Practitioner, Coach and Athlete Perceptions of Evidence-Based Practice in Professional Sport in Australia

Journal:	<i>International Journal of Sports Physiology and Performance</i>
Manuscript ID	IJSPP.2020-0835.R2
Manuscript Type:	Original Investigation
Date Submitted by the Author:	n/a
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Keywords:	Athletic Performance, Translational Research, Communication Barriers, Implementation Science, Elite sport, Research Informed Practice

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Abstract

Purpose: To examine practitioners, coaches and athletes' perceptions of evidence-based practice (EBP) in professional sport within Australia. **Methods:** 138 participants (practitioners [n=67], coaches [n=39] players [n=32]) in various professional sports within Australia each completed a group-specific online questionnaire. Questions focused on perceptions of research, the contribution of their own experience in implementing knowledge to practice, sources and barriers for accessing and implementing EBP, preferred methods of feedback and the required qualities of practitioners. **Results:** All practitioners reported using EBP, whilst most coaches and athletes believed EBP contributes to individual performance and preparation (>85%). Practitioners' preferred EBP information sources were 'peer-reviewed journals', and 'other practitioners within their sport', whilst athlete sources were 'practitioners within their sport' and 'other athletes within their sport'. As primary barriers to accessing and implementing research, practitioners highlighted 'time constraints', 'poor research translation' and 'non-applicable research'. Practitioners ranked 'informal conversation' as their most valued method of providing feedback; however, coaches prefer feedback from 'scheduled meetings', 'online reports' or 'shared database'. Both athletes and coaches value 'excellent knowledge of the sport', 'experience' and 'communication skills' in practitioners disseminating EBP. **Conclusion:** Practitioners, coaches and athletes believe in the importance of EBP to their profession, although practitioners reported several barriers to accessing and implementing research as part of EBP. Athletes place a high value on experienced practitioners who have excellent knowledge of the sport and communication skills. Collectively, these findings can be used to further stakeholder understanding regarding EBP and the role of research to positively influence athlete health.

Keywords: *Athletic Performance, Translational Research, Communication Barriers,*

1. Introduction

Evidence-based practice (EBP) is the pedagogical approach of integrating experience, values and research information to guide or support a decision making process and is commonly used in professional fields e.g. medicine¹ or education². In sports science, this has been suggested to include the collated integration of athlete and coach values, practitioner expertise and research evidence to inform the decision-making process, including the planning, delivery and reflection on practice to improve performance^{3, 4}. This process of EBP involves collating the knowledge and expertise of key stakeholders, including (but not limited to) how they access information, their use of research evidence, their perceptions of others and their environment, as well as their experiences in performing their duties within the normal realms of professional practice⁴. Such an integrated approach has many proposed benefits for both scientific and applied stakeholders within sporting organizations as they work towards a common goal of improving individual and/or team sport performance outcomes^{5,6}. For example, incorporating these principles may help to reduce inefficient or harmful training practices, prevent injuries, balance the benefits and risks in approaches to performance, as well as integrate athlete and coach preferences into decision making surrounding physical preparation⁷. Indeed, translating this knowledge to practice is a critical final step of EBP to positively influence player wellbeing, success, and workplace health⁴.

Whilst research^{7,8,9} has focused on investigating both researchers'- and practitioners'- perceptions of EBP within professional sport, our knowledge of the perceptions of other stakeholders, such as athletes and coaches, are lacking. As their values comprise part of the definition of EBP⁴, it is prudent to better understand coaches' and athletes' perceptions of EBP alongside those of the supporting practitioners. As the ultimate end user of any applied research that informs EBP, including perceptions of coaches and athlete attitudes on where and how they source [information to guide](#) EBP is critical to effective implementation and outcomes¹⁰.

For example, in contrast to practitioners, when accessing new information coaches prefer informal conversations to acquire information^{11,12,13}. Transferring this knowledge into practice can also be often hindered by a lack of resources (e.g. time^{12,14,15} and cost^{15,16}), as well as non-applicable evidence^{12,16,17}. Furthermore, some authors have reported poor player compliance can create a barrier to the effective translation of knowledge into practice^{7,8,18}. Currently, there is less research investigating coaches' perceptions and a lack of athlete perceptions on the importance of EBP, the value they place on different aspects of sports performance (e.g., mental, physical, tactical, and nutrition) or their preferences towards practitioners. Acquiring this knowledge may help to overcome the aforementioned barriers to implementing effective EBP.

Studies have attempted to understand the barriers to implementing EBP in professional sport by investigating characteristics surrounding practitioners' access, sources and use of research^{7,8}. Sport practitioners are members of a physical performance team (e.g. strength coaches, sport scientist, nutritionists, physiotherapists) and try to apply scientific principles and techniques to assist coaches and athletes and improve performance outcomes^{7,9,19}. Although research evidence is perceived as important by practitioners^{7,8}, barriers that impede research translation include a lack of resources^{7,8} and non-applicable research^{7,17}. Often research is inappropriately assumed to equate to published research papers (rather than a process that can develop skills and knowledge), and practitioners' have reported the most important sources of research are perceived as peer-reviewed journals, followed by conferences.^{7,8} For example, this research is predominantly used in applied settings for individualizing preparation and recovery strategies⁷. Despite this preliminary work (pilot research has been undertaken in the United States⁷), we have a limited knowledge of the barriers that practitioners experience when accessing and implementing research in Australia. Since research concerning EBP in Australia is scarce¹¹, it is pertinent to examine practitioners' access, sources and use of research, as well as how they disseminate their knowledge to other stakeholders. Therefore, this study examined the perceptions of professional⁷ sporting practitioners', coaches' and

athletes' use, implementation of, and barriers to EBP in Australia. Herein, we have examined this topic with a specific focus on how research has informed participants' practice, along with perceptions of value and expertise within this process.

2. Methods

Three separate surveys were designed for each designated stakeholder population: a) practitioners b) coaches and c) players, to examine their perceptions of the use, type and barriers to engaging with EBP. For practitioners, a previously developed 28-item questionnaire⁷, was adapted for the use with Australian practitioners. Additionally, shorter questionnaires, focusing on similar concepts from the practitioner-survey⁷, were developed and used with coaches and players (19 and 20 items, respectively). All procedures were approved by the institutional Human Research Ethics Committee.

Opportunity sampling was used, distributing the survey to existing networks of sporting associations, advertised through social media channels (Twitter, LinkedIn) and industry contacts. The survey was then provided through a web-link (SurveyMonkey, CA, USA). To partake in the survey, participants had to be full-time physical performance team members (practitioners), professional coaches (coaches) or athletes (players) employed by a professional sporting organization in Australia. The participants' positions were verified by two authors, before they were approved for completing the survey. The participants received invitations, a study information package, and reminders to participate in the survey between March and June 2020. Initially, a total of 246 invitations were sent, of which 158 were responded to (64%). After accounting for attrition and incomplete data, 138 surveys comprising 67 practitioners, 39 coaches and 32 players were completed (see Table 1 for further participant characteristics). Data were stored on a secure webserver with a password protected database, accessible only by the researchers to protect participants' data identity.

-----INSERT TABLE 1 ABOUT HERE-----

The adapted surveys were distributed to all members of the research team for critical analysis and feedback and then piloted with three full-time practitioners, who currently work in the Australian professional sporting system (but did not participate in final data collection). Full details surrounding the practitioner-survey items are explained elsewhere⁷ (available in Appendix 1), with a larger focus on perceptions surrounding research as opposed to (but not excluding) personal values and experiences. In summary, the survey collected general background information, before investigating the participants (a) use of research, (b) contribution of research evidence vs. personal expertise within their current role, (c) sources utilized to access information, (d) barriers to accessing and implementing EBP, and (e) methods of feedback to coaches and players.

