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## Publication information

Comparative Exercise Physiology

ISSN 1755-2540 (paper edition)

ISSN 1755-2559 (online edition)

Subscription to 'Comparative Exercise Physiology' (4 issues a year) is either on institutional (campus) basis or on personal basis. Subscriptions can be online only, printed copy, or both. Prices are available upon request from the publisher or from the journal's website ([www.wageningenacademic.com/cep](http://www.wageningenacademic.com/cep)). Subscriptions are accepted on a prepaid basis only and are entered on a calendar year basis. Subscriptions will be renewed automatically unless a notification of cancellation has been received before the 1<sup>st</sup> of December before the start of the new subscription year. Issues are sent by standard mail. Claims for missing issues should be made within six months of the date of dispatch.

Further information about the journal is available through the website [www.wageningenacademic.com/cep](http://www.wageningenacademic.com/cep).

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## What makes an elite equestrian rider?

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Received: 13 June 2016 / Accepted: 15 August 2016  
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### RESEARCH ARTICLE

#### Abstract

Eight international riders from Olympic equestrian disciplines, participated in semi-structured interviews investigating developmental factors which they felt had helped them achieve and retain elite status. Key factors were present across the variable rider journeys to elite status. Riders demonstrated a natural aptitude for horse sports, a desire to learn combined with exposure to environments which fostered confidence and skill development: access to elite and developmental horses, observing elite riders, access to coaches and parental support. Riders consistently questioned the status quo of their practice: through partnerships with multiple horses, self-development and horse-development, and were motivated and driven, with a clear belief that they would achieve success; attributes that remain once elite status was achieved. Success appears initially motivated by participation in equine sports for fun and as rider investment was rewarded by winning, with associated financial benefits. When elite status is attained, motivation and definitions of success become focused more upon the relationship with their horse and the constant challenge of developing their own and their horses' skills. Elite status appears associated with a successful philosophy that underpins rider' practice: the way riders' think, ride, train and run their business, underpinned by distinct individual philosophies. These factors combined help riders remain successful at the highest level of their sport.

**Keywords:** psychological profile, eventing, dressage, showjumping, motivation, athletic talent development

#### 1. Introduction

Equestrianism is popular worldwide, for example in the UK 2.7 million people ride, of these riders 96% ride for pleasure and 59% participate in competitive horse sports (BETA, 2015). Equestrian sports allow men and women to compete on an equal basis across disciplines from grass-roots competition up to the Olympic Games (Daspher, 2012). Competitive success is dependent on the performance of the rider but also, uniquely to equestrianism, contingent upon the physiological and psychological ability of the horse (McLean and McGreevy, 2010; Williams, 2013) and how the horse's natural talent, defined as 'special natural ability' combined with a 'capacity for achievement/success' (Falk *et al.*, 2004), is directed by the rider. The degree to which the rider, the horse, or the success of a functioning dyad (the horse-rider relationship), contributes to competitive success is often debated anecdotally in the equine industry but has not been extensively researched (McGreevy and McLean, 2007; Wolframm, 2011).

#### Rider personality

Personality profiling to assess an individual's suitability for specific sports is commonplace in human individual and team sports, such as football, gymnastics and athletics (Allen *et al.*, 2011, 2012, 2013, 2014). However, profiling is a relatively new concept in equestrianism, with little contemplation given to how personality traits vary between the different categories of rider and how these might influence competitive success and motivation. For example, there may be a difference in personality type between riders riding recreationally compared to those competing in a professional context, and variation in the amount and context of empathy felt towards the horse could differ. Similarly, rider personality can also influence the motivation to ride, with some riders focused solely on winning as a measure of success. Wolframm *et al.* (2015) conducted an online survey of riders worldwide and found that the profile of a leisure rider was distinct from both amateur and elite status competitive riders, where status

was defined by competition level and not competition success *per se*. Competitive riders recorded increased extroversion and conscientiousness scores compared to the leisure rider group, a profile which is consistent with results from athletes in other sports. Competitive athletes record higher extroversion and conscientiousness scores, and reduced neuroticism scores compared to normative (non-competitive, non-athletic) populations (Allen *et al.*, 2011; Woodman *et al.*, 2010). Wolframm *et al.*'s (2015) preliminary survey suggests that elite riders either inherently possess or have developed over time a distinct personality profile that enables them to perform under pressure, supporting their success.

Research across sports has identified that elite athletes appear to possess a distinct psychological tool-kit (Gould and Maynard, 2009; Gould *et al.*, 2002) including, but not limited to a deliberate and disciplined approach to training and competition, high levels of self-confidence, possess effective time management skills, are good at problem-solving, have the ability to focus and perform under pressure, and can use effective goal-setting, positive and constructive coping mechanisms to deal with success and failure (Allen *et al.*, 2014; Hardcastle *et al.*, 2015; Wilson and Dishman, 2015). Investigations within equestrian sports have found that the elite equestrian rider possesses different psychological traits to sub-elite riders, these include higher anxiety management abilities to regulate arousal and competitive state anxiety generally (Meyers and Sterling, 2000) and enhanced anxiety management skills to utilise anxiety positively during competition giving them greater levels of efficacy and confidence (Wolframm, 2011, 2013). However, further research is required to substantiate and consolidate these findings at the highest level of equestrian sport by exploring the psychological traits of elite riders and determining how these translate to the attainment of success (winning and sustaining elite status, defined as competing successfully at the highest level of International competition (Williams and Tabor, in press): Olympic and World Championship level).

Undoubtedly, the experience of the rider will influence their riding capabilities, decision-making and consequently their horse's ridden performance. For example, self-confidence has been found to be closely related to riders' perception of their horse's ability to perform (Beauchamp and Whinton, 2005). But to be able to evaluate the impact of the rider on the horse, and how factors within, and deriving from, this relationship generate success, we first need to understand who the rider is and how they developed into the athlete they are (Williams and Tabor, in press). Unfortunately this is not a simple question. Riders are individuals who each possess their own set of characteristics, values, skills, experience and status which will influence their own development and performance as well as their relationship with the horse (Wolframm *et al.*, 2015). Who they are,

what level they compete at and even why they ride can change over the course of a lifetime, with age, personal circumstances (including horses they encounter/own, self-taught vs managed approach, influence of and access to coaches) and/or depending on the context (culture, economic, opportunities, challenges) in which they are riding (Williams and Tabor, in press; Wolframm *et al.*, 2015).

### Rider development and motivation

Numerous models for career progression to elite success, (elite: a select group that is superior in terms of ability or qualities to the rest of a group or society; success: the accomplishment of an aim or purpose (OED, 2016)), in competitive sport have been proposed, for example by Bloom (1985) and Côté *et al.* (2003). For equestrianism, the attainment of riding expertise has been linked anecdotally to 'natural talent' either / or inherent ability (nature) (Helsen *et al.*, 2000) as well as with ongoing experience (nurture) (Colvin, 2010) such as that gained within long term athlete development (LTAD) systems (Balyi and Hamilton, 2000). Both routes require the completion of deliberate (and correct) skill practice to attain expert status. In LTAD models, the 10 year rule, that is 10 years of practice (Balyi and Hamilton, 2000; Ericsson *et al.*, 1993), or the minimum of 3,000 hours of practice (Campitelli and Gobet, 2011) are deemed to create an experienced athlete (Williams and Tabor, in press). Whilst in the equine industry, experience is often gained from undertaking a competitive 'apprenticeship' as a stable jockey/rider or working pupil within an established professional yard. Regardless of the model selected, consistent milestones appear: (1) an initial stage where individuals actively engage in a range of sports and a natural talent is identified; (2) a development stage where individuals specialise in one or two sports, learn their discipline and engage in deliberate practice to develop their expertise; and (3) a subsequent investment-mastery stage where the individual refines their skills and becomes an expert at their sport facilitating the transition to elite level success (Keegan *et al.*, 2014). Numerous factors are influential to the developmental journey of an athlete including, but not limited to, parental or familial support (Côté, 1999; Wuerth *et al.*, 2004), coaching support (Erikson and Côté, 2016), development and competitive opportunities (Martindale *et al.*, 2005; Wanga *et al.*, 2011), athlete personality (Bertollo *et al.*, 2009; Connaughton *et al.*, 2008), athlete motivation (Amorose and Anderson-Butcher, 2007; Martindale *et al.*, 2007; Smith *et al.*, 2015) and financial security (Diehl *et al.*, 2014). However, the motivational and development factors which influence success for the elite rider, and ultimately the elite horse-rider relationship, are still poorly understood, perhaps due to the complexity of equestrian sport (Williams, 2013), the challenges of studying elite athletes generally (Keegan *et al.*, 2014) and because it has seldom been researched. Therefore, the aim of the current study was to conduct

