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The transferability of sport coaching research: a critical commentary

Lyle, J. W. B.

Introduction

The catalyst for this paper is a widely reported belief that sport coaching research is not relevant to or being utilised by practitioners, and is not being incorporated into coach education. Abraham and Collins (1998) pointed to the limited application of the research base to coach education, a theory-practice gap that continues to be identified (Bush *et al*, 2013; Cushion & Lyle, 2010). Cushion (2007) highlights a problematic link between academic literature and coaching practice, and Abraham, Collins and Martindale (2010) suggest that “research has yet to effectively inform coaching development” (p.549). Bowes and Jones (2006) identify coaches’ questioning of the relevancy of research as an indicator that a comprehensive account of coaching activity is yet to be established. In particular, they suggest that much of the work undertaken does not reflect the complexity of the coaching process. In a later paper, Abraham and Collins (2011) argue that research has limited practical relevance, pointing to its overly specific focus, and poor concept of the coaching process. Each of these *cris de coeur* in the coaching literature is followed by a prescription for redressing the situation, much of which is directed at the perceived quality of coach education.

Farrow *et al* (2013) identify “a considerable gap between cutting-edge research and real world application, particularly in the sport coaching environment” (p.3). They offer three reasons: (1) researchers affirm ‘obvious’ findings – coaches feel that they already ‘knew this’ and are ahead of the game; (2) findings are presented with too many caveats to convince coaches of the value of subsequent application; and (3) dissemination is couched in the language of the scientific/academic journal. Underlying such claims are a number of problematic preconceptions: academic knowledge is superior to practitioner knowledge; knowledge transfer is a dyadic but one-way process, and; knowledge generation, transfer and use are studied as isolated stages.

However, this paper argues that the statement that research findings are not incorporated into practice or education, and therefore have limited impact, should be subject to further clarification. The claim is often presented as a criticism of others' coaching research, although it is much less common for commentators to address, directly, any perceived shortcomings in the conduct or dissemination of their own work. Such an assertion would imply knowledge and awareness of coaches' practice beyond the specificity of any recommendation from research. In addition, poor research design in terms of external validity means that it is difficult to recognise research findings in the context and particularity of practice. It is also feasible, indeed perhaps to be welcomed, that coaches are already incorporating the findings of research but in a suitably amended and applicable fashion. The emphasis on perceived shortcoming in coach education and development is perhaps understandable as materials and curricula are "visible", whereas researchers are (should be) less inclined to generalize about coaching practice (North, 2017).

Utility and dissemination will be a function of the purpose of research and it is important, therefore, to begin with an awareness of the range of purposes to which research is intended to contribute. Lyle (2014) differentiates between governmental and commercial research that is normally narrowly focused and client-orientated, and much of academic introspection, which is exploratory and designed to generate understanding and *potential* application. Each of these differs from research that has as its catalyst a perception of a deficit in professional practice. There is a distinction between basic scientific research, that is, fundamental, theoretical or experimental investigative research intended to advance knowledge without a specifically envisaged or immediately practical application, and new scientific knowledge, which is intended to foster innovation, promote economic development, inform policy development, and be a sound foundation for education and training (ICSU, 2004). These instances of non-applied research imply that there is also an *applied research* mode.

There are many types of research. For example, in terms of purpose, there is a need to distinguish between descriptive, exploratory, explanatory and transformational purposes. Similarly, there are typologies that embrace terms such as basic, pure, fundamental and applied. However, there is a misconception that the term “applied” is the culmination of research utility for practitioners. There is a further “level” of research, perhaps termed “application research”, in which coaching behaviours and interventions are “tested” *in situ* and in the context of real-life goals and constraints. The absence of such research contributes to the perception of “distance” between research and practice.

The issue of practitioner utility is predicated on the outputs of coaching research and more general academic writing finding their way into the “applied world”. It follows that homogenous interpretations and assumptions about research are unhelpful. It is helpful, therefore, to distinguish between research practice that is derived from and focused on real-world issues and practices, and that intended to contribute to more general understanding or theory building. The former might be expected to influence practice more directly. There is a further level of complexity. This involves the distinction between sport performance research, and research in which the coach’s characteristics, behaviour, practice or expertise are variables in the research. The former is better known as sports science research. Of course, it can be argued that the substance of performance-related research forms the basis of the coach’s intervention programme. However, it is the under-researched interpretation and application of such knowledge (particularly in concert with other contributory knowledge bases), and in particular sets of contexts, that is characteristic of coaches’ expertise (Lyle & Cushion, 2017).