Coaches and athletes were provided a shorter survey, targeting relevant information about research and contribution, preferred methods of feedback, practitioner engagement and sources of EBP. After the collection of general information (age, years of experience, sport) the survey for coaches had a shortened section on (a) and b) as above, along with (c) preferred methods of feedback from the performance staff, (d) desired qualities in performance staff and (e) areas of EBP they wished to receive more input. The athletes' survey was similar to the coach's version, with a slightly altered structure, additionally asking for sources of information (both surveys provided in Appendices).

Data from the survey was processed and analyzed using Python 3.7. Descriptive data (i.e., frequency counts, percentages, means, and SD) were calculated. Answers to open-ended questions were organized and subjected to inductive content analysis²⁰ by the lead and second author as per previous research²¹.

3. Results

Practitioners

All practitioners reported using research in their job, with 87% agreed or strongly agreed that research was important to their profession. The top three areas where practitioners use any form of research to inform, plan, deliver or reflect on their practice were 'strength & conditioning' (94%), 'recovery' (93%), and 'load monitoring' (91%), whilst the bottom three were 'tactics & strategy' (25%), 'teambuilding & leadership'

(19%) and ‘talent recruitment & development’ (18%). The full use of research by practitioners is provided in Figure 1A. Figure 1B on shows how the influence of evidence-based knowledge (scientific evidence; slider to the left) and personal expertise/experience (slider to the right) is perceived across different aspects of sports performance. [Results from the open answer questions are presented in Appendix 2, including why participants use research evidence, the most influential development\(s\) in the last 10 years in sport science and medicine research and strategies to overcome identified barriers to implementing research into practice.](#)

-----INSERT FIGURE 1 ABOUT HERE-----

Practitioners ranked the contribution of research to ‘optimizing individual player performance’ highest (1.79 ± 0.86 ; 1 = biggest contribution, 4 = smallest contribution), followed by ‘individual preparation and recovery’ (2.28 ± 0.97), ‘confidence when delivering key messages’ (2.72 ± 1.11) and ‘increased chance of team success’ (3.16 ± 1.05). The three most used sources of EBP information were ‘peer-reviewed research articles’ (88% of respondents), ‘other practitioners within the same sport’ (72%) and ‘conferences or seminars’ (70%). Perceptions towards the barriers when accessing [research components of EBP](#) and implementing research into practice are presented in Figure 2A, with ‘lack of time’, ‘insufficient staff’, ‘inability to transfer research to applied settings’ and ‘non-applicable/relevant research’ as the primary barriers. Practitioners most preferred methods of feedback to coaches (1 = most preferred, 4 = least preferred) were ‘informal conversations’ (2.0 ± 1.1), followed by ‘scheduled meetings’ (2.6 ± 1.1), ‘online reports’ (2.9 ± 1.0), a ‘shared database’ (3.3 ± 1.0) and ‘printed reports’ (3.5 ± 0.9).

Coaches

Coaches reported use of research outcomes as part of EBP related to ‘load monitoring’ (95% of respondents), ‘rehabilitation’ (81%) and ‘strength & conditioning’ (81%), and was least used in ‘tactics & strategy’ (42%), ‘teambuilding & leadership’ (37%) and ‘talent recruitment and development’ (37%).

Coaches perceived research to have the most contribution (1 = biggest contribution, 4 = smallest contribution) to ‘individual preparation and recovery’ (2.08 ± 1.13), then ‘individual player performance’ (2.11 ± 0.99), ‘overall team success’ (2.69 ± 1.17) and ‘delivering key messages’ (2.95 ± 0.88). The practitioner-qualities that were most valuable to coaches are provided in Figure 2B. Coaches reported that they wish to receive more evidence-based input in the areas of ‘injury prevention’, ‘mental training’ (both 47% of respondents) and ‘rehabilitation’ (45%). Coaches preferred methods of receiving feedback from their performance staff were ‘scheduled meetings’ (2.5 ± 1.1), followed by a ‘shared database’ (2.7 ± 1.2), ‘online reports’ (2.8 ± 1.2), ‘informal conversation’ (2.9 ± 1.3) and ‘printed reports’ (3.6 ± 0.8).

Athletes

All athletes agreed that EBP can contribute to ‘improving their individual performance’. 88% also agreed with the statement that EBP can contribute to ‘overall team success’. The top three sources of information for players were ‘practitioners within their sport’ (94%), ‘other athletes within their sport’ (84%) and ‘watching elite sport on TV’ (47%). 94% of athletes stated that if they had better access to evidence-based information to make better-informed decisions, they would use it. Additionally, athletes were more likely to engage with performance staff, if the practitioner had an ‘excellent knowledge of the sport’, ‘experience as a practitioner’ and ‘strong communication skills’ (Figure 2B). Athletes would prefer more input from performance staff in the areas of ‘mental aspects’ (44% of respondents), ‘strength and conditioning’ (44%), ‘injury prevention’ and ‘skill development’ (both 41%).

-----INSERT FIGURE 2 ABOUT HERE-----

4. Discussion

This study examined perceptions of practitioners, coaches and athletes towards use, barriers, and implementation of EBP in an Australian high-performance sport context, with a focus on the research aspect of this process. All practitioners used [research](#) in their role, and most agreed that within this, research was important to their profession. ‘Peer-reviewed journals’ were the preferred source of information, as well as ‘other practitioners within the same sport’. Practitioners reported several barriers to accessing and implementing research, including ‘time constraints’, ‘poor research translation’ and ‘non-applicable research’. Where practitioners rank ‘informal conversation’ as their most valued method of providing feedback, coaches prefer receiving feedback in more formalized manner, like ‘scheduled meetings’ and ‘online reports’ or a ‘shared database’. Both coaches and practitioners believed EBP was vital to improving individual performance, although coaches desired more scientific input in the areas of, ‘mental training’, ‘strength and conditioning’, ‘injury prevention’ and ‘skill development’. Athletes believe in the importance of EBP, are more likely to refer to practitioners or athletes within their sport to access this information, and value ‘excellent knowledge of the sport’, ‘experience’ and ‘communication skills’ in practitioners disseminating EBP.

Our findings support existing studies^{11,12} that highlight coaches and athletes use and value [research components of EBP](#), reinforcing its value by numerous stakeholders throughout sporting organizations in Australia. Such perceived value and use may be due to Australia’s strong historical engagement with sport science, education, and scientific support within high performance systems¹¹ (e.g., the Australian Institute of Sport). Regardless, this would suggest these respondents see worth in the integration of athlete and coach values, practitioner expertise and research evidence to optimize the decision-making process surrounding improvements in performance⁴. [Of interest, both practitioners and coaches perceive the use of research within EBP to have more of an influence on individual aspects of performance, and less on team success.](#) A likely reason for this is that team-success is also influenced by additional factors (e.g., opponents’ strength,

external conditions, referee decisions, luck, group dynamics), whereas the research used within EBP may be biased towards oneself, where greater control can be elicited for the application of EBP performance improvement at the individual level¹⁰. Another argument may be that team success takes more long-term decision making and planning, compared to individual improvements which may be more immediate.

