebody has said to me, you're going to take 6-months out of your course going to go and do a placement in a sport, but just an environment that would have been a massive quickening of your learning and what it takes to be successful in a role like this."
- D15)** "We could extrapolate from organisations like dietetics and when you finish academic qualifications and learn basics such as, 'do you know how to do a food diary?' and 'how do you hold a consultation?' Then we could start to divert a person into the softer skills, and you know I was fortunate because I did an EIS internship where I was with other interns where we did roleplay on things like mock consultations, but if I hadn't been in the Internship I would have just gone straight into the environment as a young inexperienced practitioner."
- D16)** "Yeah, I think it's just watching observing. I think there are a million things you could pick up."
- D17)** "Don't specialise too early and make sure you broaden your knowledge."
- D18)** "I think some soft skills training."
- D19)** "When I was studying, I read a BASES this newspaper with the story on the front page was an experienced practitioner and he was talking about how need to get yourself in the environment, whether it's taking bottles out at halftime, just be in around athletes the much as possible."
- D20)** "Learning how to keep better notes from consultations."
- D21)** "Motivational interviewing and behaviour change training."
- D22)** "Learning how to hold a consultation in the training/performance environment is important because it's different. How often do you sit down 1 to 1 with an athlete? You're starting from scratch with most of them and it's a 10-minute conversation at best."
- D23)** "The one thing that universities lack at the moment is the hard-hitting truth about this is what it's like in reality on the front line."
- D24)** "For example. Carrying out a one-to-one consultation for the first time on the athlete doesn't give a damn about nutrition. How do you react?"
- D25)** "Teach me how to communicate, understanding how to listen and reflect and I think once you've got to know the fundamental technical knowledge (as this will always be king), you need to become an effective performance nutritionist."
- D26)** "There's a need and a requirement for an up-and-coming nutritionist to understand strategy and performance planning."

E. Coaching framework development

- E1)** "I think we do need some coaching support. I definitely think there should be a coaching course that should incorporate different models of coaching and different variable things to be aware of, but I don't think that golden rule to say you have to do this. I think I could probably profile people a little bit to see more one way than the other and how they can play to their strengths and maybe work on the weaknesses."
- E2)** "I don't believe coaching is a one-size-fits-all model and everyone brings their own unique personality skill sets."
- E3)** "Coaching skills would help as a good coaching session for involves asking questions in a certain way that are open-ended to get an athlete to give you the information you require."
- E4)** "You have to be careful not to create robots. We don't want to just create robots so that people lose their creativity and style of delivery."
- E5)** "We don't have anything that relates to any coaching or how to run a consultation. I remember when I started a job and my first job. I've never done a consultation before."
- E6)** "We could extrapolate from organisations like dietetics and how they teach coaching skills."
- E7)** "I think the creation of a coaching framework specific to our role would be brilliant and would fast track practice because it feels like people just come in and find their way. As we don't have one to reference to, we often get creative practitioners with their own style, but they've got the basic core skills of delivery."
- E8)** A coaching framework would help. I think as a practitioner you can always develop and improve on what you do. So yeah 100% I think that would be beneficial."
- E9)** "Coaching and giving people the skills to make decisions for themselves in the context of nutrition to make better nutritional choices."
- E10)** "I do think there would be value in having a similar kind of coaching framework to help younger nutritionists through their one-to-one sessions in the elite environment. I think people having coaching training is required."
- E11)** "The risk is it could become too descriptive, so if it was set up alongside training and offer support options such as coaching and motivational interviewing behaviour change etc, you could pick and choose the ones that work for you at the time you're in is important."
- E12)** "It would be great to help practitioners maximise 1 to 1's with athletes in the training environment and helper the go through the 'abcd' of things. Because in elite sport how often do you sit down now with the athlete for 30-40 mins? You're starting from scratch with most of them and it's a 10-minute conversation at best."
- E13)** "Best coaching practice for nutritionists probably needs to be developed specifically to the day-to-day practice and our profession as a whole I think it would have an impact on my day-to-day practice."
- E14)** "A coaching framework would probably not have as much impact on my practice now as it would have done when I first started."
- E15)** "Having a framework to work through as an undergraduate in sports science would help if we had key fundamental modules that you have to complete. So, if there was a delivery or education framework where you can progress through that at the end of it then you're more than competent in different situations."
- E17)** "Within a coaching framework it might be very hard to replicate what does happen in the real world because every environment is very different and depending on the individual athlete."
- E18)** "I think coaching and being able to deliver your message effectively is needed."
- E19)** It could serve as a reference guide for younger practitioners. For example, if I'm going into a new boxing gym the first time, what are the tools that I need to help me build or to help me identify the key stakeholders how should I conduct myself when attending an MDT planning meeting for the first time with a new team."

F. Perceptions of the SENR

F1) "I was up and running as a practitioner before the senr came out. So, when it came out. I was busy and never saw it as something required to work at the elite end."

F2) "I sometimes wonder are they asking the right questions or is it become a bit of an echo chamber? What beyond that professional Indemnity Insurance is it providing practitioners?"

F3) "I'd be interested in the network and to meet other practitioners and have additional conversations with them to start to learn from experts from other fields and learn what they are doing what they're not doing, what's been effective, but I feel like I have that network already."

F4) "The senr have helped us to become a stronger discipline by protecting title which I think is so important and 'm sure many of us in nutrition would agree that being having the senr has been a positive stride. However, I feel that the process of how you go about accreditation isn't necessarily the best way to ensure that a person effective within their day-to-day working."

F5) "Yes, it's good that we get access to things like the forums and CPD but I don't think you get anything special from being in the SENR."

F7) "In comparison to a discipline like psychology where unless you are registered you cannot practice, and you won't be considered and what's nice is that now is that we are protected, and people won't get a position in an elite sport if they are not registered."

F8) "The next step now for the sport and exercise nutrition register is to look at how can we optimise practitioners. I think that would be brilliant. I'm not too sure who else could take that on but senr could be a body that could do that."

F9) "I think it's pretty good. It limits practice of self-proclaimed experts. It sets a minimum standard."

F10) "From an education point of view, to be honest the register doesn't offer anything extra to help us be better, I don't think I think it's a platform for that. I don't think it does anything to upskill you as a practitioner whether you are a graduate to a high-performance practitioner."

F11) "Senr has brought in some level of quality assurance. Which was needed, but I think it's a bit too easy to get accredited. It's all technical competency-based and doesn't assess the effectiveness of the person at all."

F12) "The accreditation process and competencies should be more detailed and specific."

F13) "Senr doesn't provide resources for nutritionists in areas such as coaching skills, which is surprising given they are very important along with influencing and relationship building to the most successful practitioners. They should have to provide enough support in those areas, but I think they provide a good level of quality assurance to the profession."

Table 4.5 Service Users (MDT colleagues): Personal vignettes from multidisciplinary colleagues that informed descriptive codes and theme development.

| A. Description of performance nutritionist |
|---|
| A1) Their role is very closely aligned with the psychologist and their role is to ensure that athletes fuel properly for basic training and recovery and injury rehabilitation." |
| A2) "Increasingly, there's a role to play in terms of providing optimum nutrition for performance so yeah, it's not just a basic training and recovery, but it's also ensuring that the people are in the best place possible to perform at their optimum." |
| A3) "There were quite a few dietitians in the mid-1990s, and they were sports dietitians, and they were ahead because they found a niche in sport, but ultimately if you look back now the practice is quite outdated. What it did do was focus on advising to eat five fruit and veg portions, so it didn't have the same depth and precision and also the expansive creative ways that modern nutritionist provide. It is now much more cutting edge and performance-focused." |
| A4) "It had a dietitian backdrop with a lot of clinical aspects to it. So, there was a lot of round disorder, but I think you know where they see the clear role of performance nutrition in improving performance outcomes." |
| A5) It is an integral part of the performance support network because everybody's going to eat when everyone's got to be in good shape for their training and their competition." |
| A6) "It wasn't until really when lottery funding came in that established the English Institute of Sport and then the different disciplines physio, psychology and of course nutrition became more prominent." |
| A7) "You're looking at that kind of seminal work on the carbohydrate feeding research at all around supplementation with more focus tended to be more research and basic info led by a dietitian. So, it was almost as if they were more academic-based people rather than practice at that time." |
| A8) "They would deliver individual workshops specifically with teams and that kind of thing." |
| A9) "Nutritionists went on to become an integral part of the MDT." |
| A10) "When I first started 20025 years, we would have a nutritionist that would consult once a week with people with problems led by the doctor. So, it was a type of reactive, healthy eating-based service you now." |
| A11) "Nutritionist were not embedded into practice in my early days of practice." |
| A12) "We didn't have any nutritional support and it was prescribed as by the doctor and recently in the last five to six years we have seen the greatest change in my opinion in the nutrition support in elite sport." |
| B. In-Effective Characteristics |
| B1) "Tendency to foster dependency upon themselves or be too brash and tell people to listen to me. I've got a special diet. It's ok. I know what I'm doing. I don't listen to them and that is a poor practice that doesn't empower the individual to take it forward." |
| B2) "Going on a whim without going on a whim and just saying all this new vasodilating food and everyone's going to try it now because it doesn't help you long term." |
| B3) "The people and so having an isolated way of working means the people need to get out of the office a bit more and people become isolated and missing out on the huge amount of information about how someone thinks house eat because you can see them and also that other clues that the petitioners are picking up on." |
| B4) "Just not working probably because of the inertia of the client being able to engage at a fast pace or maybe the practitioner has gone too slow sometimes. I've seen some examples of being too slow, and what I mean by that is you got a client who really keen and wanting to make progression, but the nutritionist has been very conservative about their approach, probably rightly so in some senses but given he hasn't set the outcomes early enough in that process than the client has lost interest and gone somewhere else." |
| B5) "Poor communication with athlete and coach creates and as a mismatch of expectation & a misunderstanding of the role and maybe there's a misunderstanding of communication." |
| B6) "Posing a question that is maybe important but it's not that relevant at that moment in time and destructive to relationships." |
| B7) "I think that this is a fascinating question so this is an interest that we share I remember our head of performance said something along the lines of, 'if you're a complete idiot, then you won't last long in high-performance sport, regardless of your competences and if you don't have the kind of people manage people skills that required to get the job done and get on with coaches and athletes you just won't be tolerated very long at all within science in applied science as well." |

B8) "There was a nutritionist who worked with us and she was difficult and hard work and I think that because she was very strict with respect to her field. If someone was going to engage with her and level which was you or not at all and I think she found herself quite isolated individuals."

C. Effective characteristics

C1) "Ensure that the basics for done well because it's useless if you don't have the right to education and access to the basics."

C2) "Cutting through a lot of noise. Possibly one confounding factor that nutritionist as a discipline suffer from more than any other as everyone has got an opinion on it and it's emotive and it's in the press a lot, so if you pick up newspaper, I probably wouldn't see something about biomechanics and I might see something about how the mind works, I might see something about popular training methods, but I'd definitely see something about food and so everybody has got an opinion about it and it is extraordinary noisy for people. So, they have to cut through the noise and deliver high priority basics, well evidence but also having high scrutiny."

C2) "The best nutritionists have a pre-emptive care and behaviour change strategy, so what I mean by that is that at some point further down the line you could find something that people don't want to do it and picking up a signal."

C3) "Task focused enough to make a change."

C4) "A shared purpose to follow to lead, communicate and powerfully impact, to listen and ask questions that they are all elements, but I think sophisticated craft skills."

C5) "Emotional intelligence, trust and the ability to gauge the dynamics of the team but at any given point that they can move through the gears and answer a question with depth of understanding."

C6) "Adaptability and agility of a nutritionist are important."

C7) "Committed to clean sport."

C8) "Ones who make small incremental changes."

C9) "A good communicator with people who and empathetic, who can interact with their clients in the appropriate setting."

C10) "Ones who can sit at the training track to chat to the coach or the athlete between training, but it's being able to listen to see what's going on and to make small changes that are really meaningful and have a positive impact in building that relationship with the client."

C11) "They often only got a very short window to achieve things, and you might not see that individual often, or they can only see them for a couple of sessions, and I've seen a few people who can operate in that area effectively and I would put it down to their ability to listen to their clients through the process with a level of implicit trust. So coaching is a key skill for nutritionists"

C12) "I would also say the clarity of roles is also important."

C13) "Good practitioners appreciate that we've got a moment in time here and a process to go through to make better decisions to whether it's an Olympic cycle, whether it's a month, today, half an hour trying to achieve an outcome. What's the best way to get to there? What is success and what are the things that will accelerate the process, and of course it's all based on that trust that the practitioner has got the goods. You know they've got the technical credibility."

C14) "Can build a strategy and break it down into achievable outcomes over a period of time." "Probably the one that made the biggest impression on me is where you've got an individual who can be an integral part of the coaching team and coach an integral part of decision-making where there's the trusted respected who's there all the time. Not just as a transactional relationship."

C15) "The ones who made most the impression on me in a not the ones who are coming from having an either like a research question that they think this is great, but the ones who answer performance questions specific to the population groups they work with."

C16) "Credible scientists, credible medics, credible practitioners all have a degree of scientific practice and academic ability to answer performance questions."

C17) "Ones who are asking the right questions in the right way and can answer with confidence based on our current understanding and testing of their hypothesis."

C18) "Influencing the coaches and the athletes to help make the best decisions possible to support their performance."

C19) "Can provide a competitive advantage."

C20) "You can have a scientist that makes interesting findings but unless they know how to promote those findings it could take an awful long time for that information to be disseminated in terms of practical use."

C21) "Persuade and Influence people and ability to tell your story in an effective way."

C22) "Effective practitioners are the ones who can see the scope of a project and see those dimensions and have the confidence to the skill to work across those areas."

C23) "It's about judging the progress with an athlete and knowing when to push and pull your information."

C24) "The relationship between the practitioner, the client and the coach are the holy trinity."

C25) "Able to have a conversation whether it's difficult conversation or not, and you can still establish a working relationship."

C26) "Understand the person rather than just prescribe what you think is the best thing for them."

C27) "Good communicator."

C28) "Different ways of communicating such as the phone call, text messages, just a chat over coffee. They don't want to become their best mate, but know they have to develop that respect and trust."

C29) "Being patient and able to engage others to get your message across to the athlete and wait for them to accept your information whilst being comfortable utilising other people who may have a better relationship the athletes than you."

C30) "Consistent approach and prepared to evolve practice."

C31) "Translate technical language into easy messages, as it is easy to get lost in any medical lingo and if people don't understand what you mean by using big words in a conversation you probably going to lose them, so I try to stick to simple terms."

D. How to improve training of nutritionists

D1) "The next big step change would be improving coaching skills. Coaching skills are invaluable, so a coach's eye and a coach's perspective are important, but the coaching mindset is important."

D2) "Leadership, communicate powerfully, listening skills, knowing how to ask questions, but I think sophisticated craft skills are required and much bigger than just isolated coaching."

D3) "Striking the right balance between high academic skills and high craft skills. There is still room for both skill sets."

D4) "My Vision would see people doing high-end clinical research for performance-based questions, but they are developed and recruited based on having the capability or capacity to develop a level of craft skill. I think about is where people are going to have the greatest impact."

D5) "Behaviour based training. Well, you're working with an individual trying to change behaviours and moving from A to B."

D6) "Having blended practitioners that are doing a multitude of roles within one."

D7) "We surveyed a practitioner group as asked them what they value the highest in the practitioners in your network and it was a specific question about if you had two individuals in front of you who have a strong academic profile, experience in the world or equally qualified with very good personal skills, the vast majority of practitioners said the latter because they could behave in the way that was acquired."

D8) "Taught how to answer questions with confidence and understanding."

D9) "We need to prioritise that technical ability."

D10) "Package technical skills together in a way that somebody can understand."

D11) "The ability to directly intervene and influence training is a massive aspect of physical adaptations from training, but the nutritionist has the ability to use all that physiology knowledge."

D12) "Knowledge about health well-being."

D13) "Interpersonal relationship management and how to translate textbook language into simple terms."

D14) "Create more performance focused practitioners."

D15) "Behaviour change training."

D16) "I think any kind of useful framework around behaviour change would massively help and a coaching framework specific to the high-performance environment would be great."

Table 4.6 Service Users (Athletes): Personal vignettes from athletes that informed descriptive codes and theme development.

A. Early Experiences working with a Nutritionist

- A1)** "I had very little support or interest in nutrition to be honest. I was sort of skinny lad that could get away with what I wanted."
- A2)** "I mean that a lot of rubbish information in terms of overloaded with information with what I need to etc be honest with you. I feel right now, I'm in a much better place with my nutrition and I'd probably never before seen any benefits."
- A3)** "I just eat Sunday roasts and things like that, and it the advice I had wasn't anything different it didn't like have an impact on performance or injury. it was just a case of getting your fuel in in."
- A4)** "I wasn't told anything to do with the benefits of nutrition on training or performance. I wasn't told 'This is what will help you'. It was basically just look after yourself yeah. The penny drops when you see the physical changes and looking a lot more athletic."
- A5)** "I now call upon my nutrition as a one percenter and I have definitely bought in because I was naturally getting stronger alongside my gym program as well and my injury record starting to get better, and I was bowling faster."
-

B. Effective Characteristics of nutritionists

- B1)** "They didn't ask me to be somebody I'm not. I could still enjoy a chocolate bar here and there wasn't like it became a chore or boring. It wasn't just eating chicken! It wasn't too rigid, and all bout protein shakes."
- B2)** "Great rapport and a good relationship were very important."
- B3)** "Just simple conversations. For example, what you like what you don't like i.e., fish which is brilliant for nutrition, but I don't like it! So, it was not a difficult relationship. It was about making things nice and showing me how I would benefit from it and realise that it wasn't difficult to make small changes to my typical fuelling habits. So, when you start going from Weetabix or Rice Krispies to two eggs scrambled egg porridge and then you just perform better."
- B4)** "We sat down and chatted about food programme generally and finding out what and why I like to eat. Simple approach like, 'what do you have normally?' and, 'What do you think you could change?'"
- B5)** "The best thing was then having the knowledge to know when I need to change something and when to eat it, it changed my behaviour."
- B6)** "Having good conversation and a good in relationship because it feels easy and it's not forced."
- B7)** "Someone good with man management and someone that can have a good relationship with somebody, and also that can sympathise and empathise with me. Treat me as an individual because you have mental side of things especially professional sports it's a big area. Finally, consistency with their messages is important and basically don't go over the top with advice."
-

C. In-Effective Characteristics

- C1)** "Examples were a bit forced and it's felt uncomfortable, as unless you know me as a person you won't and see that I'm worried about things and if I've been eating too much as a result."
- C2)** "If they are too strict then I switch off."
- C3)** "If I'm told, you need to do this, and you need to do that then it can be a bit rigid."
-

Table 4.7 Development of final themes and overarching concept

| Category Development | Final Themes | Overarching Concepts |
|--|---|--|
| The profile of performance nutritionists | <p>Effective and in-effective traits of performance nutritionists</p> <p>Skills profile of effective nutritionist of the future</p> <p>Perceived importance of high technical knowledge vs high soft skills in order to be effective</p> | <i>What good looks like</i> |
| Non-technical skill development throughout the journey of a nutritionist | <p>Non-technical skills taught during undergraduate, post-graduate and employment</p> <p>Examples of non-technical skills and experiences during undergraduate, post-graduate and employment</p> <p>How practitioners continue their professional development during employment</p> | <i>Is this area given adequate resource?</i> |
| Is a coaching framework relevant for performance nutritionists? | <p>Opinions on the development of coaching framework for performance nutritionist</p> <p>Perception of The Sports & Exercise Nutrition register (SENR)</p> | <i>Improving industry standards</i> |
| What will the profile of future performance nutritionists look like? | <p>Future training suggestions for performance nutritionists & skills profile of effective nutritionist of the future</p> <p>Key skill categories of future performance nutritionists.</p> | <i>Improving the future practitioner</i> |

4.4 Results: Transcription analysis

4.4.1 The profile of performance nutritionists

From the perspective of service users (n=9) and providers (n=8), 80% of our subjects identified that being able to flex (adapt) their communication style is the most important trait of effective performance nutritionists (figure 6), followed by; good strategist (73%), can influence behaviour (67%), Builds good relationships (67%), Trustworthy (53%), focuses on basics (53%), performance focused (46.7%), sound scientific knowledge base (40%), self-motivated (40%), good in a one to one (40%), collaborative (40%), translates complex to simple (33.3%), self-aware (33.3%), knows when to push and pull (33.3%), empathetic (33.3%), builds rapport (33.3%), asks good questions (33.3%), has a mentor (26.7%), good listener (26.7%), credible (26.7%), sets expectations (20%), reflective (20%), professionalism (20%), patient (20%), lack of self-interest (20%), consistent (20%), understands the culture of the sport they work within (20%), works well through others (13.3%), up-manages well (13.3%), understands the needs of the athlete (13.3%), lots of experiential learning experiences (13.3%), good networker (13.3%), creative (13.3%), considered speaker (13.3%), balance between technical and soft skills (13.3%), adaptable (13.3%), strong work ethic (6.6%), risk taker (6.6%), observes other practice (6.6%), good coach (6.6%), can work a room well (6.6%) and accountable (6.6%).

The importance of high-technical knowledge or high-soft skills from perspective of service users and providers show that 27% believe high-technical skills to be most important, 20% believe soft-skills are the most important, and 53% believe they are both equal skills to possess in order to be effective (figure 4.1).

The traits of in-effective performance nutritionist have been broken down and listed under the following categories: traits, performance impact, science and soft skills (table 4.8).

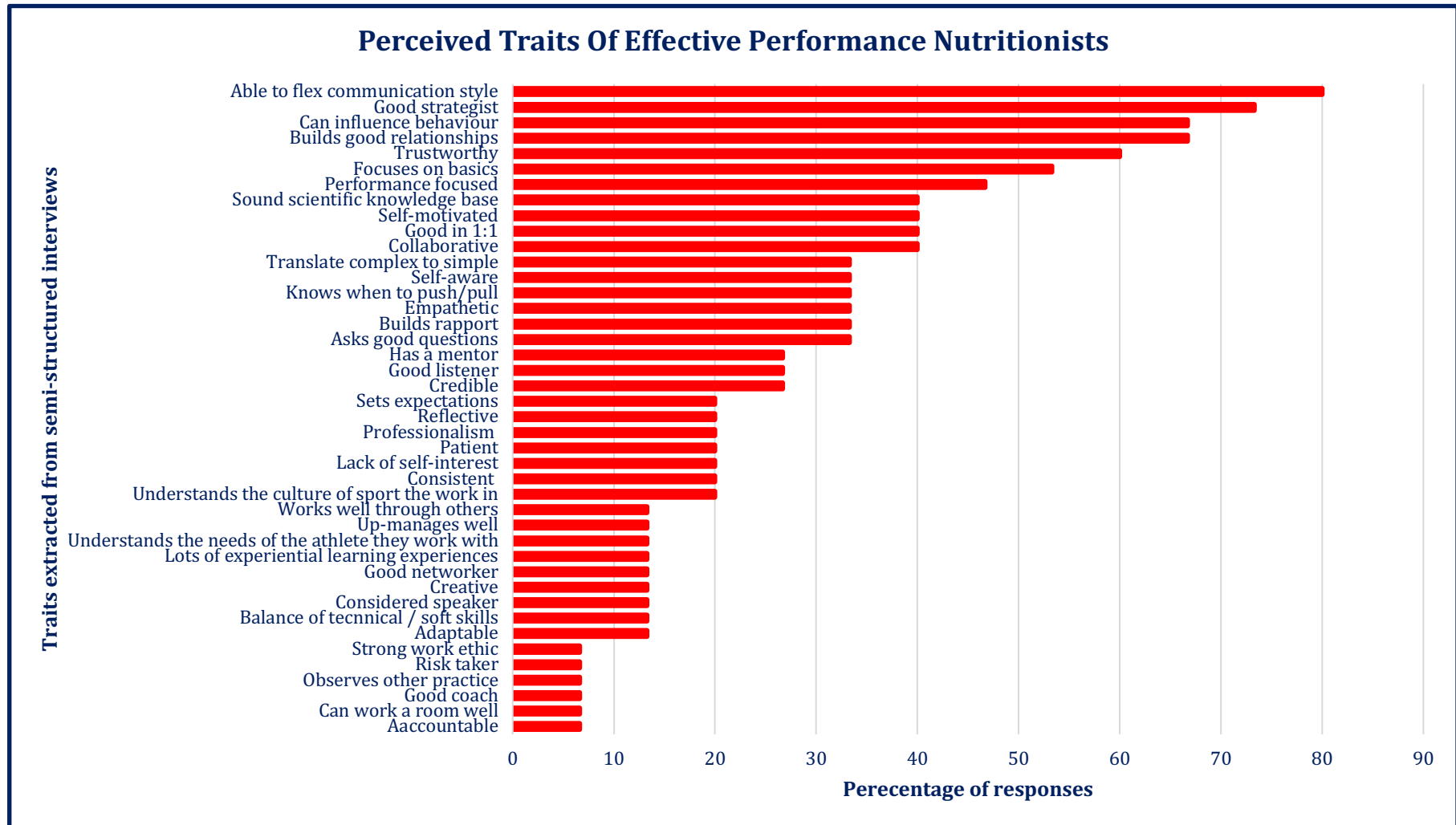


Figure 4.1. Perceived traits of effective performance nutritionists

Data extracted from the semi-structured interviews carried out with service providers and users represents the perceived effective traits of performance nutritionists.