in-depth interviews with elite riders who had achieved Olympic success, to determine how they acquired the skill set to achieve and retain their elite status, and to establish if any commonalities existed in where they came from, their journey to success and their motivation to succeed at the top level of equestrianism.

## 2. Methods

### Participants

The study obtained ethical approval from the ethics committee of the University of the West of England, Hartpury Committee in 2014. Participants were recruited personally by the first author from their peer network of riders, through a convenience sampling approach. Riders were selected using the following criteria: (1) career length over 10 years; (2) competitive success in one Olympic equestrian discipline at international championship level events, World Championships and the Olympic Games; and (3) active competitor, horse producer and/or coach at the same level. The sample contained six men and two women with an age range of 32-57 years old, three riders were from the UK, two from New Zealand, one from the United States and two were from Australia. The sample size is analogous to previous qualitative research evaluating Olympic athlete psychological and performance characteristics; for example, Cosh *et al.* (2015) reviewed the transition from elite sport to retirement in two Olympic swimmers and Gould *et al.* (2002) interviewed 10 US Olympic champions across sporting disciplines to determine the psychological characteristics which had underpinned their success. Participants had been competing successfully at the highest international level (Olympic games medallists, including gold medallists, and World Equestrian Games medallists, including world champions) predominately in eventing<sup>1</sup>; with 38% competing successfully at this level in more than one equestrian disciplines: eventing, dressage or showjumping. Several of the riders had also coached Olympic level Dressage and Eventing riders.

### Procedure

Face-to-face, semi-structured interviews were selected for use for both theoretical and practical reasons. Studying elite level athletes is acknowledged as challenging due to their training and competition schedules, and travel demands (Keegan *et al.*, 2014). In equestrian sports, elite riders require elite equine partners (horses) who are predominately

provided and funded by owners. Success and continued owner engagement are often associated with the individual rider's persona and their 'system' (Williams, 2013), therefore this can foster a reluctance to openly discuss personal and professional practices, and consequently to engage with research that aims to explore these aspects (trade secrets!). In this study, all participants were known personally to the first author as a competitive peer. The choice of a fellow competitor expedited access to the riders, whilst the author's professional credibility supported rider participation. Using a fellow rider as the interviewer facilitating openness during interviews due to mutual experiences, respect and empathy, which instilled confidence in the research process within participants. Initial contact was made with interviewees either by telephone or in person during a competition. If the interviewee was happy to proceed, a mutually convenient venue (competition or home environment) in which the interviewee would feel comfortable and relaxed and a designated time for the interview to take place was agreed. Riders took part under their own volition and no incentives were offered for participation. Interviews took place predominately in competition venues or the participants' own homes.

Semi-structured interviews were deemed appropriate for the study. The integration of a theoretical framework, contextualised into a questioning guide (Table 1) (Keegan *et al.*, 2009) focused on the development and continued attainment of elite status, and underpinned the context of the interview. The format applied provided sufficient flexibility for the interviewer to develop a rapport with the interviewee without having to create additional questions. This approach enabled time for the interviewer to listen, probe and explore emerging areas which were related to the study's objectives, encouraging openness and engagement (Newton, 2010). It was deemed important that interviews were conducted on a face-to-face basis again to promote an environment of trust and confidence for the interviewees, but also to enable depth in the exploration (due to establishing a personal and professional relationship) and understanding of factors that were influential upon the individuals' journey to elite status (Gillham, 2000). After a brief introduction, the questioning guide was deployed although questions were adapted to the context of the individual interviewee. Riders were allowed to respond freely with the interviewer using impromptu probes and additional follow-up questions were appropriate to facilitate expansion of themes as they developed (Keegan *et al.*, 2014). Interviews were recorded digitally using an Olympus digital voice recorder VN-712PC and were approximately 60 minutes in duration.

<sup>1</sup>Eventing also known as Horse Trials; equestrian discipline which tests horse and rider over 3 days at championship level combining phases of dressage (flatwork), cross country (jumping fixed obstacles cited in natural terrain) and show jumping (jumping non-fixed obstacles enclosed within an arena).

**Table 1. Questioning guide<sup>1</sup>.**

<b>Background – investment</b>
When did you start riding?
Why did you start riding?
Where did you start riding?
Did your parents ride?
<b>Development – mastery</b>
Describe your development from juniors through to senior competition
Describe your competitive development
Describe your technical development
Was your ambition clear to you?
What was your big break?
Where did you learn the most (horse, job, experience, circumstance)?
<b>Continuing motivation / inspiration</b>
Where do you find your inspiration now and what keeps you going?
What do you really enjoy about what you do?
What do you find hard about what you do?
Where do you find your improvement now?
<b>Self-analysis</b>
Do you have any formal techniques for monitoring your performance?
Do you have a regular coach/mentor?
What do you do when it's not working?
What keeps you going, where do you find your 'moments' now?
<sup>1</sup> Core questions centred on the developmental stages of elite athlete development were created and contextualised to equestrian sport to determine key factors which influenced the participants' journey to elite status. The questions outlined in the table provided a structural framework for the rider interviews whilst also allowing the interviewer and interviewee scope to explore relevant tangents as they arose.

### Data analysis

A six step analytic approach (adopted from Keegan *et al.*, 2009 and Keegan *et al.*, 2014) was applied to prepare and analyse the data: (1) digital audio files were transcribed verbatim; (2) transcripts were read and re-read for familiarity to facilitate accurate analysis; (3) direct quotes were divided into the categories of the questioning framework (Table 1); (4) an inductive content analysis was performed utilising tags ('open-coding') to create themes ('focused coding') which were then organised to demonstrate their relationship to the key areas of rider development, success and inspiration; (5) an iterative consensus validation process was conducted by three members of the research team to ensure coded data were placed under appropriate themes; and (6) a peer debrief was undertaken across the research team to debate the validity and reliability of the thematic models developed.

Analysis of the data was conducted using principles of Grounded Theory (Glaser and Strauss, 1967). Grounded Theory is widely accepted as a methodology to develop theory from novel, qualitative data such as gathered in the current study. However, the methodology of this study falls short of being classified as strictly based on Grounded Theory for several reasons. Weed (2009) identified that Grounded Theory data collection and analysis should not be separate activities. Instead the research process should include initial data analysis in order to encourage more refined data collection afterwards. Equally, Grounded Theory assumes theoretical sensitivity yet expects the researcher to avoid undue bias through having already completed a review of the literature. In the current study, all authors are actively involved in the equestrian industry, therefore the researchers' own belief systems may have biased the identification of concepts and categories. Triangulation techniques (such as those developed by Miles and Huberman, 1994) were identified as appropriate to limit researcher bias which could have occurred during individual coding during steps 3 and 4.

