

SYSTEMS THINKING: S&C IMPLICATIONS

Educating tomorrow's coach – how well are we doing?

By **Ian Jeffreys**, *Setanta College, Ireland*

THE COMPLEX CHALLENGE OF S&C

Effective coaching in strength and conditioning (S&C) ultimately involves dealing with complexity, which in turn requires the development of a skill set based on systems-type thinking and an associated focus on effective decision making and facilitated action: all this brings us to a crucial question – how effective are we in preparing aspiring coaches for the world of coaching? The fact that many coaches report themselves as being unprepared by formal study to be an effective coach suggests that perhaps our educational approaches are sub-optimal. This article will examine some of the potential reasons for this and attempt to suggest means by which the situation can be improved.

Strength and conditioning – what has it become?

The discipline of strength and conditioning initially emerged as an applied discipline, using physical training to enhance sports performance.⁵ In the intervening years, S&C has evolved as a result of multiple influences, so much so that it can be considered today to have both a theoretical arm and an applied arm; in many incarnations, it has become as much a theoretical and abstract construct as an applied profession.⁷ This clearly has implications for the direction of the discipline and over time strength and conditioning has become as much about formulation as implementation, increasingly theoretical rather than focused on practical solutions and with an almost religious focus on evidence-based practice rather than on the pragmatic development of effective strategy.

This enhanced theoretical basis clearly has its potential upsides and, harnessed correctly, has the potential to significantly enhance practice, but in taking this path have we overlooked a simple truth – ie, that we coach people. The human side of coaching will always be crucial to the ultimate success of any programme and

yet we continue to overlook this critical fact. In so many professions the quality of the practitioner is fundamental to success and in many instances is lauded. People will pay millions for a Van Gogh, celebrate the musical genius of Mozart, crave the designs of Armani and applaud the craftsmanship of many artisans. Even in sports coaching the impact of the coach is acknowledged: celebrated when the team is winning or derided if the team is losing – you only have to look at the salaries of top coaches to see the perceived value of the coach. Yet in strength and conditioning the quality of the coach is almost totally overlooked – but can we really separate the programme from the coach?⁵

If we look at strength and conditioning conversations, social media intercourses, articles, online posts, and so on, we again see the predominance of a methods-based focus. Here the conversations revolve almost totally around systems, exercises, loads, sets reps and the latest technology, but largely exclude crucial facilitators of the programme – the standards, the norms, the relationships, the quality of communications etc that drive the programme: all of these facilitators depend largely on the coach. It is always important to note that the

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application of strength and conditioning occurs in an environment where multiple factors interact, and where to attest success or failure to a single factor is to completely misunderstand the context.⁵ What we do is undoubtedly important, but it is simply one frame in a motion picture; to see the whole film requires multiple frames to be put in place, frames that encompass relationships, communication, visions, leadership, management, standards, norms, cultures etc. Just as a film is much more than a good story, effective coaching is much more than a good programme and the effective coach acts as the film director, seeing the big picture and facilitating all the necessary processes to ensure the final output is successful. But just as a film director needs diverse skills that encompass the entire film-making process, similarly the coach needs to have skills that facilitate the contextual application of effective strength and conditioning. So, what are these skills and how effectively are we currently developing them?

What makes a successful coach?

Quality coaching has been described as the consistent application of integrated professional, interpersonal, and intra-personal knowledge to improve athletes' competence, confidence, connection, and character.¹⁰ This stresses that there are multiple roads to effective coaching and, as a result, it is important to remember that coaching can never be principally a scholarly discipline but instead should be considered more as a craft.⁵ Coaching is about practice and about performance and ultimately involves the application of strategy; consequently, coaching prowess develops through practice and over time. Coaching will never be a discipline one can read about, discuss, and master – and yet we too often conflate academic knowledge with coaching prowess, in the mistaken belief that providing we have the knowledge of programming, exercise technique, biomechanics and so on, then that will suffice and effective coaching will be a given. In reality this will only ever be a part of the process, as other disciplines have already observed.