All practitioners in our study used research in their day-to-day practice, concurring with previous evidence⁷. Areas typically led by practitioners, including ‘injury prevention’, ‘nutrition’ and ‘recovery’ were perceived to be more influenced by scientific evidence, rather than personal experience. In comparison, participants perceive more personal influence in areas that are led by coaches (e.g., ‘tactics & strategy’, ‘talent recruitment & development’, ‘teambuilding & leadership’, ‘mental preparation’). Indeed, ‘tactics & strategy’ are perceived as the most influenced by personal experience from all groups as reported previously¹². When interpreting these data, the domain-specificity should be considered, whereby most practitioners surveyed work in athletes physical performance roles (e.g. ‘S&C Coach’, ‘Athletic Performance Coach’ and ‘Physiotherapist’ combined for 41/67 participants in our study, whereas only 6 ‘performance analysts’ and 0 ‘psychologists’ took part). Overall, coaches have a more polarizing view, expecting more research in scientist-led aspects and more personal experience in coach-led areas, compared to practitioners, who report a more balanced approach, combining personal experience with research evidence. Indeed, in our study practitioners had a balanced view of personal experience and scientific evidence influencing strength and conditioning (Figure 1B). In this example, an experienced practitioner may acknowledge that certain strategies actually have low adherence in the applied setting, so adapts the scientific evidence to their own practice. Collectively, our results likely reflect the preferences for each individual to be drawn to information pertaining to their specific role or expertise within the high-performance team⁷. Furthermore, our results from the coach respondents support other work that highlights the increased need for evidence in psychological aspects (e.g., ‘mental training’, motivation, as well as tactical and skill acquisition areas; as outlined in Appendices) or the need for increased uptake of available research from practitioners and coaches outside the domains they favour as part of their own development.

Such information may help to develop better questions which can guide research, as well as the practical design of strategies appropriate for particular sports and individuals.

Similar to previous studies^{7,8,16} the biggest barriers of accessing [research components of EBP](#) and implementation of research from the perspectives of practitioners were reported as ‘lack of time’, ‘insufficient staff’, ‘inability to transfer research to applied settings’ and ‘non-applicable/relevant research’. Therefore, academics might need to think of ways of establishing research that allows easier and applicable transfer and implementation of this knowledge, into programming given the limitation of time constraints on coaches and practitioners⁹ (e.g. end-user centric research designs, sharing of resources between organisations, alternative methods of dissemination²²). In addition, the embedding of [staff](#) who work with coaches to develop coach-driven, sport science informed research aiming to answer a coaches question, may result in a more favorable integration of sport science concepts into coaching practice within a EBP framework. Conversely, sporting organizations could invest in strategies that allow additional time and personnel to help implement efficacious research (e.g. [practitioners and coaches undertaking their own research within the organization](#)). Interestingly, ‘player compliance’ was less of an issue compared to a study conducted in the United States⁷, possibly showing an cultural environment that encourages player understanding towards [the importance of research](#), and in turn buy-in toward EBP in Australia. Respondents highlighted five key themes for solutions to overcome these barriers in the open answers section of the study: ‘improve staff/coach/player/front-office buy-in through education’, ‘promote university-club-collaborations’, ‘increase resources’, ‘invest in more applicable research’ and ‘make research more accessible’ (Appendix 2). These themes aligned with research highlighting pursuing more university-club-collaborations^{8,18,23}, involving practical stakeholders early in the process^{5,6,24}, promoting more applicable and relevant (real-world scenario^{6,16}) research^{6,12,25}, and improving access to research for practitioners^{7,12} as strategies to alleviate these barriers. A further quandary is the competing demands of universities requiring published papers and industry requiring implementation of such work, with a current default seemingly that research evidence equates to a published paper. Future rectification of this may be more acceptance of

implementation science practices in sports science academia or engagement in research skills set development within industry. Indeed, practitioners should be encouraged to plan their own research using existing principles/practices with their own athletes, reflecting on this process and adapting future delivery to optimize performance³.

The collaboration between stakeholders in any sporting institution is viewed as integral to organizational success²⁶. Practitioners must work together with coaches and players towards the common goal of optimizing athlete health and enhancing team performance. For example, practitioners have previously stated that increasing coach-, player- and front-office- (e.g. management, owner, executives staff) buy-in through education (e.g. building awareness of research importance, encouraging staff to develop research skills and acknowledge scientific values), is a critical step to creating an environment that encourages the effective implementation of EBP^{6,27}. Specifically, practitioners may achieve greater buy-in with coaches and players if they understand what characteristics these populations value¹⁸. In our study, coaches and athletes reported an excellent knowledge of the sport, experience and communication skills (e.g. delivering condensed key messages, translating information from scientific to practical language) as their most desired qualities in a practitioner. Therefore, practitioners may advantage themselves by specializing in certain sports or, if crossing between sports, investing time in educating themselves within the specific environment (e.g., attending additional sessions/meetings with coaches/players). Comparatively, academic institutions should make sure communication skills are part of sport science curriculum to ensure graduates are capable of operating effectively within high performance sport settings.

While the findings of this study improve our understanding of stakeholders' perceptions on EBP, and research within this context in Australia, there are also limitations that must be acknowledged. Whilst we accept this study was focused on research components of EBP, [we did not ask specifics about participants' undertaking their own research. Furthermore,](#) more studies on athlete values and what they feel is important, as well as how coaches make their decisions are required. Although our sample is larger than those

previously used, researchers should involve as many stakeholders as possible who are responsible for decisions surrounding performance within sporting organizations (practitioners, coaches, athletes, front-office/management), to investigate where in the process of the knowledge-transfer barriers can be removed and where more education is needed. For instance, a higher and more evenly distributed sample would allow for accurate comparisons across different sports, experience and practitioner roles. Within the aforementioned processes there is a possibility of participant self-selection bias, as well as cross over regarding practitioners' roles within performance teams (e.g., title, tasks, situation, organizational context, role expectations, funding). In future, more international studies following this example would be beneficial, to compare cultural differences and differences between sports to implementing EBP. Finally, further qualitative approaches may allow for a more depth and understanding of some of the concepts and findings highlighted in our study.

Practical Applications

- Club-university-collaborations could help to lessen the perceived time-, staff-, and financial constraints on stakeholders, whilst also helping to provide high-quality study populations for researchers and important experience for university students.
- Sporting organisations and research institutions would benefit from a translational process incorporating all stakeholders focused on providing efficacious use for the end user (e.g., focus groups to have input on what sporting organizations want researched and how they would like to see the research translated).
- Since coaches and players value practical experience and communication skills, young practitioners should seek early internships and experience in applied settings, alongside their tertiary education. In addition, there appears an increased need for education for sport-science students on how to communicate with coaches/athletes.

Conclusion

Our study examined perceptions of practitioners, coaches and athletes towards the characteristics surrounding EBP within professional sport in Australia. Most practitioners, coaches and athletes agreed they regularly used [research in their role and believed in the importance of EBP](#). Practitioners reported peer-reviewed literature as their preferred source of information to [inform their practice](#), and liked to engage with other practitioners within the same sport. Practitioners highlighted a lack of time, staff and applicability of present research as the primary barriers to accessing [research components of EBP](#) and implementing research [into practice](#). Whilst practitioners ranked informal conversations as their most valued method of providing feedback, coaches prefer receiving feedback from structured feedback delivered in meetings or reports. Athletes reported a tendency to engage with practitioners or other athletes within their sport to access EBP, and are more likely to engage with practitioners who have excellent knowledge and experience within the sport, as well as good communication skills. It is hoped these findings help to further understanding for all stakeholders regarding EBP, a process that is critical to positively influence a player welfare, athlete/team success, and workplace health.

Acknowledgements

The authors would like to thank all participants for their involvement in the study. The authors declare no conflicts of interest. No funding was provided which assisted in the production of this manuscript.

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Figure Legends:

Figure 1: *A:* Use of research according to practitioners (black) and coaches (grey). *B:* Perceived influence of evidence-based knowledge (EBK) vs. personal experience (PE) in different aspects of elite sport reported by practitioners (P), Coaches (C) & Athletes (A) (black circle = mean answer; dark grey shaded area = SD).

Figure 2: *A:* Barriers when accessing (black) and implementing (grey) research into practice, according to practitioners *B:* Qualities that make coaches (black) and athletes (grey) more likely to engage with performance staff.