Table 4.8 Traits of ineffective performance nutritionists


| INEFFECTIVE PERFORMANCE NUTRITIONISTS | | | |
|--|--|---|---|
| TRAITS | PERFORMANCE IMPACT | SCIENCE | SOFT SKILLS |
| <p>DIFFICULT TO WORK WITH STRICT WITH ADVICE SETS UNREALISTIC EXPECTATIONS WORKS IN ISOLATION ARROGANT OVER PROMISES UNDER DELIVERS TOO RIGID LACK OF INTEGRITY TOO MUCH SELF PROMOTION BIG EGO DISMISSIVE OF OTHERS INSECURE 'PUSHES' AT WRONG TIMES TOO CONSERVATIVE ITS ABOUT THEM</p> | <p>NOT PERFORMANCE FOCUSED ANSWERS PERFORMANCE QUESTIONS OF INTEREST OVER THE NEEDS OF THEIR SPORT DOES NOT IMMERSE THEMSELVES WITHIN THE SPORT THEY WORK WITHIN SLOW TO HAVE AN IMPACT</p> | <p>LACK OF SCIENTIFIC RIGOUR NOT EVIDENCED BASED PROMOTES 'MAGIC BULLETS' LACK OF SCRUTINY OF METHODS 'GOES ON A WHIM'</p> | <p>AVOIDS DIFFICULT CONVERSATIONS POOR COMMUNICATION SKILLS POOR ATHELE ENGAGEMENT POOR RELATIONSHIPS WITH COLLEAGUES DOES NOT MANAGE-UP POOR STAKEHOLDER ENGAGEMENT POOR STRATEGIST</p> |

4.4.2 Relevance of a coaching framework for performance nutritionists and The Perception of The Sports & Exercise Nutrition register

Our subjects note the creation of a coaching framework would have both positive and negative impacts on their practice (table 4.9). Their opinions included 'we don't currently have one', 'it would be a good reference guide', 'we absolutely need one', 'coaching support would be welcomed and should be part of our training', and it would help 'improve their day-to-day practice'. On the other hand, subjects stated that any such framework 'should not stifle personality', 'it should not be too rigid or descriptive', and 'it should not be a one-size-fits-all approach'

The results indicate the main value from SENR accreditation to performance nutritionists (table 4.1.1) are providing a level of quality assurance to the industry, indemnity insurance, portfolio support, and a professional networking forum. The negative perception of the SENR range from the accreditation process being too easy to achieve, it requires a more specific and detailed competency framework, the assessment criteria does not assess the individual or the effectiveness in the field, and accreditation should be mandatory for practice as a sport and exercise nutritionist. Furthermore, the data displayed that the SENR accreditation is seen as; a 'tick box exercise', 'not an essential requirement to work at the elite level', 'it does not upskill practitioners nor offer any technical support to its members'.

Table 4.9 Opinion's on the development of coaching framework for performance nutritionist



- We don't have currently have one
- It would be a good reference guide
- We absolutely need one
- Coaching support would be welcomed
- Coaching training should be part of training
- This would have give me confidence when junior
- Would help junior practitioners in difficult situations
- It would help us ask better questions
- It would help day-to-day practice
- Better coaching skills would be of significant value



- Must be careful not to stifle personality
- It can't be too rigid
- It should not be too descriptive
- It must not be a 'one size fits all'
- Can it reflect real life situations?
- Not as effective as 'learning on the job'

Table 4.1.1 Perception of The Sports and Exercise Nutrition Register

| PERCEPTION OF THE SPORTS AND EXERCISE NUTRITION REGISTER | |
|--|--|
| POSITIVES | NEGATIVES |
| <ul style="list-style-type: none">Has brought a level of quality assurance to the industrySets a minimum standardProvides indemnity insuranceProtects the industryProvides a network for registrantsPortfolio support days for graduate members | <ul style="list-style-type: none">Too easy to get accreditedDoesn't assess the personNeeds to be more specific and detailedHard to evidence if people are good nutritionistsHard to assess a nutritionist effectiveness in the fieldNo benefits other than insuranceDo not feel its is essential to work at the elite levelDoesn't add valueIt is a tick box exerciseLack of practical/useful resources for membersDoes not up-skill practitionersDoes not provide any support for soft-skill developmentAccreditation should be mandatoryDoes not offer any technical support to members |

4.4.3 Non-technical skill development throughout the journey of a performance nutritionist

At undergraduate level, 80% of the subjects indicated that NTS were not taught during their undergraduate degree, with 20% receiving NTS training. At postgraduate level, 60% of the subjects indicated that NTS were not taught during their degree, with 40% receiving NTS training. During employment, 70% of the subjects indicated that NTS were taught whilst employed, with 30% receiving no NTS training. These results are illustrated in figures 4.2 and 4.3 respectively.

Examples of non-technical skills and experiences during undergraduate, post-graduate and employment (table 4.1.2) included; a) undergraduate; self-sought shadowing of practitioners, one-off motivational interview seminar, b) postgraduate; mock one to one consultations, work placements, scenario based work and a motivational interviewing module, and c) during employment; 12-month practitioner development course, workshops (media training, presentations skills, problem solving, observing peers, and journal reading).

Figure 4.4 shows how practitioners continue their professional development during employment, including listening to podcasts, reading, self-reflection, presenting at conferences, visiting different organisations and listening to podcasts.

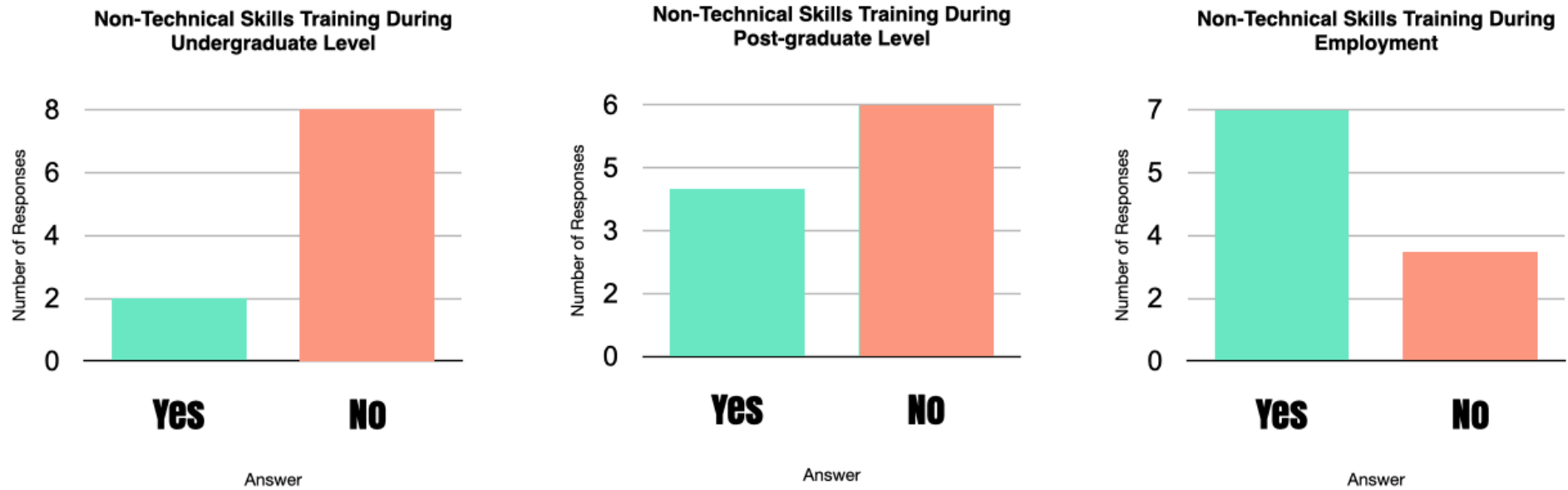


Figure 4.2 Non-technical skills taught during undergraduate, post-graduate and employment

Data extracted from the semi-structured interviews carried out with service users represents the non-technical skills training of performance nutritionists at undergraduate, postgraduate and during employment.

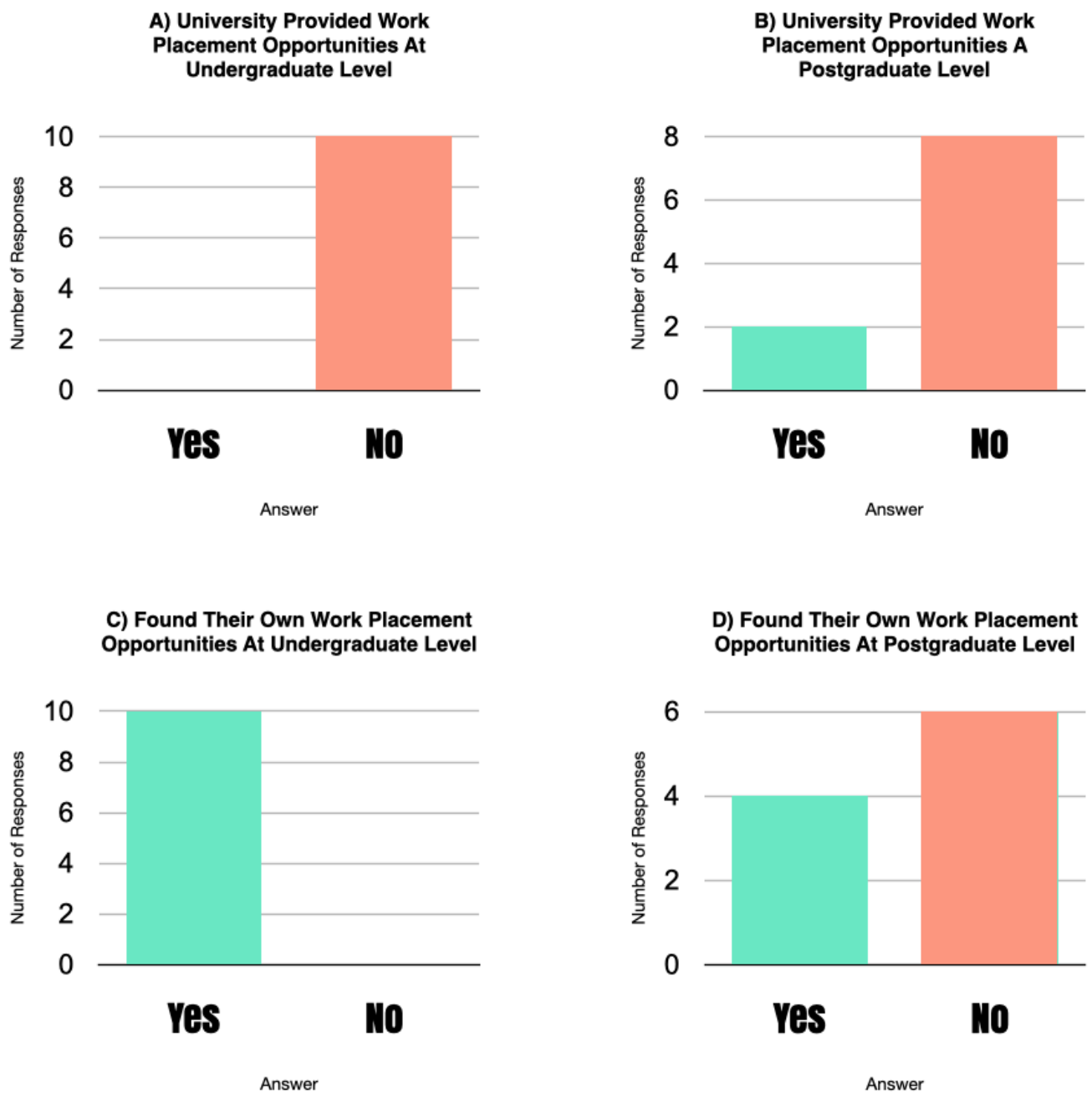


Figure 4.3. Work placements opportunities at undergraduate and post-graduate level

Data extracted from the semi-structured interviews carried out with service users represents a) work placement opportunities provided at undergraduate level, b) work placement opportunities provided at postgraduate level, c) those who found their own work placement opportunities provided at undergraduate level, and d) those who found their own work placement opportunities provided at postgraduate level.

Table 4.1.2. Examples of non-technical skills and experiences during undergraduate, post-graduate and employment

| EXAMPLES OF NON-TECHNICAL SKILLS & EXPERIENCES AT UNDERGRAD, POST-GRAD & EMPLOYMENT | | |
|---|--|---|
| UNDERGRADUATE | POST-GRADUATE | EMPLOYMENT |
| <p>Self sought opportunity shadowing practitioners</p> <p>One off motivational interviewing class</p> | <p>Mock one to one sessions</p> <p>Work placement at a professional sports club as part of the course</p> <p>Basic scenario based work</p> <p>Motivational interviewing Module</p> | <p>12-month practitioner development programme focused on soft-skills</p> <p>Presentation skills</p> <p>Behaviour change workshop</p> <p>Media training</p> <p>Problem solving workshop</p> <p>Journal reading</p> <p>Peer observations</p> |

EXAMPLES OF HOW PERFORMANCE NUTRITIONISTS CONTINUE THEIR PERSONAL DEVELOPMENT DURING EMPLOYMENT



ONLINE LEARNING COURSES/
WEBINARS



READING BOOKS & JOURNALS



SELF REFLECTION



PRESENTING AT CONFERENCES



OBSERVING PEERS



POST-GRADUATE EDUCATION



LISTEN TO PODCASTS



VISIT DIFFERENT
ENVIRONMENTS



LEARN PRINCIPLES FROM
BUSINESS

Figure 4.4. How practitioners continue their professional development during employment

4.4.4 What will the profile of future performance nutritionists look like?

According to those surveyed for this study (performance nutritionists (n=8), and service users (n=9), the key training categories of future performance nutritionists have been identified as; behaviour change and coaching, communication skills, experiential learning, and performance focused. Sub lists for each of these categories can be found in table 4.1.3.

The skills profile of effective performance nutritionists of the future (table 4.1.4) is listed as; high craft skills, strong strategic skills, systematic approach to service design and delivery, performance focused, able to influence a system, strong behaviour change and coaching skills, graphic design competency, appreciation for data visualisation, branding, emotional intelligence, strong technical knowledge, committed to clean sport, and strong performance planning skills.

Table 4.1.3 Future training suggestions for performance nutritionists

| FUTURE TRAINING OF PERFORMANCE NUTRITIONISTS | | | |
|---|---|--|---|
| BEHAVIOUR CHANGE & COACHING | COMMUNICATION SKILLS | EXPERIENTIAL LEARNING | PERFORMANCE FOCUSED |
| <ul style="list-style-type: none"> • BEHAVIOUR CHANGE THEORY SHOULD BE CORE MODULE OF UNDERGRADUATE NUTRITION DEGREE PROGRAMMES • BEHAVIOUR CHANGE MODULES INCLUDED IN POST-GRADUATE PROGRAMMES • PSYCHOLOGY MODUE INCLUDED IN UNDERGRADUATE DEGREE PROGRAMMES • COACHING SCIENCE MODULES EMBEDDED INTO UNDERGRADUATE NUTRITION DEGREE PROGRAMMES • COACHING SKILLS SHIULD BE TAUGHT AT ALL LEVELS OF EDUCATION& CONTINUE DURING EMPLOYMENT • BASIC COACHING PRINCIPLES SHOULD BE TAUGHT AT UNDERGRADUATE LEVEL | <ul style="list-style-type: none"> • RELATIONSHIP BUILDING • CONFLICT MANAGEMENT • HOW TO ASK DIFFICULT QUESTIONS • HOW TO ASK GOOD QUESTIONS • MOTIVATIONAL INTERVIEWING • HOW TO CARRY OUT EFFECTIVE 1 TO 1 CONSULTATIONS • HOW TO COMMUNICATE EFFECTIVELY & MAKE MESSAGES STICK • HOW TO BUILD RAPPORT QUICKLY | <ul style="list-style-type: none"> • WORK PLACEMENTS SHOULD BE COMPULSORY DURING BSC/MSC • MORE IMMERSIVE LEARNING EXPERIENCES DURING EDUCATION & EMPLOYMENT • MORE OPPORTUNITIES TO OBSERVE OTHERS • GREATER EXPOSURE TO A VARIEY OF ENVIRONMENTS | <ul style="list-style-type: none"> • PERFORMANCE PLANNING • HOW TO BE PERFORMANCE FOCUSED • STRATEGIC PLANNING • STRATEGIC THINKING • HOW TO KEEP CONSULTATION NOTES THAT ALIGN TO THE SENR/BDA STANDARDS • HOW TO EFFECTIVELY OPERATE AS PART OF A MULTI-DISCIPLINARY TEAM • HOW TO CONDUCT YOURSELF IN PLANNING MEETINGS |

Table 4.1.4 Skills profile of effective nutritionist of the future

| SKILLS PROFILE OF THE FUTURE NUTRITIONIST | |
|---|--|
| HIGH CRAFT SKILLS | APPRECIATION FOR DATA VISUALISATION |
| STRONG STRATEGIC SKILLS | KNOWS HOW TO BRAND/PACKAGE THEIR PRODUCT |
| SYSTEMATIC APPROACH TO SERVICE DESIGN & DELIVERY | EMOTIONALLY INTELLIGENT & TECHNICALLY SMART |
| PERFORMANCE FOCUSED | HIGH LEVEL OF TECHNICAL KNOWLEDGE |
| ABLE TO INFLUENCE THE SYSTEM | COMMITTED TO CLEAN SPORT |
| STRONG BEHAVIOUR CHANGE & COACHING SKILLS | UP TO DATE WITH CONTEMPORARY KNOWLEDGE |
| GRAPHIC DESIGN SKILLS | STRONG PERFORMANCE PLANNING SKILLS |

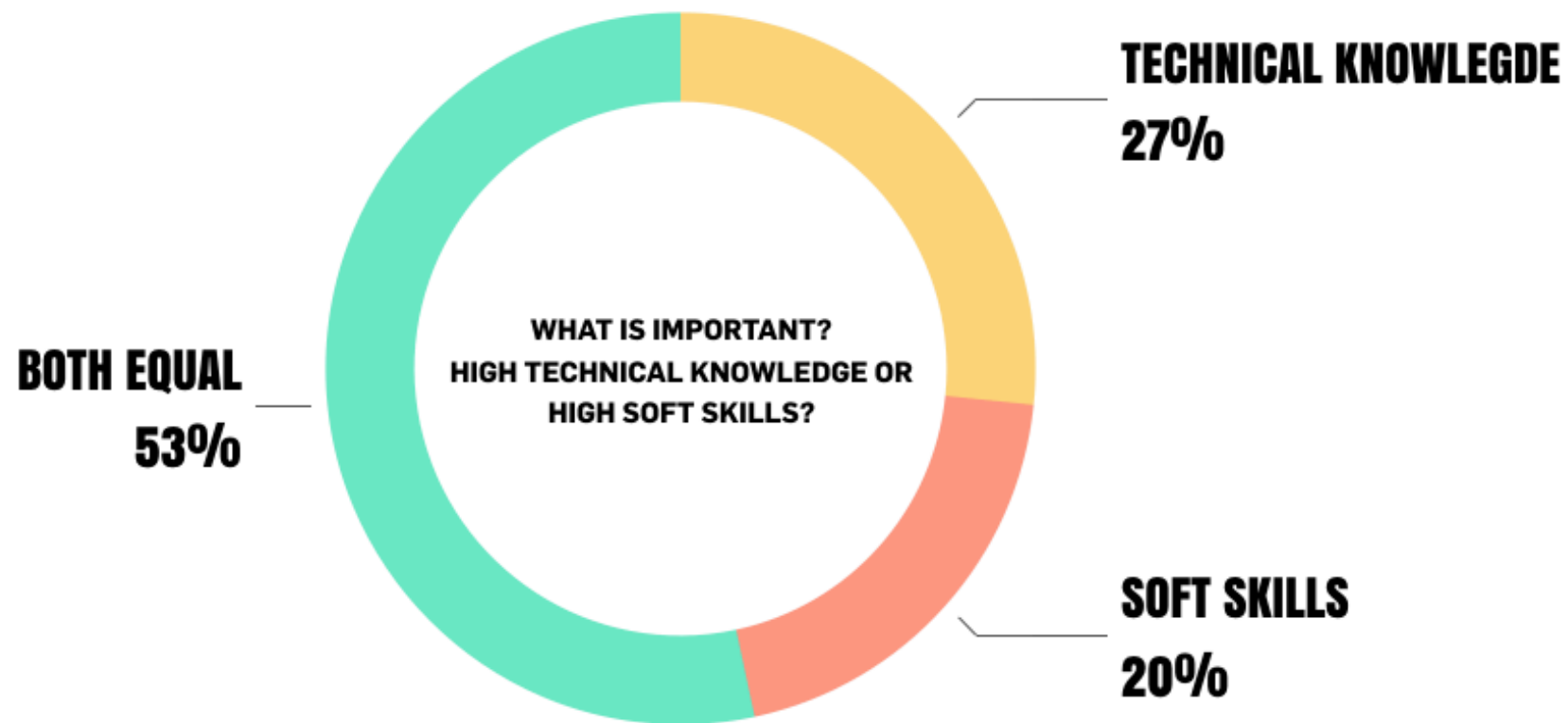


Figure 4.5 Perceived importance of high technical knowledge vs high soft skills in order to be effective

Data extracted from the semi-structured interviews carried out with service providers and users represents opinions on the importance of soft skills and technical knowledge of performance nutritionists (i.e., figure shows proportions (%) of respondents who rated each factor as most important, or if both were rated equally important).

4.5 Discussion

Although we interviewed three different categories of person (nutritionists, MDT colleagues and athletes) to ensure more diverse findings, it was interesting to note the emergence of common themes discussed during the interviews, therefore all the descriptive codes extracted from our cohort were grouped together, resulting in the final themes for further analysis in chapter 3. This commonality is likely attributed to the semi-structured interview structure where subjects were steered to discuss similar topics to help provide clarity during coding process.

