Title: 'Hand in Glove': using qualitative methods to connect research and practice

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Liam D Harper [a] and Robert McCunn [b]

[a] School of Human and Health Sciences, University of Huddersfield, Huddersfield, UK
[b] Institute of Sport and Preventive Medicine, Saarland University, Saarbrücken, Saarland, Germany

Corresponding author:

Dr Liam Harper
University of Huddersfield
School of Human and Health Sciences
Harold Wilson Building
Queensgate
Huddersfield
HD1 3DH
United Kingdom

Tel: +44 (0) 1484 4711157

Email address: L.Harper@hud.ac.uk

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Abstract

Recent work has espoused the idea that within applied sporting environments, 'fast' working practitioners should work together with 'slow' working researchers. However, due to economical and logistical constraints, such a coupling may not always be practical. Therefore, alternative means of combining research and applied practice are needed. A particular methodology, which has been utilized in recent years, is qualitative research. Examples of qualitative methods include the use of online surveys, one-on-one interviews, and focus groups. This article aims to discuss the merits of using qualitative methods to combine applied practice and research in sport science. This includes a discussion of recent examples of the use of such methods in published journal articles, a critique of the approaches employed, and future directions and recommendations. The authors encourage both practitioners and researchers to utilize and engage with qualitative research with the ultimate goal of benefitting athlete health and sporting performance.

Introduction

In a recent editorial in the *International Journal of Sports Physiology and Performance*, Coutts[1] discussed the need to work both fast and slow in applied, high-performance environments. 'Working fast' refers to the practitioner on the frontline, required to constantly interact with coaches and athletes, whilst planning and delivering preparation programs. [1] 'Working slow' refers to a researcher embedded in the environment whose role is to investigate new and innovative methods, ensuring that they are reliable and ecologically valid. [2] Examples of 'working slow' may include investigating the sensitivity and inter-individual variability of recovery monitoring tools that are implemented by practitioners, [1] or as suggested by McCall et al.[2], providing graded recommendations of new technologies/procedures based on the robustness of scientific evidence and expert opinion. [2] A parallelism of 'fast' and 'slow' work should ultimately enhance many aspects of applied practice.

However, although 'fast' working practitioners are now common in applied environments, even at semi-professional and also amateur levels, the presence of 'slow' working researchers is more unusual. This is likely to be a function of economics and the availability of resources to not only pay researchers, but also provide the necessary capital to conduct pertinent research. There may also not be a university or research institute with academics of a requisite skillset in close proximity to the applied environment. Therefore, although it is commendable that researchers have highlighted this important area, the utopic vision of having both 'fast' and 'slow' workers employed in an applied setting may not always be possible. Furthermore, in terms of developing research projects, researchers want data from multiple sources so that a wide range of potential issues can be identified. Therefore seeking alternative means of bridging the gap between research and practice is necessary.

One particular methodology that has become more prevalent in recent years is the use of qualitative research to connect applied practitioners and the researchers whose goal is to influence applied practice. Qualitative research is a methodological approach used in a wide range of disciplines, predominately to investigate human behaviour and the factors influencing behavioural processes. [3] Examples of qualitative methods include the use of online surveys, one-on-one interviews, and focus groups. Popular in psychology, qualitative methods are utilized less frequently than quantitative methods in sport science research. However, some researchers have acknowledged the role that qualitative research could play in benefitting the applied environment. In Bishop's[4] "Applied Research Model for the Sport Sciences", stages one and two refer to 'defining the problem' and 'descriptive research'. [4] These stages not only involve the researcher using their own knowledge of the sport and the fundamental science underpinning performance, but also approaching coaches, athletes, and practitioners to gather their opinions and perceptions of pertinent issues influencing performance.

This model was refined specifically for association football (soccer) by Drust and Green[5]. Within this model, the authors suggest that researchers should investigate the aetiology of a problem by conducting descriptive/qualitative research, thereby gaining an understanding into the possible barriers preventing uptake, while coordinating studies that test the effectiveness of an intervention and its possible implementation in an applied setting. [5] Thus, using qualitative methodologies can be the starting point of pertinent and practically relevant research (both quantitative and qualitative in nature).