Tables:

Table 1: Demographic characteristics of practitioners, coaches and players

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	Practitioners (n=67)	Coaches (n=39)	Athletes (n=32)
Age			
Mean±SD	33.6±7.6	42.4±9.6	26.4±6.0
Range	18-57	21-62	18-41
Experience (in respective field)			
0-5 years	16	7	8
5-10 years	34	7	12
10-15 years	9	12	5
15-20 years	4	6	5
More than 20 years	4	7	2
Gender (of athletes they work with)			
Male	39		
Female	4		
Both/Mixed	24		
Sport			
Rugby	24	5	5
AFL	14	1	0
Soccer	10	17	11
Field Hockey	3	11	4
Cricket	3	0	2
Swimming	3	0	2
Basketball	0	1	4
Other	10	4	4
Role			
S & C Coach	22		
Athletic Performance Coach	9		
High Performance Manager	13		
Sport Scientist	11		
Physiotherapist	10		
Performance Analyst	6		
Have heard of EBP prior to this?			
Yes		34	20
No		5	12

NB: Other sports with n<5 include: Rowing, Tennis, Athletics, Netball, Squash, Triathlon, Cycling and other Olympic disciplines

Figure 1: A: Use of research according to practitioners (black) and coaches (grey). B: Perceived influence of evidence-based knowledge (EBK) vs. personal experience (PE) in different aspects of elite sport reported by practitioners (P), Coaches (C) & Athletes (A) (black circle = mean answer; dark grey shaded area = SD).

115x159mm (600 x 600 DPI)

Figure 2: A: Barriers when accessing (black) and implementing (grey) research into practice, according to practitioners B: Qualities that make coaches (black) and athletes (grey) more likely to engage with performance staff.

115x159mm (600 x 600 DPI)

Evidence-based practice in elite sport in Australia - PRACTITIONERS**Welcome to the survey**

The purpose of this survey is to get real-world opinions from practitioners (i.e. high performance managers, strength and conditioning coaches, sport scientists, nutritionists, athletic trainers, doctors and data scientists), coaches and players to help build bridges between academia and the applied world. Please answer Questions 1-5 below, followed by clicking the NEXT button which will take you the main survey questions. This will take approximately 7 min to complete and is designed to be completed once only. In all instances, your information will be treated confidentially. You can change your mind at any time and stop completing the survey without consequences. If you agree to participate in the survey, you will be agreeing to giving your consent as per below.

Please fill out Q1-5 below then click NEXT to start the survey

I agree to participate in the research project 'Practitioner, coach and player perceptions of evidence-based practice in elite sport in Australia' being conducted by Dr Hugh Fullagar (+61409240469, Hugh.Fullagar@uts.edu.au). I have read the below or someone has read it to me in a language that I understand. I understand the purposes, procedures and risks of the research as described in the Participant Information Sheet below. I have had an opportunity to ask questions and I am satisfied with the answers I have received. I freely agree to participate in this research project as described and understand that I am free to withdraw at any time without affecting my relationship with the researchers or my organisation. I agree that the research data gathered from this project may be published in a form that does not identify me in any way or may be used for future research purposes.

PARTICIPANT INFORMATION SHEET

Practitioner, coach and player perceptions of evidence-based practice in elite sport in Australia

WHO IS DOING THE RESEARCH?

My name is Dr Hugh Fullagar and I am a lecturer at the University of Technology Sydney.

WHAT IS THIS RESEARCH ABOUT?

The purpose of the present study is to examine practitioner, coach and player perceptions of the characteristics surrounding the use, implementation of, and barriers to evidence-based practice in sport science in Australia

FUNDING

There is no funding, financial incentives or conflicts of interest related to this project.

WHY HAVE I BEEN ASKED?

You have been invited to participate in this study because you are either a practitioner, coach or player who works in a professional sport in Australia.

IF I SAY YES, WHAT DOES IT INVOLVE?

If you decide to participate, I will ask you to complete an online survey which asks questions relating to your use of evidence based practice in your current employment within your professional club.

ARE THERE ANY RISKS/INCONVENIENCES?

The study is survey based so there is minimal risk to the applicants as all data will be de-identified. All data will be stored on a secure web server (Survey Monkey.com) and password protected databases/university computers to protect data identity.

1. What is your age?

2. How many years of experience do you have in elite sport?

3. What is your current job title/role?

4. What sport do you work in?

5. Which athletes do you work with?

- ☐ men
- ☐ women
- ☐ both/mixed

Evidence-based practice in elite sport in Australia - PRACTITIONERS

Section 1 of 2

Evidence-based practice in sport can be defined as the “integration of expertise, values and the best relevant research evidence applied to the decision-making process for the day to day service delivery to athletes”. Specifically within this definition we are interested in how you use, and what value you place, on the integration of research in your day-to-day decision making as a coach, player or practitioner. Please consider this concept when answering the following questions and how you integrate this into practice in your organisation.

* 6. What is your response to this statement: Research is important to your profession

☐ Strongly disagree	☐ Agree
☐ Disagree	☐ Strongly Agree
☐ Neither agree nor disagree	

* 7. Do you use research evidence in your performance/training (science and medicine) program?

☐ Yes	☐ No

Why/why not?

8. Please tick the following if you use research evidence in your performance/training (science and medicine) program for the following options? If unsure or you don't use, please leave blank. Tick all that apply

☐ Training load monitoring	☐ Injury prevention
☐ Mental training and preparation	☐ Rehabilitation (return to play)
☐ Strength and conditioning/fitness	☐ Tactical/strategical components
☐ Recovery	☐ Team building/leadership
☐ Nutrition	☐ Talent development/recruiting
☐ Other (please specify)	

9. For questions 9-18, when designing your performance/training (science and medicine) program, what discrete contribution does scientific evidence and your own personal experience/expertise make to the following areas? You can drag the circle left and right to choose your value

(i.e. 0 = all scientific experience, 100 = all personal experience, 50 = an equal contribution of both)

If you are not involved in any of the following aspects, just leave the slider blank (either don't click on slider or click 'Clear')

Training load monitoring

Scientific evidence

Equal contribution

Personal experience

10. Mental training and preparation

Scientific evidence

Equal contribution

Personal experience

11. Strength and conditioning/fitness

Scientific evidence

Equal contribution

Personal experience

12. Recovery

Scientific evidence

Equal contribution

Personal experience

13. Nutrition

Scientific evidence

Equal contribution

Personal experience

14. Injury prevention

Scientific evidence

Equal contribution

Personal experience

15. Rehabilitation (return to play)

Scientific evidence	Equal contribution	Personal experience	
☐			☐

16. Tactical/strategical components

Scientific evidence	Equal contribution	Personal experience	
☐			☐

17. Team building/leadership

Scientific evidence	Equal contribution	Personal experience	
☐			☐

18. Talent development/recruiting

Scientific evidence	Equal contribution	Personal experience	
☐			☐

Evidence-based practice in elite sport in Australia - PRACTITIONERS

Section 2 of 2

* 19. Of the following, what does research contribute to the most? Please rank from largest contribution (#1) to smallest contribution (#4)

	#1	#2	#3	#4
Individualized preparation or recovery recommendations	☐	☐	☐	☐
Confidence in delivering key messages to the coach/athlete	☐	☐	☐	☐
Optimizing individual player performance	☐	☐	☐	☐
Increasing chances of team success	☐	☐	☐	☐

* 20. If you are currently using evidence-based practice, what are the sources you use to gather your information? Please choose your TOP 5 sources (#1 being your most used etc).