If we look at the business or military world, executives and officers are not judged by qualifications but by results. Ultimately, they don't get paid to be clever, they get paid to be effective. And effectiveness is all about the implementation and ultimate success of the strategy, measured by defined contextual outputs. Providing the results

are successful, how they were achieved is of far less importance than whether they were achieved. If we extend this to strength and conditioning, coaches are paid to get results: putting the processes in place to get the results is what counts and not simply the purity, the level of sophistication and the academic correctness of the programme. Naturally what constitutes results depends on the context and must not be confused with just winning: for example, results in a professional sports environment will be different to those in a youth programme. Yet successful outputs will always depend upon successfully navigating the world of systems and of complexities and applying effective strategy in context, and this requires a broad skill set that spans multiple disciplines.

Based upon decades of research in education, positive psychology, teaching coaching, and leadership, quality coaching is considered to have three components: essential coaching knowledge, athlete-centred outcomes, and contextual fit.¹⁰ Yet if we look at our current educational focus, it could be argued that it is almost entirely focused on knowledge, and largely ignores the latter two dimensions. However, it is performance in these dimensions that often dictates much of the ultimate success of a coach. It is also in these that much of the challenge of complexity reigns; athletes will have different needs, different beliefs and different goals, and all of these will affect the effectiveness of any strategy. This challenge will be further complicated by the context, which will largely determine what can and can't be done and wherein many of the greatest challenges will lie.

If we look at the world of military strategy, we see that contextual analysis is considered a critical aspect of performance and no military strategist would ever devise a strategy without developing a detailed picture of the environment.⁹ Yet the crucial aspects of contextual analysis and coaching strategy are almost completely absent from our current education systems, with our focus almost exclusively placed on knowledge. To add further challenge, even in this knowledge domain crucial elements required for effective coaching are omitted, with focus falling predominantly on methods and the science underpinning these methods, all delivered through a predominantly uni-disciplinary approach. Effective coaching ultimately relies on developing mastery across all of Howard Gardner's five minds, and the ability to integrate these in an interdisciplinary

manner – but we are still a long way from achieving this.¹⁵

Coaching wisdom and qualifications – they are not equal

One of the challenges of strength and conditioning is that we have come to equate coaching prowess with theoretical knowledge and – increasingly – academic qualifications. Consequently, we presume that the person with the highest qualifications will be the most effective coach: we make this presumption at our peril. As already outlined, the skills of coaching are diverse and span multiple disciplines. In certain instances effective coaching may depend as much on behaviour management capacities as on scientific knowledge, or it may depend as much on leadership capacity as the ability to integrate research, or as much on the capacity to communicate and inspire as on the ability to use the latest technology. As a result, a coach with a basic theoretical knowledge, but a highly developed ability to inspire and develop an effective culture, can outperform a coach with a PhD in science but with poor interpersonal skills. Many of these latter capacities cannot be ascertained from an academic transcript.

It could be argued that increasingly most high-performance S&C coaches have higher academic qualifications and this is true in many instances. However, this does not indicate causation, as with any system we cannot presume any linear relationships. The requirement for formal academic qualifications for coaching roles¹² has led to the arms race in education. Today, many roles require formal academic qualifications over accreditations – building incentives into the system and driving the number undertaking these.¹² As a result, it could be that it's not the qualifications that made the coaches, but the fact that to get the posts the system required them to gain the qualification. What we need to focus on is whether the learning we receive in the pursuit of any qualification makes us a better coach, and if it doesn't, we need to re-examine our education structures.

Start with the end in mind

So how should we educate the modern coach and is our current systems appropriate? Here it is useful to consider what a graduate of that education programme should be able to do. As outlined earlier, an effective coach should be a 'strategist' – ie, able to design



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and implement a safe and effective physical development programme in a range of scenarios while building the necessary environment, norms and behaviours that facilitate that success. A suitable education programme should ensure that coaches have the underpinning knowledge, competencies, and experience in applying strategy to enable them to successfully achieve these goals. But strength and conditioning happens at multiple levels, and the pre-requisites vary according to these levels. Subsequently, S&C education should be phased, allowing coaches to develop the skills and competencies required to work safely and effectively at their desired level of practice. Each phase should outline the types of roles the coach will undertake, the skills and competencies they need and the baseline knowledge needed to successfully navigate the role.