Data were coded using a grounded theory approach (Glaser and Strauss, 1967; Weed, 2009). Codes developed represented the interpretation of participant responses; some codes were named after riders' own words whilst others represented concepts from relevant literature or frequently used within the equestrian industry. Coded data relating to similar phenomena or concepts were then grouped into categories which were then translated into emergent themes. Each category was assigned a name representative of the concepts included in it. It should be noted that several statements were assigned to more than one concept and consequently feature in different categories. Consensus validation, peer and industry review reiterated the validity of coding and category selections.

### 3. Results

The results are presented in three parts and separated into higher and lower order themes. In part one causal factors perceived to influence riders' early development and their transition to elite status are investigated. In part two, elements which riders felt contributed or were barriers to their success are examined and in part three factors which influence and stimulate inspiration, both currently and retrospectively, in the elite rider are explored.

#### Part 1: development

The key developmental factors associated with attaining elite status during the early stages of interviewees riding careers and during their transition from competitive rider to elite status are identified in Table 2.

**Table 2. Key development factors<sup>1</sup> for the elite rider.**

Higher order themes	Early development	Transition to elite
Motivation	<p>Intrinsic drivers:</p> <ul style="list-style-type: none"> <li>• fun</li> <li>• excitement</li> <li>• realisation – good at it</li> <li>• risk – fast with jumping,</li> <li>• getting it right</li> </ul> <p>Extrinsic drivers:</p> <ul style="list-style-type: none"> <li>• winning</li> <li>• role models</li> <li>• parental support</li> </ul>	<p>Intrinsic drivers:</p> <ul style="list-style-type: none"> <li>• focus</li> <li>• self-belief</li> <li>• questioning and experimental</li> <li>• enjoyment</li> <li>• guided development</li> <li>• able to cope with adversity</li> <li>• wanting to be the best horseman</li> </ul> <p>Extrinsic drivers:</p> <ul style="list-style-type: none"> <li>• money to survive</li> <li>• competitive success</li> <li>• drive to win</li> <li>• wanting to be the best compared to peers</li> </ul>
Environment	<p><b>Talent and skill development</b></p> <p>Independent development:</p> <ul style="list-style-type: none"> <li>• natural</li> <li>• osmotic learning environment – watching</li> <li>• intrinsic learning environment – experiential learning</li> <li>• talented pony – learning opportunity</li> </ul> <p>Supported development:</p> <ul style="list-style-type: none"> <li>• family involved in sport</li> <li>• extrinsic learning environment – Pony Club/coaching/talent spotted</li> <li>• opportunity to ride lots of different ponies – gain experience</li> <li>• challenged/competed early</li> <li>• located geographically in a competition basin</li> </ul>	<p><b>Talent, skill and work ethic</b></p> <p>Entrepreneurial skills:</p> <ul style="list-style-type: none"> <li>• seeking financial independence; entrepreneurial spirit</li> <li>• business focus to support sport</li> <li>• overcoming adversity – financial; having to sell good horses to live</li> </ul> <p>Riding related skills:</p> <ul style="list-style-type: none"> <li>• osmotic learning environment – working pupil/watching</li> <li>• intrinsic learning environment – own experiences</li> <li>• extrinsic learning environment – access to elite coaches (positive/negative)</li> <li>• exposure to quality horses</li> <li>• move (country) to increase competition opportunities</li> </ul>

<sup>1</sup> Open and focused coding was undertaken from the rider interview transcripts to identify key development factors related to motivation to succeed and the environment which surrounded riders during their early development stages and during their transition to elite status. The factors identified are outlined in the table and subdivided into categories which summarise the emergent themes which were present.

*Early development: motivation*

Congruent with proposed athlete development models, elite riders were initially motivated to ride as riding was a fun and exciting activity which they had access to and in which they excelled:

‘I just wanted to ride horses,’ ‘I was always one of those kids that just wanted a pony,’ ‘It’s fun.’

All of the interviewees (n=8) started riding in early childhood (<5 years of age) and for the majority it was a combination of circumstance and opportunity that initiated their interest. Parental support was important for all riders (n=8; n=4 financially): parents and grandparents acted as mentors, provided ponies or horses for riding, had good industry contacts which provided help with

finding ponies and coaching the rider, and supported competition experience. All participants (n=8) had clearly internalised their motivation to ride from an early age and were passionate about riding consistently demonstrating a discipline and work ethic within their riding:

‘Apparently when I was young, I said to my mum I was going to represent XXXX at the Olympics. I don’t remember saying that.’

*Early development: environment*

The recognition of inherent ability and an affinity with equestrianism combined with parental or peer support and opportunities to train and compete appear important to fledgling elite riders to stimulate their continued interest in equestrian sport. A core trait across riders was their

questioning and experimental persona (n=8), as individuals they were eager to learn how to develop their skills and perform better in their sport:

'I started riding at beginning as mum was big into riding ... I've got a picture of me riding from an early age before I can even remember ... I sat on many types of horses, not all good by any stretch of the imagination but I think it was important for me to develop.'

All the riders (n=8) were able to perform competently at an early age and showed an aptitude to riding as well as having access to training and horses to foster their development; 75% of riders has early competition experiences. A common theme was their ability to observe and understand concepts when coached and as well as the mimicry skills evident across the cohort. Riders could observe experts riding and were able to copy consciously or sub-consciously such riding, to develop their own practice. Pivotal moments or experiences provided 'trigger points' for inspiration and reinforced their intrinsic belief in their own abilities. For example, access to quality ponies, being in the right place at the right time to be talented spotted and having access to coaching from people with an expert knowledge base and the aptitude for developing talent were all important factors that riders felt fostered and accelerated their development, even if they did not realise this at the time:

'I was lucky that my zone chief instructor was hugely influential on the XXXX equestrian scene, who just happened to be XXXX mother (parental guidance and coach facilitation à progress), who made the zone very competitive and made sure we all went to championships ... you get the competitive buzz or the competitive edge' 'I was lucky to have exposure from international coaches (technical development and guidance), by then I was hooked ... what got me hooked was the horse I had.'

#### *Transition to elite: motivation*

Interestingly, while the development of skills and expertise remained an important source of rider motivation, as their experience progressed, riders were increasingly motivated by achieving competitive success and associated positive financial benefits:

'Winning. That's all it is, I like to win. That's quite plain and simple.'

In part these successes support ongoing development and going forwards help to secure riders elite status. Therefore, rider motivation may partially represent the transition to elite as riders *grow* into themselves and test their own and

their horse/s ability, which results in success and winning by default.

#### *Transition to elite: environment*

As riders transitioned from developmental stages to elite status, they exhibited independence and matured into confident competitors dedicated to achieving success (competitive and financial security). The concepts of natural aptitude and skill development continue to feature extensively for riders (n=6) during their transition to elite status, but a critical third facet also becomes evident: work ethic. Riders described learning how to survive and develop in the industry as well as how they developed their riding skills, as they had reached a point where they could no longer rely on talent alone. Simultaneously, riders have reached a stage in their career where they realise they would not succeed in their sport without developing a financial infrastructure, especially those who moved overseas in pursuit of an elite equestrian career and that they must develop their entrepreneurial skills to fund their sport. Economic support is predominately achieved through developing their own equestrian related business: selling horses, getting more rides/owners or coaching:

'I learned that if I got on a pony, got it jumping I could sell it ... you learned it was a way you could make money' 'Inspirations now, your goals change ... things like kids, wives, mortgages change things ... I still need to be on XXXX team and actually do some good ... I am never about quitting anything.'