The outcome of this process led to capture of personal vignettes derived from the interviews with our research subjects. These vignettes allowed us to identify the following 11 final themes; 1) Effective traits of performance nutritionists, 2) in-effective traits of performance nutritionists, 3) Skills profile of effective nutritionist of the future, 4) Perceived importance of high technical knowledge vs high soft skills in order to be effective, 5) Non-technical skills taught during undergraduate, post-graduate and employment, 6) Examples of non-technical skills and experiences during undergraduate, post-graduate and employment, 7) How practitioners continue their professional development during employment, 8) Opinion's on the development of coaching framework for performance nutritionist, 9) Perception of The Sports & Exercise Nutrition register (SENr), 10), Future training suggestions for performance nutritionists & skills profile of effective nutritionist of the future, and 11) Key skill categories of future performance nutritionists. This chapter also presents and discusses findings from our semi-structured interviews with service users (n=9) and service providers (n=8).

The data indicates that strong NTS are considered the most prominent traits of effective performance nutritionists, as evidenced in figure 4.1, where most traits could be classified as NTS. However, this is somewhat contradicted (figure 4.5) where our data tells us that when asked whether they believe high technical knowledge or high soft skills are most important in order to be effective, our data shows that most practitioners (53%) considered both of equal importance. This could suggest that high technical skill is considered a 'given' when operating at as a high-performance practitioner, and therefore our subjects did not list this as an effective trait more frequently. However, this is based on speculation and may require further research into what prospective employers perceive to be essential and desirable role criteria of performance nutritionists to understand this more accurately. A similar theme is evident regarding the ineffective traits of performance nutritionists (table 4.8), where most findings relate to the NTS of the practitioner rather than their technical ability.

Given that NTS has been cited as an important factor, it was interesting to discover the lack of NTS training or work placements undertaken by our cohort during their training, with most of the training occurring during employment (figure 4.2 and 4.3 respectively). The reason for this was not explored, however it may reflect the demographic of the nutritionists (table 2.1) who took part in the study who most likely underwent undergraduate training several years ago when applied placements and NTS training were not commonplace amongst degree programmes, whereas several today's degree programmes offer NTS and work placements as part of their student offer (table 3.1). Moreover, the NTS training that they did receive whilst

studying was largely self-sought shadowing experiences and one-off motivational interviewing workshops at undergraduate level, with only two participants undertaking a work placement as part of their master's programme (figure 4.1.2).

Our research also indicated that coaching skills are an important part of a nutritionist's skill set, however the nutritionists whom we interviewed stated that they did not receive any structured training to support or enhance these skills as part of their studies or during their employment. This is an interesting point, and it could suggest that senior nutritionists would benefit from additional coaching training as part of their CPD, and aspiring performance nutritionists who are currently undertaking a degree in this field could benefit from the integration of work placement opportunities and the greater emphasis on behavioural and coaching principles being taught as programme modules.

The opinions of the SENR from the perception of the nutritionists who took part in this research have been listed in table 4.1.1. This shows that nutritionists believe the most positive and beneficial aspect of being associated with the SENR is the quality assurance that it provides sports and exercise nutritionists, through setting minimum standards of practice for the industry. However, some of the perceptions of the SENR challenge the value of the SENR. Our analysis indicated that some of our participants do not believe that membership offers any more value other than access to a professional network and indemnity insurance. The data also shows that SENR is perceived to be 'not that important' as two of the nutritionists that we interviewed are not currently registered yet hold successful roles in

performance nutrition (table 4.1.1). This perception was interesting given the necessity to obtain indemnity insurance in order to practice as a sports and exercise nutritionist. Professional indemnity insurance is important, especially for those who give advice or provide a professional service to clients. It can cover compensation claims if a practitioner is sued by a client for making a mistake that leads to financial loss (Mathur, 20200).

Another interesting finding was several subjects did not feel that being part the SENR will upskill them or offer any opportunities to improve their skills or knowledge, nor does the accreditation process do anything to assess an applicant effectiveness in the field. However, the main purpose of the SENR is to quality assure and protect the discipline rather than to upskill its members either technically or non-technically. Given the nutritionists who I interviewed for this research are all relatively well experienced, their views could suggest that they have been able to successfully operate within their roles without requiring any additional support via the SENR. However, it is difficult to explain further as I did not explore the participants answers in more depth in search of why.

Finally, although none of our subjects have undergone specific coaching education, all the nutritionists expressed the opinion that the development of a coaching framework that is relevant to their work would be of benefit to them. However, at this stage it is important to note that although we have used the term 'coaching' several times throughout this thesis, this term may be different when referring to a 'sports coach' or a nutritionist who adopts behavioural change coaching techniques as part of their practice with athletes. One might argue that the skillset required to be an excellent sports coach in football, or

cricket are very different to the skills required to be a nutritionist using behaviour change 'coaching' skills, which you could argue require more behaviour change and rapport development skills etc than is needed in sports coaching per se, however some of the underpinning principles may be similar and therefore be transferable across the disciplines.

4.6 Conclusion

Non-technical skills appear to be highly valuable for Nutritionists working in high performance settings. Given the statements to support the importance of strong non-technical skills, such as communication, coaching, and influencing, as key determinants of a successful performance nutrition practitioner, there appears to be a lack of emphasis given to this area at all levels of development of sport and exercise nutritionists and further research may be required to identify any gaps in the training and on-going training of performance nutritionists. These gaps may be bridged by the SENR who could review their competency framework with emphasis placed on NTS of an applicant, and the SENR course approval criteria could require prospective degree programmes to provide structured NTS learning and quality assured work placement opportunities as a prerequisite for accreditation.

5: Study 3: The development of proposed framework of competencies and coaching framework with practitioners and academics within sport and exercise nutrition.

5.1 Introduction

The primary aim of this chapter was to explore and understand how performance nutritionists who practice within elite sport evaluate their effectiveness and evaluate the suitability of an 'effectiveness checklist'. A secondary aim of this section was to gain feedback on the use of a 'theoretical application framework' where the 'effectiveness checklist' may be used as a personal development tool for practitioners. This chapter will detail the process by which the qualitative analysis was undertaken to enable us to understand more about how current practitioners go about their continued personal development.

5.2 Methods

In order to gain a spectrum of perspectives to inform this research, a spread of participants (n=9) ranging from industry experts, senior and entry-level practitioners (table 2.1). Participants were recruited via the utilisation of the lead researchers' professional network. Inclusion criteria can be found in appendix 1.

For this study, all data was gathered through a combination of online google form questionnaires. Data was analysed using qualitative methods and presented using tables and figures to illustrate the findings. Pre-recorded Microsoft PowerPoint presentations were sent to each subject and used to set the scene for each subject before completing each questionnaire. An audio narration by the lead researcher was embedded into each slide to provide the subjects with clear instructions regarding when to complete the questionnaires. These questionnaires were embedded into the pre-recorded presentation and partitioned by two sections. These sections were narrated by

the principal researcher to add clarity to the participant. An overview of the process can be seen in Figure 5.1.

5.2.1 Ethical considerations

Ethics approval was obtained from the School of Sport and Exercise Sciences Research Ethics and Advisory Group at The University of Kent. The ethics form can be found in appendix 3.

It was important to ensure that respondents were clear that participation in the interviews is voluntary. Voluntary participation was made clear in the participation information sheet (Appendix 4). Respondents were also informed that they were entitled to withdraw from the process at any point. All participants provided informed consent before they participated in the study. Performance nutritionists (n=9) already recruited for study two participated. All questionnaires were anonymous and comprised of 18 questions in total.

5.2.2 Online Questionnaires

Two online google form questionnaires (appendix 11) were used to gather qualitative data from our subjects. Questionnaire one was a baselining questionnaire, and questionnaire two captured the participants thoughts and perceptions on the 'effectiveness checklist' and 'theoretical application framework'.

5

5.2.3 Pre-recorded presentation

A pre-recorded Microsoft PowerPoint presentation (appendix 12) was distributed to each subject concurrently with the online questionnaires. Audio

narration by the lead researcher was embedded within each slide to guide the subjects through the process and provide clear context and instruction regarding when to complete the questionnaires. The presentation was divided into two sections (part A and part B).

5.2.3.1 Part A

The purpose of part A was to introduce the study and set the scene for questionnaire completion. Moreover, part A was designed to obtain baseline data regarding the following areas: a) how nutritionists assess their effectiveness, b) determine whether nutritionists undertake annual personal development reviews, c) understand more about nutritionists continued professional development choices (CPD), and d) explore how nutritionists evaluate and apply CPD back in the field of work. The link to the online questionnaire was embedded at the end of part A and serves to capture the participants thoughts on the areas outlined above.

5.2.3.2 Part B

The purpose of part B was to introduce the 'effectiveness checklist' and the 'theoretical application framework' ahead of completing questionnaire two. Moreover, part B was designed to gather the following information: a) participants' thoughts on the proposed 'effectiveness checklist', and b) participants' thoughts on the proposed 'theoretical application framework'. The link to the online questionnaire was embedded at the end of part B and served to capture the participants thoughts on the areas outlined above.

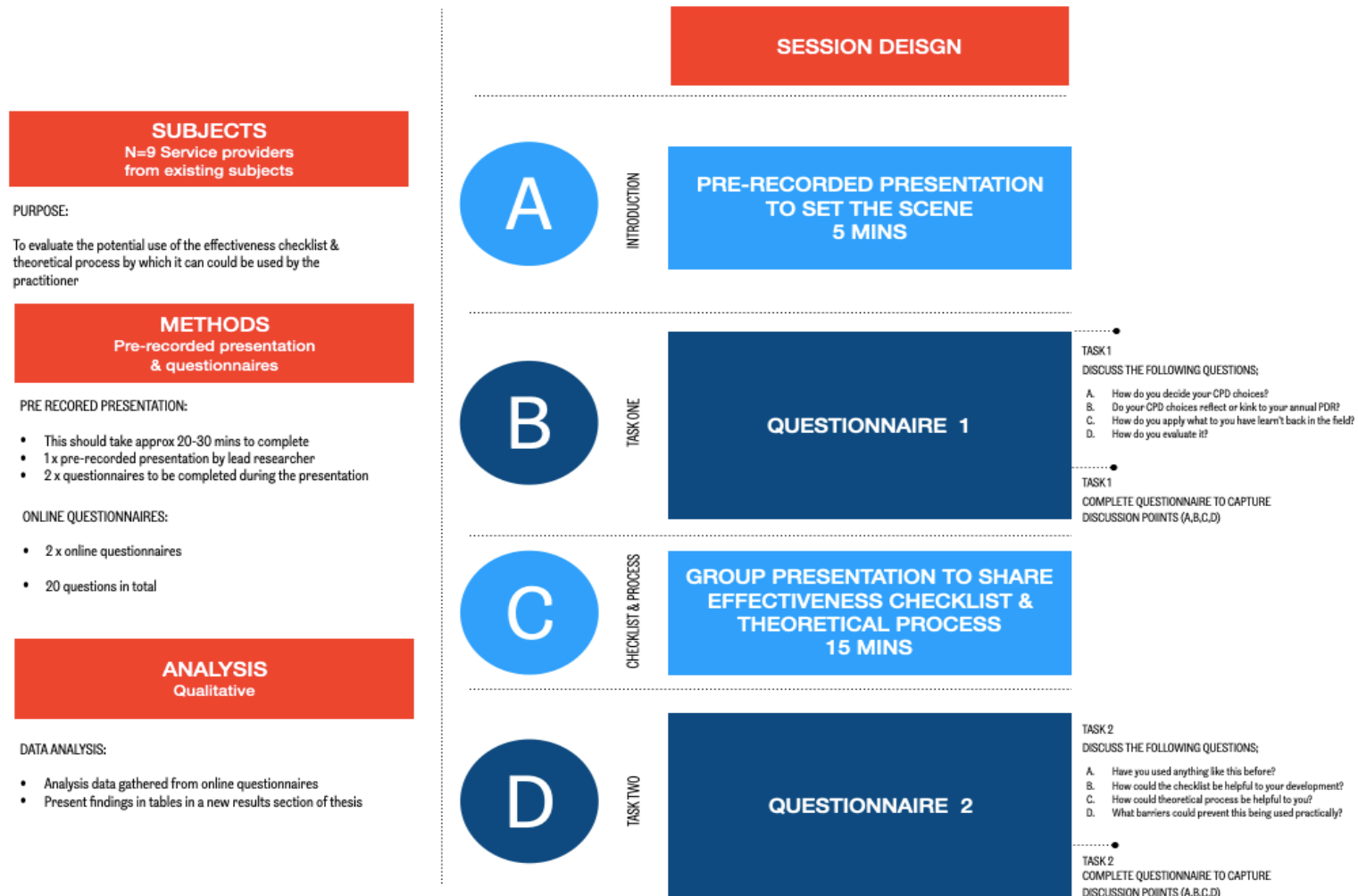


Figure 5.1. Session design

5.3 Effectiveness checklist

The combination of the lead researchers' professional experiences and perspectives, coupled with the findings of this research (chapters 3 and 4), has led to the development of an effectiveness checklist (table 5.1) and a theoretical application framework for performance nutritionists (Figure 5.2).

The aim of this checklist is to guide self-reflection and could subsequently be used by performance nutritionists of all levels to self-assess their ability in the following three competencies: 1) Delivery, 2) Strategic and 3) Technical.

Each theme is underpinned by several sub-competencies where a practitioner can self-assess their perceived effectiveness in each area. These competencies have been identified based on the top ranked perceived traits of effective practitioners, earlier illustrated in figure 4.1. This checklist was sent to the subjects within the pre-recorded presentation for their review and opinion.

5.4. Theoretical application framework

Figure 5.2 demonstrates a suggested process by which the effectiveness checklist could be used by a practitioner to help evolve and improve their effectiveness in the field. This suggested process could help facilitate the application of newly acquired knowledge into practice, whilst allowing an individual to re-evaluate their effectiveness compared to baseline. During stage 1, the nutritionist would complete a baseline effectiveness self-assessment and identify any competence gaps (delivery, strategic or technical), and seek relevant opportunities to immerse themselves in a developmental experience to improve these areas (stage 2). Stage 3 of the process is where newly acquired knowledge can be strategically applied into

practice where learning can be embedded, leading to the final step (stage 4) in which the practitioner can reassess their effectiveness and compare their progress to baseline. All these stages could be supported by a mentor to provide a 'check and challenge' for the practitioner. Finally, upon completion of the process, the desired outcome would be improved practice in the field.

Table 5.1 Effectiveness checklist for performance nutritionists

| SECTION 1: DELIVERY COMPETENCIES | | | | |
|---|---|---|----------------|---|
| COMPETENCY 1: Ability to flex delivery style | | | | |
| Very Ineffective | | | Very Effective | |
| 1 | 2 | 3 | 4 | 5 |
| COMPETENCY 2: Ability to build relationships | | | | |
| Very Ineffective | | | Very Effective | |
| 1 | 2 | 3 | 4 | 5 |
| COMPETENCY 3: Ability to translate complex to simple | | | | |
| Very Ineffective | | | Very Effective | |
| 1 | 2 | 3 | 4 | 5 |
| COMPETENCY 4: Ability to communicate in 1 to 1 situation | | | | |
| Very Ineffective | | | Very Effective | |
| 1 | 2 | 3 | 4 | 5 |
| COMPETENCY 5: Self-awareness | | | | |
| Very Ineffective | | | Very Effective | |
| 1 | 2 | 3 | 4 | 5 |
| SECTION 2: STRATEGIC COMPETENCIES | | | | |
| COMPETENCY 1: Ability to think strategically | | | | |
| Very Ineffective | | | Very Effective | |
| 1 | 2 | 3 | 4 | 5 |
| COMPETENCY 2: Ability to be performance focused | | | | |
| Very Ineffective | | | Very Effective | |
| 1 | 2 | 3 | 4 | 5 |

| | | | | |
|--|---|---|----------------|---|
| COMPETENCY 3: Ability to work within the culture of the sport | | | | |
| Very Ineffective | | | Very Effective | |
| 1 | 2 | 3 | 4 | 5 |
| COMPETENCY 4: Ability manage key stakeholders | | | | |
| Very Ineffective | | | Very Effective | |
| 1 | 2 | 3 | 4 | 5 |
| COMPETENCY 5: Ability to collaborate | | | | |
| Very Ineffective | | | Very Effective | |
| 1 | 2 | 3 | 4 | 5 |

| | | | | |
|--|---|---|----------------|---|
| SECTION 3: TECHNICAL COMPETENCIES | | | | |
| COMPETENCY 1: Practice is based on sound scientific underpinning | | | | |
| Very Ineffective | | | Very Effective | |
| 1 | 2 | 3 | 4 | 5 |
| COMPETENCY 2: Ability to critique the translational potential of academic research into an applied intervention | | | | |
| Very Ineffective | | | Very Effective | |
| 1 | 2 | 3 | 4 | 5 |
| COMPETENCY 3: Can demonstrate the right balance between non-technical skills and academic skills | | | | |
| Very Ineffective | | | Very Effective | |
| 1 | 2 | 3 | 4 | 5 |

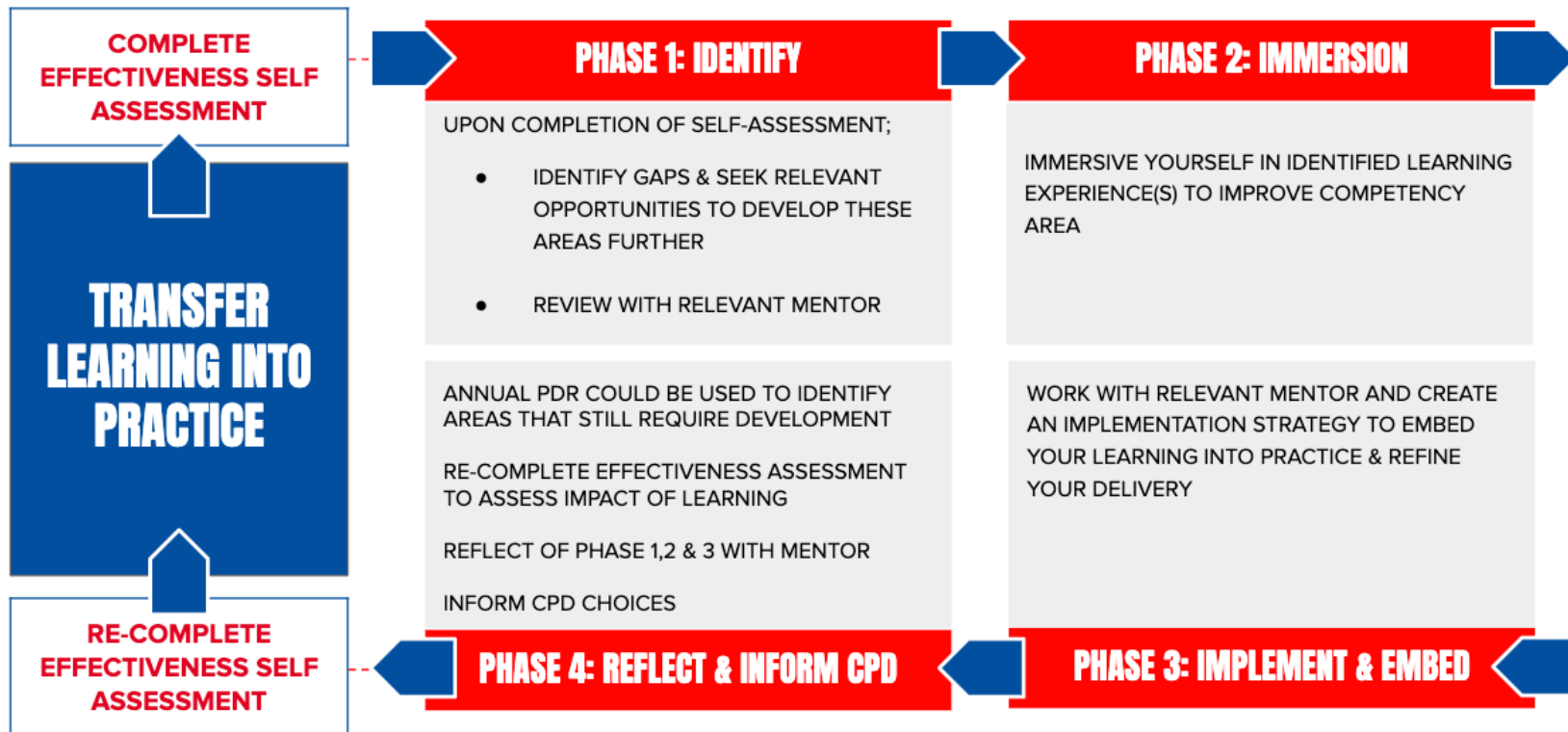


Figure 5.2 Theoretical application framework by which the effectivities checklist could be used by a practitioner.

5.5 Results

5.5.1 Questionnaire One

Understanding more about the CPD choices and PDRs of performance nutritionists.

This section represents the results from questionnaire one only and consisted of 11 questions. The responses to each of these questions is reported below in numerical order.

Question 1: How nutritionist self-assess their effectiveness.

All participants answered 'yes' when asked whether they assessed their effectiveness (table 5.2). Moreover, when asked to describe how they assessed their effectiveness, their responses were varied including feedback from athletes and clients to personal reflection, and bi-monthly meetings with a mentor. Further thoughts from the study participants who completed the questionnaire are provided below in table 5.2.

Question 2: Do nutritionists participate in annual personal development reviews (PDR) in their current or previous roles.

From the perspective of the performance nutritionist (n=9), all our subjects said that they participate in an annual PDR within their role.

Question 3: How often do nutritionists undertake their PDR.

From the perspective of the performance nutritionist (n=9), 6/9 of our subjects said that they participate in an annual PDR within their role 1 x per year, 2/9 reported two times per year and 1/9 said more than two times per year (figure 5.3).

Table 5.2 How nutritionists self-assess their effectiveness.

| HOW NUTRITIONISTS SELF-ASSESS THEIR EFFECTIVENESS? | | |
|---|--|---|
| SUBJECT | DO THEY ASSESS THEIR EFFECTIVENESS? | HOW DO THEY ASSESS THEIR EFFECTIVENESS? |
| 1 | Yes | Feedback from athletes and clients. Quantitative feedback from results (i.e., was a weight achieved, did body composition improve), reflections on projects I have worked on, what went well, what didn't. Stop Start Keeps Annual 5-year plan on a personal level which includes my career progression too. |
| 2 | Yes | I regularly do this through personal and shared reflective practice with peers, but this is not formalised or documented formally, and it is also hard to assess effectiveness given that stakeholders will have differing perspectives on what effectiveness means and how do we measure it objectively and subjectively. |
| 3 | Yes | Annual PDR, 360 feedback, Internal sport reviews |
| 4 | Yes | But not in a formal manner. I am continuously reflecting on my effectiveness as a practitioner and also use data to objectively inform effectiveness e.g., dietary intake data, body comp, hydration scores etc. |
| 5 | Yes | Client evaluation, Self-reflection, Journal writing., Annual PDPR |
| 6 | Yes | Reflective practice, Supervision. |
| 7 | Yes | Weekly reflection |
| 8 | Yes | I review my allocation of time and resources monthly against project progression and outcomes to identify energy leaks in my practice/where I waste time. I split projects into sprints, determined by scopes and managed daily with scrum meetings to keep on track, Bi-monthly meetings with mentor, discuss, seek feedback and annual PDR |
| 9 | Yes | Weekly |

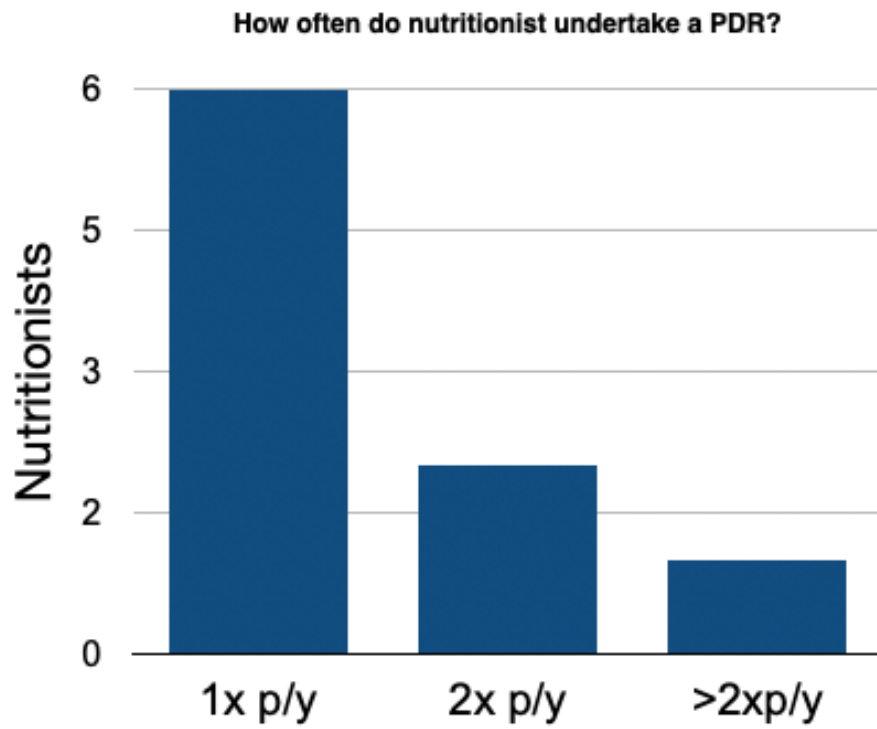


Figure 5.3. Number of times performance nutritionists undertake their annual PDR.