	#1	#2	#3	#4	#5
Websites/podcasts/forums	☐	☐	☐	☐	☐
Social Media	☐	☐	☐	☐	☐
Conferences/seminars	☐	☐	☐	☐	☐
Peer-reviewed research articles	☐	☐	☐	☐	☐
Textbooks/books	☐	☐	☐	☐	☐
Infographics	☐	☐	☐	☐	☐
Practitioners within your sport	☐	☐	☐	☐	☐
Practitioners outside your sport	☐	☐	☐	☐	☐
Watching elite sport on TV	☐	☐	☐	☐	☐
Mainstream media (newspapers, magazines, radio)	☐	☐	☐	☐	☐
Asking researchers/university academics	☐	☐	☐	☐	☐
I don't use evidence-based practice	☐	☐	☐	☐	☐
Other	☐	☐	☐	☐	☐

Other (please specify)

21. What development(s) in the last 10 years in sport science and medicine research have had the greatest influence on the applied work you perform at your organisation (e.g. training programming, nutrition, recovery etc.)? Please be as specific as possible

* 22. What are your perceived barriers of ACCESSING research components of evidence-based practice within your organisation? Please tick all that apply

- ☐ Research reported is not applicable/relevant to issues we encounter
- ☐ I don't understand the research done in peer-reviewed literature
- ☐ Limited relationship with universities/academic resources
- ☐ Poor player compliance
- ☐ Poor coach support (e.g. 'buy in')
- ☐ Poor organisational support (e.g. front office/GM/athletic director)
- ☐ High financial cost
- ☐ Other (please specify)
- ☐ Time
- ☐ Inability to transfer information obtained from research to applied sporting context
- ☐ Limited knowledge of science and medical staff
- ☐ Lack of staffing
- ☐ Difficulty in sourcing information
- ☐ I don't perceive any barriers

* 23. If you were able to access the latest sport science/medicine research, what barriers (if any) do you perceive exist to IMPLEMENTING research into practice within your organisation? Please choose your TOP 5 barriers (#1 being the biggest barrier etc)

	#1	#2	#3	#4	#5
Research reported is not applicable/relevant to issues we encounter	☐	☐	☐	☐	☐
I don't understand the research done in peer-reviewed literature	☐	☐	☐	☐	☐
Limited relationship with universities/academic resources	☐	☐	☐	☐	☐
Poor player compliance	☐	☐	☐	☐	☐
Poor coach support (e.g. 'buy in')	☐	☐	☐	☐	☐
Poor organisational support (e.g. front office/GM)	☐	☐	☐	☐	☐
High financial cost	☐	☐	☐	☐	☐
Time	☐	☐	☐	☐	☐
Inability to transfer information obtained from research to applied sporting context	☐	☐	☐	☐	☐
Limited knowledge of science and medical staff	☐	☐	☐	☐	☐
Lack of staffing	☐	☐	☐	☐	☐
Difficulty in sourcing information	☐	☐	☐	☐	☐
I don't perceive any barriers	☐	☐	☐	☐	☐

24. What (feasible) strategies would you suggest to help overcome the barriers you identified in Q 22 & 23?

* 25. What are the top three methods you PREFER to use to feedback player/team health and performance information to your COACHING STAFF? Please choose Top 3 methods (#1 being your most preferred etc.)

	#1	#2	#3
Informal conversations/speaking	☐	☐	☐
Scheduled meetings	☐	☐	☐
Printed reports	☐	☐	☐
Online/email reports	☐	☐	☐
Shared access of database/cloud based software	☐	☐	☐
I don't feedback information to any of my coaching staff	☐	☐	☐

* 26. What are the top three methods you ACTUALLY use to feedback player/team health and performance information to your COACHING STAFF? Please choose Top 3 methods (#1 being your most used etc.)

	#1	#2	#3
Informal conversations/speaking	☐	☐	☐
Scheduled meetings	☐	☐	☐
Printed reports	☐	☐	☐
Online/email reports	☐	☐	☐
Shared access of database/cloud based software	☐	☐	☐
I don't feedback information to any of my coaching staff	☐	☐	☐

* 27. What are the top three methods you PREFER to use to feedback player/team health and performance information to your PLAYERS? Please choose Top 3 methods (#1 being your most preferred etc.)

	#1	#2	#3
Informal conversations/speaking	☐	☐	☐
Scheduled meetings	☐	☐	☐
Printed reports	☐	☐	☐
Online/email reports	☐	☐	☐
Shared access of database/cloud based software	☐	☐	☐
I don't feedback information to any of my players	☐	☐	☐

* 28. What are the top three methods you ACTUALLY use to feedback player/team health and performance information to your PLAYERS? Please choose Top 3 methods (#1 being your most used etc.)

	#1	#2	#3
Informal conversations/speaking	☐	☐	☐
Scheduled meetings	☐	☐	☐
Printed reports	☐	☐	☐
Online/email reports	☐	☐	☐
Shared access of database/cloud based software	☐	☐	☐
I don't feedback information to any of my players	☐	☐	☐

Evidence-based practice in Australian sport - COACHES

Welcome to the survey

The purpose of this survey is to get real-world opinions from coaches, players and practitioners to help build bridges between academia and the applied world. Please answer Questions 1-3 below, followed by clicking the NEXT button which will take you the main survey questions. This will take approximately 3 min to complete and is designed to be completed once only. In all instances, your information will be treated confidentially. You can change your mind at any time and stop completing the survey without consequences. If you agree to participate in the survey, you will be agreeing to giving your consent as per below.

Please complete Q1-3 below then click NEXT to start the survey

I agree to participate in the research project 'Practitioner, coach and player perceptions of evidence-based practice in elite sport in Australia' being conducted by Dr Hugh Fullagar (+61409240469, Hugh.Fullagar@uts.edu.au). I have read the below or someone has read it to me in a language that I understand. I understand the purposes, procedures and risks of the research as described in the Participant Information Sheet below. I have had an opportunity to ask questions and I am satisfied with the answers I have received. I freely agree to participate in this research project as described and understand that I am free to withdraw at any time without affecting my relationship with the researchers or my organisation. I agree that the research data gathered from this project may be published in a form that does not identify me in any way or may be used for future research purposes.

PARTICIPANT INFORMATION SHEET

Practitioner, coach and player perceptions of evidence-based practice in elite sport in Australia

WHO IS DOING THE RESEARCH?

My name is Dr Hugh Fullagar and I am a lecturer at the University of Technology Sydney.

WHAT IS THIS RESEARCH ABOUT?

The purpose of the present study is to examine practitioner, coach and player perceptions of the characteristics surrounding the use, implementation of, and barriers to evidence-based practice in sport science in Australia.

FUNDING

There is no funding, financial incentives or conflicts of interest related to this project.

WHY HAVE I BEEN ASKED?

You have been invited to participate in this study because you are either a practitioner, coach or player who works in a professional sport in Australia.

IF I SAY YES, WHAT DOES IT INVOLVE?

If you decide to participate, I will ask you to complete an online survey which asks questions relating to your use of evidence based practice in your current employment within your professional club.

ARE THERE ANY RISKS/INCONVENIENCES?

The study is survey based so there is minimal risk to the applicants as all data will be de-identified. All data will be stored on a secure web server (Survey Monkey.com) and password protected databases/university computers to protect data identity.

1. What is your age?

2. How many years of coaching experience do you have in elite sport?

☐ 0-5 years

☐ 15-20 years

☐ 5-10 years

☐ Greater than 20 years

☐ 10-15 years

3. What sport do you coach currently?

Evidence-based practice in Australian sport - COACHES

Evidence-based practice in sport can be defined as the “integration of expertise, values and the best relevant research evidence applied to the decision-making process for the day to day service delivery to athletes”. Specifically within this definition we are interested in how you use, and what value you place, on the integration of research in your day-to-day decision making as a coach, player or practitioner. Please consider this concept when answering the following questions and how such practice is integrated in your organisation.

* 4. Have you heard of evidence-based practice prior to reading the definition of this term above?

- ☐ Yes
- ☐ No

* 5. Of the following, what does research contribute to the most? Please rank from most important (#1) to least important (#4).