Ambition (related to a definable ultimate goal for example Olympic success) appears to be an integral driver to achieve and retain success, and was communicated as a clear focus and belief that they would succeed, combined with the recognition they were good riders and were not intimidated by competing against the best of their peers. Riders' questioning and experimental approach to skill development (in themselves and towards the development of their equine partners) remains but was evolving into distinct individual philosophies which allowed them to experiment and continue to develop further:

'I love riding horses and I'm very competitive, I enjoy winning and the competition side of it ... I don't compete for the sake of it, I want to try and win ... it doesn't happen as often as you would like.'

Riders also consistently cited both positive and negative opportunities as pivotal learning opportunities (self-taught/self-recognition) which supported their progress:

'Don't ride a horse like that again, we learn from our mistakes, every horse you buy that is the wrong horse, every time you get knocked down ... you learn not



to do it again ... it's part of your memory pattern ... once it's a mistake, second time stupid and third time unforgivable you deserved it'.

#### Horses: a key factor

Horses were, understandably given the nature of equestrian sport, pivotal to rider development. The importance of access to high-quality or talented horses appears influential throughout all stages of the elite riders' career. However, a common theme was that all the horses they encountered contributed to their learning journey and philosophy development. Opportunities to ride and compete represent learning opportunities which can aid in the transition to elite status through success, can facilitate talent spotting and through financial gain (winning/selling horses) can fund the next stage of careers, for example funding future horses or relocation to a competition rich environment needed to expand the rider's profile:

'I just wanted to ride horses,' 'the learning comes as a result of the horse' ... 'I couldn't go home, I'd spent all my money to fly the horse over. ... I bought that [horse] over and as it turned out it went off to the events,... I did six Novice events with it and one Intermediate and I sold it to the Dutch.'

#### Part 2: success

Key factors that the riders felt were influential to their elite status, represented potential barriers to success and were valid measures of their success are provided in Table 3. The psychological profile of the participants shared consistent features across the sample surveyed. The elite equestrians were focused and driven individuals with a questioning and analytical personality, who seized opportunities when they presented and used them as learning experiences to drive their development:

'I'm good at watching and imitating. I can watch something and then go back and copy that, a riding style or what they do or whatever, if I'm with somebody who I believe is good, and that's maybe more so now, in those days (early development) I listened to anybody but overtime you develop your own ideas (self-confidence),' 'I've spent millions of hours watching, so I watch someone ride and if that's a positive for me, that's how I learn, I can go watch a top combination and see how they make a horse... and I can copy it,' 'I've tried to ride like everyone ... now I'm very confident in what I do, I'm very clear in my mind.. I don't doubt my ability at all,' 'I learnt very quickly to watch (experts / elite peers, riding novices to elite level horses).'

Access to the *right* horse and/or *right* coach or peer at the *right* time appears essential to enabling the journey to elite status. One rider described equine and coaching opportunities which arose as 'stepping stones', stating that he needed the first stone to be able to reach the next one and each stone was another step in his development:

'When I was 25 I questioned what I was doing and set myself a goal, I said I've got this horse and I'm using him as a stepping stone ... I'd set very defined goals and objectives that I wanted to achieve ... I did that ... 2 years ahead of schedule.'

Interestingly, key stepping stones were not always associated with a positive opportunity '*setbacks made me the rider I am now*'; across the group, riders' responded positively to adversity (such as poor results in competition, losing horses through injury, death, losing the ride or because they needed to be sold economically, not making it on to a team or financial instability) and did not allow negativity to influence their motivation or focus on attaining long term goals (*self-taught vs managed/produced development*). Riders' confidence came partly from their recognition that setbacks in their career were often pivotal learning moments without which they would not have gone on to achieve the same level of success (promoted future coping strategies). Support from their peer network and family, and their trust and confidence in their support network were central to achieving elite level success; this network allowed individuals to make mistakes fostering creativity in a supportive manner. Throughout the course of their journey, direct parental and peer (coaching) support appears to have transformed into more of a critical friend remit, described by multiple participants as '*eyes on the ground*'. Such support takes the form of a coach or trusted peer for whom the rider has respect and confidence in their ability to criticise (the rider and horse) in an honest and open capacity. The goal is to stimulate improvement or reinforce the rider's own thinking, creating an additional form of performance analysis:

'Eyes on the ground are important ... I just think each one can add technical knowledge and remind you of things you know and have forgotten about,' 'I have arrangement with someone I trust implicitly who has my best interests at heart, after a big competition we have a discussion,' 'I always think I would be the best rider in the world if I could stand now on the ground and teach myself, because I know what I want to be and when I see things afterwards I think well that isn't how I wanted it to be ... you need eye on the ground and they are terribly hard (trust/confidence) to get,' 'You need someone else to give you that picture, see what it looks like ... I need the same feedback from my person on the ground ... your ego cannot get in the way.'

**Table 3. Factors<sup>1</sup> that contribute to success in the elite rider.**

<b>Contributing factors</b>	
<p>1. Individual (psychological skills)</p> <ul style="list-style-type: none"> <li>• self-belief</li> <li>• self-drive</li> <li>• focus</li> <li>• work ethic</li> <li>• talent</li> <li>• mental attitude</li> <li>• focused</li> <li>• driven</li> <li>• questioning</li> <li>• never quit</li> <li>• competitive</li> <li>• confident</li> <li>• experimental</li> <li>• analytical</li> <li>• reflective</li> <li>• self-awareness (also awareness of horse/s)</li> </ul> <p>2. Learning</p> <ul style="list-style-type: none"> <li>• osmotic learning: watch learn and absorb from others</li> <li>• experiential learning: self and from horses</li> <li>• guided development: coach/mentor</li> <li>• exposure to top horses</li> <li>• exposure to talented peers</li> <li>• learn from mistakes</li> <li>• willing to learn                             <ul style="list-style-type: none"> <li>- reflect</li> <li>- experiment</li> <li>- accept criticism</li> <li>- not afraid of learning from others</li> </ul> </li> <li>• vision                             <ul style="list-style-type: none"> <li>- ability to watch, learn, figure out and break things down then apply</li> <li>- empathy with horses</li> </ul> </li> </ul>	<p>3. Analysis</p> <ul style="list-style-type: none"> <li>• self-analysis of own performance</li> <li>• self-analysis of horse/s performance</li> <li>• third party analysis</li> <li>• use of peers</li> <li>• use of video</li> <li>• feedback                             <ul style="list-style-type: none"> <li>- access</li> <li>- exposure to experts: peers / coaches (especially in development years)</li> <li>- benchmarking to peers</li> </ul> </li> </ul> <p>4. Honest and responsible</p> <ul style="list-style-type: none"> <li>• takes responsibility for own actions/decisions</li> <li>• follows 'gut'</li> </ul> <p>5. Goals</p> <ul style="list-style-type: none"> <li>• short and long term</li> <li>• developmental and competitive</li> </ul> <p>6. Adversity</p> <ul style="list-style-type: none"> <li>• ability to overcome</li> <li>• losing / selling top horses</li> <li>• having to support self financially</li> </ul> <p>7. Support</p> <ul style="list-style-type: none"> <li>• trust in support team; may be family, friends or coach</li> <li>• confidence in support team</li> <li>• 'eyes on the ground' able to give honest feedback</li> </ul> <p>8. Horse power</p> <ul style="list-style-type: none"> <li>• access to quality horses                             <ul style="list-style-type: none"> <li>- breeding / developing own horses</li> </ul> </li> </ul> <p>9. Opportunities</p> <ul style="list-style-type: none"> <li>• exposure to top level horses, riders and coaches</li> <li>• developing good, average and poor horses</li> </ul> <p>10. Financial security</p> <ul style="list-style-type: none"> <li>• able to keep quality horses</li> <li>• facilities</li> <li>• influences goals (own and horse)</li> </ul>
<b>Barriers</b>	<b>Measures</b>
<p>1. Finance</p> <ul style="list-style-type: none"> <li>• balance between maximising income vs maximising performance</li> <li>• having to sell good horses to finance self</li> <li>• requirement for 'you' as a business to be successful to make competing in sport sustainable</li> </ul> <p>2. Horse power</p> <ul style="list-style-type: none"> <li>• quality of horses</li> <li>• majority of horses when starting out are not top quality</li> </ul>	<p>1. Winning</p> <p>2. Achieving goals</p> <p>3. Horses:</p> <ul style="list-style-type: none"> <li>• producing own horse</li> <li>• having a good horse</li> <li>• over achieving on average horses (start of career)</li> </ul> <p>4. Financial security</p>

<sup>1</sup> Open and focused coding was undertaken from the rider interview transcripts to identify factors which riders felt had contributed to their success and which represented a potential barrier to success. Common measures used in elite equestrian sport were also surveyed. The factors identified are outlined in the table and subdivided into categories which summarise the emergent themes which were present.