The purpose of research is a key question for academics to consider. Despite the disparate purposes for research, there can be little doubt that individual researchers intend that, as a consequence of their research, coaching practice should become more effective. However, if, as reported, there is little direct translation of research findings into coaches’ practice, it is necessary to explore the

characteristics of the research process that create a potential blockage to effective knowledge transfer. This paper begins, therefore, with an assumption that questions of theory-practice divides, poor dissemination, lack of practitioner utilisation, and the absence of relevant *in-situ* problem solving in research designs are far more nuanced than commonly assumed. Although there is likely to be a commonality of transfer and translation issues across research fields, it is important to understand the particularity of each research context. The paper is an attempt to bring some clarity to such questions, including an absence of conceptual precision, that is, consensual interpretation of meaning, (Lyle & Cushion 2017), and for this reason focuses on clarifying concepts, scope and limitations of meaning and intentions associated with research in sport coaching. One of the purposes of the paper is to argue against vague claims about the utility of research for practitioners, and, in doing so, to invite readers to consider the possibility that many research papers in sport coaching are intended to add to the intercourse between academics. The value of the paper is to have made manifest, and appraised critically, some of the scepticism about research in sport coaching, to act as an additional analytical tool with which to evaluate research, and, in an important but less-direct fashion, to scaffold the development of professionalism in sport.

Before looking at the issues in some detail, it is important to point out that the scope of the paper is not limited by the role and domain of the coaches concerned in the research. The arguments put forward to bring some clarity to the purpose, design and transferability of coaching research apply to coaches in all domains (Lyle, 2011). There may, however, be some differences in coaches' readiness to access research findings, based on role or experience. Indeed, it will be suggested that the failure to identify role- and practice-related contexts in research populations is a contributory factor to potential limitations, both in application and in meaningfulness to practitioners.

Is there a researcher-practitioner 'gap'?

There is no doubt that some research findings are not immediately transferable to coaches' practice, and that the majority of coaches and coach educators do not routinely access new academic knowledge. Nevertheless, to simplify the argument to one of a "gap" is not helpful, particularly if this becomes a taken-for-granted generalization. One of the issues is the tendency to apportion blame for a putative gap. In seeking (or rather failing) to "cross the gap" or "build bridges", coaches are blamed for being too insular and uncritical about their practice. Coach education is indicted for failing to prepare coaches for research-proven practice, and researchers are characterised as providing outputs that lack immediate relevance or transferability to the reality of coaches' practice. Jones (2011) suggests that the theory-practice gap is contributed to by both "sides"; academics may view "theory development as more important than improvements in practice" (p.11), but this view is complemented by an "anti-intellectualism" on the part of coaches (Abraham, Muir & Morgan, 2010; Taylor & Garratt, 2010). The failure to engage coaches sufficiently in research (which may again be attributed to both "sides") will also contribute to the apparent "gap".

However, this may be misrepresenting the issue: that is, that the "gap" should be conceived of as an agonistic and polemical divide. Certainly there is a difference in perspective; the practitioner is likely to have a very personal needs-led approach, and yet we cannot assume that each 'output' of the researcher has been driven by an imperative to improve practice. Nevertheless, it is important to appreciate that the distinction between theory and practice is an intrinsic and necessary part of all occupations, and should not be viewed as an issue of "closing the gap" but of ensuring that there is clarity of purpose from each in its contribution to the whole. It might also be argued that client-based "treatment" or intervention occupations, such as sport coaching, with a strong reliance on "practice theories" (Cassidy, 2010), exacerbate the issue. It may be unreasonable to expect research findings to impact practice directly (or to "cross the gap"), without some awareness of the limitations of the transfer mechanisms. In most professions, research is incorporated into practice through extensive tertiary education and periods of supported practice. This does not describe the

stereotypical preparation of the majority of volunteer (or professional sport) coaches. In addition, this places a, perhaps greater, emphasis on continuing professional development, either formal or informal, as a site of potential transfer.

It is a simple fact that much the majority of research outputs are not written for the coaching practitioner. Academic peer group pressure, “academic rules of engagement”, and notions of “superior knowledge” mean that the language is often less about dissemination into practice than of esotericism and (sometimes, but perhaps understandably) self-aggrandizement. An element of protectionism has to be acknowledged, in which disciplinary-valid research may be valued by editors above applied research. Bush *et al* (2013) argue that coaching research is less valued because of its predominantly qualitative nature and its consequent place in the scientific community. However, Trudel, Culver and Gilbert (2014) contend that the gradual adoption of qualitative research in sport coaching has made that work more accessible to coaching practitioners. Nevertheless, the absence of statistical analysis and apparently obfuscatory language may not compensate entirely for a tendency to small sample sizes and a focus on non-performance-related coaching behaviours and practice.

Is it all coaching research that is having a limited impact: all subject matter, all methodological paradigms? In the language used by academics, do all ontologies and epistemologies translate equally well to practitioner knowledge and practice? In academic institutions, the majority of research emanates from the researcher’s interests and that for which funding is available. A simple list of recent journal content matter includes self-determination theory, learning environments, development pathways, interpersonal relationships, models, pedagogy, decision making, expertise, coaching philosophies and contributory theories to orchestration. Each of these is deemed important by its proponents, and perhaps justified as having eventual relevance to coaches’ practice. Nevertheless, they may not reflect the priorities of practising coaches. There is a danger that themes

such as these become self-referential “schools” in which publication appears to be more valued than practice. The consequential “weight of importance” claimed by authors thence becomes an evaluative stick with which to characterise perceived deficiencies in practice that do not match the “received wisdom” within the “school”.

Is there anything “wrong” with coaching research?