	#1	#2	#3	#4
Individualised preparation or recovery recommendations	☐	☐	☐	☐
Confidence in delivering key messages to the coach/athlete	☐	☐	☐	☐
Optimising individual player performance	☐	☐	☐	☐
Increasing chances of team success	☐	☐	☐	☐

6. In which of the following areas do you use research evidence in your performance/training (science and medicine) program? If you are unsure, just leave blank

- ☐ Training load monitoring
- ☐ Injury prevention
- ☐ Mental training and preparation
- ☐ Rehabilitation (return to play)
- ☐ Strength and conditioning/fitness
- ☐ Tactical/strategical components
- ☐ Recovery
- ☐ Team building/leadership
- ☐ Nutrition
- ☐ Talent identification/recruiting
- ☐ Other (please specify)

7. For questions 7-16, when designing your performance/training program, what discrete contribution does scientific evidence and your own personal experience/expertise make to the following areas? You can drag the circle left and right to choose your value

(i.e. 0 = all scientific experience, 100 = all personal experience, 50 = an equal contribution of both)

If you are not involved in any of the following aspects, just leave the slider blank (either don't click on slider or click 'Clear')

Training load monitoring

Scientific evidence	Equal contribution	Personal experience	<input type="text"/>

8. Mental training and preparation

Scientific evidence	Equal contribution	Personal experience	<input type="text"/>

9. Strength and conditioning/fitness

Scientific evidence	Equal contribution	Personal experience	<input type="text"/>

10. Recovery

Scientific evidence	Equal contribution	Personal experience	<input type="text"/>

11. Nutrition

Scientific evidence	Equal contribution	Personal experience	<input type="text"/>

12. Injury prevention

Scientific evidence	Equal contribution	Personal experience	<input type="text"/>

13. Rehabilitation/return to play

Scientific evidence

Equal contribution

Personal experience

14. Tactical/strategical components

Scientific evidence

Equal contribution

Personal experience

15. Team building/leadership

Scientific evidence

Equal contribution

Personal experience

16. Talent development/recruiting

Scientific evidence

Equal contribution

Personal experience

* 17. What are your most preferred methods of feedback for player/team health and performance information from your science and medical staff? Please provide your TOP THREE ranking (#1 being your most preferred etc)

	#1	#2	#3
Informal conversations/speaking	<div></div>	<div></div>	<div></div>
Scheduled meetings	<div></div>	<div></div>	<div></div>
Printed reports	<div></div>	<div></div>	<div></div>
Online/email reports	<div></div>	<div></div>	<div></div>
Shared access of database/cloud based software	<div></div>	<div></div>	<div></div>
Phone conversations/text	<div></div>	<div></div>	<div></div>
I prefer to not receive feedback from my science and medical team	<div></div>	<div></div>	<div></div>

* 18. What qualities/attributes make you more likely to engage with applied sport science practitioners/performance staff? Please provide your TOP THREE ranking (#1 being your most likely etc)

	#1	#2	#3
Educational qualifications	☐	☐	☐
Years of experience as a practitioner/performance staff	☐	☐	☐
Years of experience as an ex player	☐	☐	☐
Personal physical condition/appearance of the practitioner	☐	☐	☐
Approachable demeanour	☐	☐	☐
Humor	☐	☐	☐
Strong personal skills	☐	☐	☐
Strong communication skills	☐	☐	☐
Strong organisational skills	☐	☐	☐
Excellent knowledge of the sport/game	☐	☐	☐
Other	☐	☐	☐

Other (please specify)

19. In which area would you wish to receive more scientific input from your performance staff? (Check all that apply)

☐ Training load monitoring	☐ Injury prevention
☐ Mental training and preparation	☐ Rehabilitation/return to play
☐ Strength and conditioning/ fitness	☐ Tactical/ strategical components
☐ Recovery	☐ Team-building/leadership
☐ Nutrition	☐ Talent development/ recruitment

Evidence-based practice in elite sport in Australia - PLAYERS

Welcome to the survey

The purpose of this survey is to get real-world opinions from players, practitioners and coaches to help build bridges between academia and the applied world. Please answer Questions 1-3 below, followed by clicking the next button which will take you the main survey questions. This will take approximately 3 min to complete and is designed to be completed once only. In all instances, your information will be treated confidentially. You can change your mind at any time and stop completing the survey without consequences. If you agree to participate in the survey, you will be agreeing to giving your consent as per below.

Please complete Q1-3 below then click NEXT to start the survey

I agree to participate in the research project 'Practitioner, coach and player perceptions of evidence-based practice in elite sport in Australia' being conducted by Dr Hugh Fullagar (+61409240469, Hugh.Fullagar@uts.edu.au). I have read the below or someone has read it to me in a language that I understand. I understand the purposes, procedures and risks of the research as described in the Participant Information Sheet below. I have had an opportunity to ask questions and I am satisfied with the answers I have received. I freely agree to participate in this research project as described and understand that I am free to withdraw at any time without affecting my relationship with the researchers or my organisation. I agree that the research data gathered from this project may be published in a form that does not identify me in any way or may be used for future research purposes.

PARTICIPANT INFORMATION SHEET

Practitioner, coach and player perceptions of evidence-based practice in elite sport in Australia.

WHO IS DOING THE RESEARCH?

My name is Dr Hugh Fullagar and I am a lecturer at the University of Technology Sydney.

WHAT IS THIS RESEARCH ABOUT?

The purpose of the present study is to examine practitioner, coach and player perceptions of the characteristics surrounding the use, implementation of, and barriers to evidence-based practice in sport science in Australia.

FUNDING

There is no funding, financial incentives or conflicts of interest related to this project.

WHY HAVE I BEEN ASKED?

You have been invited to participate in this study because you are either a practitioner, coach or player who works in a professional sport league in Australia.

IF I SAY YES, WHAT DOES IT INVOLVE?

If you decide to participate, I will ask you to complete an online survey which asks questions relating to your use of evidence based practice in your current employment within your professional club.

ARE THERE ANY RISKS/INCONVENIENCES?

The study is survey based so there is minimal risk to the applicants as all data will be de-identified. All data will be stored on a secure web server (Survey Monkey.com) and password protected databases/university computers to protect data identity.

1. What is your age?

2. How many years of playing experience do you have in elite sport?

☐ 0-5 years

☐ 15-20 years

☐ 5-10 years

☐ Greater than 20 years

☐ 10-15 years

3. What sport do you predominantly play?

Evidence-based practice in elite sport in Australia - PLAYERS

Evidence-based practice in sport can be defined as the “integration of expertise, values and the best relevant research evidence applied to the decision-making process for the day to day service delivery to athletes”. Specifically within this definition we are interested in how you use, and what value you place, on the integration of research in your day-to-day decision making as a coach, player or practitioner. Please consider this concept when answering the following questions and how such practice is integrated in your organisation.

* 4. Have you heard of evidence-based practice prior to reading the definition of this term above?

