'Just do a little more': examining expertise in high performance sport from a sociocultural learning perspective

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Research suggests that extensive training is necessary for the development of sporting expertise. Research also suggests that extensive training can lead to overuse injuries. The aims of this paper are to: (1) expand the concept of expertise in high performance sport, and (2) contribute to the discussion of how high performance athletes move towards expert performance in sustainable ways. To achieve these aims, data from retrospective interviews with four Olympians from four different sports are presented. As a way of extending traditional approaches, a pedagogical framework focusing on dispositional learning is employed to examine athletic development. The notion of threshold concepts is used as a specific analytic tool for thinking about how athletes come to make sense of their sporting environments. Interpretations of the data provide insights into the nature of thresholds in high performance sport, factors that facilitate threshold crossing, and factors that may prevent athletes from making advances, all of which have implications for practitioners interested in developing expertise.

Keywords: athlete learning; conceptual thresholds; injuries; skill acquisition; sustainability

Introduction

Theorists and practitioners generally accept that considerable training over extended time periods is necessary for the development of athletic expertise (Baker, Horton, Robertson-Wilson, & Wall, 2003; Williams & Hodges, 2005). However, as most coaches and athletes are well aware, intensive training can and frequently does result in injuries (Denison, 2007; Malcolm, 2006; Wall & Côté, 2007). To give some idea of the risks across different sports, Price and colleagues (2004) noted that English youth academy soccer players are injured on average every two and a half seasons and miss almost 22 days (or 6%) of their development time for every injury. Elite badminton players are likely to sustain more than three injuries every season (Yung, Chan, Wong, Cheuk, & Fong, 2007). Elite gymnasts on average experience four instances of 'physical damage' causing them to miss or modify at least one training or competition episode per season (Kolt & Kirkby, 1999, p. 314). Balancing training volume with development of expertise is central to the work of athletes and coaches. The general contention made in this paper is that how a person

thinks about expertise will have important consequences for how they go about this balancing task. With a view to developing sustainable perspectives on high performance sport, the specific aims of the paper are to: (1) draw attention to a dimension of expertise that has escaped interest in existing literature on expert performance (Abernethy, Baker, & Côté, 2005; Berry, Abernethy, & Côté, 2008); and (2) contribute to the discussion of how high performance athletes move towards expertise during their careers. To achieve these aims, we draw on retrospective interview data with Olympians. We examine their athletic career progressions and consider how they attained particular types of expertise. To frame this development, we employ the notion of threshold concepts (Meyer & Land, 2012). Before sketching out this theoretical framework, we consider existing literature on expertise in more detail.

Athletic expertise and progression

Expertise has gained considerable attention within and outside the field of sport (Berry et al., 2008; Côté, Baker, & Abernethy, 2007; Ericsson et al., 1993) and scholars have identified different dimensions of expertise. Ericsson (2008) claimed that an important indicator of expertise is the ability to respond rapidly, intuitively and with limited preparation. Baker, Côté and Abernethy (2003a) suggested that sporting expertise is characterised by factors ranging from exceptional physical fitness to outstanding strategic knowledge. They contended that in team sports, decision making – the process of perceiving information, interpreting this information, and then selecting an appropriate response – is particularly important. In a useful review, Singer and Janelle (1999) concluded that sports experts: (1) have high amounts of task-specific knowledge; (2) can interpret important meaning from available information; (3) store and access information effectively; (4) detect and recognise structured patterns of play; (5) use situational probability data effectively; and (6) make rapid and appropriate decisions.