Question 4: The PDR process that performance nutritionists participate in within their role.

When asked to describe the PDR process that performance nutritionists participate in within their role, the responses ranged from; 'one to one meeting with line manager', '360 feedback' and 'personal reflection's'. One subject cited that they had 'no structured approach'. Further thoughts from the subjects who completed the questionnaire are exemplified below in table 5.3.

Question 5: Do performance nutritionists undertake continued professional development in their role.

From the perspective of the performance nutritionist (n=9), all our subjects said that they undertake CPD within their role.

Question 6: How performance nutritionists identify their CPD choices.

When asked to describe how nutritionists identify their CPD choices, our subjects' responses ranged from; 'personal preference linked to a development plan', to 'CPD selected based on their PDR', and 'checking SENR and hearing about CPD events with professional network'. Further thoughts from the subjects who completed the questionnaire are provided below in table 5.4.

Table 5.3 The PDR process that performance nutritionists participate in within their role.

| SUBJECT | Please describe the PDR process that you have participated in with your line manager/mentor? |
|----------------|---|
| 1 | Stop start keep. normally 2 areas for each of these so 6 areas in total. Personal reflection on my year, what did I enjoy what did I do well. Direct feedback from line manager on the same areas. |
| 2 | There has been no structured approach but generally a one-to-one session with some 360-peer feedback. I have generally not found these sessions helpful but have benefited most from informal mentoring and coaching over a prolonged period. |
| 3 | Self-reflection - what's gone well, what can be improved, any issues currently, any support required going forward |
| 4 | 3 hours set aside. Review objectives, set new objectives, 360 feedback. Discuss positive experiences from the year and more challenging experiences |
| 5 | Complete a form and then formal review of it |
| 6 | Standard chat around what went well etc, review any specific objectives, what do i want to do next |
| 7 | Reflective practice. Objective setting. monthly reflections on objectives. |
| 8 | Review meeting of how I was doing in my role, my effectiveness, areas for improvements, positive areas, etc. My mentor was also very supportive of my ideas and help facilitate opportunities to try new things. |
| 9 | Reflective practice |

Table 5.4 How performance nutritionists identify their CPD choices.

| SUBJECT Please describe how you identify CPD choices | |
|---|---|
| 1 | Personal choice to be honest, aligned to my own 5-year development plan and where I want to be in x years' time. Options of conferences, webinars and invitations to present etc |
| 2 | Mainly through personal self-assessment of areas I believe I need to improve upon, largely technical in the beginning as I have become more experienced a lot more on leadership skills |
| 3 | No formal process. Generally, decision is made on the quality of the people delivering CPD and the content |
| 4 | Often these will come from the PDR and will be an area of development. I.e., leadership for example and a course or opportunity around that |
| 5 | Identify annually areas to improve and also chose conferences based on areas to work on |
| 6 | Not enough space to complete this, I use a wide range of CPD activities based around the HCPC classes of CPD, i would do at least 2 hours a week |
| 7 | Based on performance needs of role and needs identified in reflections and PDRs |
| 8 | I would check SENR and hear about events within a trusted network |
| 9 | No formal process |

Question 7: How often do performance nutritionists undertake continued professional development (CPD) in their role.

From the perspective of the performance nutritionist (n=9), 5/9 of our subjects said that they undertake CPD more than three times per year, 2/9 reported two to three times per year, and 2/9 said once per year (figure 5.4).

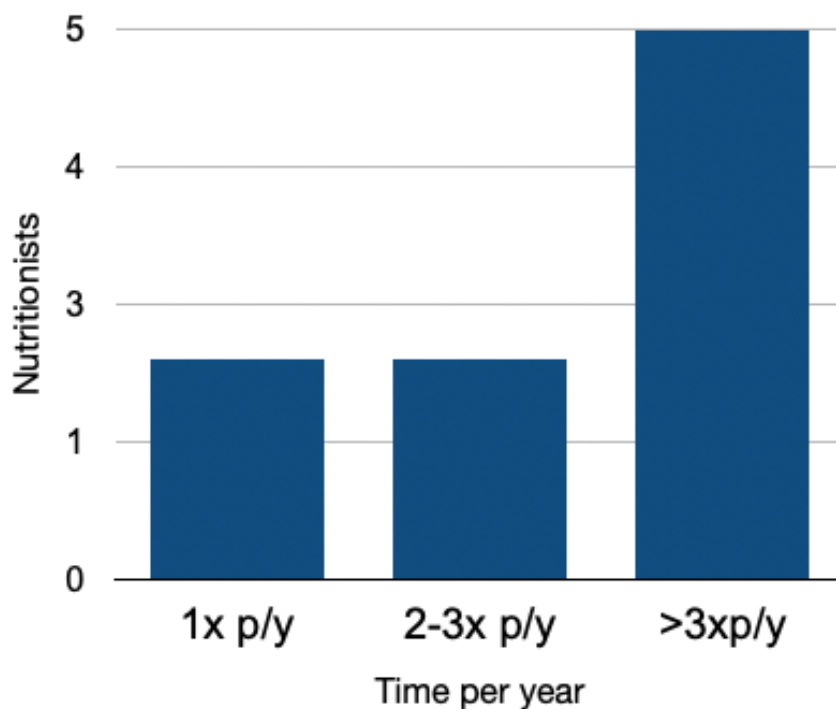


Figure 5.4. How often do performance nutritionists undertake continued professional development (CPD) in their role.

Question 8: Do performance nutritionists perform a form of evaluation/review of what they have learned during a continued professional development experience.

From the perspective of the performance nutritionist (n=9), 4/9 of our subjects said that they do carry out a form of CPD evaluation, 2/9 said they do not, and 3/9 said that they would sometimes carry out an evaluation (figure 5.5).

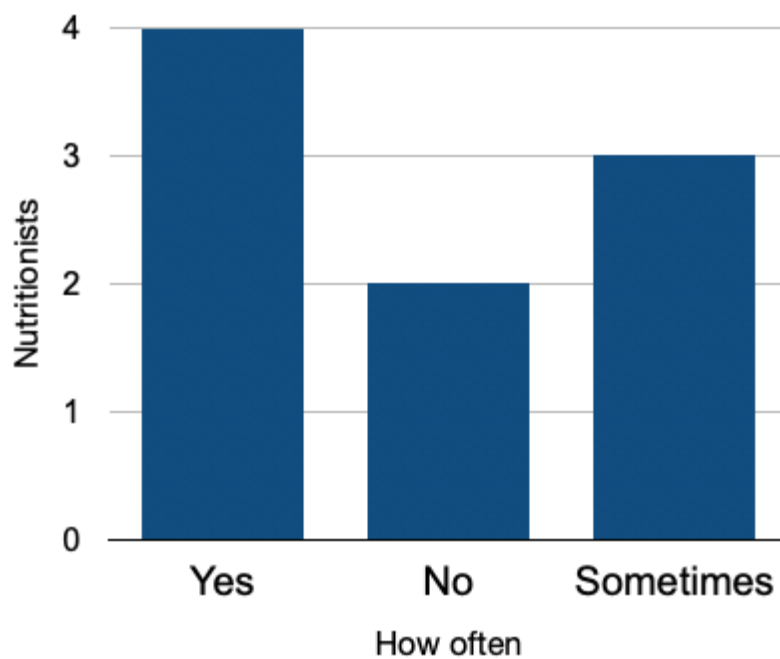


Figure 5.5. Do performance nutritionists perform a form of evaluation/review of what they have learned during a continued professional development (CPD) experience.

Question 9: How do nutritionists evaluate or review their CPD experience in terms of how this has improved their practice.

When asked to describe how nutritionists evaluate their CPD experiences, only four of our subjects indicated that they carried out a form of evaluation including note keeping, diary inputs, subjective reflection, audit cycles, and de-brief with line manager. The remaining five subjects stated that they do not carry out any methods or review process.

Question 10: How do nutritionists implement, apply & embed what they have learned from a CPD experience.

When asked to describe how nutritionists apply, implement and embed what they have learned from a CPD experiences, there was a range of different methods used by the participants, with some being more detailed and specific than others. An example of a more deliberate approach to this was recorded by subject A who stated the following process: 'Implement - begin to educate with my athletes, Apply - practice what I have learned, Embed - practice and refine what it is I have learned'.

Other responses ranged from sharing learnings with peers and linking learning back to a development plan. Further thoughts from the subjects who completed the questionnaire are provided in table 5.6.

Table 5.6 How do nutritionists implement, apply & embed what they have learned from a CPD experience?

| SUBJECT | How they apply and embed learning |
|---------|--|
| 1 | Implement - begin to educate with my athletes Apply - practice what I have learned Embed - practice and refine what it is I have learned |
| 2 | This may be around a new technical approach with athletes, or it could be around areas such as listening skills / communication skills |
| 3 | Review what has been learnt and follow up if any further information required Devise an appropriate strategy Check proposed strategy with line manager Obtain feedback from a couple of athletes prior to rolling out strategy Roll out strategy |
| 4 | No methods or process carried out |
| 5 | Journal and shared reflections with colleagues |
| 6 | This really depends, if it is problem based CPD I will implement the new learning as an intervention/practice |
| 7 | Including within objectives and linked to performance plan |
| 8 | Most of CPD is around behaviour change so predominantly through conversation in 1-2-1's and in intervention design |
| 9 | Forms part of my Annual PDR |

Question 11: Do performance nutritionists link their CPD choices to their annual PDR.

From the perspective of the performance nutritionist (n=9), 5/9 of our subjects said that 'sometimes; their CPD choices are linked to their annual PDR, 3/9 said that they do link their CPD choices to their PDR not, and 1/9 said that they do not link their CPD to their PDR (figure 5.6).

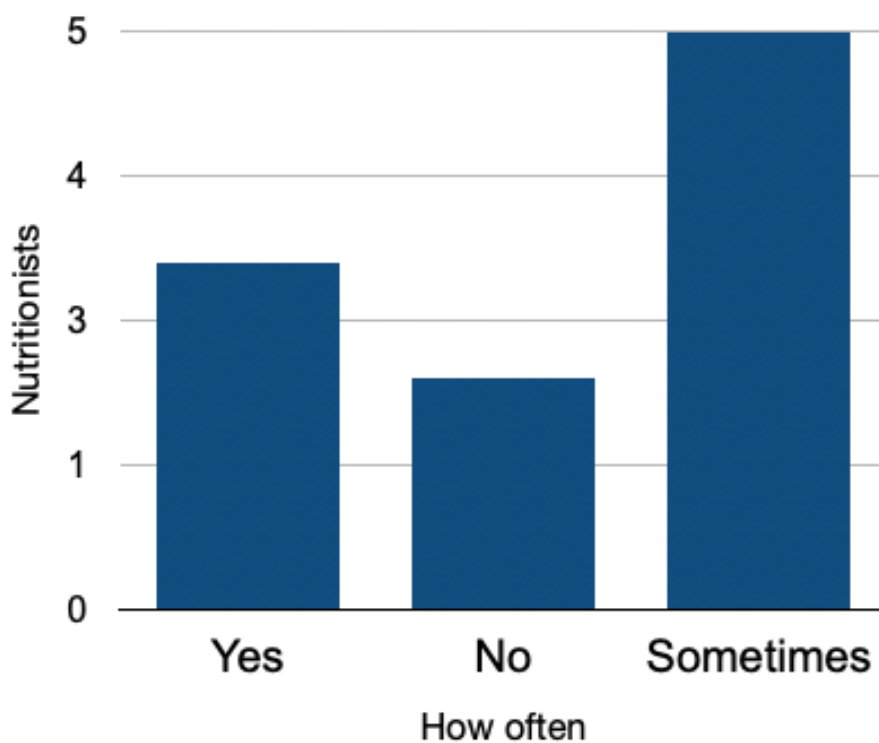


Figure 5.6. Do performance nutritionists link their CPD choices to their annual PDR.

5.5.2 Questionnaire Two

Nutritionist's thoughts and opinion on the proposed 'effectiveness' checklist, and the 'theoretical application framework'.

This section represents the results from questionnaire two only.

Question 1: Exploring whether nutritionists have used an effectiveness checklist before

When asked if our subjects (n=9), have ever used an effectiveness checklist before, 4/9 of our subjects said NO, 3/9 said they have used something similar, and 2/9 said YES (figure 5.7).

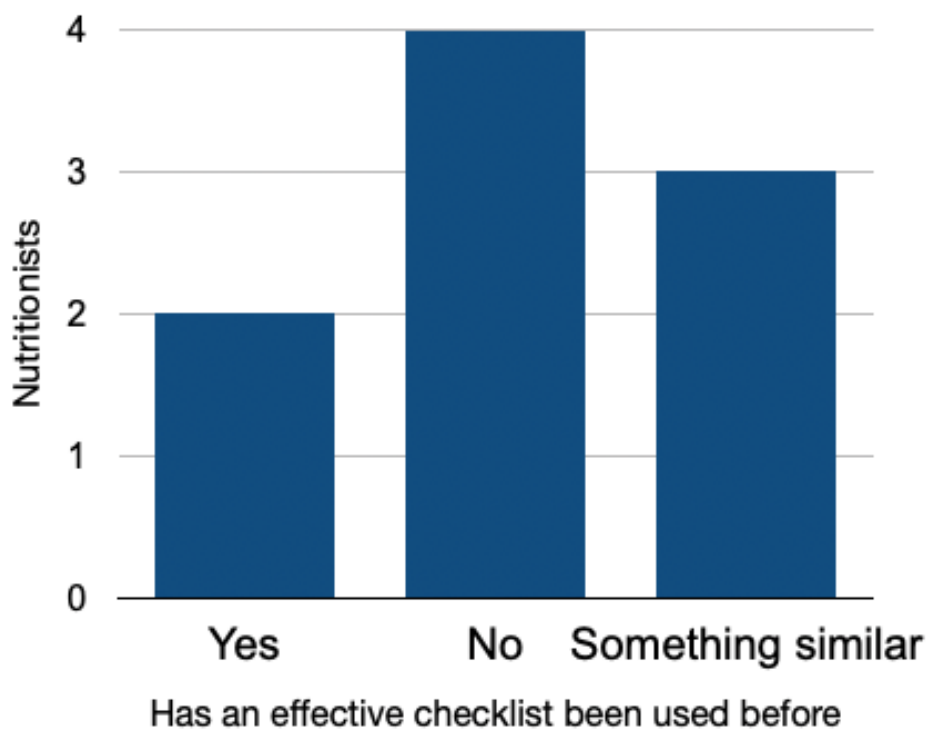


Figure 5.7. Performance nutritionists that have used an effectiveness checklist before

Question 2: Exploring the different types of effectiveness checklist nutritionists have used.

There was a range of different methods used to assess effectiveness by the participants, with some being more detailed and specific than others. When asked to describe the type of checklist that our subjects have previously used, subject 2 recalled, 'I have my own version of a checklist based on reflective practice literature and theory which essentially relates to technical, practical and critical reflections where I rate myself against knowledge versus behaviour / delivery'. Moreover, subject 6 has 'used reflective questions around what has been learned, and how will it be used.' The remaining seven subjects 'have never seen or used one before' (Table 5.7).

Table 5.7 Exploring the different types of effectiveness checklist nutritionists have used.

| | |
|----------------|---|
| SUBJECT | What types of checklists have you used |
|----------------|---|

| | |
|----------|---|
| A | Have used one before but cannot recall the name of it |
|----------|---|

| | |
|----------|--|
| B | I have my own version of a checklist based on reflective practice literature and theory which essentially relates to technical, practical and critical reflections where I rate myself against knowledge versus behaviour / delivery |
|----------|--|

| | |
|----------|------------------------------------|
| C | Have never seen or used one before |
|----------|------------------------------------|

| | |
|----------|------------------------------------|
| D | Have never seen or used one before |
|----------|------------------------------------|

| | |
|----------|------------------------------------|
| E | Have never seen or used one before |
|----------|------------------------------------|

| | |
|----------|--|
| F | used reflective questions around what have i learned, and how will it be used. |
|----------|--|

| | |
|----------|------------------------------------|
| G | Have never seen or used one before |
|----------|------------------------------------|

| | |
|----------|------------------------|
| H | A competency framework |
|----------|------------------------|

Question 3: How would the effectiveness checklist be beneficial to the practice of a performance nutritionist.

When asked how the effectiveness checklist would be beneficial to the practice of a performance nutritionist, some of the nutritionists (3/9) whom we interviewed suggested, 'it could help them review and reflect on what needs to be improved and identify gaps', and 'it could help to identify and assess areas of development effectively and more objectively than subjectively'. (See Table 5.8, Subject 2, 3 & 6). Responses from the rest of the participants can be found in table 5.8.

Question 4: How could the effectiveness checklist be improved in order to be beneficial to the practice of a performance nutritionist.

When asked how the effectiveness checklist could be improved, some of the nutritionists (3/9) whom we interviewed suggested the following improvements: 'if the checklist could be completed by client rather than practitioner', 'it could be better if it is Integrated into a learning management system', 'it could capture the ability to translate the science into effective real-world' (see Table 5.9, Subject 2, 4 & 6). Responses from the rest of the participants can be found in table 5.9.

Table 5.8 How would the effectiveness checklist be beneficial to the practice of a performance nutritionist.

| SUBJECT What types of checklists have you used | |
|---|---|
| 1 | review and reflect on what needs to be improved and identify gaps |
| 2 | I see your checklist as more of a performance profiling exercise as opposed to an "effectiveness" checklist. I also think we could make this more nutrition specific. At present this could be applied to any area of sport science but how can you really make this detailed for a nutritionist. For example, in technical what specific technical areas can you rate yourself against as opposed to just keeping it vague in relation to technical. The same for your other domains. The more detailed a reflective checklist could be I think the more impact it could have and could prompt reflection and more importantly, future learning. |
| 3 | This is a good way of identifying areas of weakness which can be focussed on in order to improve in this area/these area |
| 4 | This could help to identify and assess areas of development effectively and more objectively than subjectively |
| 5 | Could focus CPD around immediate areas to action. Could also guide PDPR. To be honest I always find these things hard to do. I find it hard to rank my own competence |
| 6 | For me personally i do not think it is, but it could be useful to use with junior staff |
| 7 | This would help to identify and assess areas of development effectively and more objectively than subjectively |
| 8 | this Adds structure to implement learnings from CPD |
| 9 | Yes, as this is a new way of looking at it |

Table 5.9 How could the effectiveness checklist be improved in order to be beneficial to the practice of a performance nutritionist.

| SUBJECT | How it could be improved |
|---------|--|
| 1 | Instead of 1-5 look to open this up to % maybe. provide potential sport nutrition related sources to help improve each section, so, if I need to improve strategic management - is there a particular course i need to go on? |
| 2 | I always start with technical (do I have the correct knowledge) then practical (can I bring this to life practically) then critical (do I understand to navigate the environment and deal with the culture and people inherent to the specific sport, this is where I put strategic thinking). A lot of practitioners will struggle to develop a strategic mindset, or it will take them a long time to get there. |
| 3 | In the delivery section - the ability to translate the science into effective real-world food/drink/supplement solutions |
| 4 | Potentially a further level of specific detail around sports nutrition in a sport to narrow in on development. |
| 5 | This could be better is it is completed by client not practitioner |
| 6 | I think this is organisational tool to help the organisation maximise value of cpd, there is also potential benefits for developing practitioners. For very experienced practitioners I feel they do this automatically |
| 7 | Potentially a further level of specific detail around sports nutrition in a sport to narrow in on development? |
| 8 | It could be better is it is Integrated into a learning management system |
| 9 | No real changes, I like the simplicity. |

Question 5: Understanding whether nutritionist have used anything like the ‘theoretical application framework’ before to apply & evaluate the effectiveness of newly acquired skills/knowledge gathered from a CPD experience.

When asked if our subjects (n=9), have ever used theoretical application framework’ before, 7/9 of our subjects said NO, 2/9 have used something similar (figure 5.8).

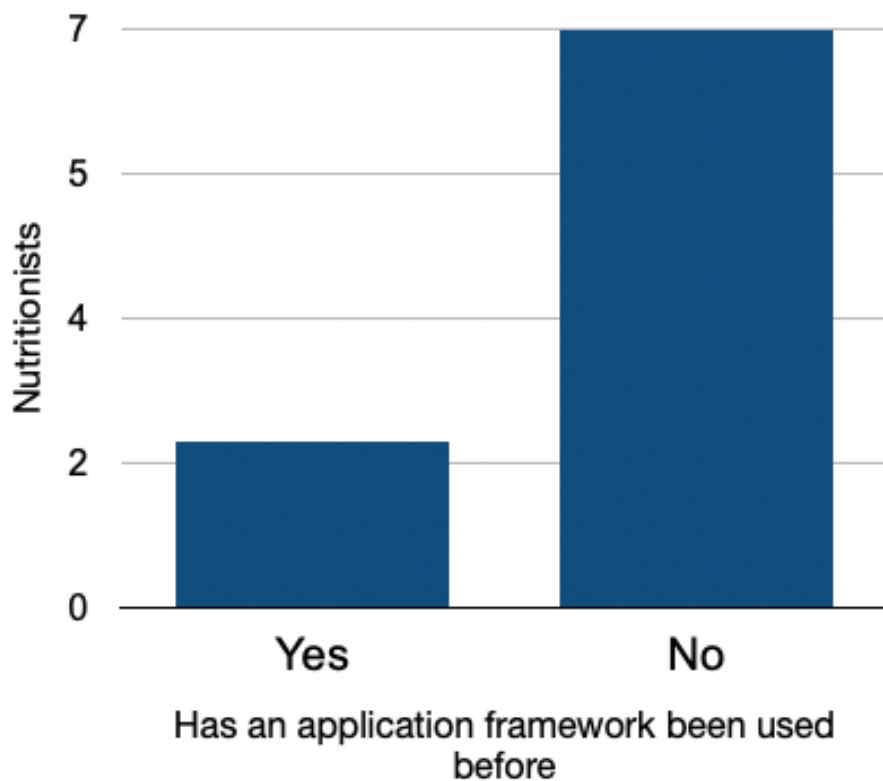


Figure 5.8 Performance nutritionists have used anything like the ‘theoretical application framework’ before to apply & evaluate the effectiveness of newly acquired skills/knowledge gathered from a CPD experience.

Question 6: Exploring the different types of theoretical application frameworks nutritionists have used.

When asked to describe the type of application frameworks that our subjects have previously used, only subject 6 and subject 2 have used one. Subject B recalled, 'I like the simplicity of the language here; it is akin to education and coaching philosophy in that you learn by doing but I think nutritionists don't necessarily understand the concept of deliberate practice in that if you want to get better at something then you have to actually practice it and I'm not sure the non-reflective thinkers fully understand the learning process or can document their learning'. Subject F stated, 'I have mainly used audit and reflective practice questions.'. The remaining seven stated that they 'have never seen or used one before' (table 5.9.1).