Riders clear focus and motivation to achieve career orientated goals was accompanied by a strong work ethic and an inherent belief that they would succeed and be successful, which for five of the riders entailed moving to another country to facilitate career development and goal attainment. All participants demonstrated an acute awareness that to be able to succeed in equestrian sport they needed to not only develop their riding expertise but also their entrepreneurial and business skills. These were required to ensure they created a financially secure environment with a suitable infrastructure (equestrian resources and staff) to enable them to achieve success in their equestrian goals and manage these alongside their family. Interestingly, the extrinsic factors: finances and the quality of horses riders had access to, which is related to finances, were the key barriers identified to success, again demonstrating their intrinsic belief in their skill and ability to succeed. These factors combined with winning and attainment of goals were cited as transparent measures that they had succeeded:

‘With high performance we have to set goals and be pretty realistic about each horse’s capabilities.’

**Part 3: elite rider inspiration**

Factors which motivated and inspired riders to attain and retain elite status within their equestrian disciplines varied depending on the stage of their career (Table 4). During their development years as they transitioned to elite status, inspiration appears equally weighted between intrinsic and extrinsic factors with a clear focus on achieving competitive success but also enjoying the challenge of their sport. This transition could represent increased internal confidence attained from achieving success, allowing riders the cope to concentrate on refining their skills at elite level. Interestingly once they have achieved elite level success, riders’ inspiration becomes more internalised with their inspiration coming predominately from their desire to always improve their skill as well as still enjoying their sport. Riders still want success, but their measures of success vary and are balanced between their long term (improve horses → Olympic success, competitive success will occur within horse’s developmental journey; build reputation they can produce horses therefore sent more rides leading to long term financial security) and short term goals (win/be a good horseman, build profile and reputation to underpin long term goals). The continued success of the participants at the elite level of equestrian sport reflects the development of their own individual belief systems encompassing specific personality traits, mental toughness combined with a desire to engage in lifelong learning, and a continued motivation to succeed combined with the confidence that they will succeed:

**Table 4. Retrospective and current factors<sup>1</sup> that inspire success in the elite rider.**

Elite rider	Inspiration
Current	Extrinsic: <ul style="list-style-type: none"> <li>• success</li> </ul> Intrinsic: <ul style="list-style-type: none"> <li>• relationship with the horses</li> <li>• constant challenge</li> <li>• still learning</li> <li>• changing goals (own/related to individual horses)</li> <li>• horses (relationship/quality / understanding them)</li> <li>• enjoyment</li> </ul>
Retrospective	Extrinsic: <ul style="list-style-type: none"> <li>• success</li> <li>• winning</li> <li>• finance</li> <li>• be the best</li> </ul> Intrinsic: <ul style="list-style-type: none"> <li>• exciting</li> <li>• fun</li> <li>• natural talent (felt could do well/succeed)</li> <li>• to achieve excellence</li> </ul>

<sup>1</sup> Open and focused coding was undertaken from the rider interview transcripts to identify the factors that had inspired elite riders during their past and currently. The factors identified are outlined in the table and subdivided into categories which summarise the emergent themes which were present.

‘You learn or you reinforce what you are doing, because some of what you are doing is right,’ ‘I think you’ve got a system, you choose to go down a road and along comes a horse that won’t work with me, then you have to say, well actually ... I don’t think your core system goes but your deviation is a reality of what we do,’ ‘I think this is an ongoing journey, I think the day they are putting a nail in your box, you’ll be putting your hand up saying ... hold on I’m not ready to go yet, I’ve got to work it out,’ ‘Eventually you find your own thing. And that is a powerful thing.’

These factors have been translated by the riders into their core philosophies which underpin their continued success and which focus around central themes, supported by their own words: (1) analyse what does and does not work: ‘to be true to one’s self; (2) relationship with the horse: ‘understand how horse’s think and apply it, as winning/losing can be a fraud’; (3) learn by experience: ‘recognise success is an ongoing journey’; (4) keep learning: ‘learn from your mistakes, confirm and explore why they were made, work to try to rectify them, don’t make the mistake again’; and (5) recognition that equestrian sport is business orientated:

*'make every horse perform to its best at that point in time', 'have clear goals (not necessarily winning), and balance competitive success with career longevity for the horses'.*

#### 4. Discussion

##### **Elite equestrians: talent, psyche and environment, a winning triad?**

Elite equestrians by definition demonstrate excellent riding ability and achieve competitive success. Our results suggest attainment of elite status is underpinned by an individual's natural aptitude for equine sport which is combined with a specific psyche (*questioning, motivated and driven: innate drive to learn*), both of which are cultivated through the provision of a nurturing environment (*exposure to talent: coaching, riders, horses and support*) akin to reported findings across elite athletes and musicians (MacNamara *et al.*, 2010a). Riders who progress to attain success utilise opportunities presented during the latter to support their development and fine tune their own philosophy (Gould *et al.*, 2002). Goal-orientated mental skills and a strong work ethic also appear to continue to be of value to elite riders and persist throughout their career (Wolframm, 2011, 2013).

Natural talent combined with focus and mental toughness (Connaughton *et al.*, 2008; Gould *et al.*, 2002) have been consistently associated with success and attainment of elite status in athletes across other sports (Bertollo *et al.*, 2009; MacNamara *et al.*, 2010a; Pummell *et al.*, 2008). Mental toughness in athletes is also related to a burning desire and motivation to succeed (Connaughton *et al.*, 2008) providing the strength of character to not only cope with adversity but to use such experiences to fuel future success. Athlete focus continues to be maintained by retaining these factors which become insatiable and internalised, creating an aspirational athlete who builds a developmental support network (family, mentors and coaches) (Pummell *et al.*, 2008) which supports that goal (Connaughton *et al.*, 2008). The riders interviewed here possessed strong athletic identities, with a core focus which appeared related to a strong motivation to succeed in their sport which informed their career choices, such as moving from Australasia to the UK, to support their goals (Bertollo *et al.*, 2009). Interestingly, the riders surveyed with the exception of one, did not view themselves as extraordinary and considered their success to be a combination of their perseverance and drive, combined with the highs and lows they had encountered on their journey to elite success. Research in other sports suggests that elite and successful athletes are able to cope with adversity more effectively than the non-elite peers (MacNamara *et al.*, 2010a; Wolframm and Micklewright, 2008), using set-backs and failure as major learning experiences from which to develop their skills and devise effective coping strategies enabling them

to peak under pressure in future competition (Bertollo *et al.*, 2009; Gould *et al.*, 2002; MacNamara *et al.*, 2010a,b); a facet that appears equally relevant in the equestrian athlete to enable elite level success.