Many scholars share a concern with identifying factors that lead to expertise (Baker et al., 2003a; Côté, Baker, & Abernethy, 2007). Many also acknowledge that a variety of factors contribute to whether an athlete becomes an expert, including genetics, relative age and cultural importance assigned to the sport (Baker & Horton, 2004; Ericsson, 2008; van Rossum, 2000). However, two dependent variables have gained particular attention: time spent practising and type of practice. For example, we know that experts spend more time training than non-experts (Helsen, Starkes, & Hodges, 1998), that there is some variation in the time experts spend training (Baker et al., 2003a), and that experts invest more time in specific types of training such as video-assisted practise and time with the coach (Baker, Côté, & Abernethy, 2003b). We also know that expertise and training hours are often related in a negative exponential fashion (Newell & Rosenbloom, 1981). Newell and Rosenbloom (1981) coined this relation the ‘power law of practice’ and Côté and colleagues (2007) suggested that while other theories exist, the power law provides one of the most empirically sound profiles of the relationship between practice and achievement in sport.

In many respects, the scientific focus on training quantity and practice type makes sense: with knowledge about these two aspects, researchers can provide coaches and athletes with valuable information about how to manipulate training environments and develop expertise. In other respects, we may ask whether these variables completely describe the activity of ‘expertise development’. In other words, have sport scientists developed what Ericsson and colleagues (1993)

described as a ‘truly scientific account of exceptional performance [that] completely describe[s] both the development leading to exceptional performance and the genetic and acquired characteristics that mediate it?’ (p. 363). Our position is that there is still work to do. While it is certainly not our intention to provide a grand theory that accounts for all factors natural and nurture-able with this paper, we believe we can make a contribution to our understanding of expertise. More specifically, we believe we can extend our understanding of what it means to be expert in high performance sport settings and provide a complementary way of looking at training and practice. By doing this, our contention is that we can remove some of the emphasis currently placed on training volume and potentially reduce the risk of dangers related to over training.

Theoretical perspective

It is abundantly clear that sporting experts combine remarkable motor capacities, high levels of physical fitness, outstanding decision-making skills, and exceptional tactical and strategic understandings of the sports in which they are involved. Our theoretical proposition is that expertise also has a ‘dispositional’ dimension that relates to the way athletes view and act in their social worlds. To elucidate this proposition, we draw on sociocultural learning theory and then the notion of threshold concepts.

Sociocultural learning theory frames learning as a process of becoming (Hager & Hodkinson, 2009; Hodkinson & Hodkinson, 2004) and suggests that as people learn, they become different types of people (Hodkinson, Biesta, & James, 2007). From this perspective, expert performers do not simply have more tactical knowledge, motor skills or fitness than non-expert performers; rather, they are qualitatively different types of people. As different people, they have different personal characteristics and see the world in different ways. They also occupy different positions within the networks that make up sporting communities.

To think about personal characteristics as an analytic term, several sociocultural learning theorists have drawn on Bourdieu’s notion of disposition (Hager & Hodkinson, 2009; Hodkinson et al., 2007). According to these theorists, a disposition refers to how a person typically or habitually relates to other people. It can refer to how people hold themselves, how they dress, how they talk and what they value. ‘Disposition’ is more extensive than ‘personality’ as it attempts to capture the physical and social dimensions of individuals. Learning can involve changes to any element of a person’s disposition and below we elaborate on this process in our discussion of threshold concepts.

Importantly, other analytic frameworks could explain the development of dispositional expertise – Bourdieu’s and Wacquant’s (1992) concept of reflexivity, for example, could well be used to explain the development that we will examine. The primary advantage of the proposed framework is its accessibility. Indeed, to our minds, it would seem difficult to merge the Bourdieu and Wacquant idea with current discussions of expertise or to use it to describe coaches’ and athletes’ everyday experiences.

Threshold concepts

A threshold concept refers to an idea that once grasped, opens up previously inaccessible ways of thinking, and has deep, transformative consequences for individuals (Lucas & Mladenovic, 2007; Meyer & Land, 2005). Although the notion has been

used predominantly in educational research (see for example, Clouder, 2005; Kiley, 2009; Wright & Gilmore, 2012), the concept has a good deal of utility in elite sport settings.