There are likely to be generic shortcomings across research studies in similar intervention processes that, in turn, may impact on the translation to practice. However, the profile of development in each research field will be subject to a particular history, influence of key individuals, and the vagaries of funding bodies and institutional support. Therefore, it is necessary to be aware of the specific characteristics of research in sport coaching. Unfortunately, previous reviews of sport coaching research have been descriptive rather than critical (Gilbert & Trudel, 2004; Gilbert & Rangeon, 2011). Nevertheless, it is possible to identify a number of potential reasons for constraints on the utility of coaching research. Readers may wish to evaluate the following insights: for example, few, if any, links established between specific coaching behaviours and performance outcomes; failing to identify or operationalise intervention strategies in research designs; failing to describe the parameters of coaches’ practice (and thereby make it more meaningful to practitioners); performance outcomes are rarely the dependent variable in research designs into effectiveness; a reliance on satisfaction studies; prescriptions for good practice are partial and not integrated into a broad concept of expertise; interpreting “coaching” too widely and failing, as a result, to particularize practice prescriptions, and; relying on self-reported retrospective accounts of practice. The prevalence of single-focus research designs in the context of well-attested complexity and interdependence of variables inevitably results in a form of reductionism. There is little evidence that researchers have resolved the problem of retaining complex coaching practice as a site of enquiry and, in consequence, producing findings that would be of value to practitioners?

There can be no denying the claim that research helps (or is necessary) to further the conceptual and intellectual development of coaching (Cushion & Lyle, 2010), but a preponderance of this writing leaves itself open to a criticism of “distance”. A cursory review of sport coaching journals demonstrates that research claiming to address such a purpose (perhaps also because of publishing requirements) has come to dominate the academic field. Sample selection may also impact on practitioners’ perceptions of the value of research. For example, opportunity samples using university students are unlikely to resonate with coaches in the field. In addition, the failure of the majority of research studies to particularize the sample coaches’ practice means that practitioners are denied a sense of “association” with the issues described. There was a similar message from Gould (2016) who stated that researchers were paying insufficient attention to dissemination, and he felt that contextual constraints needed to be acknowledged. It might reasonably be argued that lack of attention to context and particularity render empirical findings almost inadmissible.

Roth and Fonagy (2005) draw a distinction between the efficacy of a therapy and its clinical effectiveness. They point to the problem of inferring the latter from the former, particularly if the experimental processes lack ecological validity. In other words, naturalistic assessment of likely outcomes may differ from the experimental when one considers that “treatments” are often given in combination with others and there is uncontrolled application or delivery, which is often sub-optimal. The “deliverers” (cf. coaches) differ considerably in skills, precision, aptitudes and motivation. However, increasing the “representativeness” of research to ameliorate the variability in application diminishes its explanatory power. This concern for “external validity” is one that researchers in sport coaching would do well to embrace. A critical appraisal of threats to external validity should accompany all research, and practitioners may be much more likely to respond to prescriptions that are shown to be valid and susceptible to implementation.

Coaching research, in particular, positivistic behavioural research, is criticized for being based on a flawed ontology and epistemology (North 2017). Nevertheless, research outputs can seem real and relevant to the practitioner. There is a “received wisdom” that sport coaching exhibits an interdependency of context and actors that leads to complexities in interventions. Coaches attempt to bring some structure to their work by instrumental planning and by being focused on the elements of expertise that allow them to deal with this complexity. The behavioural approach and other simplistic or linear process representations of coaching are criticized for being flawed and for having an inappropriate influence on coach education (e.g. Cushion, 2011). However, the same authors aver that coaching research does not impact on coach education or practice. It is difficult to escape the conclusion that authors generally mean, “my research and my insights are not being translated into practice.” The appropriate redress for this is not to demonstrate to other academics that a particular approach is “best”, but to demonstrate to practitioners and academics alike that such an approach leads to more valid and applicable findings.

A particularly apposite insight is that research often has a single focus, and coaches’ practice is characterised as “sub-optimal” when it is “held to account” in relation to this single focus. In reality, of course, coaching practice is much more complex, but the external validity of research and the particularity of practice are rarely acknowledged in the recommendations arising from research findings. North (2017) describes the ramifications of the “epistemic fallacy”, in which the researcher’s view of the world is shaped by the discipline-influenced knowledge produced, rather than the untidy reality of “what is”. The significant point being made is that the researcher may thereafter evaluate knowledge, competing models, and practice against this partial view of the world. This fallible, partial, inevitably unrepresentative, and modestly practice-orientated account of coaching contributes to sport coaches’ sense of “distance” from research.

It can also be argued that the claim that research into sport coaching has not impacted practice is, at the very least, over-generalised and imprecise. To which research and to which practice does this refer? There is no doubt that targeted research has aided performance sport (BBC, 2013), although this may also be accounted for by the more significant role of sport sciences in elite-level sport. However, coaching research should not be treated as a homogeneous entity – neither in disciplinary, methodological, nor thematic uniformity. It would be instructive to establish the proportion of research studies that focus on coaches' behaviour and practice in contrast to that which focuses on the occupation of coaching. Gilbert and Rangeon's (2011) selective account of North American research identifies a number of limitations in the comprehensiveness and applicability of coaching research, but provides no sense of the proportions attached to each object or purpose of study. My own perception of the trends within academic publications is that research that comprises empirical studies or those bearing more directly on coaches' practice are outweighed by middle-range theory papers (often from other fields), derivative generalisations based on secondary analysis, and (albeit very sound) research into coaching that is less-directly related to sport performance intervention and improvement.