When using a mixed-methods approach to investigate a particular issue, researchers should be aware of the ontological (nature of reality) and epistemological (theory of knowledge) differences between quantitative and qualitative paradigms. Ontologically, in quantitative research there is a singular, objective truth, independent of human perception. [6] However, in qualitative research there can be multiple truths that are formed by an individual's perception of reality (which is seen as a social construct). Epistemologically, quantitative research separates the investigator from the investigated, so as not to influence the study of particular phenomena, whereas qualitative research allows an interactive immersion of both parties, thereby developing a mutually created picture of reality. [6] Qualitative methods emphasize interaction and process, allowing discoveries to be made together. However, despite this polarity, both methods can be used concurrently in a single study or sequentially in a series of studies, predicated on the philosophies of pragmatism and contextualism. Additionally, researchers who are currently reticent to use qualitative methods should be aware that undertaking this type of research may not only just answer particular research questions, but also provide a mutual development of creative ideas that could potentially lead to future quantitative projects that are not only empirical and objective, but also relevant and ecologically valid.

Examples of the use of qualitative research

Contemporary qualitative research involving professional soccer practitioners has investigated the use of training load and player monitoring, [7] warm-up and half-time practices, [8] injury prevention strategies, [9,10] and issues surrounding the extra-time period. [11] McCall et al.[9] used a bespoke questionnaire to ask 44 practitioners working worldwide at professional soccer clubs their perceptions of non-contact injury risk factors, the screening tests used to detect potential injuries, and the injury-prevention exercises applied at their club. [9] Furthermore, McCall et al.[10] used an online survey to determine the injury prevention strategies used, and the challenges faced by, physicians working for the 32 international soccer teams competing at the FIFA 2014 World Cup in Brazil. [10] Gathering this type of information is useful as injuries have a negative impact on successful team performance, [12] the short- and long-term health of players, [12] and creates a large financial burden. [13] Follow-up research projects from these investigations may include assessing the validity, reliability, and sensitivity of screening tests and injury-prevention exercises, as well as developing novel and

ecologically valid tools that help address the needs of practitioners and the sports they work in.

Furthermore, Towlson et al.[8] surveyed 19 practitioners working in the top two levels of English professional soccer about their practices related to warm-up strategies, the situational and theoretical factors that underpin their use, and their value in enhancing player work-rate, and ameliorating injury risk. [8] This work has subsequently informed quantitative research projects investigating the influence of re-warm-up strategies on intermittent exercise performance (i.e., [14-16]). Anecdotally, the number of soccer teams now performing re-warm-ups in the minutes before the resumption of the second half of matches would appear to have increased in the last few years. Qualitative research could also be used to investigate how practitioners use published research findings in their applied environment. For example, questions relating to how practitioners modify or adapt research findings for their own environment, or the barriers to utilizing performance enhancing interventions would be of use to researchers in future planning, as well as measuring the impact of their research.

Notably, and with the use of an online survey, Stoszkowski & Collins[17] recently asked 320 coaches how they acquire and apply new coaching knowledge. [17] The results demonstrated that, on the whole, coaches predominately acquire knowledge through informal learning activities (with social interaction in person or through social media a key factor). [17] This type of information is important as it allows researchers to understand the best ways to interact with coaches and disseminate research findings. As such, asking applied sport science practitioners to complete this type of survey provides itself as a future research opportunity.

Qualitative methods have also been used to assess the nutritional knowledge of athletes, [18] and practitioners and athletes' perceptions of concussion guidelines. [19,20] As the importance of nutrition for optimal performance is well understood, elucidating athletes' understanding of what/when they should be eating can allow practitioners and coaches to better understand what level of nutritional support their athletes require. Furthermore, this type of investigation can identify the (mis)use of supplements, which not only has health implications, but also potential consequences related to anti-doping procedures. A recent study (albeit utilizing a quantitative survey) by Kelly et al.[21] identified that only small percentages of professional rugby union, rugby league, and Australian Rules football players who take β-alanine know the correct dosage and the purported ergogenic benefits of the supplement. [21] Thus, identifying gaps in athlete knowledge of nutrition and doping procedures through the use of open-ended survey questions, focus groups and interviews may allow for better education. [22] However, a recent systematic review of current nutrition knowledge measures has identified a lack of quality with existing questionnaires. [18] The authors recommend that before future studies are conducted, a new, bespoke, up-to-date and validated measure of general and sport nutrition knowledge be created. [17]

Utilizing qualitative research

When answering particular research questions, qualitative methods lend themselves to a number of potential uses both in isolation and to compliment quantitative techniques. These include talent identification and development, the translation of knowledge to practice, investigating compliance, and ethnography. In terms of talent identification and development, both quantitative and qualitative methods have been used to assess expert performance (for a review see [23]), however, qualitative studies are less common. Utilizing a mixed-methods approach, Weissensteiner et al.[24] used both a temporal occlusion task (observing the run-up and delivery action of a swing bowler and identifying at different stages in the delivery if it was an out-swinger, in-swinger, or a short ball) and a structured interview to assess what factors contribute to anticipatory skill in cricket batting. [24] During the interviews, players of a range of ages and playing level answered questions related to the number of hours spent performing organized and unorganized sporting activities. More skilled players were identifiable from their ability to use the pre-delivery information to discern what type of delivery they were facing, however; hours of cricket-specific practice did not explain the variance in anticipatory skill. Nevertheless, this type of mixed-method approach has potential to be used in talent identification and development in a number of sports, alongside the traditional quantitative approaches that are commonly used.