Threshold concepts have been employed in different ways (see Rowbottom, 2007, for a useful discussion here). They can be considered in relation to content knowledge. In this respect, threshold concepts constitute 'core concepts' that are necessary to grasp if learners are to extend their understanding of a given subject. Such knowledge does not necessarily lead to a 'qualitatively different view of subject matter' (Meyer & Land, 2012, p. 6). Alternatively, threshold concepts may be seen as more than 'particularly tough conceptual nuts' in the content of a discipline (Perkins, 2012). It is this second line of thinking that we are interested in. Davies and Mangan (2007) suggested that threshold concepts can be related to an appreciation of how a community operates, how 'things' are done within it and how a person can knowingly function within the community. This view fits comfortably within a sociocultural approach and its focus on networks (Hager & Hodgkinson, 2009). From this perspective, a threshold concept relates to less tangible, but still crucial knowledge of how individuals should and can interact with their social world. Somewhat like Neo's appreciation of how his virtual world worked in the film *The Matrix*, such learning involves members comprehending the 'larger conceptual game' (Perkins, 2012), and has an impact not only on how individuals see the world, but also on how they see themselves within it.

A change in worldview and a concomitant reconstruction of identity is one defining aspect of crossing a threshold (Meyer & Land, 2012). Along with transformation, Meyer and Land (2012) proposed three other characteristics. These related to 1. irreversibility, 2. the integrative nature of threshold concepts, and 3. the effort involved in crossing them.

1. Meyer and Land suggested that once such a concept has been grasped, it is very difficult to unlearn. They maintained that threshold concept crossing is unforgettable and that new ways of seeing/doing/understanding will become part of a person to the extent that they cannot ignore them.
2. Thresholds are integrative. Traversing a threshold may offer opportunities to understand not only one aspect of how things work, but many. Crossing may also provide ways of understanding how different aspects influence one another. Perkins (2012) referred to threshold concept epistemes, where individuals gain access to 'a system of ideas or a way of understanding that allows [learners] to establish knowledge' (p. 42). As learners grasp connections, they can make more extensive meaning and may be able to justify practices, explain processes and solve problems that they had been previously unable to. At the same time, while interconnectedness exists, Meyer and Land (2012) noted the bounded nature of threshold concepts. They pointed out that communities have 'conceptual spaces' and that understanding one community does not necessarily lead to recognising how others operate.
3. While threshold concepts may sound enlightening and positive, crossing may be troublesome and difficult. Perkins (2012) suggested that seeing things in other ways can make learners feel strange, confused and possibly anxious. The disruptiveness of new knowledge may be increased as

alternative ways of seeing things appear counter-productive to personal growth and/or the successful functioning in other settings. In this respect, the ability to appreciate threshold concepts may have emotional consequences that are negative and/or positive.

Methods

Our examination of learning in high performance sport involved a case study approach (Stake, 2005). We took participation at the Olympic Games as an indicator of expertise, although several athletes that participated in the study exceeded this criterion, winning one or more Olympic medals. To identify former Olympians, we consulted 2008 and 2010 participation lists of national Olympic organisations. Former athletes were contacted via email and invited to participate. Recruitment depended on the addressees' willingness and availability to participate in the study. Five female and three male athletes from Australia, Sweden, Switzerland and England who had participated in cycling, high-jumping, judo, kayaking, land hockey, ski jumping, softball or synchronised swimming were eventually recruited. Seven of the eight athletes had participated in at least one Olympic Games, one athlete was selected as a travelling reserve, and all athletes had competed extensively in international competitions.

Two semi-structured interviews (Rapley, 2004) were held with each athlete. The first interview covered topics relating to athletic career progression, social relationships, practices and values. The schedule included questions such as: 'how did you enter your sport? How did your sporting participation change over time?' 'What did you need to learn in order to do well in the sport?' and 'Who was important to you in your sporting context?'. After the interviews had been transcribed, the athletes were interviewed a second time using the material from the first conversations as prompts.

Analysis involved the identification of key incidents (Emerson, 2004). In line with our theoretical approach, key incidents included accounts of substantial personal transformation that had significantly affected how the athletes understood their sporting involvement. In three of the eight cases, threshold crossing was identified. For each of these instances, annotations that included information on the events leading to crossing, the knowledge or dispositions that needed to be learnt, the learning that followed afterwards and the effects this learning had, were produced.

