

Impact case study (REF3)

Institution: University of South Wales (USW)		
Unit of Assessment: 24 Sport and Exercise Science, Leisure and Tourism		
Title of case study: From Practice to Podium: Improving the Training, Service Delivery and Performance of Sport Scientists, Coaches, Educators, and Elite Athletes.		
Period when the underpinning research was undertaken: 2014-2020		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Brendan Cropley	Professor	2017-present
David Shearer	Professor	2010-present
Ceri Bowley	Senior Lecturer	2015-2019
Period when the claimed impact occurred: 2014-2020		
Is this case study continued from a case study submitted in 2014? No		
1. Summary of the impact (indicative maximum 100 words)		
<p>Research undertaken at the University of South Wales (USW) has developed novel understandings of mechanisms and interventions that enhance effective service provision in sport (e.g., reflective practice; biofeedback). These have been significant in substantially changing and improving: (a) nationally and internationally recognised professional education qualifications (FAW/UEFA coaching licences; BASES Sport & Exercise Science Accreditation); and (b) the preparation of those performing at major international sporting competitions (Commonwealth / Olympic Games). Between 2014 and 2020, our research has directly influenced the service delivery of over 4000 coaches working in Wales, over 100 elite football coaches working across the World, over 100 sport science support staff, and the performance of over 100 Sport Wales international elite athletes (influencing medals won). Beyond sport, our research has also been used to construct new approaches to workforce development for approximately 800 staff members at Coleg-y-Cymoedd.</p>		
2. Underpinning research (indicative maximum 500 words)		
<p>Since 2014, researchers at USW have worked closely with government agencies, national governing bodies of sport (NGBs), and education providers (e.g., The Football Association of Wales Trust [FAWT]; British Association of Sports and Exercise Sciences [BASES]; Sport Wales; UK Coaching; Coleg-y-Cymoedd) to conduct research that informs best practice in the development and performance of professional practitioners and athletes. Indeed, in concert with European Knowledge, Economy, Skills Scholarships (KESS), Sport Wales and the FAWT have separately funded PhD studentships in this area to Shearer (2016, 2020) and Cropley (2018), totalling £158,952 [9, 10, 11], with the aim of producing translational research that improves practice in the respective organisations. This research has focused on 3 key areas:</p>		
<p>i. Enhancing professional practice through reflective practice</p> <p>Whilst reflective practice has been widely advocated as a process of experiential learning, a lack of knowledge and understanding has hindered its integration into the domain of sport. Research conducted at USW has systematically developed an understanding of the efficacy and practice of reflection for professional development in the context of sport. Most recently, Cropley's 2017-2020 research has demonstrated that reflective practice facilitates positive adaptations to a range of personal (e.g., hardiness) and interpersonal (e.g., communication) characteristics that help to augment the effectiveness of sport science and coaching service delivery [1, 2]. Further, Cropley's (2020) novel longitudinal research [1] using a single subject multiple-baseline intervention design, has facilitated a better understanding of how the skills required for reflective practice can be effectively taught and integrated into professional education programmes across a variety of sectors (e.g., sport; education) through the use of multi-modal interventions (e.g., mentoring, communities of practice, formative feedback).</p>		
<p>ii. Improving elite coach and athlete preparation for performance</p>		

It is well known in the field that the psychological preparation of coaches, support staff, and athletes has been demonstrated as a predictor of successful performance in competitive events. Consequently, NGBs persistently strive to implement the most effective approaches to help individuals cope with the demands that such situations create. In attempts to aid Sport Wales in such endeavours, over the last six years, Shearer's research [3, 4] has sought to help to inform best practice regarding the preparation of performers. Supported by a number of research grants [7, 8, 9], his work, which entailed direct engagement with Sport Wales' practicing sport psychologists, international coaches and elite athletes, identified performance decrements at major events were often caused by poor emotional awareness and attentional focus due to the stress-related demands of competition. Subsequently, his research has shown that simple biofeedback techniques, which provide real-time feedback of how the body's physiology responds under stress and during controlled resonant frequency breathing, can be used as an effective tool to prepare performers to deal with the pressures encountered at major world-level sporting events (e.g., Olympic Games). Specifically, simple, brief, and bespoke breathing interventions were shown to increase heart rate variability, the use of somatic control strategies under pressure (e.g., controlled breathing) and impacted emotional control before and during performance and in domains outside sport (e.g., home life).