Question 7: Understanding why the 'theoretical application framework' could be beneficial to the practice of a nutritionist.

When asked to describe why the 'theoretical application framework' could be beneficial to the practice of a nutritionist, one subject (subject 6) did not believe that it would be of benefit because they stated that they 'automatically/sub-consciously do this already'. All other subjects believe that it would be beneficial, with subject 2 citing, 'Yes, definitely when mentoring others and getting them to reflect and document their learning i.e., tell me what you want to learn and why, how you are going to learn it, how are you going to embed it, how are you going to reflect on it and is it working?' (Table 5.9.2).

Table 5.9.1 Exploring the different types of theoretical application frameworks nutritionists have used.

| | |
|----------------|---|
| SUBJECT | What types of frameworks have you used |
|----------------|---|

| | |
|----------|------------------------------------|
| 1 | Have never seen or used one before |
|----------|------------------------------------|

| | |
|----------|---|
| 2 | I like the simplicity of the language here; it is akin to education and coaching philosophy in that you learn by doing but I think nutritionists don't necessarily understand the concept of deliberate practice in that if you want to get better at something then you must practice it and I'm not sure the non-reflective thinkers fully understand the learning process or can document their learning |
|----------|---|

| | |
|----------|------------------------------------|
| 3 | Have never seen or used one before |
|----------|------------------------------------|

| | |
|----------|------------------------------------|
| 4 | Have never seen or used one before |
|----------|------------------------------------|

| | |
|----------|------------------------------------|
| 5 | Have never seen or used one before |
|----------|------------------------------------|

| | |
|----------|--|
| 6 | I have mainly used audit and reflective practice questions |
|----------|--|

| | |
|----------|------------------------------------|
| 7 | Have never seen or used one before |
|----------|------------------------------------|

| | |
|----------|------------------------------------|
| H | Have never seen or used one before |
|----------|------------------------------------|

| | |
|----------|------------------------------------|
| 9 | Have never seen or used one before |
|----------|------------------------------------|

Table 5.9.2 Understanding why the 'theoretical application framework' could be beneficial to the practice of a nutritionist.

| SUBJECT | Why would this framework be useful? |
|---------|---|
| 1 | Yes 100% |
| 2 | Yes, definitely when mentoring others and getting them to reflect and document their learning i.e., tell me what you want to learn and why, how you are going to learn it, how are you going to embed it, how are you going to reflect on it and is it working. |
| 3 | Yes |
| 4 | Yes, it could be beneficial |
| 5 | If I could work out a more qualitative way to rank myself then yes, otherwise I would find this hard |
| 6 | No because I automatically/sub-consciously do this |
| 7 | Yes, it could be beneficial |
| 8 | Yes |
| 9 | Yes |

Question 8: Perceived barriers that nutritionists think might prevent both the 'effectiveness checklist' and the 'theoretical application framework' from being applied in the field.

When asked to outline any barriers that might prevent both the 'effectiveness checklist' and the 'theoretical application framework' from being applied in the field, the responses ranged from, 'Whether a line manager wants to buy into the process with you or not', to, 'the term effectiveness does not resonate as strongly with me as reflection or performance profiling.' Three of the subjects didn't not perceive any barriers. All responses can be seen in table 5.9.3.

Question 9: What aspects regarding the 'theoretical application framework' could be improved in order to be beneficial to the practice of a nutritionist.

When asked to outline any aspects regarding the 'theoretical application framework' could be improved in order to be beneficial to the practice of a nutritionist, the responses ranged from, 'Start with step 1 and get the effectiveness checklist as detailed as possible to allow for more specific development plans and then develop a reflective learning log to help practitioners become really aware of how to track and document their learning' to 'If this was brought into and formalised into the appraisal process'. Further thoughts from the subjects who completed the questionnaire are exemplified in table 5.9.4.

Table 5.9.3 Perceived barriers that nutritionist think might prevent both the 'effectiveness checklist' and the 'theoretical application framework' from being applied in the field.

| SUBJECT | Barriers |
|----------------|--|
| 1 | Whether a line manager wants to buy into the process with you or not |
| 2 | The term effectiveness does not resonate as strongly with me as reflection or performance profiling |
| 3 | None - simple solutions that could be easily implemented |
| 4 | Not necessarily a barrier, but could a peer or mentor also fill this out to assess the accuracy of what you think your development areas are, and what they actually experience and see in your work |
| 5 | My own self-evaluation |
| 6 | effectively storing and revisiting. I like the term used 'learning experience' rather than just events and to make this effective it needs to be fully integrated into plans and PDRs etc |

Table 5.9.4 What aspects regarding the 'theoretical application framework' could be improved in order to be beneficial to the practice of a nutritionist.

| SUBJECT | Areas of improvement |
|---------|--|
| 1 | The how to do each section. so ok, I need to immerse myself, how is this done, what does it look like? |
| 2 | Start with step 1 and get the effectiveness checklist as detailed as possible to allow for more specific development plans and then develop a reflective learning log to help practitioners become aware of how to track and document their learning |
| 3 | Immersion may be difficult in certain environments however it depends on (1) what it is and (2) your specific environment. |
| 4 | Not necessarily a barrier, but could a peer or mentor also fill this out to assess the accuracy of what you think your development areas are, and what they experience and see in your work |
| 5 | Specific examples of what is deemed good / bad maybe? |
| 6 | If this was brought into and formalised into the appraisal process. One of the issues is often people do not full recognise what CPD is and only think it is a course or a workshop. But it is much broader than that. |

Question 10: Further comments

When asked for any further comments, two subjects noted the following thoughts, 'Very interesting especially for people more self-aware than me' and 'I think trying to maximise CPD impact is important, but you do not always know when the learning will be used or impact and finally; 'I think trying to maximise CPD impact is important, but you do not always know when the learning will be used or impact as a lot of people's views on CPD is very narrow'.

5.7 Discussion

The primary aim of this study was to explore and understand how performance nutritionists who practice within elite sport assess their effectiveness and to evaluate the suitability of an 'effectiveness checklist' for practitioners. The initial questionnaire completed by the subjects was a baselining exercise used to understand more about the CPD choices and PDR process undertaken by performance nutritionists. Although we interviewed three different levels of performance nutritionists (previously outlined in table 2.1), it was interesting to note common experiences regarding CDP choice and subsequent evaluation. For example, when responses were agreeing one way (i.e., 3 participants in agreement) they were from participants spread across various levels of practice which could suggest that the approach to self-evaluation and CPD is similar throughout the industry. It was also interesting to gather the thoughts and perceptions captured via the questionnaires regarding the effectiveness checklist and application framework. With regards to self-assessing their effectiveness, all the subjects stated that they all carry out some form of self-assessment. However, the methods used to assess effectiveness were varied amongst the group and in some cases an amalgamation of various techniques would be adopted. Similarly, all subjects undertake an annual PDR at least once per year, with the common methods of review being a formal meeting with their line manager (table 5.3), which would appear to be the standard process for a PDR.

Continuing professional development has been defined as an ongoing professional activity in which a practitioner identifies, undertakes, and

evaluates learning appropriate to the maintenance and development of the highest standards of practice within an evolving scope of practice (Gawugah 2011). Regarding the CPD choices of performance nutritionists, it was encouraging that all nutritionists undertake CPD at least once per year (figure 5.5 and 5.6 respectively). An interesting feature of this study was to identify how nutritionist go about identifying their CPD experiences. Although all subjects undertake annual CPD, there appears to be no formal process used to identify CPD choice, with only one subject recording that their CPD choices are linked to areas of development identified through a PDR process (table 5.4 and figure 5.8 respectively). This is contrast to other healthcare professions where a reflection on future learning needs, using a PDR, is explicitly required by several bodies such as The General Chiropractic Council, the General Dental Council, the General Medical Council and the General Optical Council where planned learning activities constitute key elements of a PDR (Karas, 2020).

Furthermore, other healthcare professions outline the critical role of CPD in supporting delivery and considered essential in to ensure effective health care delivery, improve outcomes in health care settings (Sachdeva, 2016).

According to Sachdeva (2016), distinct CPD strategies are necessary for staff retention, and the participation in CPD programs can be encouraged by leveraging the joy of learning, which should drive physicians and surgeons to strive continually to be the best in their professional work. This could suggest that a more formalised approach to both self-assessment and CPD identification is worthy of consideration for performance nutritionists and could encourage a greater sense of investment.

Similar findings were stated in a report exploring the effectiveness of CPD by Schostak (2010). They state that for CPD to be effective it must address the needs of individual clinicians, of the populations they serve, the organisations within which they work as well as broader system. Furthermore, they found that staff members identified their annual appraisal and development plan as key determinants of effective CPD choice, with experiential learning opportunities being the preferred choice of event. This suggests that if nutritionists were to link CPD with individual PDR it could lead to greater engagement and make the selection of the CPD more specific to their needs. For nutritionists, this type of approach could promote more better application of knowledge into practice. Our findings shown that when asked to describe how nutritionists currently apply, implement and embed what they have learned from a CPD experiences (table 5.6), the vast majority demonstrate some sort of individual strategy where apply their learning back into the field of practice, although the process of doing so varies for everyone. However, a recent literature claims that a gain in knowledge does not necessarily result in a change in behaviour by the clinician (Karas, 2020), suggesting that knowledge application could require attention. The requirement for effective CPD reflection and application into practice has been acknowledged by the UK health system who have recently acknowledged the importance of being a reflective practitioner and that all the regulators require or suggest some form of documented reflection and action plan (Karas, 2020).

Although all nutritionists participate in annual CPD, only 4/9 participants said that they would always carry out a review or evaluation of what they learned, whereas 2/9 stated that they will sometimes review, and 3/9 participants

stated that they will never carry out a review (figure 5.5), with no formal process used to facilitate it. It is unclear why the methods of CPD evaluation are varied amongst our participants, but this is congruent with the report by Schostak (2010) who found that employees methods of CPD evaluation ranged from 'nothing' and "no formal methods" through to 'evaluation forms' and "an open culture encouraging feedback in general".

A secondary aim of this study was to gain feedback on the potential use of a 'theoretical application framework' and 'effectiveness checklist' may be used as a personal development tool for practitioners. The data indicated the proposed effectiveness checklist could be of value as most participants said they have never used anything like it before (figure 5.7 and table 5.7 respectively) with all nutritionists expressing various benefits of the checklist to their practice (table 5.8). However, some improvements to the checklist could be made such as, 'it could be better if it is completed by client not practitioner '(see Table 5.9 and 5.9.3 respectively).

Similarly, our findings suggest that the theoretical application framework could be of value given that most participants said they have never used anything like it before (figure 5.8 and table 5.9.2 respectively) with only one nutritionist expressing various benefits of the framework to their practice (table 5.9.2).

This in is contrast to the findings of Schostak (2010) who indicated the extent to which the engagement with CPD was the opportunity to reflect on practice and to fill identified knowledge or skills gaps, and effective CPD should involve both "learning" and 'knowing both the "why" and the "how" and to put learning into practice. Potential barriers were highlighted by our participants,

that may prevent the framework from being successfully applied and would require further attention before using in the field (table 5.9.3 and 5.9.4 respectively).

In consideration, the effectiveness checklist and application framework proposed in our study could provide the ideal platform for nutritionist to determine knowledge gaps and a mechanism for self-reflection and action. However, it would be prudent to suggest that further work may be required to determine the potential impact of these tools before implementation in the field.

5.8 Conclusion

Continued professional development and personal development reviews are commonplace with the nutritionist who participated in this study. However there appears to be inconsistency regarding how CPD choices are identified with the majority not deriving from or being part of an ongoing personal development plan. In addition, the findings suggest that CPD is not routinely evaluated and embedded back into practice consistently. In consideration of the above, along with most of our subjects stating that they have never use a specific checklist to self-assess their ability, nor use a formalised process to evaluate and apply learning suggest that the proposed effectiveness checklist and theoretical application framework could be of benefit to performance nutritionists of all levels. However, before implementation some refinement may be required to ensure that the competencies capture a nutritionist's effectiveness more accurately along with a pilot study where the process can be applied with nutritionists back in the field.

6: General Discussion

6.1 Introduction

This chapter includes a discussion of the major findings regarding the proposed question 'What makes an effective performance nutritionist within elite sport? This discussion will relate to the relevant literature and conclude with a discussion of the limitations of the study and brief summary of areas for future research.

The purpose of this qualitative research was to investigate what makes an effective performance nutritionist working within elite sport, to understand the athletes and practitioners' experiences when working alongside a performance nutritionist, and to explore if the development of an effectiveness checklist with a model to improve practitioner competence would be beneficial. In addition, this has led to creation of theoretical performance nutrition-coaching model. Moreover, I have explored the academic route to becoming an elite sport performance nutritionist from undergraduate to postgraduate level, how senior practitioners continue their professional development during employment, and to investigate the development of a performance nutrition specific coaching model.

From the perspective of performance nutritionist who participated, the results indicate that NTS are considered important for sports and exercise nutritionists, which is supported by the inclusion of NTS at most undergraduate and post graduate degree courses in the UK. Furthermore, they would welcome the creation of a coaching framework that is specific to the role.

The theory for understanding the research question was multi-dimensional, and comprised of the following themes; (a) traits of effective/non-effective performance nutritionists, (b) the role of the sports and exercise nutrition register, (c) opinions of the development of a coaching framework specific to performance nutritionists, (d) importance of non-technical skills vs technical skills, (e) the on-going training of performance nutritionists, (f) how to improve the training of performance nutritionists, (g) the desired skills profile for effective performance nutritionists, and (h) identification of United Kingdom degree courses. Some of these factors relate primarily to the individual, some to the education system, some to the wider sports science industry, some to the elite sport environment, and some are a combination of all. All these factors help contribute to a better understanding of what makes an effective performance nutritionist within elite sport. Whilst career path and experiences of the subjects interviewed for this research may vary for everyone, each of the themes were prominent factors in understanding the research question and may differ between everyone based on their experience and personal journey. The results of which are presented in the results chapter 3, 4 and 5.

6.2 Interpretation of the Findings

6.2.1 Common traits

According both service users and providers, the findings from this study show that the top five effective traits of effective performance nutritionist are, (1) ability to flex communication style, (2) good strategist, (3) can influence behaviour, (4) builds good relationships, and (5) trustworthy (figure 6). It is encouraging our cohort considered the ability to flex communication style was the most important trait, as this aligns with the SENR who state that

professional sport and exercise nutritionists require proficiency in communication and education about their subject to be able to give and formulate advice that is appropriate and relevant to an individual or group (SENR 2019). These traits are similar to those identified by (Foulds et al., 2019) in a recent study investigating perceptions of high-performance athletes' relationship with strength and Conditioning coaches. The primary purpose of this study was to investigate high performance athlete perceptions of strength and conditioning coaches, specifically, their character traits, the effective behaviours that display these traits, and how these relationships were fostered. The study participants included 12 high performance athletes (6 females and 6 males; mean \pm SD age, 29 ± 9 years), ranging from state level representatives to Olympic medallists, from a range of sports were interviewed. Using the 3+1 C's model (Jowett and Poczwardowski, 2020) as a framework and based on contemporary research on coach–athlete relationships and best practice of strength and conditioning coaches (Felton and Jowett, 2013), a semi-structured, open-ended interview guide was developed. From the deductive analysis, 56 raw data themes were identified relating to athletes' perceptions of effective S&C coach behaviours. In comparison to our study, they identified similar themes (personality traits, and effective communication). Their findings highlighted the importance of building of positive coach–athlete relationship for the athlete, with transferable non-technical skills integral to this, and is congruent with our findings. Our study indicated that behaviour change and influencing skills were of high importance to enable performance nutritionists to maximise their effectiveness with athletes and colleagues alike. This theory has been demonstrated by

(Costello et al., 2018) who's case study illustrated the use of contemporary behaviour change science to design and implement an effective nutritional intervention within professional rugby league. They used an eight-step intervention to target athlete consumption of a high-quality dietary intake to achieve an overall body mass increase of 5 kg across a twelve-week intervention period. The COM-B model was used to identify population-specific intervention functions, policy categories, behaviour change techniques and modes of intervention delivery. The COM-B model describes that changing the likelihood of any behaviour of an individual or group or population involves changing one or more of the following: capability, opportunity, and motivation relating to either the behaviour itself or behaviours that compete with or support and individual (Figure 3). The resulting intervention was successful, increasing the average daily energy intake of the athlete, which corresponded in a 6.2 kg body mass gain. Speaking from experience as an applied performance nutritionist, body composition interventions would require significant shift in eating behaviour it is often a challenge to change behaviour from their habitual eating patterns. This suggests that incorporating well considered behaviour change science into practice provides sport nutrition professionals with an effective and practical stepwise method via which to design and implement effective nutritional interventions for use within high-performance sport.

6.2.2 Non-technical skills training

Our data indicates that strong NTS (communication style, good strategist, can influence behaviour, build relationships and trust) are just as important as strong high-technical skills (figure 4.1). However, an interesting observation

form our results is the lack of non-technical skills taught to our subjects at undergraduate level, with the greatest emphasis on NTS training commencing during their employment via continuous professional development (figure 8). This could suggest that during their studies, degree programmes may have believed that strong academic skills were the most important area to develop, and the onus being on the individual and their employer to develop non-technical skills during employment. This may also be reflective of the demographic of the nutritionists (table 2.1) who took part in the study who most likely underwent undergraduate training several years ago when applied placements and NTS training were not commonplace amongst degree programmes, whereas several today's degree programmes offer NTS and work placements as part of their student offer (table 3.1). The NTS training that they did receive whilst studying was largely self-sought shadowing experiences and one-off motivational interviewing workshops at undergraduate level, with only two participants undertaking a work placement as part of their master's programme (figure 4.4). It should be mentioned that these 2 participants are classified as junior practitioners and may have benefited from commencing their degree at a time where placements were becoming more prevalent. However, this is an assumption as we did not ask any of the nutritionist what year they graduated from university during the interview process, and this should be considered as a study limitation when evaluating these findings.

In comparison, the healthcare profession has recognised the importance of NTS. According to the Manual of Simulation in Healthcare (2015), NTS such as decision-making, situation awareness, leadership, and teamworking

underpin the technical skills required for safe and efficient practice. NTS have been identified for specific clinicians such as NTS for anaesthetists, anaesthetic practitioners, surgeons and scrub nurses, where simulation facilities provide an ideal setting for examining the behaviours related to non-technical skills.

A similar scenario was observed in the healthcare setting, where NTS deficits have been recognised as a major cause for error in urological surgery, there is an increasing interest in their training and evaluation and a growing number of training courses are emerging and some NTS curricula have also been created. According to (Griffin et al., 2019) in the last decade, NTS have emerged as a vital area for improvement within healthcare, where a lack of NTS is a major cause for error, causing 86% of adverse events in open surgery. A UK-based evaluation of skills survey found that only 41% of urological trainees felt that their NTS training was sufficient for their first day of practice compared to 78% of specialists, with an even lower 25% of trainees believing their current NTS training was sufficient (Aydin et al., 2016), (Griffin et al., 2019).

6.2.3 Work placements

As displayed in figure 8, our data shows that all the performance nutritionists whom we interviewed sought and undertook some level of self-directed, immersive learning to gain essential real-world experiences. This indicates that autonomously seeking learning experiences over and above what is provided during university is key indicator of future success in the field.

At the time of writing this thesis, sports science is the most popular degree course in the United Kingdom, with 82 institutions offering 115 specialised

routes. Estimates show that somewhere between 9000 and 15000 students will exit sports science undergraduate courses each year. Global estimates put this figure between 75000 to 100000 sports science students at undergraduate level. Added to this, the inflationary increase of more and more students undertaking a master's course in this area, means that by the time students graduate they would be one of 1200 master's students graduating each year in the UK (Ingham, 2019). The ferocity of this competition for employment further emphasises the need for universities to offer rich and immersive learning experiences that are complemented by well taught modules where non-technical skill can be attained by students. Ingham, (2019), goes on to explain that 'Ideally a degree course will offer a work placement, but students will need to go further. The icing on the cake will be if a course requires students to not only learn about a theory but require students to apply it to a real person or population in a real-world setting, before then processing it by either writing it up, discussing or presenting it for your assessment.' Although this statement makes sense in theory, it is difficult to understand the practicalities of applying this and more work would need to be done explore the feasibility if this in more detail.

Most of the established universities in the UK now run a form of sports nutrition placement/internship across a range of sports and disciplines, as part of their curriculum. (Sleep and Reed, 2006) found that sport science students who undertook work placements further developed their "soft skills," such as communication, interpersonal, awareness of work culture, and self-confidence. However, care must be taken when students undertake these experiences as previous research has reported that graduates see internships

as a “career taster” rather than an opportunity to develop a range of skills (Malone, 2017). This could be counteracted by the SENR who could set a criterion where relevant placements be benchmarked against, and those who undertake these ‘SENR endorsed’ internships could gain ‘credits’ that count towards portfolio evidence when applying for graduate SENR membership. This is supported by Ingham (2019), who provides an insightful personal view of what it takes to work as a practitioner within elite sport. The author highlights some of the key moments along his career pathway in which he has worked with the likes of Sir Steve Redgrave, Dame Jessica Ennis-Hill, and Kelly Sotherton. The book describes numerous instances where he was presented with tough scenarios in which he had to use his scientific background and some personal intuition to solve. When working with Sir Steve Redgrave, he was told, in no uncertain terms, that if he didn’t help make him faster and stronger, then he wouldn’t have a place within the support team. One thing that stands out is the author’s openness about making mistakes throughout his career. However, as he points out, it is the ability to learn and adapt to these mistakes that will ultimately improve sport scientists as practitioners working with athletes. This is something I believe could be beneficial to the development of sport and exercise nutritionists and can only be truly experienced working out in the field with real athletes and coaches rather than in hypothetical classroom-based scenarios. I appreciate that this could be challenging for university programmes to include adequate placement or work experience opportunities within their courses, and each university may will have their own perspectives, however a review of the SENR course accreditation criteria could play a role in facilitating this. For

example, courses who wish to achieve SENR status could be asked to evidence their industry specific placement opportunities in order meet the SENR approval criteria.

6.2.4 Coaching Skills

The notion that good coaching skills are important in behavioural change and influencing of individuals is commonly accepted. Previous research has shown sports coaches can significantly influence athletes through their behaviours, communicative actions, and environments they create (Felton and Jowett, 2013). A positive coach–athlete relationship is acknowledged to promote participation, athlete satisfaction, self-esteem, and improved performance (Jowett and Poczwardowski, 2020). However, little research on coach-leadership has been conducted in the specific context of sports science settings. Our research indicated that coaching skills are an important part of a nutritionist’s skill set, however the nutritionists whom we interviewed stated that they did not receive any structured training to support or enhance these skills as part of their studies or during their employment. This is an interesting point, and it could suggest that senior nutritionists may require additional coaching training as part of their CPD, and aspiring performance nutritionists who are currently undertaking a degree in this field could benefit from the integration of work placement opportunities and the greater emphasis on behavioural and coaching principles being taught as programme modules. There appears to be a shift of emphasis to this area at both undergraduate and post-graduate nutrition level, where some of today’s courses include coaching and behavioural science modules within their curricula (figure 3.1 & 3.2). As indicated in chapter four, our data found that the majority of the

nutrition related undergraduate (69%) and postgraduate (58%) degree programmes offered students the combination of work placements and non-technical skill training. Although this is an encouraging statistic, it is unclear whether these taught modules will translate into the attainment of applied coaching and behaviour change skills. Further analysis of this data indicates that only one undergraduate course includes a specific coaching module within their programme, with only three courses focusing on behaviour change theory. Moreover, only one postgraduate programme appears to offer behaviour change science as a core module. In accordance with this, a quote from Vern Gambetta who has worked as a coach of professional athletes and teams in several high-performance sports, challenges sports science graduates' ability to coach effectively and poses the following question to modern sports science practitioners, *"But can you coach? You have graduated with a degree in exercise science, you got your masters. You have done three internships with professional teams. You have every certification offered. Now what? It begs the question can you coach? Have you ever done any real coaching? Have you ever gotten your hands dirty? This is what I am seeing today. Young men and women with no idea of what coaching is. How to coach people not numbers. How to organize to teach effectively. Coaching is not an industry; it is a profession. Where are the professionals? All the theory is important, but it is trumped by practice. Can you apply it to make the athlete better and give the athlete a good competitive experience?"* (Gambetta, 2020).