Sporting threshold concepts

Before discussing the Olympians' data, two introductory remarks are warranted. First, only four athletes' comments are considered here. This is for the simple reason that three athletes described a process of threshold crossing and we have chosen to use another one as a comparison. We return to this important point in the Discussion. Second, the accounts are brief. Providing four examples was important and at the same time, data of this nature are not easily abridged. However, we believe we can give a sense of the thresholds that were crossed and the events that facilitated and hindered the process.

Susan – looking out for number one

Susan was a competitive kayaker for approximately 20 years. She was successful throughout her career, placing well in national and international competitions and competing at the Olympics at the end of her career. However, sporting involvement also led to substantial financial strain and she experienced interpersonal conflict with coaches and team members. For much of her career, Susan trained as part of a larger team within which notions of comradeship, inclusion and sharing were espoused. She identified closely with this culture and considered herself a team player.

Susan's threshold crossing occurred in the later years of her career, where she came to 'see how the game of competitive kayaking worked in her country'. She was in her early thirties and had come back to high-performance kayaking after a break. She was attempting to re-enter the national team but was not selected. The selectors said that despite top-level competitive results, she was too old and that because she was in paid employment, she lacked commitment to kayaking.

According to Susan, it was during this time that she realised that her supportive, sharing attitude disadvantaged her. She recounted how she began to see how her belief in comradeship and solidarity 'was a mistake ... because it made [her] someone else's training fodder'. With this recognition, she became egotistic and selfdirected. She began working closely with her husband and started to give precedence to her own sporting needs. She selected training partners with which she was sure she could improve her own capacity, recruited relevant supporting staff and built a suitable support crew. She explained it as follows:

You're not doing anyone a favour if you don't prioritise yourself and your own performance ... to do as well as you can, you need to do what's right for you, not do what people think you should do or do what's right for other people ... you don't train with someone just because you like them; you train with someone if there's a benefit to you. You don't train with someone just because they happen to be on the same squad as you. You train with someone if it's going to benefit your performance.

While Susan adopted this egocentric worldview to become successful in high-performance sport, she stated that this was not something she wanted to embody outside of sport. However, the egotism became an important aspect of her athletic disposition, reflected in the ways she interacted with those around her. She described how in the end this translation improved performance to the extent that she made the national team of another country and felt 'young again'.

Beth – telling it how it is

Beth enjoyed an extensive career in softball, competing at four Olympic Games. For much of her career, she felt that she did not deserve to be in the teams for which she was selected. In age group squads, she would ask herself why the coaches had picked her and was not disappointed if she was not chosen. She played for five years in the national team before she felt that she had earned her place. Even then, she played in different positions over the years, often when the coaches could not field their first choice players. This essentially made her a 'jack-of-all-trades' and a player without her own speciality. She did not assign softball the same high value as her coaches and was inclined to view the sport as just a game. This view enabled her to cope with pressure, but at the same time did not sit well with her coaches.

Beth described two decisive phases that resembled threshold crossing. The first occurred after her second Olympic Games. The entire event had been significant in that it had showed her how 'amazing' sport could be but also how 'bitchy' the people involved with sport could be. The experience was negative enough for her to leave softball and try field hockey. While playing second division hockey she became irritated with her inability to meet her own performance expectations, which were in hindsight simply too high. Her hockey team mates quizzed her, asking her, 'Who do you think you are? You've come here and you don't play very much and you're getting cranky?' Beth explained that through the experience, she came to see the value of realistic performance expectations, adding that it helped her recognise similar characteristics in other players when she returned to the national softball team.

After her third Olympic Games and with just under four years of her career remaining, Beth had shoulder surgery and almost a year away from softball. This was a second critical moment and preceded threshold crossing. When she returned, the team had a new coach. Beth's relationship with her previous coach had been unexceptional and she felt that this had played a part in her own sub-optimal performances. She decided that she needed to communicate to the coach exactly what she needed if she was to perform at her best:

I just said, this is who I am, this is what I need, this is what I need you to tell me, this is what I am feeling when I am feeling bad, this is what – I just spelled it out and we were awesome.