- ☐ Yes
- ☐ No

5. For questions 5-14, what contribution does scientific evidence and your own personal experience/expertise help you make independent choices in the following areas? You can drag the circle left and right to choose your value

(i.e. 0 = all scientific experience, 100 = all personal experience, 50 = an equal contribution of both)

If you do not use or participate in any of the following aspects, just leave the slider blank (either don't click on slider or click '[Clear](#)')

Your training preparation

Scientific evidence

Equal contribution

Personal experience

6. Mental training

Scientific evidence

Equal contribution

Personal experience

7. Work in the weight room/gym or on-field conditioning

Scientific evidence

Equal contribution

Personal experience

8. Recovery

Scientific evidence	Equal contribution	Personal experience	
☐	☐	☐	☐

9. Nutrition

Scientific evidence	Equal contribution	Personal experience	
☐	☐	☐	☐

10. Injury prevention

Scientific evidence	Equal contribution	Personal experience	
☐	☐	☐	☐

11. Rehabilitation (return to play)

Scientific evidence	Equal contribution	Personal experience	
☐	☐	☐	☐

12. Tactics or strategy relevant to your sport

Scientific evidence	Equal contribution	Personal experience	
☐	☐	☐	☐

13. Team building/leadership

Scientific evidence	Equal contribution	Personal experience	
☐	☐	☐	☐

14. Skill development

Scientific evidence	Equal contribution	Personal experience	
☐	☐	☐	☐

* 15. How would you respond to this statement: Evidence-based practice can contribute to optimizing my own individual performance

- ☐ Strongly agree
- ☐ Agree
- ☐ Neither agree nor disagree
- ☐ Disagree
- ☐ Strongly disagree

* 16. How would you respond to this statement: Evidence-based practice can contribute to maximizing the chances of my team being successful

- ☐ Strongly agree
- ☐ Agree
- ☐ Neither agree nor disagree
- ☐ Disagree
- ☐ Strongly disagree

* 17. If you are currently using evidence-based practices, what are the sources you use to gather your information? Rank your TOP 5 (#1 being the most used etc.)

	#1	#2	#3	#4	#5
Websites/podcasts/forums	☐	☐	☐	☐	☐
Social Media	☐	☐	☐	☐	☐
Conferences/seminars	☐	☐	☐	☐	☐
Peer-reviewed research articles	☐	☐	☐	☐	☐
Textbooks/books	☐	☐	☐	☐	☐
Infographics	☐	☐	☐	☐	☐
Practitioners/performance staff within your sport	☐	☐	☐	☐	☐
Practitioners/performance staff outside your sport	☐	☐	☐	☐	☐
Players within your sport	☐	☐	☐	☐	☐
Players outside your sport	☐	☐	☐	☐	☐
Watching elite sport on TV	☐	☐	☐	☐	☐
Agents/associates/friends	☐	☐	☐	☐	☐
Mainstream media (newspapers, magazines, radio)	☐	☐	☐	☐	☐
Asking researchers/university academics	☐	☐	☐	☐	☐
I don't currently used evidence-based practice	☐	☐	☐	☐	☐
Other	☐	☐	☐	☐	☐

Other (please specify)

* 18. If you could have better access to evidence-based information to make better-informed decisions regarding your preparation or recovery would you use it?

☐ Yes

☐ No

* 19. What qualities/attributes make you more likely to engage with applied sport science practitioners/performance staff? Please provide your TOP THREE ranking (#1 being the most important etc)

	#1	#2	#3
Educational qualifications	☐	☐	☐
Years of experience as a practitioner/performance staff	☐	☐	☐
Years of experience as an ex player	☐	☐	☐
Personal physical condition/appearance of the practitioner	☐	☐	☐
Approachable demeanour	☐	☐	☐
Humor	☐	☐	☐
Strong personal skills	☐	☐	☐
Strong communication skills	☐	☐	☐
Strong organisational skills	☐	☐	☐
Excellent knowledge of the sport/game	☐	☐	☐
Other	☐	☐	☐

Other (please specify)

20. In which area would you wish to receive more scientific input from your performance staff? (Check all that apply)

- ☐ Training preparation
- ☐ Mental training
- ☐ Work in the weight room or on-field conditioning
- ☐ Recovery
- ☐ Nutrition
- ☐ Injury prevention
- ☐ Rehabilitation (return to play)
- ☐ Tactics or strategy
- ☐ Team-building/leadership
- ☐ Skill development
- ☐ Other (please specify)

Plan Programs/Inform Decision Making (n=14)

“...apply strength science principles”

“... guide our practice and also to support things we may already be implementing”

“... evidence underpins the basis of our practices as proven methods to plan towards our chosen outcomes. Be i

“Drives and directs program direction”

“Use it to provide some guidelines as to what may be effective and adapt it to my current situation and circumst

“Helps guide innovation/novel techniques, as well as validating those already practiced. Enables best and safe p

“Base practice off of valid & grounding principles from research”

“It bases the theory of what we do and then contextualize to the particular environment...”

“...provides a system for understanding change and ways to look at problems within the HP environment...info

“I believe in making decisions based on scientific evidence.”

“It informs the way we train and compete.”

“To make sure we’re making educated decisions regarding training strategies and prescription of load”

“...help shape but not completely make decisions”

“ground your practice with methods that have been research...”

For Peer Review

Continual Professional Development (n=14)

“Helps to keep me informed, and assist others where I can”

“... To be the best we can and use our knowledge to our advantage”

“Research evidence is the backbone to our profession. What works, what doesn't etc. It is a matter of searching

“Because it's gone through a thorough peer review process”

“Important to move forward with new evidence to help shape but not completely make decisions”

“It would be irresponsible not to, so much can be learnt and applied as a result”

“We always are looking for ways to improve our athlete's performance and reduce injury risk”

“I definitely push for this to be the case. The reason why is because I would like everything, we do to be eviden

“They are proven methods that work”

“Helps guide innovation/novel techniques, as well as validating those already practiced”

“It bases the theory of what we do and then contextualise to the particular environment”

“...To me it is a thinking paradigm that allows us to address any issues, even ones which have minimal research

“Learns from past, innovates toward future”

“It provides useful information to deliver the best service to the athletes.”

For Peer Review

Health and Safety (n=6)

“Safeguard my athletes and promote thorough process”

“... keep up to date with the best practices which may help an athlete get back on the field from injury more quickly”

“... would be negligent not to”

“... reduce injury risk”

“Enables best and safe practices...”

“...making educated decisions regarding training strategies and prescription of load”

confirmed to be accurate and meaningful.”

this point in time”

For Peer Review

Justify Decisions/ Programs to Coaches & Athletes (n=4)

“...justify what I am doing to my manager and the athletes.”

“...justifying a certain direction of the program.”

“... backing for what we do”

“... easy to justify...”

For Peer Review

For Peer Review

Increased Resource and Technology (n=19)

“Strength Diagnostics - use of force plates etc to inform programming and highlight training efficacy”

“GPS”

“...constant upgrades in the resources and technology space available to us...”

“...GPS usage for weekly planning, return to play, & review for coaching...GPS has given the understanding of

“The micro-technology tsunami has provided plenty of evidence on training and match demands...”

“GPS”

“GPS...”

“... GPS - it has taken away a lot of the subjective components to programming and rehabilitation”

“... increases in technology availability and usability. GPS, NordBord...”

“GPS monitoring, having an external load measure.”

“Proliferation of GPS technology”

“increase in GPS accuracy and reliability”

“The technical advances to make everything streamlined to allow better coaching and stronger insights to be de

“User-friendly testing and assessment tools like GymAware, ForceDecks, NordBord etc.”

“Technology (GPS, Force plates, velocity measures etc)”

“Understanding of game demands through improved technology to better plan training”

“Quantification of training load and load monitoring through wearable technology”

“...GPS data which are more readily available and more evidence to support how they are used/ limitations acro

“Implementation of data sharing between technology platforms to increase accessibility (eg. Training Peaks inte

Individualization

Measurement of training output and an individual's response to training, has greatly affected prescription"

"Individualising"

"...Sport specific return to play KPIs for individuals. How to monitor and adapt training volumes for individuals

"Personalized rehabilitation programs"

"Training load monitoring ... individual within the team..."

"Individualizing training intervention based off of improved ability to capture individual responses to stimulus"

AMS"

For Peer Review

Better transfer from research to practice (n=5)

“More research focusing on bridging the gap between theory and applied practice”

“Social Media”

“Capacity to share knowledge quickly and succinctly through twitter and podcasts.”