In consideration of the above, it could be difficult to ascertain a difference between being a nutritionist who used effective coaching techniques and a

nutritionist who is a 'coach'. It would be interesting to explore in further detail the nutritionists who have adopted, and apply, these coaching principles and determine whether these skills enable them to have a greater influence with the athletes they work with. The need for strong coaching skills, underpinned by an individual coaching philosophy is often cited as a valuable set of skills that a practitioner should possess. The coaching philosophy is quite focused on just the coach and athlete roles in the training and performance environment; however, they can also extend to expectations around attitudes and behaviour. Having such philosophy is not unique to coaches, as many applied practitioners develop their practice (Kyndt, 2012).

This would seem to be an important consideration given that none of our subjects have undergone specific coaching education, yet all the nutritionists expressed the opinion that the development of a coaching framework that is relevant to their work would be of benefit to them. These opinions have been listed in table 4.9. Some of the more senior practitioners have attained coaching experiences during their early career and gained coaching qualifications in various sports such as football, snowboarding and rugby. Although these coaching courses are not specific to sports science and the personnel within, it could be assumed that some of the coaching principles and NTS, such as effective communication and translating something complex into simple terms to an individual may have some translational potential to their work as a sports science practitioner in the applied setting. In my experience, this approach has been well received and successful, as evidenced by the high-profile roles that I have subsequently secured in international cricket, professional football, elite level squash and professional

cycling. In each role, I have successfully managed to establish and enhance the performance nutrition service and positively influence the culture through an effective coaching process and collaborative approach with my peers and colleagues. Positive feedback from my colleagues validates my coaching skills and is evidenced by the following statements;

“Your current super-strength is the quality of relationships you have developed. You are both liked and respected due to the way you interact with a wide group of stakeholders. You have a lot of ‘good-bloke’ credibility, which opens many doors for you and enables you to build your circle of influence. Whenever there has been a situation where your style hasn’t landed as well, you have been honest in your reflections and have made steps to approach a situation differently. That is to your great credit”.

“Chris communicates in an easy, honest manner that assists in building open and honest relationships. This allows him to influence his ‘clients’ in a manner of his choosing, either gently cajoling, or indeed being a little more forceful, and he is able to flex his style accordingly”.

Without this background in football coaching, it is my belief that I would not have been adequately equipped with the necessary coaching skills to enable me to maximize my work as a practitioner.

At the time of writing this thesis, we are unaware of any coaching frameworks or principles that have been developed to suit the role of sports and exercise nutritionists. Whereas dietitians are trained and equipped with literature and models to help them carry out structured consultations that are specific to

their environment, performance nutritionists do not have an articulated and validated framework to follow that is directly related to the unique, high performance-sporting environment.

This may result in performance nutritionists attempting to adapt and follow behavioural change and NTS models that are directed at dietitians and other healthcare professions. However, these may have limitations and their appropriateness to the day-to-day practice of a performance nutritionist should be questioned. In the absence of a set structure or framework to work from, performance nutritionists may rely on their own ability and intuition when carrying out consultations with athletes in the most effective way. It could be argued that when performance nutritionists carry out the structured, linear process that dietitians and other healthcare practitioners may follow, then their ability to have an impact and influence an athlete could be diluted, and this clinical approach may not be suitable to adopt within the fast-moving elite sports environment. This may suggest that there is a gap in the training of performance nutritionists that may inhibit their effectiveness, and the requirement for integrated NTS training within a university's curriculum may help bridge this gap.

6.2.5 The role of the Sports and Exercise Nutrition Register

The SENR demonstrates commitment to the promotion of high standards of education and services in sports and exercise nutrition. SENR have commenced a programme of accreditation for undergraduate and postgraduate degrees in Sport and Exercise Nutrition. Any student successfully graduating from an SENR accredited course will be automatically eligible to join the SENR Graduate Register. For universities who desire their

course to be approved by the SENR, they must comply with the SENR requirements, and education programmes need to meet certain standards. The undergraduate programme approval process recognises that the course programme has been mapped to the SENR knowledge competencies at an introductory / basic level. Thus, whilst the undergraduate degree would need to be supplemented by an appropriate postgraduate qualification for an individual to be accepted onto the Graduate Register, SENR approval denotes that the undergraduate element of SENR Graduate status has been achieved through this programme of study (SENR, 2019). The list of approved postgraduates (n=7) and undergraduate courses (n=5) has been presented in table 4.3 and 4.4 respectively of results chapter four. Leeds Beckett University was the first course to be accredited by the SENR. According to their website (2020), their course will provide academically challenging, vocationally relevant and underpinned by evidence-based practice, where students will gain a thorough understanding of the multidisciplinary aspects of sport and exercise nutrition. They also provide nutrition workshops and applied sessions to provide opportunities to develop practical skills and application of expertise. Additional practical experience can be gained alongside academic study, where students are able to apply for an internship in an applied sport science setting, working with elite athletes under the guidance of a registered SENR practitioner. This is a positive step for aspiring and existing sports and exercise nutrition professionals as it could help improve the standards of practice across the board.

The opinions on the SENR from the perception of the nutritionists who took part in this research have been listed in table 10. This shows that nutritionists

believe the most positive and beneficial aspects of being associated with the SENR is the quality assurance that it provides sports and exercise nutritionists, through setting minimum standards of practice for the industry. However, some of the perceptions of the SENR challenge the value of the SENR. Our analysis indicated that some of our participants do not believe that membership offers any more value other than access to a professional network and indemnity insurance. The data also shows that SENR is perceived to be 'not that important' as two of the nutritionists that we interviewed are not currently registered yet hold successful roles in performance nutrition (table 4.1.4). Another interesting finding was several subjects did not feel that being part the SENR will upskill them or offer any opportunities to improve their skills or knowledge, nor does the accreditation process do anything to assess an applicant effectiveness in the field. However, the main purpose of the SENR is to quality assure and protect the discipline rather than to upskill its members either technically or non-technically. However, support from the SENR across these areas would be welcomed. This could be achieved by the SENR reviewing their competency framework and exploring ways in which NTS can be assessed during the SENR application process alongside a mentorship scheme to support graduates when making the transition from trainee to practitioner. This suggestion is explained in more depth in section 6.2.6. Moreover, table 4.5 illustrates examples of how performance nutritionists currently develop their technical and NTS during employment. It is worth noting that the SENR do offer endorsed CPD events, SENR portfolio development days and SENR / BDA sports nutrition group showcase events.

In contrast of the above, the BASES position stand on graduate internships (2013), state that BASES recognise the value of quality internships that are of mutual benefit to the sport and exercise science graduate and employer. Graduate internships provide practical experiences to individuals with a degree looking to develop the relevant knowledge and skills required to enter a particular career. Furthermore, Supervised experience is a programme run by BASES with a purpose to provide support for probationary sport and exercise scientists. It is considered a key steppingstone to becoming an accredited sport scientist. Supervised experience requires a minimum of two years whereby the candidates are expected to provide and document 500 hours of sport science delivery in their chosen discipline, of which 250 are supervised. In conjunction, it is expected that the candidate meets and documents regular case study meetings with their supervisor and engages in regular reflective practice. On completion of supervised experience, candidates will have provided documented evidence to demonstrate competency in 10 core proficiencies; scientific knowledge, technical skills, application of knowledge and skills, understanding and use of research, self-evaluation and professional development, communication, problem solving and impact, management of self, others and practice, understanding of the delivery environment, professional relationships and behaviours.

6.2.6 The effectiveness checklist and application framework

The primary aim of this section of the research was to explore and understand how performance nutritionists who practice within elite sport evaluate their effectiveness and to evaluate the suitability of an 'effectiveness checklist' for

practitioners. Although we interviewed three different levels of performance nutritionists (table 2.1), it was interesting to note common experiences regarding self- assessment, CDP choice and subsequent evaluation. It is unclear why these similarities exist, however given that the subjects were recruited from similar institutions could be a factor.

All subjects stated that they all carry out some form of self-assessment. However, the methods used to assess effectiveness were varied amongst the group and in some cases an amalgamation of various techniques would be adopted. Furthermore, although all Individuals carry out some form of self-evaluation, the outcome of which does not appear to link directly into their annual PDR or inform CPD choices.

Continuing professional development has been defined as an ongoing professional activity in which a practitioner identifies, undertakes, and evaluates learning appropriate to the maintenance and development of the highest standards of practice within an evolving scope of practice (Gawugah 2011). An interesting feature of this study was to identify how nutritionist go about identifying their CPD experiences. Although all subjects undertake annual CPD, there appears to be no formal process used to identify CPD choice, with only one subject recording that their CPD choices are linked to areas of development identified through a PDR process (table 5.4 and figure 18 respectively). This in contrast to other healthcare professions where the critical role of CPD in supporting delivery is receiving more attention, where CPD is considered essential in efforts to ensure effectiveness of new models of health care delivery, improve outcomes and value in health care settings (Sachdeva, 2016). According to Sachdeva (2016), distinct CPD strategies are

necessary for staff retention participation in CPD programs can be encouraged by leveraging the joy of learning, which should drive physicians and surgeons to strive continually to be the best in their professional work. This could suggest that a more formalised approach to both self-assessment and CPD identification is worthy of consideration.

Linking CPD strategies intrinsically to individual development could make CPD identification more relevant and specific. As previously mentioned, our research identified a potential disconnect between CPD choice and PDRs, suggesting that the current process used by many of the nutritionists who participated may not be optimal. This could be improved by the frequency by which a PDR is undertaken. Seven out of nine participants said that they participate in an annual PDR within their role 1 x per year, 2/9 participants said two times per year and 1/9 participants said more than two times per year (figure 5.4). It is unclear whether if a PDR was to be carried out at least two times per year, then individual development areas to that inform richer and more immersive CPD could be more frequently identified and evaluated more specifically, as per the process outlined in the theoretical application framework in figure 5.2. In accordance with this, the use of this framework concurrently with the effectiveness checklist could offer a link to more meaningful CPD choices. However, it is unclear why a disconnect currently exists between CPD and PDRs as this was not explored as part of the questionnaire, furthermore we did not explore any barriers to participating in CPD in the questioning.

In a similar report exploring the effectiveness of CPD by Schostak (2010), through a combination of questionnaires and interviews they found that staff

members identified their annual appraisal and development plan as key determinants of effective CPD choice, with experiential learning opportunities being the preferred choice of event. They also indicated that the extent to which the engagement with CPD was a consequence of interest in the subject matter, the opportunity to reflect on practice and to fill identified knowledge or skills gaps.

This research could indicate that the use of the theoretical framework could be a novel approach to practitioner development. After the initial baselining exercise, we presented each nutritionist with the proposed effectiveness checklist and application framework for their review. The majority of our subjects said they have never used anything like the effectiveness checklist before (figure 5.9 and table 5.7 respectively) with all but one nutritionists expressing various benefits of the checklist to their practice (table 5.8), although some improvements to the checklist could be made to improve its specificity (see Table 5.9 and 5.9.3 respectively). Similarly, the data indicated that the theoretical application framework could be of value given that 67% of our subjects said they have never used anything like it before (figure 20 and table 5.9.1 respectively) with all but one nutritionists expressing various benefits of the framework to their practice (table 5.9.2) although some barriers were highlighted that may prevent the framework from being applied in the field. Such as, *“Not necessarily a barrier, but could a peer or mentor also fill this out to assess the accuracy of what you think your development areas are, and what they actually experience and see in your work”, and another barrier being, ‘my own self-evaluation’*. (Subject D & E respectively, table 5.9.3). This indicates that the success of the self-assessment and application framework

would require input from a mentor/line manager to add more rigour to the process.

As with all new concepts, there is always scope to improve. Areas of improvement regarding the checklist and application framework suggested by our subjects included, *'If this was brought into and formalised into the appraisal process. One of the issues is often people do not full recognise what CPD is and only think it is a course or a workshop. But it is much broader than that.'* (Subject G, table 5.9.4). This was a very interesting reflection and could raise the question regarding the level of understanding and appreciation that nutritionists and other sports science practitioners have regarding CPD and how to get the most out their experiences.

This is supported by the variability how nutritionist review and embed new learning. Although all subjects participate in annual CPD, only 3.8/9 would carry out a review or evaluation of what they learned, a further 3.8/9 stated that they will sometimes review, and 2.5/9 stated that they will never carry out a review (figure 5.7), with the methods used to review or evaluate their learning being varied with no formal process used to facilitate it (table 5.5).

When asked to describe how nutritionists apply, implement and embed what they have learned from a CPD experiences (table 5.6), the vast majority demonstrate some sort of individual strategy where they look to apply their learning back into the field of practice, although the process of doing so varies for everyone. Again, this could suggest that there is a different level of understanding regarding CPD amongst our group, however further research would be required to understand this in more detail.

This is where the theoretical application framework could add value and facilitate more focused partitioner mentorship and support the on-going application of newly acquired knowledge. This concept is supported in the education setting where a similar approach was adopted by schools in secondary education who considered teacher mentorship as a vital, yet often underutilised strategy within professional development initiatives (West, 2002). They used a 'continual learning model', where the level of mentorship provided to teachers was concurrent with the career stage and relevant to the experience of the teacher. This provides structure and a clear development pathway that is bespoke to the teacher, where they can track their development from baseline.

However, it must be acknowledged that at present it is difficult to ascertain the effectiveness of the subjects' current strategies around CPD choices, and effectiveness evaluation and the impact they have on their development as we did not explore this within our research, which is a limitation in this study. However, in consideration of the findings, it would suggest that the CPD identification and evaluation in general maybe lacking structure and could benefit from an audit of their methods.

6.2.7 Bridging the gap

The SENR have recognised that non-technical skills are an important tool for performance nutritionist to possess. This is evident in the accreditation criteria outlined in the SENR competency framework that requires registrants to demonstrate effective communication skills (Appendix 5). The criteria require registrants to "Demonstrate proficient communication skills to elicit, interpret,

integrate, assess and apply relevant information to provide safe and sound individualised advice". However, the criterion does not require evidence to support a practitioner's ability to effectively coach and influence behavioural change. This could lead to a review of the SENR accreditation current competency framework where more emphasis is placed on the assessment of an individual's non-technical ability, where CPD opportunities could be identified to help the applicant improve areas that the SENR application process may flag as inadequate, as exemplified in table 20. The competencies illustrated in this proposed checklist have been selected based on the perceptions of effective practitioners identified by subjects interviewed for this research. Should the SENR carry out a review of their competency framework, it could be informed by the data expressed in figure 4.1, alongside tables 4.1.3 and 4.1.4, where our subjects outlined the skills profile of future performance nutritionists. These findings demonstrate a relatively broad and balanced set of skills that are considered to make the most effective performance nutritionists who work in elite sport. It should be noted that these skills & traits are based solely on the opinions of our participants. More detailed research could be conducted in this area with a much larger cohort to explore a broader perspective of performance nutritionists' views before any new competencies be developed.

In consideration of the findings from this present study alongside relevant literature, it is plausible to suggest that some gaps may exist in the NTS training of sport and exercise nutritionists. The example by BASES could serve as a model for the SENR to adopt and adapt, to help better prepare students for full-time employment, and potentially provide a platform to upskill

and assess a registrant's NTS, such as effective communication, behaviour change and coaching acumen. This could further enhance the SENR's reputation as the industry standard and guardian of the sports and exercise nutrition profession. This could be achieved through improved work placement opportunities, whilst influencing the curricula of sport and exercise nutrition degrees to meet the competency framework for successful SENR accreditation. Furthermore, the key traits and desired skills identified for success by our study participants could pave the way for the creation of the 'ideal practitioner profile' to inform a review of the existing SENR competency framework, whilst serving as a reference guide for aspiring and current sport and exercise nutritionists. Finally, this could inform the development of coaching philosophy that is relevant for the sport and exercise nutrition profession.

The development of this framework could be inspired by health professionals across the globe who share the challenges of translating the best available evidence into actual health interventions in a timely way to provide the most effective care and service (Field et al., 2014). The Knowledge to Action Framework is a conceptual framework intended to help those concerned with knowledge translation deliver sustainable, evidence-based interventions.

Knowledge translation has been defined as a process *'that includes synthesis, dissemination, exchange and ethically sound application of knowledge to improve health and provide more effective health services and products and strengthen the health care system'* (Field et al., 2014).

Conceptual frameworks are recommended as a way of preparing for the multiple, dynamic and interactive factors that influence the uptake of evidence

in practice (Eccles et al., 2005). Although the terms conceptual frameworks, theories and models are often used interchangeably, conceptual frameworks are broad and descriptive, whereas theories and models are more specific and amenable to hypothesis testing (Rycroft-Malone, 2004). Conceptual frameworks provide a frame of reference for organising thinking, a guide for action and interpretation. Potential benefits from applying a conceptual framework include making the process of knowledge translation more systematic, with greater likelihood of changed practice and spread of evidence (Eccles et al., 2005).

6.3 Personal reflections

6.3.1 Personal reflections on thematic analysis process

The analysis process was both challenging and rewarding. The biggest challenge related to my lack of experience conducting qualitative research, resulting in nervousness about the quality of the interview transcriptions and theme identification. The early interviews were difficult to navigate as I was 'learning as I went along' that resulted in some relatively short answers from my interviewees. This required self-reflection to seek techniques to ask more open-ended questions, and to use prompts to encourage the subjects to expand their views. However, after this I grew in confidence and found subsequent interviews much more enjoyable with natural flow.

During the transcription phase, which involved me listening very carefully to the recordings, this really helped me 'get to know' and improve my understanding and engagement with the data. This was essential in developing early descriptive codes that led to the final themes.

I enjoyed the later stages of the analysis as I was able to confidently group the various codes together and build a picture that led to the emergence of a story that could be illustrated and discussed for this thesis.

6.3.2 Personal reflections on the research

Football coaching taught me the basic principles to help an individual improve across the following areas; tactically, technically, physically and mentally. The term coaching refers to "the process of training somebody to play a sport, to do a job better or to improve a skill" (Seniuk, 2013). During my time as a football coach, other coaches and I would be encouraged to use 'the guided discovery theory' and to 'build rapport and connect quickly', 'let the game be the teacher', 'be invisible', 'be clear and concise', 'use your personality', 'give good demonstrations', 'dominate the 1v1 situation', 'flex your style', 'think in the now' and 'be an actor' (Partington, Cushion and Harvey, 2014). I found that if these cues were applied consistently, then the players would benefit by learning at their own pace, and we would coach them more effectively. It was apparent that the concepts and processes used when coaching a child to dribble the football past a defender is no different from coaching an experienced athlete to improve their diet.

My current practice as a performance nutritionist utilises similar coaching principles to build adult understanding and appreciation of nutrition and has enabled me to have a greater influence on the athletes that I work with. This approach has been well received and successful, as evidenced by the high-profile roles that I have subsequently secured in international football, international cricket, professional football, elite level squash, and professional cycling. In each role, I have successfully managed to establish and enhance

the performance nutrition service and positively influence the nutrition culture of each 'dressing room' environment from a vague understanding of the discipline to a much broader appreciation of the performance impact of nutrition. I believe that this has been achieved through finding an effective process and a collaborative approach with my peers and colleagues. Having undertaken this research, it is encouraging to discover that my perception that strong NTS are an essential skillset for the most effective performance nutritionists. However, I also believe that an over reliance on these skills could limit the practitioner, as these must be backed up with an appreciation of the need for science (and evidence) to underpin a nutritionist's strategies. This might seem an obvious statement to make, but an on-going commitment to improving both the NTS and technical knowledge requires dedication and hard work.

6.4 Closing thoughts

It is my belief that the most effective practitioners make the most of the opportunities presented to them. By this I mean that those who go onto successful careers at the highest level, are the ones who have had the strongest work ethic, and enough inclination and determination to find their own path, whilst having sought and undertook structured NTS training or work experience placements as part of undergraduate degrees. I also believe that future degree curricular that include specific education regarding behavioural change coaching, alongside rich and immersive work placements that are quality assured by the SENR will unearth talented practitioners and provide a springboard for the most driven students to prosper, and in turn raise the

overall standard of practice within the sports and exercise nutrition industry for years to come.

6.5 Conclusion

Modern day performance nutritionists are working more intimately with coaches and athletes in the field rather than in the consultation room. To be successful in this setting, this requires a high level of soft skills that are rarely published in scientific literature and difficult to measure. These attributes can include communication skills and coaching and leadership abilities, as well as personal qualities such as friendliness, empathy, and optimism (Heckman, 2012). Undoubtedly, they are crucial assets on the road to becoming a successful sports science practitioner. Given the statements to support the importance of strong non-technical skills, such as communication, coaching, and influencing, as key determinants of an effective performance nutrition practitioner, there appears to be a lack of emphasis given to these areas at all levels of development of sport and exercise nutritionists.

Furthermore, continued professional development and personal development reviews are commonplace with the nutritionist who participated in this study. However there appears to be inconsistency regarding how CDP choices are identified with the majority not deriving from or being part of an ongoing personal development plan. In addition, the findings suggest that CPD is not routinely evaluated and embedded back into practice consistently. In consideration of the above, along with the majority of our subjects stating that they have never use a specific checklist to self-assess their ability, nor use a formalised process to evaluate and apply learning suggest that the proposed

effectiveness checklist and theoretical application framework could be of benefit to performance nutritionists of all levels.

Finally, having been underpinned by a coaching background myself, and successfully incorporated these skills into my work as a performance nutritionist, it is my belief that a specific coaching framework may be required for sports and exercise nutritionists who operate within high-performance environments, as current models that have been developed for healthcare practitioners, such as dietitians, may have limited translational potential for direct application to elite sport.

6.6 Limitations

The nature of qualitative research come with several limitations. Research quality is heavily dependent on the individual skills of the researcher and more easily influenced by the researcher's personal biases. This means that rigor is more difficult to maintain, assess, and demonstrate. Another limiting factor is the volume of data gathered can makes analysis and interpretation time consuming. This alongside the researcher's presence during data gathering, which is often unavoidable in qualitative research, can affect the subjects' responses (Anderson, 2010). With this in mind, our study had several limitations. Firstly, there is a risk of bias and subsequent error given the lead author conducted all of the initial screening, all data extraction and synthesis. This was necessary given the limited resources available to support the process. Given the personal journey and background of the researcher, the nature of bias could be related to personal experience and may have led the selection of subjects who had similar views and experiences regarding the

research question. This may also have resulted in bias when extracting data during transcription to suit a desired narrative.

Measures were taken to ensure the data was captured accurately. For example, developing semi-structured interviews to help the interviewer guide the discussion whilst maintaining a natural flow to the conversation without stifling organic content provided by the subjects and allowing participants to demonstrate flexibility in order to articulate their opinions, ideas, feelings and attitudes around the topic area (Sparkes and Smith, 2013). However, we acknowledge there are some issues regarding the use of semi-structured as opposed to structured interviews. Qualitative interviews rely on respondents' ability to accurately and honestly recall whatever details about their lives, circumstances, thoughts, opinions, or behaviours that are being asked about, whilst qualitative interviewing is time & labour intensive (Lusardi, 1996).