This led to a particularly good relationship with the new trainer. She talked with him often and they developed a friendship. Beth learned to play the position that the coach had played while he was a softball player and this became her specialist position. At the following Olympics, Beth intimated to the coach that she only wanted to be selected if it was for this position, and not for her versatility, and this eventually happened.

John – forgetting the medals

John competed in three Olympic Games as a judoka. At the time of the interview, he was still enjoying a degree of public attention, but indicated that this was starting to diminish. In his account of development as elite judoka, he said that learning to be self-centred, hard with himself and patient was crucial. In this last respect, a Japanese trainer had been instrumental. The trainer had encouraged him over many years to value waiting for success. However, it was an experience at his second Olympic Games that led to the most demonstrative example of threshold crossing. John had been to one Olympic Games, was in excellent form and was a favourite for a medal. In the first round against a lower ranked opponent, John lost and was out of the tournament. He could not understand why. It was six months before he could talk about the event and several years before he had an explanation for what had happened. Now he says simply that he 'cracked' – it was too much pressure and he could not manage it.

The personal transformation that accompanied this event was significant. Prior to the event, John had valued winning highly. Over several years following this loss, he came to believe that winning could not provide the only motivation: 'What if

you lose the next time? You commit suicide or what?'. The idea of competing for some alternative reason (for John this seemed to be about the deeply emotional, sensual experience of Judo) was indeed transformative. John suggested that this view allowed him to free himself from much of the judo culture that increasingly revolved around prizes and ultimately allowed him to keep going with the sport. John also maintained that this crossing had significant consequences on performance. He summarised his realisation in the following way:

If you want to be good, not only one year but for 10 years, then you have to think like this. If you are good one or two years, this is hard, but it's easier than to be good 10 or 12 years. And I think if you want to be good at the top level, on a long-term basis, you have to think like this. Otherwise you lose too much energy. You can't do this for a long time ... you have to be free so that it's not the most important thing to have a medal.

Somewhat paradoxically, John ascribed his medal success at his last Olympic Games to having been able to free himself of the reward orientation he had previously embodied. He described his development as 'a huge personal step', one that he was glad to have been able to make.

Amélie – accept it and say nothing

Amélie's case is different from those above in that her account did not reveal specific moments of personal transformation. It did reveal learning in terms of the development of a disposition and like the four athletes in the investigation that remain un-discussed in this paper, Amélie's narrative reveals personal progress (as well as performance improvements). Still, neither she nor the four others identified events that resulted in qualitatively different world views or changes in the ways they interacted with those around them. While any of the four could have been used to provide a counterpoint to the three examples above, Amélie's case is useful because it appears to contain several moments where threshold crossing appeared close, but did not occur.

Amélie began synchronised swimming at a young age and eventually competed in two Olympic Games. Her training was consuming, typically involving between 30 and 40 hours per week. The training environment was hierarchical and rigid, and coaches expected Amélie and her colleagues to acquiesce completely to their training regimes. She says of one of her trainers:

She just said, "you'll do it and you don't say a word! I say how, what, when and where and you just shut up!". So you never commented or said anything or criticised anything ... she was really relentless. You had to do everything 1000 times. It really was the quantitative training.

At the age of nine or ten Amélie learned to deal with criticism: 'just accept it and say nothing'. She identified being submissive as a key disposition she learnt through her sport participation.