Crucially, the efficacy of any education provision should be judged on how well prepared the coach is to practice and how well they are prepared to cope with the challenges of the context in which they work – and never just how much they know. The fact that many employers report that university graduates and people holding professional credentials are often unprepared for the roles they are required to fulfil and need further training suggests that we still have some way to go in optimising our education provision.⁵ Similarly, the fact that many coaches report that they learn more in practice than they do from their formal courses again suggests that our education provision overlooks key elements of coaching performance and/or lacks contextual relevance.⁵ So why is our education designed as it is? To find out the answer we need to delve into how the education system has evolved and the incentives that have become embedded into the system.

Now we need a degree to be a coach

If our profession is to thrive, developing skilled practitioners is crucial, and effective education is fundamental to this. Perhaps the biggest shift in strength and conditioning in the past decade or so has been the proliferations of S&C degrees. Coaches now have a formal pathway of training, so it would be expected that graduates of these programmes should be optimally prepared for practice, yet is this the case? Again to answer this requires an examination of the way in which these courses have developed and the incentives this has built into the



system. Many S&C courses have emerged from more traditional sport science courses – and are subsequently built around the narrow perspective of S&C as being a programme and methods-driven discipline. These courses have consequently been based around a common scientific core with the addition of a few applied S&C modules – modules based predominantly around training theory and practice.

Despite the fact that many of these modules state that their objective is to develop S&C ‘coaches’, aspects relating to the coaching processes are strangely absent. Even where ‘coaching’ modules are included, these are often limited to session delivery type components and fail to address the wider contextual challenges a coach will face. This has had profound effects, not just on the design of courses but also on people’s perception of what strength and conditioning is – to paraphrase Winston Churchill: ‘we may have designed the courses but now the courses are designing us’. In reality, most courses seem designed to produce academics and scientists rather than coaches and this dictates not only the type of graduate being produced, but also the direction of the profession. In many instances, job adverts for S&C coaches are not dissimilar to job roles for sport scientists – ie, managers of data and workload rather than catalysts of human potential. In chasing this new ideal, have we potentially changed the discipline and lost sight of the value it once had? Despite our good intentions, have we inadvertently driven S&C in a direction where it has naturally become an analytical and theoretical construct rather than a predominantly practical discipline? And as a result, has it lost much of its true potential to drive performance – and is much of the latent value of a top-quality S&C coach potentially being lost?

There was never an obligation to base strength and conditioning around a sport science curriculum: it could just have easily been based around one of physical education and teaching. Indeed, John Wooden argues that a coach is first of all a teacher and that knowledge is largely irrelevant unless combined with an ability to coach: ‘the coaching graveyard is full of failed teams whose leaders were very well informed but could not teach to save their souls’.¹³ This simple change would have resulted in a completely different direction of travel. Yes, there would have been underpinning science, but the ethos and focus would have been on delivery of coaching and aligned to educational pathways rather than simply

with science. There would have been a far greater requirements on practice and a focus on how to deliver effective S&C sessions and away from an over reliance on underpinning theory. We may never know the impact this may have had and the direction our discipline would have taken – perhaps this is an experiment waiting to happen. Yet the current path dependency will be extremely hard to break, as the shape of the initial courses has forged a specific direction of travel.

Control has shifted outside the profession

Another subtle but profound result of this shift to formal academic education is that to some extent control of the training of coaches has been ceded to higher education establishments whose actions are guided, not by the best interests of the profession, but by their own internal metrics and mechanisms. These mechanisms will impact upon all aspects of course structure, function and operation. Over time, even the best designed course will be subtly altered by the academic system with little if any recourse to what the discipline really needs. Here the desire to analyse, summarise, evaluate, and comprehend will dominate over the need to create, design, to compromise, to negotiate to contextualise to enquire and to formulate. These latter skills, while crucial often don’t fit with the taxonomy of course design, and subsequently creative course design that develops effective coaches is largely limited. Interestingly, many other professions which require academic qualifications to practice have maintained control over the courses and so are able to respond to market needs. Medical training for example is governed by the General Medical Council which has a major say in the suitability of curricula, ultimately determining which Universities can deliver medical courses, and the number of students they can take. In strength and conditioning, the discipline has no control over these aspects and so the design of courses, the number of courses, the number of students etc is outside the control of the profession.