Summary of the dilemma

The starting point is the question of whether some research is more "relevant" or potentially transferable than others. It may be a moot point whether the charge that coaches do not use research is a criticism of the coaches (to which I shall return), the research itself, the researchers, the publishers, professional bodies – or some agency with responsibility for knowledge transfer and professional development. It is held to be a "given" that coaches question research knowledge (Gould et al, 1990, Williams & Kendall, 2007) but it is also necessary to make a distinction between "questioning", which implies some knowledge of the findings, and simply not accessing them. North (2013, 2017) notes that coaches are said to be unwilling or unable to reflect on and challenge their practice, to lack interest in research, to be unable to apply concepts to practice, and are

characterised as exhibiting “poor practice.” This perception is fueled by academics who exhibit a surety about the quality and status of their work and assume that they are the appropriate arbiters of knowledge worth and creation.

A critical interpretation of the issues can be summarized under three headings: purpose, process and expectations. In relation to purpose, coaches do not and are not intended directly to access and utilize non-applied (or non-application) research findings, research studies need to be understood in their appropriate categories in order to appreciate their potential contributions, and many research studies (and non-empirical works) are intended to contribute to the corpus of knowledge and understanding in the academic study of sport coaching, and to stimulate other academics to address significant issues. In relation to process, amending practice, based on the outputs from empirical research, requires a transformational process that goes beyond simply “reading” (and absorbing) the information and implications, and the knowledge transfer and translation process needs to be treated as an additional (but perhaps better conceived of as intrinsic) step in the research-practice process. In terms of expectations, the primary vehicle for the transmission of research findings into practice is through education and development and coaches in more advanced certification programmes and those who might be deemed to be “master” coaches could be expected to immerse themselves in more in-depth academic reading. There are also a number of characteristics of sport coaching research that contribute to the “distance from research” felt by practitioners.

There is no reasonable argument against the role of theory in scaffolding practice, but its utility is often implicit and the manifest “transfer” from theory to practice is much less evident. This is conceived of as an issue of knowledge transfer, with attendant questions about whose responsibility it should be to operationalise this process. If research is conceived of as a knowledge transfer process, the likely stumbling block is the “translation” process or stage. Glasgow (2013) reminds us that research translation will be facilitated by adopting a stakeholder perspective and considering

the context for application, and Gera (2012) identified what he termed inherent barriers in the creation, diffusion, adoption and utilisation by practitioners of knowledge transfer. Neal et al's (2017) research on teachers demonstrated clearly the need for research findings to resonate with practitioners' experience and context. This emphasis on "compatibility" was accompanied by a desire to be convinced that "it works". Reynolds et al (2014) recognised the limited adoption of research into policy and practice. They identified the need to focus on teachers, carry out longitudinal studies and address context specificity.

Grimshaw *et al* (2012) identify five questions to aid knowledge translation of research findings: what should be transferred, to whom research knowledge should be transferred, by whom research knowledge should be transferred, how research knowledge should be transferred, and with what intended effect should research knowledge be transferred. It is not unreasonable that these questions should be addressed in each academic field of study, and although apparently simple questions, should form the basis for more effective translation. Graham *et al* (2006) also provide a knowledge transfer framework that identifies primary studies, synthesis and development of "knowledge tools" to aid dissemination. These are couched within an "action cycle", ranging from the identification of practitioner problems to the evaluation of use. It is interesting, however, that the least convincing element in the framework is the adoption aspect of the process.

However, it is necessary to engage with and understand researchers' and practitioners' motives and habitual practices to evaluate the likelihood of their engagement with the transfer process. Indeed, it seems likely that the responsibility for knowledge transfer is not "felt" by either party, but lies with other organisations (perhaps practitioner-based but most often national agencies with development responsibilities). Knowledge transfer may be more successful when the commitment to transfer occurs before the research takes place, although this may not resolve the issue of practitioner

utilisation. Knowledge transfer of “stand-alone” or aggregated research outputs is much more challenging.

There is conceptual imprecision in what is often claimed to be a maturing research field (Gilbert & Rangeon, 2011). It is hardly conceivable that the terms coaching and research can be conflated into useful single constructs (Lyle & Cushion, 2017; Lyle, 2011). Therefore, any assertion that research can or cannot usefully be incorporated by practitioners requires very considerable elaboration. A similarly imprecise generalization applies to assertions about the research-deficiencies of coach education. All coach education, all practitioners, all research – or are there some subtleties in our understanding of each of these assertions that must be taken into consideration? The paper now goes on to address a number of issues that will shed some further light on these assertions: namely, how do other professions deal with the problem; what specific lessons can be learned from sports science research; what are the implications for coach education, and; is there anything about the coach practitioner that needs to be taken into account?