iii. Exploring sport as a vehicle for life skill development in young people

Sport has been advocated as a domain in which people can learn transferrable skills (e.g., reflective practice; emotional control) that will help them to function effectively in all areas of their lives. These skills are thought to be key facilitators of sporting performance that compliment sport-specific skills, allowing individuals to cope with the demands (e.g., micro-politics) associated with competitive sport. However, little is known about how life skills are developed through sport. Using a rigorous systematic review [6] and applied intervention research design [5], Bowley and Cropley found that life skills are taught and not caught through sport participation alone. Consequently, they examined the impact of an education programme that focused on improving coaches' ability to facilitate life skills development through football. Funded by KESS and the FAWT (£72,000 PhD funding), Bowley and Cropley's work has informed a key element of coach education across FAWT and UEFA coaching qualifications, and consequently influenced coaching practice across Wales to enhance the personal development of players.

3. References to the research (indicative maximum of six references)

All references are from international peer-reviewed journals. Two are in the lead publication in the discipline hosted by the British Psychological Society, *Sport & Exercise Psychology Review* [1, 5]. Reference 2 is from the leading, peer-reviewed open access journal in the field of psychology, *Frontiers* (impact factor 2.1). Reference 3 is in the *Journal of Applied Sport Psychology in Action*, the first journal in the discipline dedicated to applied practice research. Reference 4 is in *Applied Psychophysiology and Biofeedback*, which is a widely referenced interdisciplinary journal. Finally, reference 6 is in the *Journal of Applied Sport Psychology*, widely considered to be one of the premier journals for the discipline. References 3 and 4 were the product of research funding (£141,273 combined [7, 8]).

RESEARCH OUTPUTS UNDERPINNING THE CASE

1. **Cropley, B.**, Hanton, S., Miles, A., Niven, A., & Dohme, L-C. (2020). Developing the effectiveness of applied sport psychology service delivery: A reflective practice intervention. *Sport & Exercise Psychology Review*, 16, 38-60.
2. **Cropley, B.**, Baldock, L., Hanton, S., Gucciardi, D., McKay, A., Neil, R., & Williams, T. (2020). A multi-study exploration of factors that optimise hardiness in sport coaches and the role of reflective practice in facilitating hardy attitudes. *Frontiers in Psychology*. <https://doi.org/10.3389/fpsyg.2020.01823>
3. Gross, M., Hall, R. J., Bringer, J., Cook, C. J., Kilduff, L. K., & **Shearer, D. A.** (2017). Resonant frequency training in sport: A case study example. *Journal of Sport Psychology in Action*, 8, 1-11. <http://dx.doi.org/10.1080/21520704.2017.1287797>
4. Gross, M., **Shearer, D. A.**, Bringer, J., Hall, R., Cook, C., & Kilduff, L. (2016). Abbreviated resonant frequency training to augment heart rate variability and enhance on-demand emotional regulation in elite sport support staff. *Applied Psychophysiology and Biofeedback*, 41, 263-274. <https://doi.org/10.1007/s10484-015-9330-9>

5. **Bowley, C., Cropley, B.,** Neil, R., & Hanton, S. (2018). A life skills development programme for youth football: Programme development and preliminary evaluation. *Sport & Exercise Psychology Review*, 14, 3-22.
6. Williams, C., Neil, R., **Cropley, B.,** Woodman, T., & Roberts, R. (2020). A systematic review of sport based life skill programmes for young people: The quality of design and evaluation methods. *Journal of Applied Sport Psychology*. <https://doi.org/10.1080/10413200.2020.1792583>.

RESEARCH GRANTS UNDERPINNING THE CASE

7. **Shearer, D. A.,** Kilduff, L., & Hall, R. J., (2014 - 2015). Using Elite Commonwealth Athletes as a test-bed for the development and integration of new feedback screens, peripherals, and 3rd party software in biofeedback equipment. A4B ERDF proof of concept grant. **GBP47,273**
8. **Shearer, D. A.,** (2015- 2017). Welsh Institute of Performance Science - High Performance Research Assistant funding. Sport Wales Institute. **GBP94,000**
9. **Shearer, D. A.,** & Hall, R. J. (2016-2019). An investigation of cognitive and behavioural factors that influence tapering in elite swimmers. Joint award received from Sport Wales and Knowledge Economy Skills Scholarships (KESS). **GBP53,476**
10. **Cropley, B., & Shearer, D. A.** (2018). Developing a framework of mental toughness in youth football: Exploring mentally tough behaviours and associated personality traits to aid talent development. Joint award received from FAWT and Knowledge, Economy, Skills Scholarships Project (KESS). **GBP53,476**
11. **Shearer, D. A.,** Roderique-Davies, G., & Greville, J. (2020). Psychological interventions for physical recovery from acute exercise induced fatigue. Joint award received from Sport Wales and Knowledge Economy Skills Scholarships (KESS). **GBP52,000**

4. Details of the impact (indicative maximum 750 words)

In pursuit of developing best practice and sporting excellence, our research has informed improvements in the education and performance of coaches, support staff and athletes nationally and internationally.