This has profound consequences, not just in whether a course is fit for purpose but also because ultimately market forces cannot act. Academic decisions that impact upon the courses are not considered in light of the discipline, but through the lens of the metrics that academic institutions consider as their key performance indicators. Unfortunately, these forces often result

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in a focus on recruiting as many students as possible, making sure they retain as many as possible and graduate as many as possible with good degrees. Lukianoff and Haidt⁸ assert that: ‘Education should not be intended to make people comfortable; it is meant to make them think.’ And it is in this way that we will develop the most highly skilled graduates, yet the focus on student satisfaction can act against this. It is not too difficult to see where the incentives built into the system are leading. Ever increasing numbers are graduating with degrees that may not be preparing them to coach and paying handsomely for the privilege. Yet at the same time the number of well-paid opportunities is not increasing at a commensurate rate. Unfortunately, Adam Smith’s invisible hand is unable to work to correct this as universities can continue to churn out graduates, at significant cost, irrespective of the market. This oversupply means that wages will automatically be kept low. Graduates will feel forced to undertake Master’s degrees to differentiate themselves – again at further and significant cost. The lunacy of the current labour market, where Masters degrees have been requested for internship opportunities demonstrates the futility of the current situation.

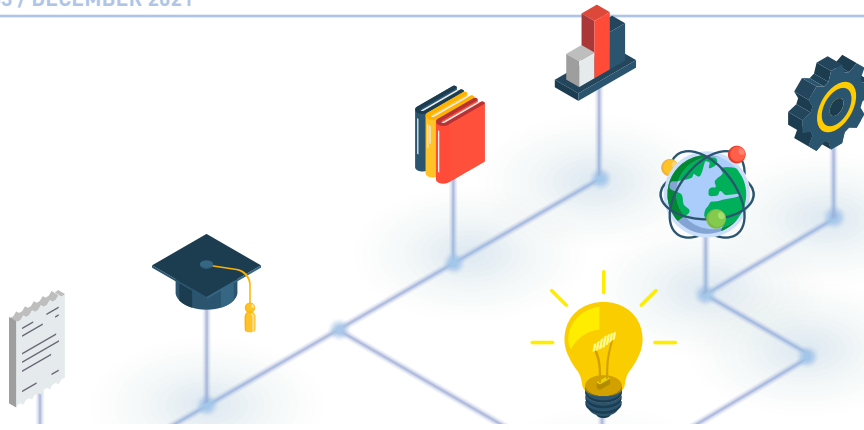
So how could it look?

Given that coaching is not principally a scholarly discipline – it is a craft, involving applied practice but based on sound scientific principles – effective education has to balance two opposing poles: the overly academic on the one extreme of the continuum and the overly ‘practical’ on the other. Too much emphasis on the academic and there is a danger that education becomes obsessed with academic irrelevancies and too far away from practice, whilst overly practical can result in an inability to effectively evaluate practice against sound theoretical constructs and thus coaches will lack the ability to think critically and evaluate practice. The key to effective education will ultimately be balance, ensuring a suitable

base of knowledge but combined with the ability to apply this and develop strategy.

Whether our current education provision is providing this balance is open to debate and this opens up three intriguing opportunities. First, significant improvements in strength and conditioning education are possible today. However, to achieve this we need to expand our horizon beyond the current confines and change our course focus from an overreliance on theory to the development and application of strategy. Secondly, given that strategy is contextually driven and requires multiple interdisciplinary skills – a period of mentored practice is crucial. Critically, this must not be confused with ‘placements’, where students often simply observe coaches, take some part in sessions, but are never involved in strategy. To be effective, mentored practice should resemble medical or teaching practice and involve understanding the contextual landscape, configuring the environment, and delivering effective contextually relevant actions. Thirdly, we have to emphasise the need for appropriate education and learning and not overemphasise qualifications.