Other professions

One of the criticisms of the implicit negative evaluation of coaches or coaching practice might be that it is rarely situated in the context of other professions. It is important that any perceived problems of an academic/practitioner divide, or the utility of research by practitioners should not be viewed as solely a sport coaching issue. There may be lessons to be learned from other professions. The perception of a “divide” is evident in dentistry (Stone et al, 2014), management (Bartunek & Rynes, 2014), social work (Gray et al, 2012), education (Harris et al, 2013), executive coaching (Kotte et al, 2017), and health (Colditz & Emmons, (2018). In youth sport, Holt et al (2018) noted that policy was not informed by research. They advocated addressing stakeholder priorities and adopting a knowledge transfer framework. A researcher-practitioner distance and the applicability of research outputs may well be common to many occupations, but may also be exacerbated in occupations that

are acknowledged to be “practical”. Examples such as teaching and nursing are analogous to sport coaching. Characteristics of being practitioner focused, strongly context dependent, evidencing treatments or interventions that have an element of craft delivery, and being based on prescriptions that are disputable give such occupations a day-to-day feeling of being “practical”.

Gossa *et al* (2015) give an example of the research-implementation gap in the conservation science field. They focus on access to peer-reviewed literature, what they term “disconnects and impediments to the free flow of information.” Their solutions include: open access journals, making “grey” literature for practitioners more widely available, and co-production of research. Park (2017) also highlights better communication between researchers and practising professionals. She bemoans the failure of physical education in the United States of America to incorporate research findings, and identifies the need for practitioners to have sufficient background knowledge to make best use of the information available. Harris *et al* (2013) bemoan the fact that good evidence becomes “lost in translation.” Examining educational effectiveness research, they suggest that there is reliable evidence about the characteristics of effective schools, teaching practices and school/system organisation, but that this knowledge is not being used. They cite research that is written for researchers, the volume of research available, and the fact that the field has not tried hard enough to make findings available to non-specialist audiences. They conclude that research design needs to be multi-level (reflecting the world that practitioners inhabit), high quality, have theoretical explanations, be relevant to multiple outcomes, and appear “contemporary, alive”. Tellingly, they say, “distilling complex research findings into more digestible forms and repeating the message is a more effective way of influencing policy and practice than constant talk of complexity” (p.15). Readers may find their comments on complexity are apposite in the context of sport coaching research. Their call to arms is one that we would do well to heed, “we need to use more multi-method analyses that tell a compelling story about exactly how to lever better performance effectively and sustainably at all levels in the system” (p.15).

Thyer's (2015) proposals for social work may also have some resonance with sport coaching, given its "human treatment" aspect. He offers support for Evidence Based Practice (EBP), first introduced in the 1990s to improve medical care (Straus, Glaszion, Richardson & Haynes, 2011), and foresees, perhaps encourages, litigation for unsupported practice. EBP involves a process of moving from an identifiable problem or knowledge deficit, through finding the best evidence available, to incorporating an evaluation of its usefulness into current expertise and the needs of the client/context. However, both the potential for litigation and the introduction of EBP are more likely in regulated occupations.

In healthcare, a concern for ensuring up-to-date and research-informed patient intervention has found support in the application of pragmatic approaches to healthcare research (Glasgow, 2013). This approach aims to produce research findings that are relevant to stakeholders, but rigorously obtained – creating "intelligent practice". This requires a better balance between internal and external validity. The focus is on research that impacts decision making and taking action, and can be applied and actionable in real-world settings. In particular, comparisons are made to current practice rather than control groups, and considered in the light of "usual" rather than ideal conditions. There is much to be learned from this for research on and for coaches' practice.

Sports Science

The sports sciences have also identified a research-practice gap. Bishop (2008) suggests that this is partly a reflection of failing to study problems relevant to practitioners and disseminating findings that may not easily be incorporated into coaches' *in situ* practice. Bishop also provides a useful list of references demonstrating similar issues across the health sciences. His more pragmatic approach to applicable research includes being made aware of likely barriers to implementation and intervention studies in real sport settings.

There is little doubt that the sports sciences have an important role in elite-level sport. This ranges from exercise sciences to nutrition and equipment engineering (Cressey & Callaway, 2012). It might be assumed that higher levels of visibility and accountability in elite sport would ensure that practitioners would be up-to-date in their practices, but there is no direct evidence for such a claim. However, the focus of the argument in this paper is the likelihood of incorporation of research by coaches themselves. Much the majority of coaches in participation and development domains will not routinely have the services of support staff. This reinforces the point made earlier that assertions about coaches and research should be more specific. It does not seem unreasonable to hazard a guess that coaches with higher levels of certification and those in the high-performance domain are more likely to reflect on and challenge their practice, and therefore, be open to new knowledge. Reade and Rodgers (2009) propose that a collaborative approach with sport scientists will increase the likelihood of knowledge transfer to coaches.

Williams and Kendall (2007) found that research did not meet the needs of coaches, partly because of not using “lay” language and the need for more appropriate dissemination. One of the key issues was the perception of priorities in the focus of research, leading to differences between coaching activities and researcher interests. Although referring specifically to sports science research, Williams and Kendall’s identification of the discontinuity between multi-disciplinary problem setting and single-discipline research might well apply more generally. It was also acknowledged that laboratory-based research did not address the desire of coaches for research in more “natural” settings.