It is well documented that elite athletes make sacrifices to attain success (Keegan *et al.*, 2014) and even the most naturally talented athletes are able to unlock and optimise their potential without significant practice and arduous training (Keegan *et al.*, 2014; Treasure *et al.*, 2008). Therefore a motivational climate integrating relevant environmental stimuli during an athlete's development are required to secure future competitive success and status (Keegan *et al.*, 2014; MacNamara *et al.*, 2010b). It appears for equestrianism that the combination of a rider's inherent talent combines with their psyche and natural aptitude to learn from their experiences and contributes towards their development and attainment of elite status. Interestingly, this mirrors themes revealed by MacNamara *et al.* (2010a) who found world class athletes and musicians possessed a strong competitive drive combined with self-determination and self-motivation in addition to natural ability (MacNamara *et al.*, 2010b). To trigger the necessary improvement required to achieve success, the individual also needs to be nurtured within a suitably motivating environment for the stage of their career (Keegan *et al.*, 2014; MacNamara *et al.*, 2010b). Interestingly, not one clear theory appears to align with motivation in equestrianism and in contrast to the elite athletes surveyed in MacNamara *et al.* (2010b) the pressure of competitive success was inherent for the majority of interviewees in this study from soon after they started riding, often related to their family's involvement within equestrianism. Riders cited mastery of their sport, self-belief and winning as their motivation akin to the extrinsic motivation associated with Achievement Goal Theory (Ames, 1992; Nicholls, 1989; Ntoumanis and Vazou, 2005). In contrast, the desire to continually develop, understand the horses they are working with, and achieve autonomy, confidence and success represent the intrinsic motivation affiliated more with Self-Determination Theory (SDT) (Deci and Ryan, 2000; Ryan and Deci, 2000). Interestingly riders defined success in this context as improvement in their partnership with horses, and this was not always associated with winning competitions.

Inspiration during the early stages of the riders' careers was derived from the fun relationships they enjoyed with their horses, competition success and their wider support network: coaches/aspirational riders (national or international profile), team mates (peers and horses) and parents (Keegan *et al.*, 2010). Motivation at this stage appears more achievement based (Nicholls, 1989). Parental support is fundamental in providing access to the tools of their sport: ponies and horses as well as support during initial and transitional phases (Pummell *et al.*, 2008) but lessens once extended support networks (coaches) and

mastery of their sport increases; a pattern observed across world class athletes (Keegan *et al.*, 2014). A characteristic also found across Olympic athletes (Gould *et al.*, 2002). As careers develop, different socio-environmental influences impact on rider motivation, with a clear transition from parental and peer influence with coaching support towards a more internalised focus on personal development and self-coaching reinforced with trusted peer support (friend, coach or confidante) once elite status is attained. Therefore motivation appears to shift in the elite equestrian from an achievement focus to an increased self-determination (SDT) model (Deci and Ryan, 2000; Nicholls, 1989).

The career stages in equestrianism loosely mirror those associated with other elite sports (Keegan *et al.*, 2014). The traits identified here for successful equestrian Olympians and World Championships are consistent with core traits present across successful Olympic athletes (Gould *et al.*, 2002). The results suggest that confidence, mental toughness, ability to focus, set and achieve goals, and cope with anxiety and adversity with adaptive perfectionism, sport intelligence and a belief they will succeed are core traits possessed by elite athletes across sport (Gould *et al.*, 2002). The current models used by the Governing Bodies in equine sport used to progress talented young riders towards elite status engage with Developmental Models of Sport Participation (DMSP) (Balyi and Hamilton, 2000; Côté, 1999), for example the British Equestrian Federation, Long Term Participant Development plan for riders (BEF, 2015). A fundamental component of DMSP is late specialisation and deliberate practice (Balyi and Hamilton, 2000; Côté, 1999). In contrast the athletes surveyed in this study began riding at a young age (early start with early specialisation) and start to engage with Deliberate Practice (Baker, 2003) to promote mastery of their discipline earlier than their non-equestrian peers. Baker (2003) suggests that early specialisation may not be needed to attain subsequent elite level performance as long as prospective athletes engage with a range of sports or physical activities to stimulate the development of the motor, psychological and physiological skills they will require to be successful in their chosen elite sport (Ericsson *et al.*, 1993). Recent studies in football (Ford and Williams, 2012; Ford *et al.*, 2009, 2012) have shown that prospective footballers follow a model more akin to that of deliberate practice with early specialisation, spending the majority of their time playing and practicing football related activities, predominately because these are considered to be fun. The riders were also motivated to ride and practice riding during their early development because they were good at it, enjoyed riding and achieved competitive success, although they also played other sports. In football, Huagaasen *et al.* (2014) found more professional players had specialised at an earlier age with football specifically and engaged with supported deliberate practice (peers and coaches from 6 to 19 years) than their non-professional counterparts. Our results suggest that

riding may be similar to football where early engagement combined with deliberate practice is the most appropriate mechanism for elite athlete development.

Not all riders will come from an equestrian-family background, consequently talent identification and development pathways for potential riders from alternative upbringings are also required. Talent development environments (TDEs) have been proposed across sporting areas to be related to athlete status (Martindale and Mortimer, 2011; Wanga *et al.*, 2011) and incorporate key components including: (1) long term aims and methods; (2) wide ranging coherent support mechanisms; (3) an emphasis on appropriate development rather than early selection; and (4) individualised and ongoing development of athletes (Martindale *et al.*, 2005). High quality TDEs stimulate and facilitate intrinsic motivation and mastery-approach goals (here: riding) and are negatively correlated to extrinsic motivation, mastery-avoidance and performance goals (Wanga *et al.*, 2011). The elite riders in this study unknowingly had access to high quality TDEs during their development and were also motivated by their long-term goals to create these for themselves (for example, moving to a different country or coach to support their development as their goals focused more on self-development) as they entered the investment-mastery stage and continued to maintain these to retain their elite status and success once achieved (Martindale *et al.*, 2013). The knowledge gained from evaluating how elite equestrians achieved their status has the potential to be applied to prospective athletes from both equestrian and non-equestrian backgrounds, and for talented (self-taught) versus trained (managed) riders to propose bespoke development pathways containing relevant opportunities (access to high quality TDEs) to optimise success.

### **Mechanisms to support success**

Key attributes which facilitate success in the elite equestrian rider have been identified here: self-belief, a questioning and experimental approach which leads to engagement in lifelong learning, a robust support network during their development years, targeted goals, the ability to overcome adversity, access to elite and developmental horses, and sufficient financial and management infrastructure to support equine development as their career progresses. However, it should be noted that although these factors are repeated across participants, they have been nurtured via specific developmental pathways for each individual surveyed. Therefore, whilst an outline of core factors which appear to be needed for elite success to be attained in equestrian sport is proposed, aspiring riders should take these cornerstones and contextualise them to their own personality and journey if they wish to use them to facilitate success.

Success in equestrian sport is not just about the human athlete and their talent or how this is developed, but also relies on the contribution of their partner: the horse (Williams, 2013). Within equestrianism less skilled riders regularly compete and win against more experienced competitors. There are many factors that could be considered influential here, but the role of the horse in the horse-rider dyad is probably the greatest factor (Wolframm *et al.*, 2011). Therefore in parallel to the elite rider journey to success, it has been suggested that the elite equine athlete also needs core attributes: excellent physical qualities, talent and conformation to support career longevity, the underpinning physiology to cope with the demands of training and excel in competition, and the personality and/or psychology to be trainable and perform under challenging conditions (Randle, 2015; Visser *et al.*, 2002; Williams, 2013).