The development of best practice in sport practitioner education and professional development:

i. The Football Association of Wales Trust [FAWT]

Cropley and Bowley's research has been used by the NGB for football in Wales (FAWT) to inform the development of their National Syllabus [b], which underpins the FAWT coach education portfolio. This syllabus guides national youth development and enriches the content of the coach education programmes offered by the FAWT. All coaches (between 4000 and 7000 coaches per year from 2015-2020) engaging in these programmes are, therefore, exposed to the recommendations presented in the National Syllabus [a].

Bowley and Cropley's research [5, 6] has resulted in the creation of modules designed to educate coaches how to integrate life skills development into their coaching practice. These modules are embedded into the curricula of the FAWT Level 1 and Level 2 awards, and delivered to ~2000 coaches (400 per annum from 2015-2020 [a]), with many coaches indicating that the research-informed modules have facilitated improvements to their practice – “*We have found that many of our coaches have reported substantial developments in their coaching practice as a result of being exposed to Brendan's work*” (FAWT Technical Director [a]). Additionally, Cropley's research into reflective practice [1, 2] has been used to develop modules on Levels 2-5 (C Certificate to Professional Licence) of coach education offered by the FAWT, which have been delivered to ~1980 coaches since the qualifications were re-written between 2017-2020 [a] – these qualifications include those ratified by UEFA (the NGB for football in Europe). This research has also informed the way coaches are asked to engage in reflective practice during their coach education journeys and has significantly influenced coaches' attempts to improve the effectiveness of their practice, “*Brendan's research has really helped to facilitate the quality of my reflective practices, which I believe has helped me to become a more effective coach. His work has had a considerable effect on my work*” (EFL Championship Coach, 2017; [a]). Approximately 10% of the candidates on the UEFA accredited licences delivered by FAWT attend from overseas' NGBs (~130 coaches between 2017-2020). This widens the reach of our impact to an elite

international audience, with many of these coaches working in the highest leagues in their respective countries (e.g., La Liga, Spain) [a]. In support of this impact, the FAWT Technical Director detailed: *“We have witnessed significant changes in coaches’ practice and education and in player development, which have occurred at least in part because of the integration of the evidence Brendan has developed through his research”* [a].

ii. British Association of Sports and Exercise Sciences [BASES] and UK Coaching

Cropley’s research [1, 2] has been used to create a number of resources and Continuing Professional Development (CPD) programmes to support the ongoing development of coaches’ reflective practices across a range of sports [d, e]. Collectively, these have supported a *“huge step forward in coach education”* [f] and have been distributed to a worldwide audience via NGB websites, which have been accessed by over 400 coaches in 2020 [e]. More specifically, Cropley’s research [1, 2] has been used to re-design the core Reflective Practice workshop on the BASES (the UK’s leading governing body for Sport & Exercise Science) Supervised Experience programme [c]. Between 2017-2020, 100 trainees on the programme have been educated using content underpinned by Cropley’s research. As this workshop is core, every future trainee who participates in the programme (and often go on to work in elite sport) will also be impacted by Cropley’s work. Feedback from participants showed the workshop had a profound influence on many of the candidates’ abilities to engage in reflective practice, which is likely to augment the quality of their service delivery: *“I’m going to reflect so differently now based on what I’ve seen [during the workshop] and I’m sure that this will make my reflections more critical, which will have a huge impact ... and improve what I do”* (Anonymous, 2019 [c]). The influence of this research on practitioner development was further recognised by BASES who awarded Cropley and colleagues an Expert Statement Grant (£1000) in 2019 to summarise the key findings from research relating to reflective practice and support the development of service delivery across the sport and exercise sciences disciplines [d]. This statement was distributed to the 2561 professional and student members of the organisation.

iii. Coleg-y-Cymoedd

Finally, the impact of Cropley’s research in sport has been recognised outside of the sport domain by Coleg-y-Cymoedd, one of the largest tertiary education colleges in Wales. Since 2017, the college has utilised Cropley’s research in order to design and implement a staff CPD programme underpinned by reflective practice, resulting in the education of ~800 academic and support staff [g]. This has fundamentally changed the way that the college seeks to improve academic service delivery. This is confirmed by the college’s Vice Principal: *“[Cropley’s research] links directly to what we wanted to achieve at the college; namely a reflective workforce who are able to address the effectiveness of their practice. Consequently, the links that Brendan has made ... have been impactful for us ... we have seen explicit improvements in staff engagement in reflective practice, which is fundamentally altering the way in which they work”* [f].