Martindale and Nash (2013) investigated coaches’ perceptions of sports science knowledge and support. They identified practical application, relevance, integration, access and language as factors influencing a positive response. Contextualisation of findings was particularly important (Nash &

Sproule, 2012). However, in the literature associated with such research, a distinction needs to be drawn between sports science support and the diffusion of sports science-related research findings into coaches' practice. There is no doubt that coaches' information is not generally obtained from academic publications, but, in addition, the question of knowledge transfer is not central to academic debate (Reade *et al*, 2008).

Coach education

It has been argued that coach education is not sufficiently influenced by research, and that coach education does not impact on practice, thus negating a potential knowledge transfer mechanism: "compelling argument that coach education programmes are having a very limited impact on practice" (Jones, 2006). There is an undercurrent of academic opinion that the "fault" lies with insufficiently well-designed and orientated education programmes (Cushion, 2011; Morgan *et al* 2013). However, should this lack of impact be surprising? Is it reasonable to expect that minimalist initial coach education, which is designed to provide sport-specific knowledge and insight, orientation to the coaching role, and some mental templates to aid initial practice, should be impactful? A more pertinent question is whether "better" formal coach education would have any greater impact.

It is important to distinguish between the use of research findings in initial coach education and in continuous professional development or the more advanced levels of coach education. Lyle and Cushion (2017) have speculated that there would be value in conceiving of initial coach education as merely an entry-level pathway. An advanced, perhaps chartered, stage in which coaches can draw on a greater depth of experience might have the potential to facilitate more intellectually demanding and reality-based learning in which current research findings would play a more prominent part. Nevertheless, we need to consider why research findings should not be more evident in coach education, and perhaps be less surprised about it. In a similar field of study, Hagger

and McIntyre (2006) note, in relation to teaching: “disciplined scholarly understandings, which (teachers) may have developed in HE contexts, ... are quite inadequate as a basis for effective classroom functioning” (p.11).

Cushion (2011) contends, “research and theory have much to contribute to the understanding of coach education, and coach and athlete learning This potential has, to date, been largely ignored, as current trends in coach learning, research and practice have been towards ‘what works’” (p.166). Leaving for a moment the question of who is doing the “ignoring” and the generalisations within the assertion, this puts the spotlight on the perceived worth of research findings. Research can identify “what works”, but also “what might work, for whom, and in which circumstances.” Research outputs need to be re-evaluated in terms of utility, availability, accessibility and transferability. Coach education has to be conceived of as a “transfer mechanism”; setting aside the issue of coach education not impacting sufficiently on practice to ask why it is not being used more purposefully as a means of knowledge transfer. At the same time, we need to acknowledge that coach education has understandable limits in its purpose and impact.

Hemmestad, Jones and Standal (2010) have also identified a theory-practice gap, suggesting that experience, as it is the dominant mechanism for coaches’ education, is a reason for the lesser impact of research findings. This falls into the trap of associating research solely with formal education. A reliance on mediated experience and other non-formal mechanisms does not negate the potential contribution of coaching research. Mass initial coach education should not be conflated with coach development and learning at higher level of certification and in coach development programmes. The emphasis needs to be on the respective roles of formal and informal coach education rather than simply an assumed absence of quality. It is also not unreasonable to expect that any recommendations for better practice should be couched in more domain-specific terms.

It might also be noted that coach education is not simply about the absorption of new information. Changes in behaviour and practice are subject to a more extensive deconstruction, reconstruction and reinforcement process than might be implied by the relatively superficial adoption of research findings. In relation to the use of current research, the role of “continuing professional development” is interesting. It might be assumed that efforts to update qualifications in order to become re-licensed would involve awareness of the latest findings from research (going beyond the requirement simply to be practising). The “seriousness” with which this requirement is taken may depend on the public perception of risk. For example, medical practitioners would be expected to “keep up” with drug and other treatment advances. Mechanisms are therefore set up to assure current learning. In the absence (in the United Kingdom) of licensing requirements and mandatory professional body registration, there is less pressure for coaches to demonstrate that they are “up to date” in their practice. There is limited evidence in sport coaching, but anecdotal evidence from programme evaluations suggests that much of the updating is rather more “tick box” than research-rich, although sport-specific performance-related information may be more readily absorbed than research on coaching behaviour.

The practitioner

There will be some coaches who are not receptive to new knowledge or who rely on habitual practices that have not been sufficiently challenged by coach education. Some coaches will exhibit behaviour that is less effective or appropriate. However, we should not generalize about this, and any assertions should be couched in terms of the specifics of domain, age and stage of athletes, and the particulars of the coach’s deployment. Lilienfield *et al* (2013) identify three sources of the researcher-practice gap (albeit from a “defending science” perspective): (a) attitudinal factors, (b) differences in the definition of “evidence”, and (c) cognitive factors (naïve realism and confirmation bias). We ought, therefore, to consider the coach’s perception of and contribution to the “gap”, but in the context of the coach’s needs.