In sports where partnerships are key to success, such as team sports including rugby and football or those involving a mechanical partner for example cycling or motor sport, the best players or cutting edge technology are often targeted as an aid to success (Saether and Solberg, 2015). Equestrianism can be considered a team sport: dyad and horse and rider, or a triad: horse, rider and coach (Williams, 2013). Elite riders repeatedly cited the mediocre or difficult horse as the one they learnt the most from and to whom they contributed most to their success. Success appears to be driven by three equestrian related mechanisms: (1) the ability to learn from experience and therefore from the horses encountered; (2) an inherent aim to strive to maximise the potential of all their equine partners; and (3) to cope with the adversity of losing a horse/ride (for example through injury or the owner selling) or competition failure (Collins and MacNamara, 2012). Consequently, as well as considering rider development within the journey to elite status the aspiring equestrian needs to maximise the opportunities the horses they encounter represent. As well as developing an economic and infrastructure framework to support the management, purchase and development of both elite and potential elite horses to facilitate longevity of their own elite (success and) status.

## 5. Conclusions

No singular or obvious pathway to elite success in equestrian sport was identified within the study. However it has become apparent throughout all rider interviews that key cornerstones are replicated within the psychological profile, motivation and developmental stages of riders who have achieved Olympic level success. These factors combine to form a system of operation: the way riders' think, ride, train and run their business, which is underpinned by the individual's philosophy and enable them to remain successful at the highest level of their sport. Young riders aspiring to achieve Olympic success within equestrianism,

and their coaches and wider support teams, could utilise the core factors from current elite riders' system of operation to help guide their development to elite status.

## Acknowledgements

We would like to thank the riders who gave freely of their time to take part in our research despite their busy schedules, and for their honesty and candour during interviews.

## References

- Allen, M.S., Frings, D. and Hunter, S., 2012. Personality, coping, and challenge and threat states in athletes. *International Journal of Sport and Exercise Psychology* 10: 264-275.
- Allen, M.S., Greenlees, I. and Jones, M.V., 2011. An investigation of the five-factor model of personality and coping behavior in sport. *Journal of Sports Science* 29: 841-850.
- Allen, M.S., Greenlees, I. and Jones, M.V., 2013. Personality in sport: a comprehensive review. *International Review of Sport and Exercise Psychology* 6: 184-208.
- Allen, M.S., Greenlees, I. and Jones, M.V., 2014. Personality, counterfactual thinking, and negative emotional reactivity. *Psychology of Sport and Exercise* 15: 147-154.
- Ames, C., 1992. Classroom, goal structures, and student motivation. *Journal of Educational Psychology* 84: 261-274.
- Amorose, A.J. and Anderson-Butcher, D., 2007. Autonomy-supportive coaching and self-determined motivation in high school and college athletes: a test of self-determination theory. *Psychology of Sport and Exercise* 8: 654-670.
- Baker, J., 2003. Early specialization in youth sport: a requirement for adult expertise? *High Ability Studies* 14: 87-94.
- Balyi, I. and Hamilton, A., 2000. Key to success: long-term athlete development. *Sport Coach, Canberra, Australia* 23: 30-32.
- Beauchamp, M.R. and Whinton, L., 2005. Self-efficacy and other efficacy in dyadic relationships: riding as one in equestrian eventing. *Journal of Sport and Exercise Psychology* 27: 245-252.
- Bertollo, M., Saltarelli, B. and Robazza, C., 2009. Mental preparation strategies of elite modern pentathletes. *Psychology of Sport and Exercise* 10: 244-254.
- British Equine Trade Association (BETA), 2015. National equestrian survey 2015. Available at: <http://tinyurl.com/zvmvwjz>.
- Bloom, B.S., 1985. *Developing talent in young people*. Ballantine Publishers, New York, NY, USA.
- British Equestrian Federation (BEF), 2015. Long term participation development plan for riders, drivers and vaulters. Available at: <http://tinyurl.com/j3k7sjb>.
- Collins, D. and MacNamara, A., 2012. The rocky road to the top: why talent needs trauma. *Sports Medicine* 42: 907-914.
- Colvin, G., 2010. *Talent is overrated: what really separates World-Class performers from everybody else*. Portfolio, London, UK.
- Campitelli, G. and Gobet, F., 2011. Deliberate practice: necessary but not sufficient. *Current Directions in Psychological Science* 20: 280-285.