The development of best practice in applied performance psychology:

i. Sport Wales

Shearer’s research [3, 4] has developed via two funded industrial collaborations with Sport Wales that began in 2014, the most recent of which saw the formation of the Welsh Institute of Performance Science (WIPS: funding secured till 2024). WIPS now act as the research arm of Sport Wales and, as a founding member, Shearer’s work was driven directly by the needs of Sport Wales and Team Wales to improve workforce (e.g., coach, athlete) performance, and focused on the preparation of athletes for elite-level, international, multisport games (e.g., Commonwealth Games 2014 and 2018; Olympic Games 2016 and 2020). The impact of this research is international by the nature of the international level of competition experienced by athletes and coaches [h, i]. Shearer’s research has shown that biofeedback techniques can be used to effectively prepare coaches, support staff and athletes for elite competition by enhancing their competition-coping and decision-making skills [3, 4]. This has resulted in the delivery of in-house training workshops to all Welsh Commonwealth Sports, and adoption of the psychophysiology techniques detailed in the research by the sport psychology delivery team at Sport Wales in support of their athletes [h]. In particular, the methods were used to psychologically prepare over 100 elite athletes (with great effect) by a number of coaches at the Commonwealth Games in Glasgow in 2014, and Gold Coast 2018 where Team Wales had their best ever medal

performances at an international level in succession [h, i]. For the Gold Coast 2018 games in particular, these stress-management methods were used to directly intervene with 20% of Wales' medallists, including 30% of Wales's gold medallists – *“The intervention [biofeedback] ... helped them to remain in control during pressure situations ... These marginal gains in emotion control and subsequent behaviour/behaviour can often distinguish between winning a medal or not”* (Assistant Director Sport System Strategy and Services, Sport Wales Institute, Sport Wales [h]).

ii. Swim Wales

Similarly, Shearer's work with Swim Wales (2016-2020) has helped Welsh swimmers to prepare for the psychological factors encountered during the taper period in the lead-in to competition [j]. Swim Wales and Sport Wales psychologists identified that Welsh medals had been lost at major international competitions through poor psychological adaption during this stressful time in the swimmers' and coaches' preparation. This industry-driven problem, endorsed by WIPS, resulted in Shearer receiving KESS funding [9] to research and implement a biofeedback intervention to improve emotional regulation during the taper period before an important competition. Since 2018, the research has been integrated into the service delivery of the sport science support team (e.g., psychologists, S&C coaches; $n = 7$) and sport coaches ($n = 18$) working with Swim Wales [i], and has subsequently resulted in a change to the competition culture of Swim Wales, from grassroots to elite international competition. The National Performance Director of Swim Wales has stated: *“This research has had a significant impact on the way in which we view and plan for the implementation of the taper at all level of swimmer development”* [i].

5. Sources to corroborate the impact (indicative maximum of 10 references)

Evidence supporting the development of best practice in sport practitioner education and professional development:

- a. Letter from the Technical Director of the Football Association of Wales Trust
- b. FAWT National Syllabus document: 2015-2020 <https://www.fawtrust.cymru/next-generation/national-syllabus/>; 2020-2025 <https://www.fawtrust.cymru/nationalsyllabus/>.
- c. Letters from the Director of Sport Education Solutions and the Professional Development Manager of the British Association of Sport & Exercise Sciences (BASES) relating to BASES core professional training workshops
- d. British Association of Sport & Exercise Sciences (BASES) Expert Statement: Reflective Practice in the Sport & Exercise Sciences
- e. UK Coaching website resources: <https://www.ukcoaching.org/resources/topics/search?query=brendan%20cropley&taxonomy=47&order=relevant>
- f. *Coaching Matters* article: <http://www.joomag.com/magazine/coaching-matters-volume-3-issue-6/0045165001443003256/p8?short>

Evidence supporting the development of best practice in wider professional education:

- g. Letter from the Vice Principal of Coleg-y-Cymoedd

Evidence supporting the development of best practice in applied performance psychology:

- h. Letter from the Assistant Director Sport System Strategy and Services at Sport Wales Institute
- i. Letter from the Performance Director at Welsh Swimming