“Implementation of data sharing between technology platforms to increase accessibility (e.g. Training Peaks int

“Questioning of traditional dogmas associated with professional sports prep allowing a more focused approach.”

For Peer Review

More applicable research (n=3)

The amount of research being published in real world environments / team sports that is more applicable as a re:
“The validation and testing of methods to quantify training across sports and environments. This includes things:
“...quantity of research regarding validity/reliability/signal/etc. ... has been critical...”
e AMS).”

For Peer Review

Research in Load Monitoring (n=16)

- “Player monitoring”
- “...research on load management/monitoring....”
- “...Training monitoring”
- “...load management. Training load Gabbett work...”
- “Load Management and monitoring principles”
- “Load management...”
- “...fatigue research”
- “Load monitoring...”
- “Acute - Chronic workload ratio’s...”
- “Training workload monitoring...”
- “load monitoring...”
- “Training load monitoring both team and the individual within the team...”
- “...Training load monitoring...”
- “Tim Gabbett's work on training load...”
- “Training load monitoring...”
- “...understanding of risk associated with Training Load. Parameters around measurement and understanding of

Research in Nutrition (n=2)

“...Nutrition”

“...Nutrition for performance...”

For Peer Review

Research in Recovery (n=8)

“...Research on recovery... preparedness has provided a lot of useful insights”

“...Recovery strategies...”

“...Recovery of the athlete”

“Recovery research...”

“...Recovery strategies”

“...Recovery modalities and duration”

“recovery...”

“Recovery protocols...”

For Peer Review

Research in Injury prevention (n=2)

“Injury Reduction space e.g. hamstring injury prevention work (Eccentric HS strength, fascicle length monitoring)
“Introduction of the FIFA 11+ ACL prevention warmup for footballers.”

For Peer Review

Research in Rehab/ return to play (n=7)

“Injury classification and return to play”

“Return to play timescales for players. Sport specific return to play KPIs for individuals...”

“Personalized rehabilitation programs”

“...Evidence-based rehab (as opposed to protocols)”

“...criteria-based rehabilitation...”

“...Return to Play protocols...”

“...Updated RTP protocols from severe injury”

For Peer Review

Research in Programming (n=4)

“Training program development ...”

“Programming...”

“...Program progression/regression”

“Training programming...”

For Peer Review

Other (n=14)

“Remedial Massage Techniques”

“...eccentric exercises and testing modalities using eccentrics has broadened my mind to the use of these in exercise”

“...blood flow restriction training”

“HIIT training principles for conditioning”

“Speed strength training and transfer to athletic performance. E.g.: velocity-based training”

“Research that shows that greater volumes of training, when delivered appropriately, prepare the athlete for more”

“...Motivational research on the concepts of flow and growth mindset and how we can include mechanisms for”

“...Worst-Case scenario and peak game intensity research to ensure that our training is meeting match demands”

“...Recent work on High Intensity Interval Training to develop VO2 Max effectively with smallest amount of time”

“...Off-foot conditioning specificity (e.g. HIIT)”

“...The work coming out of the hamstring group (Opar and colleagues) has been very influential on practices in”

“...Research on ...sleep ... has provide a lot of useful insights”

“...youth development”

“...Shane Malone speed exposure work / ACU Nordic work / Aspetar papers”

“...Research on ... mental preparedness has provide a lot of useful insights”

1, recovery measures and injury screening processes”

out to handle thus reducing injury risk...”

hysical program...”

o merge S&C/Sports Science with coaching....”

ial environment”

For Peer Review

More Applicable Research (n=12)

- “...change in the way research is viewed. A case study of an elite athlete is much more relevant and useful than
- “...not enough sport specific research ... at the elite level which can be implemented on a daily basis.”
- “Everything is context specific. Some things are applicable to our environment. Some things aren't. University’
- “...what is required to get research published (the length of intro, methods and stats) isn't always relevant or of:
- “Match specific data research that can/could be utilised in program design (field/strength) to assist greater transi
- “Science and research in practice, based in practice and derived from practice settings”
- “...research questions driven from industry rather than just gaps within literature. I can appreciate there are a lo
- “have academics who understand the professional sporting arena better...”
- “...practical application. Greater use real world data in sporting/high performance setting, less lab-based studies
- “More relevant research questions, faster publications, more incentives for sharing research.”
- “More journals with practical applications to elite environments (not in clinical practice)”
- “More short-term studies within elite sport - may not fully answer questions with same confidence but will allow

For Peer Review

Staff/Coach/Player/Front-Office Buy-In & Education (n=15)

“Coaches buy in”

“Education to the decision makers (head of football, CEO)”

“Need greater support from front office to create space in programme for staff learning and implementation of f

“Buy in from staff with fixed mentality”

“Better education of coaches and players collectively of what EBP is all about”

“... Has to be a focus and a premium put on research from GM down, if the senior management do not value in

“Pre-season meetings with ALL members of coaching and staff to inform them of potential changes we can mal

“Education of coaches and organisation in the benefits of doing things correctly...”

“...current staff who want to do things the way they have been done. Barrier is that they don't want to change th

“Allowing coaches to drive science-based initiatives where possible”

“Ongoing Coach education. Bringing sports science and Coaches education closer together.”

“...Upskilling of Staff by the organisation...”

“...actively engaging front offices, coaches, and athletes to help educate them on the scientific process, literacy

“... Coaches reading more. Organisations allowing more research with FT pro athletes”

“...employing some staff members with some research-based degree (i.e. PhD) or at least experience in conduct

University-Club-Collaborations (n=14)

“...well planned intern programs...”

“High Performance Managers need to ... build strong relationships with Universities. Mutually beneficial relationships”

“Embedded students (masters, PhD etc) ...”

“Strong relationship with a University is important...”

“Increase the approach from universities to sporting clubs for research”

“...strengthening the relationship with the local Uni to provide internship opportunities would help to overcome”

“Tighter relationships between professional sporting teams and tertiary academic institutions. If this link improves”

“...Build stronger relationship with Uni”

“getting research completed within our training environment”

“...Links with universities and sports teams. Setting up research students or scholars with sports teams or part of”

“Effective use of Interns to allow paid staff more time to think, plan and analyse Upskilling of Staff by the organisation”

“Universities offer more hybrid research-practitioner roles in professional clubs and make it easy to implement”

“Working more closely with University and State Institute partners.”

“Universities be more forthcoming with access to equipment etc. which are used in sport science / medicine. As well as being really helpful here... club overall needs to be supportive and drive research, and a culture of innovation and buy-in”

Resources (n=14)

...having more experienced staff would help greatly in implementing any sort of strategy, it would also help free

“...increased \$ to hire suitable staff”

“... cost...”

“...create space in programme for staff learning and implementation of findings...”

“...Time is needed to be able to read & critically appraise research.”

“...More money for support staff to improve ability to implement.”

“...Less Paywalls...”

“More staff”

“... overcome the lack of staffing which would in turn help with the lack of time we have to implement these st

“... fix the staffing challenges which is the general concern in sport where we generally have small teams of ov

“Time is the biggest barrier for me...”

“... allow paid staff more time to think, plan and analyse...”

“... everyone is time-poor...”

“...Funding and staff is difficult in a women’s program - many of us are simply doing more work than that said

ers is needed...”

For Peer Review

Research Access (n=10)

Club account for online articles”

“... shorter research articles or reporting of results...”

“Research needs to publicly available...”

“Greater access to research articles. Less paywalls...”

“...free access to all research journals...”

“More access to university libraries...”

“... improved access and use of research data...”

“easier access to research. More reader friendly research, particularly surrounding practical application...engagi

“...more incentives for sharing research.”

“Open source journals...”

ptions.”

For Peer Review

dcasts on the real-world application of sport science (maybe with rotating sports hosting various topics)”

For Peer Review