Amélie recounted numerous instances of physical and emotional hardship that extended beyond her sporting world. She trained with illness, she trained in various states of exhaustion, and she trained when she was having relationship difficulties. She would often arrive home from competitions or training camps without sufficient money for groceries or bills. These hardships led to at least two instances where

significant change seemed imminent. The first was at a training camp in Malaysia. In the preceding months Amélie had become concerned about her physical health and financial well-being. At the camp, she became ill with food poisoning. According to Amélie, her trainer said, 'you've got to train, you have to stay in the water'. Amélie decided to quit and fly home. Her boyfriend – a member of the training staff – persuaded her to stay and continue training 'for the sake of her team mates'. The second was a situation in which her trainer choreographed a routine for Amélie to use at the National Championships. The competition was to occur in three weeks and Amélie felt that the difficulty of the routine was too high considering the time available. The disagreement was significant and team mates and other coaches became involved in the dispute. As a result of the disagreement, she left the club and returned to her previous one. There, she continued on with her sporting engagement in much the same way as she was used to until she competed at her second Olympics where she was slightly disappointed with a poorer ranking than her first Olympics.

Discussion

The athletes introduced in the previous section had exceptional sport-specific talents. They had also spent considerable time training and were working on the upper plateau of Newell and Rosenbloom's (1981) curve. In the first three cases, the athletes experienced moments of significant personal transformation and came to see what they were doing in different ways. Crossings resulted in the development of a particular type of expertise which enabled the athletes to function more effectively in their sporting environments. We would like to discuss the types of thresholds that the athletes crossed, the factors that can facilitate threshold crossing, and the factors that might prevent athletes from crossing thresholds.

What types of thresholds do athletes cross?

In the cases above, Susan learned that being egotistic was necessary for improvement, Beth discovered her own needs and the importance of communicating these to her coach, and John learned that his reason for doing judo was critical to performance. Several points can be made here. First, they do not fall within technical/motor or strategic domains (Baker et al., 2003a, 2003b; Berry et al., 2008; Singer & Janelle, 1999). Our interview data suggest that while technical/strategic skills are important, athletes are also involved in 'underlying games' (Wright & Gilmore, 2012, p. 615) that are not immediately apparent to the outside observer or the athletes themselves.¹ These games involve knowing things such as how to structure training environments for maximum learning and how to interact effectively with coaches. In thinking about underlying games, Ericsson and colleagues' (1993) proposition of deliberate practice could be extended to include a reflective element, involving learning how to recognise a person's social world and navigate within it.

The thresholds that John, Susan and Beth crossed were different from each other, a point with significant consequences for coaches. The idea of generic threshold concepts has received attention in educational literature. Kiley and Wisker (2009) attempted to identify generic concepts; Lucas and Mladenovic (2007) suggested that differences are unavoidable if we assume a constructionist perspective. Our data are more in line with constructionist perspectives and lead us to agree with Rowbottom (2007) who proposed that thresholds are 'agent-relative' (p. 267). In other words,

different people involved in the same activity might cross different thresholds on the way to becoming experts. Where Rowbottom (2007) saw this as theoretically problematic, we are inclined to view this as part of the pedagogical challenge, which involves helping athletes to discover the types of crossings necessary for becoming experts.

A third important point regarding types of thresholds was that they tended to involve a rejection of the general way things were done in the athletes' respective communities. This seems to contradict much of the threshold literature which suggests that crossing a threshold is about entering a community (Kiley, 2009). Why did athletes need to eschew the accepted knowledge of their performance-oriented communities in order to improve their performance? Susan's narrative suggests that her sporting community was not going to bring out her best performance and John stressed that most of his peers and competitors valued winning and rewards. One interpretation is that there are communities within communities in sport and that only some of these sub-communities are bounded by expert knowledge. This raises questions about how sporting organisations are structured along with which groups get to determine 'legitimate' knowledge (remember Susan's selectors believed that it was not possible for a woman of her age to be internationally competitive, let alone win). It also encourages us to think about how organisations can be structured to maximise individual performance for all athletes and how different types of participants and their different forms of knowledge can co-exist successfully.

What factors can facilitate threshold crossing?