If we take the first focus – developing strategic thinkers – then this ties in with the thoughts of many pedagogical experts who argue that education should revolve around an interdisciplinary approach teaching ‘the four Cs’: critical thinking, communication, collaboration and creativity.³ Adding these elements contextually to a strength and conditioning syllabus would undoubtedly help develop the strategic thinkers required for the modern world. However, there is a major challenge in switching immediately to this approach. Despite being constantly listed in academic curricula as key skills, capacities such as critical thinking are built on the consideration of specific knowledge.⁴ It is impossible to think critically without a certain degree of knowledge about a specific topic. Consequently, teaching these skills without a baseline knowledge, both of theory and practice, is fundamentally flawed.⁴ It is only when skills of critical thinking are



built on knowledge and experience that we can fully evaluate information, differentiate the scientifically sound from the outlandish, discern the purveyors of quality from the snake oil salesmen and differentiate the contextually feasible solutions from the fanciful. Experienced practitioners will often take a quick look at a planned programme, and immediately see its potential and latent flaws: this ability comes from the application of these higher order skills, all built upon a well-developed baseline in both theory and applied practice.

Taking the lead from medical training

So how should we structure our formal education; to balance this need for baseline knowledge, for applied practice, for an interdisciplinary approach and for developing the skills of critical and strategic thinking? Perhaps medicine has an appropriate approach. Medical training is typically built around two stages: the pre-clinical and clinical stages. The pre-clinical stage can be thought of as a preparatory phase, developing the baseline skills and knowledge needed to be able to practice safely. Once this is successfully completed, students enter the clinical phase which involves extensive practice supplemented with further study.

The pre-clinical phase for strength and conditioning could focus on the relevant applicable knowledge from the fields of anatomy, physiology, biomechanics, psychology, pedagogy, data management behavioural science etc. This could then be fused together with applied methods that address the fundamentals of resistance training, assessment, speed and agility development and endurance development. On successful completion of this phase, students would be generally well equipped to enter the clinical phase.

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coach must involve a period of applied practice. This clinical phase would involve mentored practice under the guidance of an experienced practitioner. This would be more akin to an apprenticeship than a traditional academic course, which Greene² outlines as a crucial move towards the mastery of any discipline. The quality of mentorship would be fundamental to the degree of learning this phase can engender and finding skilled mentors with the time to undertake the role will always be a challenge.

This practical experience in the clinical phase would be supplemented by continued learning, but with the focus switching from disciplinary knowledge to interdisciplinary application, drawing information from multiple sources with a focus on strategic practice. This would involve a development of both an appropriate depth of knowledge but also on breadth of knowledge. Crucially, this should involve moving off the mountain of linearity and onto the mountain of complexity.⁷ Consequently content and assessment should be built around preparation for the complex world of coaching and as a result content should be expanded to cover aspects such as leadership, team building, developing effective environments, building relationships etc. Integrating this into the clinical phase allows the information to be applied directly into practice, allowing reflection on its applicability and suitability for context. Assessment should shift from theoretical to contextual application, using experience and reflection on practice to facilitate understanding.

Alternative routes

Although a reformed formal education route into strength and conditioning will always be a valid point of entry into the profession for some, it is important not to confine entry to this one path. Many potentially effective coaches may wish or need to enter through alternative pathways. The vocational route is the preferred route of

many sports organisations. Here, coaching qualifications are the route to employment, with academic qualifications simply seen as additional training rather than pre-requisites. Coaching qualifications typically utilise a mix of formal training, delivered by the governing body, and extensive applied practice. Importantly, this arrangement also means that the governing body maintains complete control of its qualifications and training, able to dictate content, numbers, access etc.