The corollary of a limited impact of research on practice is that the coaches' "practice theories" (Cassidy 2010) are derived from experience of "what works" for them. It might be argued that these practice theories could be the site of knowledge transfer. At present, there is still a need to articulate, collate and interpret these practice theories in order to investigate how they might be influenced by research findings. Eraut (1994) deals with the issue of knowledge creation and the research process. He suggests that the researcher needs to be moved from the "centre of the universe", and recognition given to the fact that knowledge is also created by professionals in their practice; "in some professions, nearly all new practice is both invented and developed in the field with the role of academics being confined to that of dissemination, evaluation and *post hoc* construction of theoretical rationales" (p.54). Practitioners address problems as they arise and add to their "stored experiences". However, this is rarely codified, published or widely disseminated. Eraut draws on Weiss' (1977) model of research use: decision-driven (commissioned research and practitioner problem solving), knowledge-driven (largely academics contributing to the understanding of the discipline), and interactive. The final form implies interaction between various stakeholders but is rare. Nevertheless, Eraut speculates that as researchers draw on their own experience of practice and those of others, listen in workshops and talk to practitioners, an "implicit interaction model" arises.

Applying Eraut's ideas to sport coaching, we can speculate about why knowledge creation does not appear to serve the profession. Coaching practice research is not commercial and is characterised by "small practices". Its outcomes are not life threatening, and the focus of research is influenced by organisational interests, career opportunities and "schools" of research practice. Coaches are under-exploited in the research process, perhaps because their practice is so particularized. Finally, dissemination is challenging; practical knowledge is not "tidy" and the language with which to share and disseminate this is under-developed and dominated by academic niceties.

North (2017) suggests that the coach might “close the gap”. However, coaches who are reflective, insightful and creative in applying new knowledge to their particular contexts and needs can also be assisted by more accessible and valid research findings. We are in danger of repeating academic platitudes. Contextual complexities prevent researchers from creating a compelling and comprehensive reality. The capacity of coaches to interpret research and produce balanced judgements of applicability and impact assumes access and considerable training. In addition, the processes through which new knowledge (rather than information) is reconciled with existing knowledge remains a theoretical reference point for academics rather than an established facet of education and development.

In my lengthy experience of coach development, coaches (certainly in performance sport) are preoccupied with sport-specific knowledge and how to overcome the barriers to what they perceive as optimal working practices. One of the outcomes of a tendency to generalize research findings is that they are decontextualised from the particularities of practice and become “reduced” to recommendations, to which coaches respond by saying, “I already knew that.” A published research paper [for collegial reasons, not identified] was justified by its relevance for coaches’ practice; the findings recommended that team sport coaches would benefit from developing positive relationships with their players. It is not difficult to see why practising coaches might not be impressed with such a finding; indeed, might even find it patronizing.

In summary

The objective of the paper was to demonstrate that there was a need to be more nuanced and realistic about claims that research in sport coaching was not being translated into coaches’ practice nor incorporated into coach education. Emphasis was placed on the coaches’ capacity for knowledge transfer and researchers’ motives in relation to direct translation of their work into coaches’

practice. It was suggested that application and dissemination were often secondary to inter-academic discourse. The paper was designed to raise awareness that, while the coaching science research field exhibits similar transfer issues to other research fields, the coaching research network should recognise that research design and purpose is a major contributor to the lack of transfer and adoption. The failure to conduct *in situ* intervention studies and to accommodate the particularity of context and application were identified as potential factors. This is an exhortation to more practitioner-compatible studies.

Within our field, it may be advantageous and necessary to be more specific about the different forms of academic enquiry - not to attribute “worth” but to emphasise purpose and intended application and significance. From this perspective, academic writing that is considered prescriptive, conceptual, theoretical or philosophical may usefully be considered to be at the pre-research stage. These contributions are valuable for identifying gaps in our knowledge, generating research questions, and informing the “hypothesizing” stage of research. It is surprising that there have not been more action-research studies. These are often identified as potential “bridges” between research and practice and have the potential for co-construction of problem issues. This is perhaps rendered less feasible because of journal reporting expectations, but perhaps more pertinently because, to date, researchers have shied away from intervention strategies as a focus for their work. Sport coaching can be thought of as an “open system”. As a consequence, designing and delivering maximal or optimal interventions is unlikely, but they are even more difficult to evaluate. This is simply a consequence of the dynamic complexity characteristic of coaching.

Williams and Kilgour (2014) suggest that there are four criteria that improve the likelihood of impact on practice: (a) convincing findings (generalisable to different contexts, from studies with clear, rigorous methods), (b) resonance with teachers’ professional experience in their day-to-day practice, (c) translation to practical strategies for classroom practice, and (d) wide dissemination through

professional networks. There are lessons here for sport coaching and the suggestions are very valuable markers against which to evaluate our current research practice. Grimshaw *et al* (2012) reinforce the message in the health sciences; “one of the most consistent findings from clinical and health services research is the failure to translate research into practice and policy” (p.1). More interestingly, they suggest that knowledge transfer should usually be by up-to-date systematic reviews and other syntheses of research findings, and informed by an assessment of likely barriers and facilitators. Although this may seem to reify academic processes, it is also a useful warning against making excessive claims for isolated or derivative studies.