Thematic analysis was adopted as it provides a suitable method for identifying, analysing and report themes within the data (Braun and Clarke, 2006). The disadvantages of thematic analysis become more apparent when considered in relation to other qualitative research methods. The lack of substantial literature on thematic analysis, may cause readers to feel unsure of how to conduct a rigorous thematic analysis. A simple thematic analysis is disadvantaged when compared to other methods, as it does not allow researcher to make claims about language use (Braun and Clarke, 2006). While thematic analysis is flexible, this flexibility can lead to inconsistency and a lack of coherence when developing themes derived from the research data (Holloway and Todres, 2003). This should be considered when interpreting the findings of this research.

With regards to study three, it must be acknowledged that at present it is difficult to ascertain the effectiveness of the subjects' current strategies around CPD choices, and effectiveness evaluation and the impact they have on their development as we did not explore this within our research and must be considered to be a study limitation. However, in consideration of the findings, it would suggest that the CPD identification and evaluation in general maybe lacking structure and could benefit from an audit of their methods.

6.7 Future Research

Future research could include a review of the studies which we categorised as using the NTS and the impact they have on practitioner performance in field. This might include a deeper analysis to determine what kind NTS were taught, how they were delivered and how impact was assessed. It would also be interesting to explore the research question posed in the thesis with a much greater number of participants to include the views of current students who are undertaking degrees in sports and exercise nutrition.

Finally, exploring the impact of thermotical coaching framework and other conceptual frameworks, with athletes in terms of behaviour change and impact on performance outcomes would also be worthwhile, as would exploring application of the framework, not just as recipients of services but as key stakeholders in each phase. Based on the findings of this research, a theoretical pathway from education to employment of an elite sports and exercise nutritionist has been illustrated in figure 12.

6.8 Future coaching framework for performance nutritionists

It would be interesting to evaluate the use of a performance nutrition specific coaching model and the impact it has on the transfer of expert knowledge to athlete application. The theoretical coaching framework (table 6.1) is a practitioner centred model that could support a performance nutritionists' delivery competence when planning their education strategies with individual athletes. This framework is designed to help practitioners consider their approach with various age range of individuals whom they must engage and influence within their sport. The content of this coaching model has been derived from a combination of known teaching theory, personal experiences as both a coach and partitioners, and from some of the key findings of this research. For example, the coaching outcomes within the framework are adapted from those typically used in education, such a Bloom's Taxonomy (appendix 8), however this has been modified for performance nutritionists, with the content an outcome of my personal and professional experience as both a qualified football coach and senior performance nutritionist and is underpinned by the findings of this research. The coaching objectives were developed from perceived traits of effective performance nutritionists (figure 6) as identified in study 2 of this research.

I believe that if practitioners can consider and improve their ability across these competencies, then they could create a positive learning environment to practice that could lead to greater influence with stakeholders.

Moreover, with further work, both the effectiveness checklist and coaching framework could serve as a baseline reference of best practice for performance nutritionists of all levels and could be an ideal platform to

develop a more comprehensive coaching framework that is specific to the practice of performance nutritionists.

Table 6.1 Theoretical coaching framework for performance nutritionists.

| TARGET AUDIENCE | COACHING OUTCOMES | COACHING OBJECTIVES | EVIDENCED BY | DESIRED BEHAVIOURS |
|--|---|---|--|--|
| <p>LEVEL 1 DELIVERY</p> <p>Coaching Outcomes: Identify, differentiate & understand</p> <p>Age: JUNIOR/YOUTH ATHLETES: 15s, 16s, 17s</p> | <p>Individuals are able to identify & differentiate simple key messages from your consultation</p> <p>Individual has a basic understanding of the key message from your consultation to allow basic, independent application</p> | <p>Build rapport quickly</p> <p>Adapt delivery style to suit the personality of the individual</p> <p>Establish trust with the individual</p> <p>Keep advice simple without including complex language, whilst underpinned by scientifically sound literature</p> <p>Establish current knowledge base</p> | <p>Clearly written consultation notes to conform with SENR record keeping policy.</p> <p>Individual is provided with supporting information for remote learning</p> | <p>Spark interest & excitement about nutrition</p> |
| <p>LEVEL 2 DELIVERY</p> <p>Coaching Outcomes: Recognise, describe & demonstrate</p> <p>Age: YOUTH ATHLETES 18s, 19s, 20s</p> | <p>Individual is able to recognise the how the advice you provide can be of benefit to them</p> <p>Individual is able to describe how the advice (in simple terms) can be of benefit to them</p> <p>The individual is able to demonstrate how to apply the advice that has been given to them</p> | <p>Build rapport quickly</p> <p>Adapt delivery style to suit the personality of the individual</p> <p>Establish trust with the individual</p> <p>Keep advice simple whilst introducing complex language, whilst underpinned by scientifically sound literature</p> <p>Establish current knowledge base</p> <p>Be patient</p> | <p>Clearly written consultation notes to conform with SENR record keeping policy.</p> <p>Individual is provided with supporting information for remote learning</p> | <p>Generate curiosity about how nutrition can have a performance impact</p> |
| <p>LEVEL 3 DELIVERY</p> <p>Coaching Outcomes: Refine & Deliver</p> <p>Age: SENIOR ATHLETES</p> | <p>Individual is able to recognise the how the advice you provide can be of benefit to their performance</p> <p>Individuals demonstrate the ability to apply the advice that you give to them autonomously</p> <p>Individuals are able to critique & refine the advice that you give to them, and begin to develop their own nutrition strategies</p> | <p>Build rapport quickly & develop professional relationship</p> <p>Adapt delivery style to suit the personality of the individual</p> <p>Develop & maintain trust with the individual</p> <p>Keep advice simple whilst explaining scientific underpinning where appropriate to do so</p> <p>Establish current knowledge base</p> <p>Be self-aware & recognise when to 'push & pull' with your advice</p> | <p>Clearly written consultation notes to conform with SENR record keeping policy.</p> <p>Individual is provided with supporting information for remote learning</p> <p>Individual performance improvements</p> | <p>The individual values nutrition & believe it will have a genuine performance impact</p> |

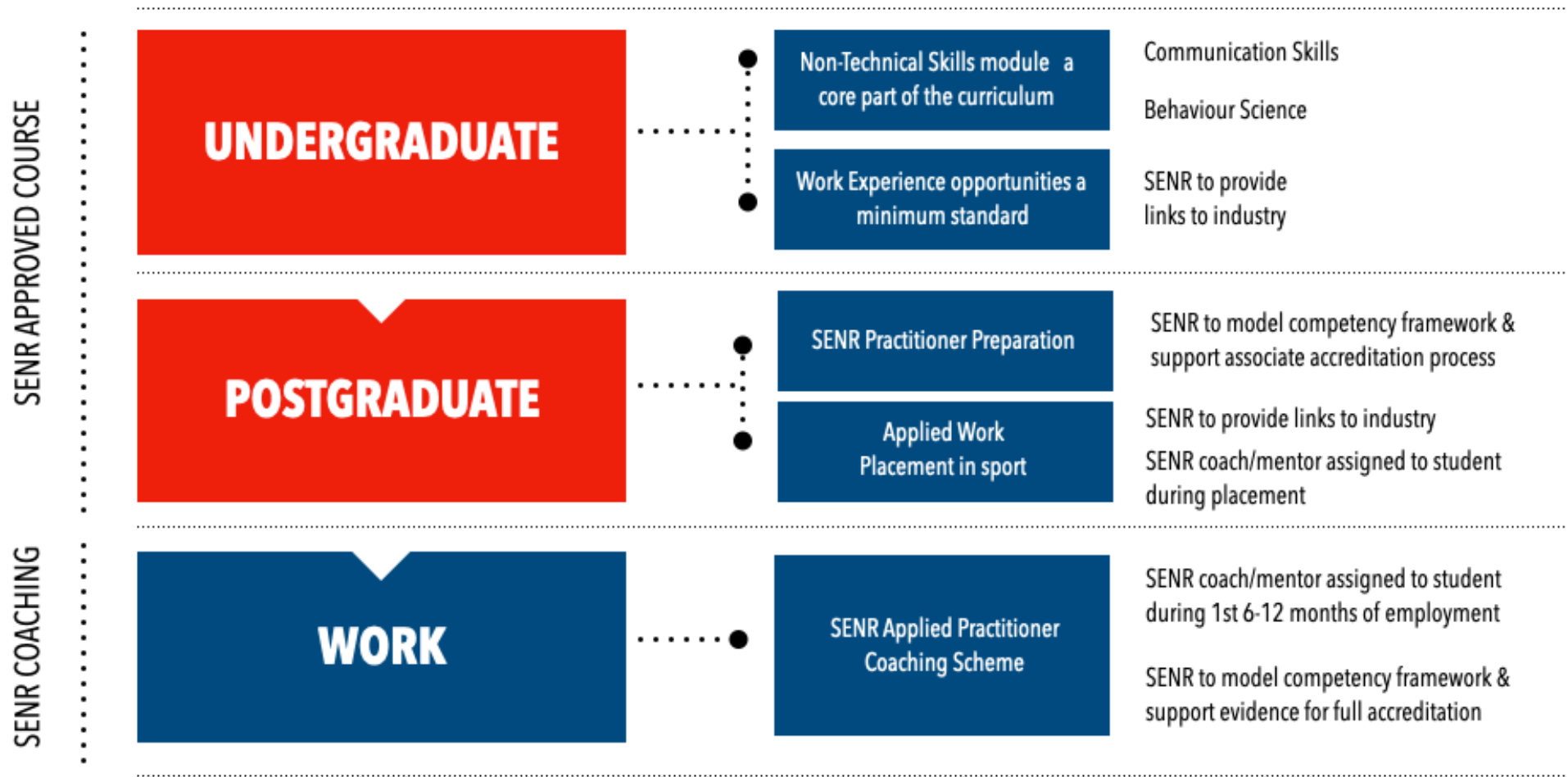


Figure 6.1. Theoretical Pathway from education to employment as an elite sports and exercise nutritionist.

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8: Appendix

Appendix 1

Inclusion Criteria

SERVICE PROVIDERS

| Performance Nutritionists | | |
|----------------------------------|---------------------------|------------------------------------|
| Level | SENR Accreditation | Industry Experience (years) |
| Senior | High Performance | 5+ |
| Level 2 | Associate/graduate | 3+ |
| Intern | n/a | 0-1 |

| Students | | |
|---------------------|--------------------------------------|----------------------|
| Level | Degree/Research | Year of study |
| Undergraduate | Nutrition Specific | Final |
| Post graduate (MSc) | Sports & exercise nutrition specific | n/a |
| Post graduate (Phd) | Sports & exercise nutrition specific | n/a |

| Academics/Lecturers | | |
|----------------------------|--|----------------------------------|
| Position | Course teaching | Level |
| University Lecturer | Sports Nutrition Specific Sports science specific | Undergrad, post-grad or doctoral |

SERVICE USERS

| Athletes & Coaches | | |
|--------------------------------------|--------------|-----------------------------------|
| Level | Sport | Currently playing/Coaching |
| Professional | Any | Yes |
| International | Any | Yes |
| Multi-disciplinary colleagues | | |
| Discipline | Sport | |
| Sports sciences | Any | |
| Sports medicine | Any | |
| Sport Psychology | Any | |

Appendix 2

Semi-Structured Interview Questions for 'Providers'

Personal

1. Can you please outline current job/position and what the role involves?
2. What was your journey to this role?
3. What is the primary focus of your work?

General

1. What do you think are the most important things for doing your job well?
2. Looking at each of these aspects in turn how did you learn and develop these?

Potential follow up on soft skills in case this is not included in their answer

How important is/are in your role? Give examples for context

(Please grade each out of 1 to 10. 10 being most important)

1. Influencing skills?
2. Communications skills?
3. Adaptability? (Flex your delivery style)
4. Coaching skills?
5. Teaching skills?
6. Coaching frameworks/models?

Soft skills continued

1. How would you define soft skills in the context of your role?
2. Were you taught this as part of your formal training?
3. If yes how were you taught this and how did this enhance your soft skills?
4. How have you developed these (further) since becoming a sports nutritionist? What has been the impact?

Consolidation Questions

1. What suggestions would you make to improve the training of performance nutritionists?
2. What suggestions would you make to improve the CPD of experienced performance nutritionists?
3. Do you feel that the SENr provides adequate support/resources to performance nutritionists in the following areas;
 - Coaching skills?
 - Influencing skills?
 - Coaching models applicable to practitioners working within elite sport?
4. **How do you feel the development of a coaching model that is applicable to practitioners working within elite sport would benefit;**
5.
 - a. Your practice
 - b. The performance nutrition profession

Semi-Structured Interview Questions for 'Users'

Personal

1. Can you please outline current job/position and what the role involves?
2. What was your journey to this role?
3. What is the primary focus of your work?

Questions for MDT colleagues

1. In your experience working alongside performance nutritionist, how would you describe their role?
2. Drawing on your experience, can you describe the characteristics of a nutritionist who has had a positive impact as part of your MDT?
3. Drawing on your experience, can you describe the characteristics of a nutritionist who has NOT had a positive impact as part of your MDT?

Questions for Coaches

1. In your experience working alongside performance nutritionist, how would you describe their role?
2. Drawing on your experience, can you describe the characteristics of a nutritionist who has had a positive impact as with the athletes that you coach?
3. Drawing on your experience, can you describe the characteristics of a nutritionist who has NOT had a positive impact with your athletes?

Questions for Athletes

1. In your experience working alongside performance nutritionist, how would you describe their role?
2. Drawing on your experience, can you describe the characteristics of a nutritionist who has had a positive impact whilst working with you?
3. Drawing on your experience, can you describe the characteristics of a nutritionist who has NOT had a positive impact whilst working with you?

Questions for all users:

How important is/are for a performance nutritionist to function effectively in your sport? Give examples for context. (Please grade each out of 1 to 10. 10 being most important)

1. Influencing skills?
2. Communications skills?
3. Adaptability? (Flex your delivery style)
4. Coaching skills?
5. Teaching skills?
6. Coaching frameworks/models?

Consolidation Questions

1. **What suggestions would you make to improve the training of performance nutritionists?**
2. **Do you feel that performance nutritionists are competent in the following areas;**
 - Coaching skills?
 - Influencing skills?
3. **In your opinion, do you feel that practitioners should be taught how to coach behavioural change?**
4. **How do you feel the development of a coaching model that is applicable to practitioners working within elite sport would benefit;**
 - a. Your performance
 - b. Your athletes
 - c. The performance nutrition profession

Appendix 3: Ethics Checklist Approval**FULL ETHICS APPLICATION FOR RESEARCH
WITH HUMAN PARTICIPANTS – FACULTY OF SCIENCES**

If any of the questions in Section IV B is answered 'yes', a full ethics application must be made to the REAG. This also applies for studies not defined as 'research' in the narrow sense, i.e. evaluations/audits, etc. Complete this form and send it to the Faculties Support Office along with supporting documentation: a copy of the full research proposal; any participant information sheets and consent forms; any surveys, interview schedules; any advertising material or proposed website wording. **It is important to note that you must not commence any research with human participants until full approval has been given by the Research Ethics Advisory Group – you will be notified via email when this has been granted.**

| |
|--|
| Overview |
| Name of Applicant(s) |
| Christopher Rosimus |
| Contact Details (Please include your UoK address, email and telephone number) |
| The School of Sport and Exercise Sciences, The University of Kent at Medway The Medway Building Chatham Maritime Kent ME4 4AG. |
| Title of Project |
| Are performance nutritionists whom practice within elite sport effective coaches of nutrition? |
| Lay Summary (Please provide a brief summary of the study) |
| The purpose of this thesis is to investigate whether performance nutritionists whom practice within elite sport are effective coaches of nutrition, to understand what athletes, coaches and practitioners expect when working alongside a performance nutritionist, and to investigate the effectiveness of a performance nutrition-coaching model. Moreover, we will explore the academic route to becoming an elite sport performance nutritionist, and challenge the performance nutritionist occupation as a profession. This document provides more detail regarding the proposed study 'Are performance nutritionists whom practice within elite sport effective coaches of nutrition?' |
| Name of Supervisor(s) (If applicable) |
| Louis Passfiled |
| Application Reference Number (For office use only) |
| |

| Risks and ethical issues | | | | | | | | | | | | | | | |
|--|---------------------------|-----------------------------|--|-------|--------------------|-----------------------------|--------|------------------|----|---------|--------------------|----|--------|-----|-----|
| Please list the principal inclusion and exclusion criteria | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th colspan="3">Performance Nutritionists</th> </tr> <tr> <th>Level</th> <th>SENR Accreditation</th> <th>Industry Experience (years)</th> </tr> </thead> <tbody> <tr> <td>Senior</td> <td>High Performance</td> <td>5+</td> </tr> <tr> <td>Level 2</td> <td>Associate/graduate</td> <td>3+</td> </tr> <tr> <td>Intern</td> <td>n/a</td> <td>0-1</td> </tr> </tbody> </table> | Performance Nutritionists | | | Level | SENR Accreditation | Industry Experience (years) | Senior | High Performance | 5+ | Level 2 | Associate/graduate | 3+ | Intern | n/a | 0-1 |
| Performance Nutritionists | | | | | | | | | | | | | | | |
| Level | SENR Accreditation | Industry Experience (years) | | | | | | | | | | | | | |
| Senior | High Performance | 5+ | | | | | | | | | | | | | |
| Level 2 | Associate/graduate | 3+ | | | | | | | | | | | | | |
| Intern | n/a | 0-1 | | | | | | | | | | | | | |
| <table border="1"> <tr> <td>Students</td> </tr> </table> | Students | | | | | | | | | | | | | | |
| Students | | | | | | | | | | | | | | | |

| Level | Degree/Research | Year of study |
|---------------------|--------------------------------------|---------------|
| Undergraduate | Nutrition Specific | Final |
| Post graduate (MSc) | Sports & exercise nutrition specific | n/a |
| Post graduate (Phd) | Sports & exercise nutrition specific | n/a |

| Academics/Lecturers | | |
|---------------------|--|----------------------------------|
| Position | Course teaching | Level |
| University Lecturer | Sports Nutrition Specific Sports science specific | Undergrad, post-grad or doctoral |

| Athletes & Coaches | | |
|--------------------|-------|----------------------------|
| Level | Sport | Currently playing/Coaching |
| Professional | Any | Yes |
| International | Any | Yes |

How long will each research participant be in the study in total, from when they give informed consent until their last contact with the research team?

1 hour.

What are the potential risks and burdens for research participants and how will you minimise them? (Describe any risks and burdens that could occur as a result of participation in the research, such as pain, discomfort, distress, intrusion, inconvenience or changes to lifestyle. Describe what steps would be taken to minimise risks and burdens as far as possible)

No risk

Please describe what measures you have in place in the event of any unexpected outcomes or adverse effects to participants arising from involvement in the project

Not applicable

Will interviews/questionnaires or group discussions include topics that might be sensitive, embarrassing or upsetting, or is it possible that criminal or other disclosures requiring action could occur during the study?

No.

If yes, please describe the procedures in place to deal with these issues

N/A

What is the potential benefit to research participants?

Improved understanding of the pathway to becoming a successful performance nutritionist and contribute to the development of a industry specific coaching framework.

What are the potential risks to the researchers themselves?

None identified

Will there be any risks to the University? (Consider issues such as reputational risk; research that may give rise to contentious or controversial findings; could the funder be considered controversial or have the potential to cause reputational risk to the University?)

No.

Will any intervention or procedure, which would normally be considered a part of routine care, be withheld from the research participants? (If yes, give details and justification). For example, the disturbance of a school child's day or access to their normal educational entitlement and curriculum).

| |
|-----|
| No. |
|-----|

Recruitment and informed consent

How and by whom will potential participants, records or samples be identified?

An invitation letter (attached) with a participant information sheet (attached) will be sent to potential participants. Those willing to participate will be asked to identify themselves to the researcher via email.

Inclusion criteria for participants is outlined below;

- Performance nutritionists working within elite sport
- University lecturers in sports and exercise nutrition
- Undergrad, post-grad or doctoral students in sports & exercise nutrition
- Athletes or coaches currently working at a professional or international level

Will this involve reviewing or screening identifiable personal information of potential participants or any other person? (If 'yes', give details)

no

Has prior consent been obtained or will it be obtained for access to identifiable personal information?

N/A

Will you obtain informed consent from or on behalf of research participants? (If 'yes' please give details. If you are not planning to gain consent, please explain why not).

Yes (see attached information sheet).

Will you record informed consent in writing? (If 'no', how will it be recorded?)

Yes (see attached consent document).

How long will you allow potential participants to decide whether or not to take part?

The invitation letter will be sent 1 month before any scheduled interviews or focus groups.

What arrangements have been made for persons who might not adequately understand verbal explanations or written information given in English, or have special communication needs? (eg, translation, use of interpreters?)

None.

If no arrangements will be made, explain the reasons (eg, resource constraints)

N/A

Confidentiality

In this section personal data means any data relating to a participant who could potentially be identified. It includes pseudonymised data capable of being linked to a participant through a unique code number.