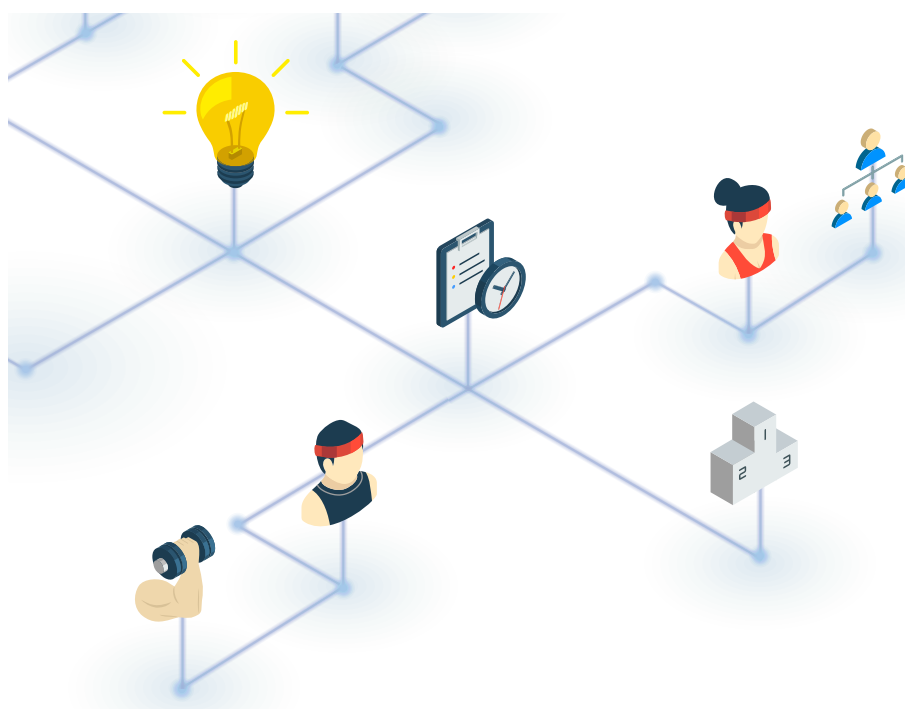
This provides a very real route into practice and employment in many sports. Unfortunately, many career paths are viewed simply as ladders, and we are brainwashed into thinking that everybody wishes to climb them: this directly influences how we design our educational provision. It is always important to remember that for many people, S&C coaching will always be a voluntary or part-time activity. So although formal academic education may be appropriate for some, it is not the ideal mechanism for everyone. Consequently, we need a means of ensuring that people wishing to become S&C coaches have the opportunity to develop the appropriate skills and knowledge required to perform effectively at their desired level of practice. A vocational pathway similar to that practised in many sports needs to be developed and controlled. This should be practice-based and built around what a coach has to be able to do at their level of practice and never on what they could know. Educational provision should then be based around enabling the coach to act effectively at that level of practice.

Ongoing education

The road to 'mastery' is long and winding and, some may argue, never-ending. Learning never ends. Perhaps the weakest part of our current educational offerings is that offered to the practising coach. Currently, little exists beyond formal MSc courses, or even PhD study, and the majority of these suffer from the same limitations as degree courses – ie, a predominantly linear approach, an overemphasis on science, and a lack of coverage of coaching skills and strategy. To consider these skills, a key is to look at how the work of a S&C coach evolves over time.

In their initial roles, S&C graduates working at higher levels of sport are likely to undertake assistant roles. Here much of the decision-making and setting of norms and cultures will be carried out by the head coach. However, over time a coach is likely to take on more responsibility: he or she will have a greater accountability for strategy and take an increasing role in the management and leadership of the programme.

Alternatively, they may start to specialise in a specific aspect of S&C delivery. Commensurate with this development will be an associated shift in their educational requirements. Given the emphasis on methods in undergraduate courses, emphasis at Masters level should move towards more interdisciplinary work, more critical and strategic thinking and to a focus on the skills required to lead and manage programmes.



If Masters level courses are to be industry-relevant, they have to evolve and become more industry-informed and not simply preparation for academia. Given that students should have a base of both theory and practice before embarking on a Masters, they should be ideally prepared to delve into effective application of the 4 Cs. The ideal solution would be flexible courses, with cores built around interdisciplinary practice, critical thinking, strategy and coaching – and the addition of multiple options allowing coaches to select modules that best represent their preferred career routes. This would facilitate potential specialisation as a coach develops. The requirements of assessments, projects, and dissertations should be built around applied solutions to real world problems rather than being limited by traditional research protocols.