Translating knowledge into practice in the field of injury prevention has been investigated using face-to-face interviews [25] and an online survey. [26] Using these qualitative methods can allow researchers to identify barriers inhibiting the use of particular injury prevention strategies in applied settings. This is of particular importance as positive injury prevention outcomes may rely on coach and athlete adherence. [27] Another potential type of qualitative enquiry is ethnography. Ethnography is broadly the systematic study of human races and culture, and involves the close integration of a researcher in a particular environment. [28] In the field of sport science, ethnography may not only just benefit researchers, but also practitioners. Practitioners may be able to utilize ethnographic methods through the logging of observations made during interactions with athletes, coaches, and fellow practitioners. This collating of data may provide useful information regarding potential issues that need addressed, which practitioners may subsequently use to change their own practice, in a form of effective reflection.

Due to its increasing ubiquity, social media may provide a less formal method of conducting qualitative research due to its convenience and ability to bring researchers and practitioners together in the same virtual space. [29] The use of Twitter polls to gather information is popular, as they are quick and easy to establish. However, such polls can be left open to abuse, as theoretically anyone can vote and not necessarily only the target audience. Other options such as private, invite-only Facebook groups or password-protected forums may provide a platform for an informal interaction between researchers and practitioners. Anecdotally, practitioners on social media have

previously bemoaned the lack of ecological validity and applicability of research that is ostensibly conducted for the benefit of their applied practice. Therefore it is imperative that practitioners engage with qualitative research projects (such as surveys, interviews, and/or focus groups) to voice their concerns and elaborate on how research can be best planned, executed, and disseminated for the benefit of their practice.

Researchers beginning a doctoral program of study that is designed to impact applied sport science practice may benefit from including qualitative research methods early in their studies. Such investigations, and thus interactions with their target audience, could potentially inform future projects, making them more ecologically valid and applicable to applied practitioners. Therefore, doctoral candidates may benefit from undergoing qualitative research training (if they have not been exposed to this methodology previously) at the beginning of their studies to facilitate this approach, whilst also ensuring rigorous and impactful research is conducted. This will also allow sport science researchers to be pragmatic, protean thinkers who are able to use qualitative or mixed methodological approaches to produce novel and cogent research throughout their academic careers. [30]

Researchers setting up qualitative research projects should be conscious of a number of factors. Online surveys are particularly useful when trying to approach a larger number of participants, as they do not require as much contact time as interviews or focus groups. Although focus groups and interviews are conducted with a smaller number of participants, they provide researchers with an opportunity to follow different avenues of enquiry and are more likely to elicit additional information compared to an online survey. When creating online surveys, it important to consider the number of questions and so the time required to complete the survey, the layout and aesthetics, and the language used. A number of platforms are available for the creation of online surveys, including Bristol Online Surveys, Google Forms, and SurveyMonkey. Having a mix of open (i.e., where practitioners are provided space to elucidate their thoughts) and closed (i.e., yes or no; agree or disagree) questions is beneficial as it provides a range of data for analysis and dissemination. When planning focus groups and interviews it is important to develop semi-structured ‘guides’ that will help facilitate the discussions.

As with quantitative research, it is imperative that validated and robust methods of analysis are used to increase the credibility of the findings. Typically following collection (from open-ended survey questions, focus groups, and interviews), data is transcribed, categorized, coded, displayed, and verified. [28] Analyses can be done manually, or using specific computer software such as QSR NVivo. Detailed coding and interpretation of data is performed using one of a number of analytical methods that depend on the type of data collected, the objective of the research, and if an inductive or hypothetic-deductive approach is being used. [28] Once analysis is complete, member checking (i.e., sharing the findings of the study with the

participants) can enhance the credibility of a study. [6] This is because participants can either endorse (thereby providing credibility) or disagree with the analyses (therefore questioning the trustworthiness of the data). For more detail on designing and analyzing qualitative research see [3,6,28].

Conclusion

To conclude, qualitative research has been used effectively in sport and exercise science research in recent years. The authors urge both researchers and practitioners to engage in this type of research, requiring a 'buy-in' from both the research and applied communities. A harmonious coming together of practice and research should ultimately have a positive impact on athlete health and sporting performance.

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