If you will be undertaking any of the following activities at any stage (including in the identification of potential participants) please give details and explain the safeguarding measures you will employ

- Electronic transfer by magnetic or optical media, email or computer networks
- Sharing of personal data outside the European Economic Area
- Use of personal addresses, postcodes, faxes, emails or telephone numbers
- Publication of direct quotations from respondents
- Publication of data that might allow identification of individuals, either directly or indirectly

| |
|---|
| <ul style="list-style-type: none"> • Use of audio/visual recording devices • Storage of personal data on any of the following: <ul style="list-style-type: none"> – Manual files – University computers – Home or other personal computers – Private company computers – Laptop computers |
| All paper records an not use the participant's name. Any recorded interviews will be stored in a password-protected file. |
| How will you ensure the confidentiality of personal data? (eg, anonymisation or pseudonymisation of data) |
| All paper records an not use the participant's name. Any recorded interviews will be stored in a password-protected file. |
| Who will have access to participants' personal data during the study? |
| The principle researcher |
| How long will personal data be stored or accessed after the study has ended? (If longer than 12 months, please justify) |
| 12 months following data collection to allow audit of written informed consent procedure. |
| Please note: as best practice, and as a requirement of many funders, where practical, researchers must develop a data management and sharing plan to enable the data to be made available for re-use, eg, for secondary research, and so sufficient metadata must be conserved to enable this while maintaining confidentiality commitments and the security of data. |

| |
|--|
| Incentives and payments |
| Will research participants receive any payments, reimbursement of expenses or any other benefits or incentives for taking part in this research? (If 'yes', please give details) |
| No. |
| Will individual researchers receive any personal payment over and above normal salary, or any other benefits or incentives, for taking part in this research? (If 'yes', please give details) |
| No. |
| Does the Chief Investigator or any other investigator/collaborator have any direct personal involvement (e.g. financial, share holding, personal relationship, etc) in the organisations sponsoring or funding the research that may give rise to a possible conflict of interest? (If 'yes', please give details) |
| No. |

| |
|--|
| Publication and dissemination |
| How do you intend to report and disseminate the results of the study? If you do not plan to report or disseminate the results please give your justification |
| Data will be used for the thesis write up. |
| Will you inform participants of the results? (Please give details of how you will inform participants or justify if not doing so) |
| Anonymous data will be available upon request |

| |
|--|
| Management of the research |
| Other key investigators/collaborators. (Please include all grant co-applicants, protocol authors and other key members of the Chief Investigator's team, including non-doctoral student researchers) |
| Louis Passfiled |

| | | |
|--|--------------------------------|----------------------------|
| Has this or a similar application been previously rejected by a research Ethics Committee in the UK or another country? (If yes, please give details of rejected application and explain in the summary of main issues how the reasons for the unfavourable opinion have been addressed in this application) | | |
| No | | |
| How long do you expect the study to last? | | |
| • Planned start date: 1/10/2018 | • Planned end date: 0/022/2019 | • Total duration: 4 months |
| Where will the research take place? | | |
| n/a | | |

| |
|---|
| Insurance/indemnity |
| Does UoK's insurer need to be notified about your project before insurance cover can be provided? <i>The majority of research carried out at UoK is covered automatically by existing policies, however, if your project entails more than usual risk or involves an overseas country in the developing world or where there is or has recently been conflict, please check with the Insurance Office that cover can be provided. Please give details below.</i> |
| No. |

| |
|---|
| Children |
| Do you plan to include any participants who are children under 16? (If no, go to next section) |
| No |
| Please specify the potential age range of children under 16 who will be included and give reasons for carrying out the research with this age group |
| N/A |
| Please describe the arrangements for seeking informed consent from a person with parental responsibility and/or from children able to give consent for themselves |
| N/A |
| If you intend to provide children under 16 with information about the research and seek their consent or agreement, please outline how this process will vary according to their age and level of understanding |
| N/A |

| | |
|---|---|
| Participants unable to consent for themselves | |
| Do you plan to include any participants who are adults unable to consent for themselves through physical or mental incapacity? (If yes, the research must be reviewed by an NHS REC or SCREC) | |
| No. | |
| Is the research related to the 'impairing condition' that causes the lack of capacity, or to the treatment of those with that condition? | |
| <input type="checkbox"/> Yes | If 'yes' proceed to next question |
| <input checked="" type="checkbox"/> No | If 'no' the study should proceed without involving those who do not have the capacity to consent to participation |
| Could the research be undertaken as effectively with people who do have the capacity to consent to participate? | |
| <input checked="" type="checkbox"/> Yes | If 'yes' then the study should exclude those without the capacity to consent to participation |
| <input type="checkbox"/> No | If 'no' then the inclusion of people without capacity in the study can be justified |

| |
|---|
| Is it possible that the capacity of participants could fluctuate during the research? (If yes, the research must be reviewed by an NHS REC or SCREC) |
| No – all testing is conducted on one day. |
| Who inside or outside the research team will decide whether or not the participants have the capacity to give consent? What training/experience will they have to enable them to reach this decision? |
| The research team has previous experience in working with this age group and gauging capacity to consent. |
| What will be the criteria for withdrawal of participants? |
| Participant choice. |

| Declaration | |
|---|------------------|
| To be signed by the Chief Investigator | |
| <ul style="list-style-type: none"> • I agree to comply, and will ensure that all researchers involved with the study comply with all relevant legislation, accepted ethical practice, University of Kent policies and appropriate professional ethical guidelines during the conduct of this research project • If any significant changes are made to the design of the research I will notify the Faculty of Sciences Research Ethics and Advisory Group (REAG) and understand that further review may be required before I can proceed to implement the change(s) • I agree that I will notify the Faculty of Sciences Research Ethics Advisory Group of any unexpected adverse events that may occur during my research • I agree to notify the Faculty of Sciences Research Ethics Advisory Group of any complaints I receive in connection with this research project | |
| Signed: Name: Christopher Rosimus | Date: 08/08/2018 |

| What to do next |
|---|
| Send your completed form, along with all supporting documentation, to the Faculties Support Office, at fso@kent.ac.uk. |

| Checklist | |
|--|--|
| Please ensure you have included the following with your application (where relevant): | |
| <ul style="list-style-type: none"> • Full research proposal (current project) • Participant information sheet • Consent form • Covering letter (if relevant) • Any questionnaires/interview schedules/topic guides to be used • Any approved instruments/measures to be used • Any advertising material to be used to recruit participants • Confirmation that project is covered by UoK insurance policies (if necessary) | <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> |

Appendix 4: Participant information Sheet



PARTICIPANT INFORMATION SHEET

DATE

Project: Are performance nutritionists whom practice within elite sport effective coaches of nutrition?

Dear Participant,

You have been invited to be a part of this study as you have experience in one or more of the following areas;

- Performance nutritionist working within elite sport
- University lecturer in sports and exercise nutrition
- Undergrad, post-grad or doctoral student in sports & exercise nutrition
- Athlete or coach currently working at a professional or international level

We value your opinion and your perception about the topic of this study.

The purpose of the study is to investigate whether performance nutritionists whom practice within elite sport are effective coaches of nutrition, to understand what athletes, coaches and practitioners expect when working alongside a performance nutritionist, and to investigate the effectiveness of a performance nutrition-coaching model. Moreover, we will explore the academic route to becoming an elite sport performance nutritionist and challenge the performance nutritionist occupation as a profession.

You will be required to partake in an interview and two follow up questionnaires. The interview will be anonymous. During the interview we will ask questions relating aim of this research. We hope that you will be able to share your experience, thoughts and recommendations on the subject.

In most cases we will try to do a face to face interview but if this is not possible, we can do a phone interview instead. The interviews will last up to 60 minutes, depending on the depth of the discussion. If you agree, interviews can be recorded. As part of the research, relevant parts of the interview will be transcribed. Please feel free to ask for a copy of the transcription.

Your participation in the study is **voluntary**. You do not have to participate, and you have the right to remove yourself from the study at any time without the need to provide any reason. If you wish to no longer partake then all data obtained from you including personal information will be retracted from the study and destroyed.

Being involved in the study can provide you, the participant, with insights about your Industry. This is an original exploratory/investigative research that can become the basis for a comprehensive developmental project.

Your signed informed consent form will be kept within a locked filing cabinet and any other personal data will be kept on a password protected computer. Anonymous data will be stored for up to 12 months. After this time the data will be destroyed. The data (including personal information) will be kept in an anonymous form for the provision of data sharing for further research. The supervisor will only allow access to the data if the researcher has received ethical approval from the School of Sports and Exercise Sciences. Any data collected from you will not be shared nor sold to any third-party companies.

The results of the study will be written into student research projects and could also be published within peer-reviewed scientific journals or presented at scientific conferences. If you would like access to the information this can be provided for you if you leave contact details with the lead researcher.

If you feel there is a question you would like an answer to during the study, you are unclear/unsure about the study, or you have any complaints, you can contact the researcher at cr591@kent.ac.uk at any time.

The lead supervisor for this study is: Dr.Glen Davison email: g.davison@kent.ac.uk

Thank you for taking the time to read this participant information sheet. Please, keep a copy for your records.

Appendix 5: Consent Forms for study 2



CONSENT FORM



Title of project: Are performance nutritionists whom practice within elite sport effective coaches of nutrition?

Please initial box

- 1. I confirm I have read and understand the information sheet dated Nov 2019 for the above study. I understand that if I don't understand something on the questionnaire form I will ask **Chris Rosimus** to explain.

- 2. I understand that my participation in the questionnaire is up to myself and that I can withdraw at any time without giving any reason.

- 3. I understand that my responses will be anonymised, and I give permission for members of the research team to have access to my anonymised responses from the questionnaire.

| | | |
|-------------------------------|----------------|--|
| _____ | November 2019 | Signature |
| Name of participant | _____ | _____ |
| | Date | |
| Chris Rosimus | November 2019 | _____ |
| Name of person taking consent | Date |  |
| | | Signature |
| Chris Rosimus | November 2019. | _____ |
| Lead researcher | Date |  |
| | | Signature |

Appendix 6: Consent Forms for study 3



CONSENT FORM

Title of project: Are performance nutritionists whom practice within elite sport effective coaches of nutrition?

Please initial box

- 4. I confirm I have read and understand the information sheet dated April 2021 for the above study. I understand that if I don't understand something on the questionnaire form I will ask **Chris Rosimus** to explain.
- 5. I understand that my participation in the questionnaire is up to myself and that I can withdraw at any time without giving any reason.
- 6. I understand that my responses will be anonymised, and I give permission for members of the research team to have access to my anonymised responses from the questionnaire.

| | | | |
|-------------------------------|----------------|-------|----------------------|
| _____ | November 2019 | _____ | Signature |
| Name of participant | Date | | |
| Chris Rosimus | November 2019 | _____ | <i>Chris Rosimus</i> |
| Name of person taking consent | Date | | Signature |
| Chris Rosimus | November 2019. | _____ | <i>Chris Rosimus</i> |
| Lead researcher | Date | | Signature |

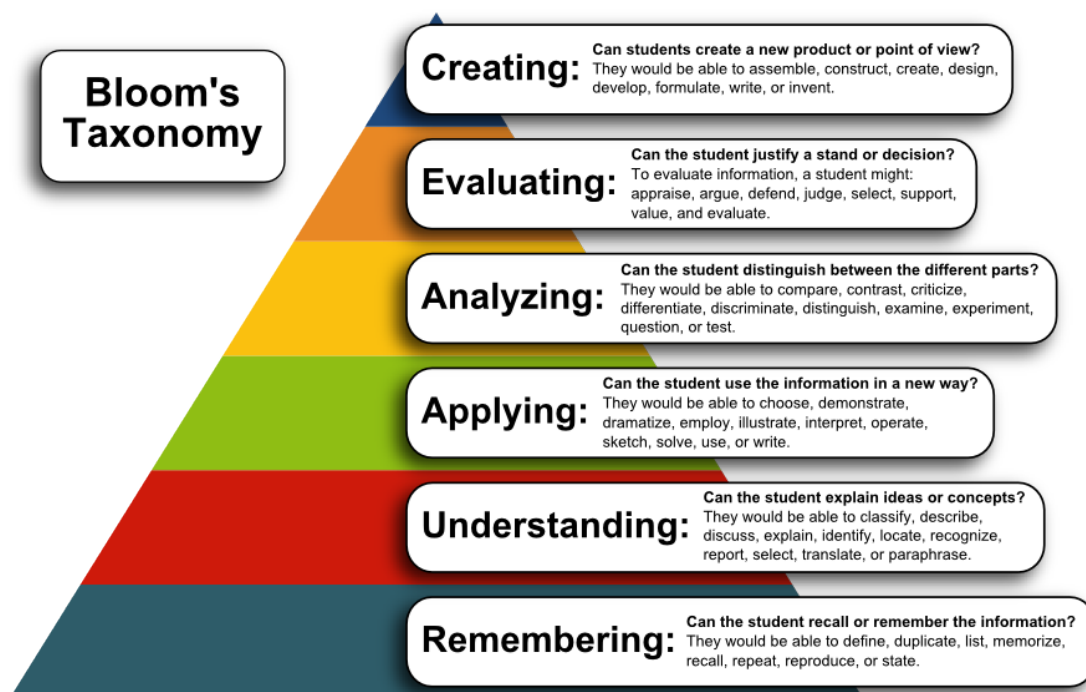
Appendix 7

SENR Competency Framework

| | | | |
|-----------|--|---|--|
| D. | Communication Skills <ul style="list-style-type: none"> • Communication • Research Data | | |
| D1 | Demonstrate proficient communication skills to elicit, interpret, integrate, assess and apply relevant information in order to provide safe and sound individualised advice. ¹⁰ | E | <ul style="list-style-type: none"> • Written information for case study client and others • Translation of dietary goals and targets into a coherent food and fluid plan for the athlete according to their level of skill, budget, personal circumstances. |
| D2 | Present information clearly, tailored to the needs of the client or audience where groups are concerned promoting sport and exercise nutrition in an informative, engaging and professional manner. | E | <ul style="list-style-type: none"> • Case study, presentation material from workshops and client feedback from workshops • Use of Sports specific Personal goals and plans rather than generic guidelines. Timeline for review. |
| D3 | Collate, analyse and interpret published information on behalf of the client(s), developing resources to support service interventions and client education and effectively communicate the interpretation of data and proposed interventions. | E | <ul style="list-style-type: none"> • Case study • Professional talks, lectures and workshop materials eg. role of Vit D and benefits and develop protocol for monitoring Vit D status, advise on consensus for optimal blood levels and safe supplementation protocols and dietary interventions to support recommendations. |

Appendix 9

Bloom's Taxonomy



Appendix 10

Performance Nutritionist Job Description


L1L152.17 - Performance Nutritionist (working with British Gymnastics)

Posted: 17/11/2017 15:39
Salary: £25,749 - £32,582 p.a. pro rata
Location: Lilleshall
Level: Practitioner

Deadline: 04/01/2018 09:00
Hours: 30 hours
Benefits: 29 days annual leave, career average pension scheme (pro rata)
Job Type: Fixed Term

JOB DESCRIPTION – PERFORMANCE NUTRITIONIST - MATERNITY COVER (working with British Gymnastics)

Interview Date: 20th December 2017
Salary Scales: Level 2 - £25,749 - £32,582 p.a. pro rata
 Level 3 - £36,259 p.a. pro rata

| Knowledge and Skills | | |
|---|-----------|-----------------------|
| Effectively translate nutrition science into practical food advice | Essential | Assessment Interview |
| Good knowledge and understanding of the use of nutrition supplements and ergogenic aids | Essential | Interview |
| Understanding of the nutritional issues (performance and clinical) relevant to high performance sport | Essential | Interview |
| Knowledge of nutritional support appropriate to the needs of high performance athletes both in training and competition | Essential | Interview |
| An understanding of the various sports science and sports medicine disciplines | Essential | Application Interview |
| Ability to critically appraise scientific methodology and data | Essential | Application Interview |
| Ability to influence athletes and coaches to support programmes that impact on performance | Essential | Interview |
| Ability to communicate complex data in terms that are easily understood by a wide range of audiences | Essential | Assessment Interview |
| Good communication and presentation skills | Essential | Assessment Interview |
| An interest in sport and recognition of the importance of promoting and supporting equality, safeguarding and anti-doping within sport. | Essential | Interview |
| An understanding of the elite sporting environment | Desirable | Application Interview |
| An understanding of the needs of elite athletes and coaches in a high performance environment | Desirable | Application Interview |
| Understanding of the coaching and training process and also of athletic performance in terms of periodisation and peaking | Desirable | Application Interview |
| Skilled in building and maintaining productive relationships with high performance staff within national governing bodies of sport | Desirable | Application Interview |

Appendix 11
Study 3 questionnaires 1 and 2

| <h3>CROSIMUS PROF DOC TASK 2</h3> <p>Perceptions & opinions</p> | <h3>CROSIMUS PROF DOC TASK 1</h3> <p>Learning questionnaire</p> |
|--|---|
| <p>Q1. With reference to the effectiveness checklist presented in the video, have you used anything like this before to self-assess your effectiveness as a practitioner?</p> <p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p> <p><input type="radio"/> Something similar</p> | <p>Q1. Do you self-assess your effectiveness as a practitioner? If you do, please describe the process below.</p> <p>Long answer text</p> |
| <p>Q2. If you answered 'yes' or 'something similar' to Q1, please describe what you have used previously.</p> <p>Long answer text</p> | <p>Q2. Do you participate in annual personal development reviews (PDR) with your line manager/mentor in either your current or previous role as a performance professional?</p> <p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p> |
| <p>Q3. Please describe how this checklist could be beneficial to your practice?</p> <p>Long answer text</p> | <p>Q3. If you answered yes to Q2, how often would you carry out your PDR review?</p> <p><input type="checkbox"/> 1 a per year</p> <p><input type="checkbox"/> 2 a per year</p> <p><input type="checkbox"/> More than 2 a per year</p> <p><input type="checkbox"/> None</p> |
| <p>Q4. Please indicate any suggested aspects regarding how this checklist could be improved in order to be beneficial to your practice?</p> <p>Long answer text</p> | <p>Q4. Please describe the PDR process that you have participated in with your line manager/mentor?</p> <p>Long answer text</p> |
| <p>Q5. With reference to the 'theoretical application framework' and 'coaching model' presented in the video, have you used anything like this before to apply & evaluate the effectiveness of newly acquired skills/knowledge gathered from a CPD experience?</p> <p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p> | <p>Q5. Do you undertake continued professional development (CPD) as part of your role as a performance professional?</p> <p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p> |
| <p>Q6. If you answered yes to Q4, please describe the process.</p> <p>Long answer text</p> | <p>Q6. If you answered yes to Q5, please describe how you go about identifying your CPD choices.</p> <p>Long answer text</p> |
| <p>Q6. Please describe whether you think this 'theoretical application framework' and 'coaching model' could be beneficial to your practice?</p> <p>Long answer text</p> | <p>Q7. How often do you undertake CPD as part of your role as a performance professional?</p> <p><input type="radio"/> at least 1 a per</p> <p><input type="radio"/> 2-3 a per year</p> <p><input type="radio"/> More than 3 a per year</p> |
| <p>Q7. Please outline any barriers that you think might prevent both the 'effectiveness checklist' and the 'theoretical application framework' from being applied in the field.</p> <p>Long answer text</p> | <p>Q8. Do you perform a form of evaluation/review of what you learned during a CPD?</p> <p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p> <p><input type="radio"/> Sometimes</p> |
| <p>Q8. Please indicate any suggested aspects regarding how the 'theoretical application framework' could be improved in order to be beneficial to your practice?</p> <p>Long answer text</p> | <p>Q9. If you answered yes to Q8 please describe how to evaluate or review your CPD experience in terms of how this has improved your practice?</p> <p>Long answer text</p> |
| <p>Q9. Any further comments?</p> <p>Long answer text</p> | <p>Q10. Please describe how you implement, apply & embed what you have learned from a CPD experience?</p> <p>Long answer text</p> |
| | <p>Q11. Are your CPD choices linked to your annual PDR?</p> <p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p> <p><input type="radio"/> Sometimes</p> <p><input type="radio"/> I do not undertake CPD or PDR</p> |

Appendix 12

Study 3 presentation slides

CHRIS ROSIMUS PROFESSIONAL DOCTORATE RESEARCH

UNDERSTANDING PRACTITIONER CPD CHOICES

MARCH 2020




PARTICIPANT INFORMATION

Dear student,

I am pleased to invite you to participate in my research project on the topic of CPD choices.

The purpose of this study is to investigate the factors that influence CPD choices of practitioners in the field of CPD. The study will explore the relationship between CPD choices and various factors such as age, gender, and experience.

The study will involve a questionnaire and a focus group discussion. The questionnaire will be distributed to practitioners in the field of CPD. The focus group discussion will be held with a small group of practitioners.

The data collected from the questionnaire and the focus group discussion will be analysed to identify the factors that influence CPD choices. The results of the study will be used to inform the development of CPD programmes for practitioners in the field of CPD.

If you have any questions, please contact me at [email address].

Thank you for your interest in my research.

Chris Rosimus




PARTICIPANT CONSENT

Dear Participant,

Thank you for agreeing to participate in my research project.

I am pleased to have your consent to participate in my research project.

The purpose of this study is to investigate the factors that influence CPD choices of practitioners in the field of CPD. The study will explore the relationship between CPD choices and various factors such as age, gender, and experience.

The study will involve a questionnaire and a focus group discussion. The questionnaire will be distributed to practitioners in the field of CPD. The focus group discussion will be held with a small group of practitioners.

The data collected from the questionnaire and the focus group discussion will be analysed to identify the factors that influence CPD choices. The results of the study will be used to inform the development of CPD programmes for practitioners in the field of CPD.

If you have any questions, please contact me at [email address].

Thank you for your interest in my research.

Chris Rosimus




INTRODUCTION & PURPOSE

The purpose of this study is to investigate the factors that influence CPD choices of practitioners in the field of CPD. The study will explore the relationship between CPD choices and various factors such as age, gender, and experience.

The study will involve a questionnaire and a focus group discussion. The questionnaire will be distributed to practitioners in the field of CPD. The focus group discussion will be held with a small group of practitioners.

The data collected from the questionnaire and the focus group discussion will be analysed to identify the factors that influence CPD choices. The results of the study will be used to inform the development of CPD programmes for practitioners in the field of CPD.

If you have any questions, please contact me at [email address].

Thank you for your interest in my research.

Chris Rosimus




METHODS

| | |
|-------------------------------|-------------------------------|
| QUESTIONNAIRE | QUESTIONNAIRE |
| FOCUS GROUP DISCUSSION | FOCUS GROUP DISCUSSION |
| DATA ANALYSIS | DATA ANALYSIS |
| RESULTS | RESULTS |
| CONCLUSIONS | CONCLUSIONS |




INTRODUCTION & PURPOSE: PART 1



A HOW TO USE YOUR CPD CHOICES

B DETERMINE THE RELEVANCE OF CPD CHOICES FOR PRACTITIONERS

C UNDERSTAND THE RELEVANCE OF CPD CHOICES FOR PRACTITIONERS

D UNDERSTAND THE RELEVANCE OF CPD CHOICES FOR PRACTITIONERS

BASELining

PART 1- QUESTIONNAIRE 1 (continue slide to google form)



[https://forms.gle/29d8F8t8t8t8t8t8](#)

INTRODUCTION & PURPOSE -PART 2




A
THE RIGHTS ENHANCING PROPOSED EFFECTIVENESS CHECKLIST

B
THE RIGHTS ENHANCING PROPOSED EFFECTIVENESS CHECKLIST APPLICATION SURVEY

YOUR PERCEPTIONS & OPINIONS



PROPOSED EFFECTIVENESS CHECKLIST



1
THE RIGHTS ENHANCING PROPOSED EFFECTIVENESS CHECKLIST

YOUR PERCEPTIONS & OPINIONS



PROPOSED EFFECTIVENESS CHECKLIST

BACKGROUND

The goal of this project is to improve the effectiveness of the current HR. As a result of an ongoing effort to improve the HR, we have identified the following as a result of the current HR. We are currently working on these items and will provide updates as they are completed.

The HR is the backbone of our organization and is critical to our success. We are currently working on these items and will provide updates as they are completed.

It is the goal of this project to improve the effectiveness of the current HR. We are currently working on these items and will provide updates as they are completed.

The HR is the backbone of our organization and is critical to our success. We are currently working on these items and will provide updates as they are completed.





PROPOSED EFFECTIVENESS CHECKLIST

DELIVERY COMPETENCIES

Using the 5 to 5 scale, 1 = very ineffective, 5 = very effective. If you are unsure, please rate their perceived effectiveness in each case below.



| ACTION COMPETENCIES | | | | |
|---------------------|---------------|---|---|---|
| Competency 1 | Competency 2 | | | |
| 1 | 2 | 3 | 4 | 5 |
| Competency 3 | Competency 4 | | | |
| 1 | 2 | 3 | 4 | 5 |
| Competency 5 | Competency 6 | | | |
| 1 | 2 | 3 | 4 | 5 |
| Competency 7 | Competency 8 | | | |
| 1 | 2 | 3 | 4 | 5 |
| Competency 9 | Competency 10 | | | |
| 1 | 2 | 3 | 4 | 5 |



PROPOSED EFFECTIVENESS CHECKLIST

STRATEGIC COMPETENCIES

Using the 5 to 5 scale, 1 = very ineffective, 5 = very effective. If you are unsure, please rate their perceived effectiveness in each case below.



| ACTION COMPETENCIES | | | | |
|---------------------|---------------|---|---|---|
| Competency 1 | Competency 2 | | | |
| 1 | 2 | 3 | 4 | 5 |
| Competency 3 | Competency 4 | | | |
| 1 | 2 | 3 | 4 | 5 |
| Competency 5 | Competency 6 | | | |
| 1 | 2 | 3 | 4 | 5 |
| Competency 7 | Competency 8 | | | |
| 1 | 2 | 3 | 4 | 5 |
| Competency 9 | Competency 10 | | | |
| 1 | 2 | 3 | 4 | 5 |



PMP 0018 FIRE TRENDS CHECKLIST

TECHNICAL CAPACITIES

Using the Fire Trends Checklist, you will be able to identify the strengths and weaknesses of your fire trends and make necessary adjustments to your fire trends.



| FIRE TRENDS CHECKLIST | |
|-----------------------|-------------|
| Fire Trends | Fire Trends |
| Fire Trends | Fire Trends |
| Fire Trends | Fire Trends |
| Fire Trends | Fire Trends |
| Fire Trends | Fire Trends |



PMP 0018 NUMERICAL APPLICATIONS

YOUR PERCEPTIONS & OPINIONS




PMP 0018 THE NUMERICAL APPLICATIONS

TRANSFER LEARNING INTO PRACTICE





PMP 0018 NUMERICAL APPLICATIONS

TRANSFER LEARNING INTO PRACTICE





PART 2 - QUESTIONNAIRE 2 (continuous link to page 18)