- Connaughton, D., Thelwell, R. and Hanton, S., 2008. The development of mental toughness: perceptions of elite performers. *Journal of Sports Sciences* 26: 83-95.
- Côté, J., 1999. The influence of the family in the development of talent in sport. *The Sport Psychologist* 13: 395-417.
- Côté, J., Baker, J. and Abernethy, B., 2003. From play to practice: a developmental framework for the acquisition of expertise in team sport. In: Starkes, J. and Ericsson, K.A. (eds.) *Expert performance in sports: advances in research on sport expertise*. Human Kinetics, Champaign, IL, pp. 89-113.
- Cosh, S., Crabb, S. and Tillu, P.J., 2015. A champion out of the pool? A discursive exploration of two Australian Olympic swimmers' transition from elite sport to retirement. *Psychology of Sport and Exercise* 19: 33-41.
- Deci, E.L. and Ryan, R.M., 2000. The 'what' and 'why' of goal pursuits: human needs and the self-determination of behavior. *Psychological Enquiry* 11: 227-268.
- Diehl, K., Theilmann, I., Thiel, A., Mayer, J., Zipfel, S. and Schnieder, S., 2014. Possibilities to support elite adolescent athletes, improving athletes improving performance: results from a qualitative content analysis. *Science and Sports* 29: 115-125.
- Dashper, K., 2012. Together, yet still not equal? Sex integration in equestrian sport. *Asia-Pacific Journal of Health, Sport and Physical Education* 3: 213-225.
- Ericsson, K.A., Krampe, R.T. and Tesh-Romer, C., 1993. The role of deliberate practice in the acquisition of expert performance. *Psychological Review* 100: 363-406.
- Erikson, K. and Côté, J., 2016. A season long examination of the intervention tone of coach-athlete interactions and athlete development in youth sport. *Psychology of Sport and Exercise* 22: 264-272.
- Falk, B., Lidor, R., Lander, Y. and Lang, B., 2004. Talent identification and early development of elite water polo players: a 2 year follow up study. *Journal of Sports Science* 22: 347-355.
- Ford, P.R., Carling, C., Garces, M., Marques, M., Miguel, C., Farrant, A., Stenling, A., Moreno, J., Le Gall, F., Holmström, S., Salmela, J.A. and Williams, M., 2012. The developmental activities of elite soccer players aged under-16 years from Brazil, England, France, Ghana, Mexico, Portugal and Sweden. *Journal of Sports Sciences* 30: 1653-1663.
- Ford, P.R. and Williams, A.M., 2012. The developmental activities engaged in by elite youth soccer players who progressed to professional status compared to those who did not. *Psychology of Sport and Exercise* 13: 349-352.
- Ford, P.R., Ward, P., Hodges, N.J. and Williams, A.M., 2009. The role of deliberate practice and play in career progression in sport: the early engagement hypothesis. *High Ability Studies* 20: 65-75.
- Gillham, B., 2000. *The research interview*. AandC Black, UK.
- Glaser, B.G. and Strauss, A.L., 1967. *The discovery of grounded theory: strategies for qualitative research*. Aldine Publishing Company, Chicago, IL, USA.
- Gould, D., Dieffenbach, K. and Moffett, A., 2002. Psychological characteristics and their development in Olympic champions. *Journal of Applied Sport Psychology* 14: 177-209.
- Gould, D. and Maynard, I., 2009. Psychological preparation for the Olympic Games. *Journal of Sport Sciences* 27: 1393-1408.
- Hardcastle, S.J., Tye, M., Galsley, R. and Hagger, M.S., 2015. Exploring the perceived effectiveness of a life skills development program for high-performance athletes. *Psychology of Sport and Exercise* 16: 130-149.
- Helsen, W.F., Hodges, N.J., Van Winckel, J. and Starkes, J.L., 2000. The roles of talent, physical precocity and practice in the development of soccer expertise. *Journal of Sports Sciences* 18: 727-736.
- Huagaasen, M., Toering, T. and Jordet, G., 2014. From childhood to senior professional football: a multi-level approach to elite youth football players' engagement in football-specific activities. *Psychology of Sport and Exercise* 15: 336-344.
- Keegan, R.J., Spray, C.M., Harwood, C.G. and Lavalley, D., 2009. A qualitative investigation exploring the motivational climate in early career sports participants: coach, parent and peer influences on sport motivation. *Psychology of Sport and Exercise* 10: 361-372.
- Keegan, R.J., Spray, C.M., Harwood, C.G. and Lavalley, D., 2010. The motivational atmosphere in youth sport: coach, parent, and peer influences on motivation in specializing sport participants. *Journal of Applied Sport Psychology* 22: 87-105.
- Keegan, R.J., Spray, C.M., Harwood, C.G. and Lavalley, D., 2014. A qualitative investigation of the motivational climate in elite sport. *Psychology of Sport and Exercise* 15: 97-107.
- MacNamara, A., Button, A. and Collins, D., 2010a. The role of psychological characteristics in facilitating the pathway to elite performance. Part 1: Identifying mental skills and behaviors. *The Sport Psychologist* 24: 52-73.
- MacNamara, A., Button, A. and Collins, D., 2010b. The role of psychological characteristics in facilitating the pathway to elite performance. Part 2: Examining environmental and stage-related differences in skills and behaviors. *The Sport Psychologist* 24: 74-96.
- Martindale, R.J.J. and Mortimer, P., 2011. Talent development environments: key considerations for effective practice. *Performance Psychology*: 65-84.
- Martindale, R.J.J., Collins, D. and Abraham, A., 2007. Effective talent development: the elite coach perspective in UK sport. *Journal of Applied Sport Psychology* 19: 187-206.
- Martindale, R.J.J., Collins, D. and Abraham, A., 2013. Examining the ecological validity of the Talent Development Environment Questionnaire. *Journal of Sports Science* 31: 41-47.
- Martindale, R.J., Collins, D. and Daubney, J., 2005. Talent development: a guide for practice and research within sport. *Quest* 57: 353-375.
- McGreevy, P.D. and McLean, A.N., 2007. The roles of learning theory and ethology in equitation. *Journal of Veterinary Behaviour: Clinical Applications and Research* 2: 108-118.
- McLean, A. and McGreevy, P.D., 2010. Ethical equitation: capping the price horses pay for human glory. *Journal of Veterinary Behavior: Clinical Applications and Research* 5: 203-209.
- Meyers, M.C. and Sterling, J.C., 2000. Physical, hematological, and exercise response of collegiate female equestrian athletes. *Journal of Sports Medicine and Physical Fitness* 40: 131-138.
- Miles, M.B. and Huberman, A.M., 1994. *Qualitative analysis: an expanded sourcebook*. Sage Publications, London, UK.
- Newton, N., 2010. The use of semi-structured interviews. Exploring qualitative research. Available at: <http://tinyurl.com/jbaayyn>.
- Nicholls, J.G., 1989. *The competitive ethos and democratic education*. Harvard University Press, Cambridge, MA, USA.

- Ntoumanis, N. and Vazou, S., 2005. Peer motivational climate in youth sport: measurement development and validation. *Journal of Sport and Exercise Psychology* 27: 432-455.
- Oxford English Dictionary (OED), 2016. Available at: <http://www.oed.com/>.
- Pummell, E.K.L., Harwood, C.G. and Lavalley, D., 2008. Jumping to the next level: examining the within – career transition of adolescent event riders. *Psychology of Sport and Exercise* 9: 427-447.
- Randle, H., 2015. Personality and performance: the influence of behaviour. In: Williams, J.M. and Evans, D.S. (eds.) *Training for equestrian performance*. Wageningen Academic Publishers, Wageningen, the Netherlands, pp. 301-323.
- Ryan, R.M. and Deci, E.L., 2000. Intrinsic and extrinsic motivations: classic definitions and new directions. *Contemporary Educational Psychology* 25: 54-67.
- Saether, S.A. and Solberg, H.A., 2015. Talent development in football: are young talents given time to blossom. *Sport, Business and Management* 5: 493-506.
- Smith, N., Tessier, D., Zioumakisy, Y., Fabra, P., Qusted, E., Appleton, P., Sarrazin, P., Papaionnou, A., Balaguer, I. and Duela, Z., 2015. The relationship between observed and perceived assessments of the coach-created motivational environments and links to athlete motivation. *Psychology of Sport and Exercise* 23: 51-63.
- Treasure, D.C., Lemyre, N., Kuczka, K.K. and Standage, M., 2008. Motivation in elite sport: a self-determination perspective. In: Hagger, M.S. and Chatzisarantis, N. (eds.) *Self-determination theory in exercise and sport*. Human Kinetics, Champaign, IL, USA, pp. 153-166.
- Visser, E.K., Van Reenen, C.G., Van der Werf, J., Schilder, M., Knaap, J.H., Barneveld, A. and Blokhuis, H., 2002. Heart rate and heart rate variability during a novel object test and a handling test in young horses. *Physiology and Behaviour* 76: 289-296.
- Wanga, C.K.J., Sproule, J., McNeill, M., Martindale, R.J.J. and Leed, K.C., 2011. Impact of the talent development environment on achievement goals and life aspirations in Singapore. *Journal of Applied Sport Psychology* 23: 263-276.
- Weed, M., 2009. Research quality considerations for grounded theory research in sport and exercise psychology. *Psychology of Sport and Exercise* 10: 502-510.
- Williams, J.M., 2013. Performance analysis in equestrian sport? *Comparative Exercise Physiology* 9: 67-77.
- Williams, J.M. and Tabor, G., in press. Rider impacts on equitation. *Applied Animal Behaviour Science*.
- Wilson, K.E. and Dishman, R.K., 2015. Personality and physical activity: a systematic review and meta-analysis. *Personality and Individual Differences* 72: 230-242.
- Wolframm, I.A., 2011. Psychological traits and states in equestrian sport: influences on horse-rider performance. Unpublished doctoral dissertation, University of Essex, Colchester, UK.
- Wolframm, I., 2013. *The science of equestrian sports. theory, practice and performance of the equestrian rider*. Routledge, London, UK.
- Wolframm, I. and Micklewright, D., 2008. Personality compatibility between elite equestrian riders and their horses. *Medicine and Science in Sports and Exercise* 40: S210.
- Wolframm, I.A., Shearman, J. and Micklewright, D., 2011. A preliminary investigation into pre-competitive mood states of advanced and novice equestrian dressage riders. *Applied Sport Psychology* 22: 333-342.
- Wolframm, I.A., Williams, J.M. and Marlin, D.M., 2015. The role of personality in equestrian sport: an investigation. *Comparative Exercise Physiology* 11: 133-144.
- Woodman, T., Akehurst, S., Hardy, L. and Beattie, S., 2010. Self-confidence and performance: a little self-doubt helps. *Psychology of Sport and Exercise* 11: 467-470.
- Wuerth, S., Lee, M.J. and Alfermann, D., 2004. Parental involvement and athletes career in youth sport. *Psychology of Sport and Exercise* 5: 21-33.