All participants had competed for a number of years. This is unsurprising; most expertise literature suggests that at least 10 years of training are necessary for exceptional performance (Côté, Baker, & Abernethy, 2003; Starkes, Deakin, Allard, Hodges, & Hayes, 1996). For Susan, and in the case of Beth's second crossing, transformation occurred late, and both accounts contained a type of 'now or never' element. Even John had participated in two Olympics and might have chosen to end his career at that point. Drawing once more on the idea of networks and communities (Hager & Hodgkinson, 2009), we would propose that change was prompted by the athletes' recognition that their relationships and identities were going to change in any case. Susan certainly had little reason to maintain her teamwork disposition and the relationships that went with it. Beth too had competed in three Olympics and realised that she was slowly coming to the end of her career. Before reaching these points, the athletes had established dispositions within their communities (the team player, the all-rounder). In acknowledging the possibility of post-sport dispositions, athletic dispositions possibly became less rigid.

In a similar way, breaks were also important. It is difficult to say what happened during Susan's and Beth's injury breaks since this was not a focus of the interviews. However, threshold crossing has been linked with career disruptions in other fields such as nursing (Clouder, 2005, refers to burnout). Interestingly, the idea that disruptions are important is somewhat consistent with early work on skill acquisition (see for example, Plimpton, 1977, cited in Ericsson et al., 1993) that posited the importance of rests. A key assumption of this work was that rest was needed for reflection and recuperation.

Of course, this hardly means that injuries in and of themselves are performance enhancing. Rather, it suggests that a protracted pause in an athletic career might

bring opportunities for reflection, growth and maturation. Such opportunities could be utilised without injury and indeed could reduce the risk of overuse injuries. That none of the athletes did take extended, unforced breaks is significant, yet given the precedence training hours are awarded in the current logic of high performance sport, may not be particularly surprising.

What might prevent athletes from crossing thresholds?

Significantly, none of the athletes mentioned explicit attempts to develop anything like an expert disposition. Personal transformation simply was not an explicit focus of their training, at least not in the recollections of the athletes. Then again, why would it be when most scientific expertise literature has foregrounded characteristics such as decision making, strategic knowledge and physical fitness?

While this lack of focus on a dispositional dimension may explain why some athletes do not cross thresholds, there are other possible explanations. Kiley (2009) and Meyer and Land (2003) discussed states of liminality where learners get stuck pretending to know what is required but not actually knowing. This would seem to be a rather disparaging assessment of athletes such as Amélie who are exceptionally good but fail to succeed at the highest level, despite spending much of their lives training. Being stuck occurs frequently in other fields (Wisker & Robinson, 2009; Wisker & Savin-Baden, 2009) and it appears reasonable to suggest that sport could be similar. Indeed, the logic of training suggests that 'just doing a little more' will lead to better performance. This logic constitutes 'tacit knowledge' (Irvine & Carmichael, 2009), which Meyer and Land (2005) maintained can prevent learners from purposefully reflecting on practices, conduct and consequences. However, if we consider a dispositional element of expertise, it may actually be reflection rather than additional training that will lead to improvements in performance.

Conclusion

Current perspectives on expertise foreground aspects such as motor capacity and decision making. They also stress the importance of type and quantity of training in attaining expertise. We have attempted to expand the concept of expertise to account for a dispositional element that involves athletes' ways of seeing their environments and acting within them. In the process, we have presented data which suggests that some athletes experience important moments during their sporting careers where their views of their environments and themselves change significantly. These moments, referred to as incidents of conceptual threshold crossing, involve reflection and have significant consequences for athletes' expertise and identity trajectories.

Unfortunately, we know little about the nature, frequency of occurrence or impact of threshold crossing in sport. While we have attempted to sketch out the types of thresholds that Olympic athletes have crossed, considered various factors that could help athletes cross thresholds, and reflected on why athletes may not experience threshold crossing, this work can only be seen as a preliminary and tentative exploration. It is our contention that threshold concepts provide a useful tool for thinking about the development of athletic expertise with utility across practice-theory boundaries. This additional aspect of expertise could be especially important in light of scientific and practice trends that stress the value of training quantity. We hope that further research can expand on this work.

Note

1. Hodkinson, Biesta and James (2008) also discussed the game metaphor, pointing out that many social practices ‘appear as one thing whilst achieving something else, with the people involved not necessarily seeing how this works’ (p. 35).

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