Perhaps the most urgent development for effective Masters level study is to break the direct move from undergraduate to postgraduate study. Once a baseline of competence has been demonstrated, Greene² suggests that the next step towards Mastery is what he terms the creative-active phase. Here, learning comes through actively trying out different approaches experimenting and reflecting on practice. Unfortunately, moving directly from undergraduate to Masters study too often precludes this opportunity, and a potentially more effective route would be to spend time coaching and strategising before returning to Masters level study armed with this experience. Unfortunately, the incentives built into the current system directly impact upon the feasibility of this route. Today so many jobs in strength and conditioning require a Masters degree: many people sign up to achieve this as quickly as possible to enable them to enter the job market. In an ideal world, perhaps there should be a mandatory period of applied experience between undergraduate and postgraduate study; alternatively, this study should be blended, allowing experiential and formal learning to occur at the same time. This would allow for a greater depth of critical thinking, blending academic theory with practical experience.

Informal mechanisms of professional development

Perhaps a powerful move in the right direction for CPD for practicing coaches would be a realisation that formal education routes are not the only or – in many cases – even the ideal way. Today a plethora of

options exists that potentially span a whole host of disciplines. However, here again the system can inadvertently limit scope. Few coaches have endless resources for professional development and so choices are often made that balance education with any pre-requisite for recertification. In many instances the criteria for eligible recertification courses are constrained to traditional narrow confines. The list of acceptable courses also sub-consciously sets the agenda for the types of activities we ‘should’ be doing, again setting up a path dependency. In reality, if we are to expand our horizon, our CPD pathways similarly have to expand.

Perhaps one of the most powerful but underdeveloped professional development pathway is the circle of professional practice – essentially bootcamps for experienced practitioners. For experienced coaches, perhaps the greatest sources of professional development are facilitated discussions with similarly experienced coaches and this could be a powerful means of education and development. Practitioner groups could meet regularly and discuss topics relevant to their work: these would not be designed to seek specific answers to narrow questions, but instead to allow coaches to become more effective and successful leaders and strategists. The aim of these discussions would be to allow the sharing of experiences, allowing coaches to reflect on the challenges they face and the relative success of different approaches. This can facilitate additional insights and allow concepts to emerge and grow in a bottom-up manner, thus developing a higher level of awareness and understanding which can expedite enhanced practice. Importantly, this approach would have maximal content validity given that methods discussed would have been used and evaluated in context.

Developing the skilled facilitator

If there is to be a shift in emphasis from theory onto strategy at the higher levels of study, then this requires facilitators and educators versed in both the theoretical and applied aspects of coaching. Ideally, a strength and conditioning faculty should have a mix of academics and applied practitioners to ensure this balance. Yet again, the system actively acts against this. Many potentially skilled facilitators and educators are often prevented from undertaking these roles because they are delivered by academic institutions who have their own rules of employment. Many,

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for example, require a PhD to be able to work on a Masters degree course and are far more likely to employ the career academic than the experienced coach. Yet the career academic is far more likely to be well versed in research than practice. The status quo and path of travel is further reinforced.

Not all coaches will be great educators, and we probably need to develop a mechanism to help facilitate coaches entering education. However, attaining this balance is far more likely to result in effective coach education than the current system, crucially ensuring a healthy balance between academic and practical provision.

Conclusion

Effective coaching is strategic and requires navigating complexity, facilitated by the ability to combine multi-disciplinary information to develop contextual solutions:

this capacity develops over time and through extensive practice. This fact has huge implications for the way in which coaches are developed. The emphasis of education should shift away from a knowledge basis and extend to contextual interdisciplinary solutions. Curricula must ensure that coaches are facilitated to deal with the tasks they will face on entering the workforce and also enable them to develop the skills required to thrive in a complex and changing world. Education should ultimately be a lifelong activity and we need to devise ongoing opportunities via which coaches can share and illuminate practice.

Our education has made great strides, but not every step has led us in the right direction. To best serve our profession and our future coaches we need to re-evaluate much of what we do and to make sure our education is fit for purpose. In the words of French philosopher Jean-Paul Sartre: 'There is a future to be fashioned'.

AUTHOR'S BIOGRAPHY



IAN JEFFREYS, PHD, ASCC, CSCS*D, RSCC*E, FUKSCA, FNSCA

Professor Ian Jeffreys is a coach, author and educator who is currently the academic director of Setanta College in Ireland. A former professional rugby player, he is the author of ten books, a former board member and vice chair of the UKSCA, and a former board member and vice president of the NSCA. He is a fellow of both organisations and the Editor of *Professional Strength and Conditioning*.

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