Assuming that research “ought”, at some point, to have (or at least lead to) an impact on practice, we need to give some thought to how this might be achieved more successfully. We must also accept that many academic papers are intended to advance theory or improve our understanding of coaching at an abstract level. This is one of the roles of the academic. However, another concomitant danger is that the number of “prompt” papers outweighs the number of research studies with practical relevance. We are perhaps not at the stage, as a research field, in which systematic reviews of “treatments” (i.e. coaching interventions) are meaningful. Nevertheless, there is a need for academic outputs that synthesise the knowledge available, perhaps within a framework of expertise - without using this to assert that there is a “better approach” into which only those authors have insight - and that attempt to situate the findings within the particularities and interdependencies of domain, purpose, and context. This would be facilitated by an increased number of case studies, action research studies on interventions, and “application” research in naturalistic settings.

A further consideration is the extent to which the “sport system” within which coaching is situated may be enabling or constraining. Chalip (2011) gives an example of the impact of a withdrawal of regulatory support for the conduct and dissemination of research in sports medicine and sports

safety on amateur sport in the USA. The arrangements for coach development and the efforts of regulatory bodies in countries such as the United Kingdom and Australia (De Bosscher *et al*, 2009) are potential conduits for knowledge transfer and examples of some good practice. There is little doubt that research into aspects of elite performance is fostered in support of sporting success, but coaching behaviour and practice are less evident. The “research summaries for coaches” by UK Coaching (ukcoaching.org/resource/research-summaries-coaches) is an excellent example of translation of findings into coaching language, but is, of course, dependent on awareness and access. Coach education remains the “system output” most likely to impact coaches but the contribution of formal certificated programmes has already been questioned, and non-certificated coach development for performance coaches would appear to be a more promising avenue for transfer of findings.

A consensus that emerges from the literature is that stakeholder involvement is beneficial for the likelihood of producing relevant research findings. The co-construction of research problems, design and dissemination between researchers and coaches and other stakeholders addresses, at its source, the “gap” between researchers and end users. Schenkels and Jacobs (2018) remind us of the need, in these circumstances, to attend to the professional development of practitioners and the potential limitations of different frames of reference. Bush, Pluye, *et al* (2017) showed that organisation-inspired collaboration was most effective. To some extent knowledge transfer groups may obviate the temptation merely to communicate better a “top-down” translation of findings into coaches’ expectations (Verhagen *et al*, 2014). It is also worth noting that much of coaching research is not generated from public funding bodies, from which an imperative to co-construction might be expected. There is also a danger that “bottom up” identification of need may focus on immediate technical matters rather than coaches’ behaviour or strategy.

Eraut's (1994) claim that practitioners can make the links between research and practice was made on behalf of practitioners with extensive education, training and experience. Imagine a context in which coaches are familiar with coaching theories and their purpose, have access to academic papers, understand research methodologies and their limitations, are required to reflect on their practice, are held accountable for being up to date, have a clear personal theory of expertise, have sufficient breadth of knowledge and experience to interpret findings and identify relevance. This would be a demanding "ask" for any professional, but cannot be held to be a characteristic profile of coaches across roles, domains and levels of expertise. Assertions and assumptions about knowledge transfer and the impact of research in sport coaching need to be considered within a critical realization of the limitations of education, training, motivations, deployment context, and the limited reward environment of many, particularly volunteer, coaches.

Nevertheless, there are practical measures that can be taken. These include aggregating research findings into consensus statement or larger "messages" that may be more impactful (Gould, 2016), and setting up collaborative or knowledge transfer groups that increase stakeholder engagement and the degree of contextualisation. There is also a need to consider how the output of research can be converted into user-friendly tools or products, and to establish cross-disciplinary problem-based programmes of study rather than discipline-based schools of research.

What is likely to change? Despite exhortations to increased external validity, applicability and relevance, it seems very likely that academics will remain entrenched in the "academic process", and perhaps, for career advancement reasons, understandably self-focused and only rarely practitioner-focused. More pragmatic and interdisciplinary research designs hold a great deal of promise, but weaning researchers away from discipline-based enquiry will be, at best, a long-term endeavour. I am only marginally more confident that coaches will access directly the findings of academic

research, and this will, largely, be restricted to self-directed coaches in high-performance sport or those with higher levels of certification.

A “third way” involves the establishment of a cadre of “academic translators” who have the expertise to synthesise and contextualise research findings, within more varied and more widely-available means of dissemination. The example above by UK Coaching, similar good practice by the International Council for Coaching Excellence, multi-agency projects (See, <http://www.icoachkids.eu>), innovative approaches such as pedagogical case studies (Armour, 2014), and “practice papers” and research digests in journals such as the *International Sports Coaching Journal* are a reminder of the breadth of the subject matter and a need to address avenues of dissemination in addition to accessible content. Greater awareness of the potential impact of research and increased attention to transfer and adoption would be a mark of enhanced professionalisation for sport coaching. Our challenge is to ensure that coach education (within its role and remit) and continuing professional development is informed by an ever-evolving body of knowledge that is meaningful, relevant to coaches’ practice, and can be seen to extend beyond coaches’ existing practice theories.

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