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The information coaches use to make team selection decisions: a scoping review and future recommendations

Matthew F. Fiander ^a, Juliette Stebbings^b, Mark C. Coulson^c and Simon Phelan^a

^aDepartment of Sport, Health Sciences and Social Work, Oxford Brookes University, Oxford, United Kingdom; ^bSchool of Sport, Health & Exercise Science, University of Portsmouth, Portsmouth, United Kingdom; ^cSchool of Psychology, University of East Anglia, Norwich, UK

ABSTRACT

Selecting players for a team is one of the most important and recurring decisions sport coaches make. Despite this, relatively little is known about the information coaches use to make team selection decisions. In response to this, the following scoping review aims to (1) present literature that can offer insight into the information coaches use to make team selection decisions and (2) provide a platform from which researchers, practitioners and coaches can explore this often taken-for-granted decision. The systematic literature search was conducted following guidelines set out by PRISMA. Given the small number of studies found ($N = 16$), the extant literature fails to fully answer the question of why players are selected. Results are discussed in light of key theoretical approaches to decision-making (i.e. information processing, naturalistic decision-making and ecological psychology) to demonstrate the value of adopting each in specific instances to further our understanding of coaches' team selection decisions.

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Coach; team selection; decision; information; team sport; player

Introduction

Selecting players for an upcoming game is one of the most important and recurring decisions team sport coaches must make (Côté, Young, North & Duffy, 2007; Couturier, 2009; Johansson & Fahlén, 2017), playing a key role in a team's success (Sampaio, Ibáñez, Lorenzo & Gómez, 2006) and athletes' and coaches' careers (Johansson & Fahlén, 2017). From the players' perspective, participating in sport is associated with improved psychosocial functioning, emotional wellbeing, vitality, enjoyment, life satisfaction, reduced stress and distress and a sense of community (Eime, Young, Harvey, Charity & Payne, 2013). Furthermore, being repeatedly selected during a season can maintain and improve players' physical and skill performances (Caterisano, Patrick, Edenfield & Batson, 1997; Gonzalez

CONTACT Matthew F. Fiander  mfiander@brookes.ac.uk  Department of Sport, Health Sciences and Social Work, Oxford Brookes University, Oxford, United Kingdom

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et al., 2013; Gonzalez, Hoffman, Scallin-Perez, Stout & Fragala, 2012; Scanlan, Tucker & Dalbo, 2015), which can lead some players into a talent development pathway (Côté, Young, North & Duffy, 2007) and (depending on the sport) a senior, professional team (Güllich, 2014). On the other hand, players who do not get selected during a season can experience detraining (Caterisano, Patrick, Edenfield & Batson, 1997), stress (Woods & Thatcher, 2009), a loss of identity (Neely, McHugh, Dunn & Holt, 2017), a crisis (Bollnow, 1987) of one's lifeworld (Ronkainen, Aggerholm, Ryba & Allen-Collinson, 2020) and may become perceived as redundant by coaches and teammates (Wang, Callaghan & Goldfine, 2001). Yet despite the well-documented effects of coaches' team selection decisions on teams and individual players, as a topic this process is rarely discussed. For example, in several recently published sports coaching textbooks (e.g. Cope & Partington, 2020; Thelwell & Dicks, 2019) team selection is offered only a passing mention. The limited discussion of this vital and frequently made decision is somewhat surprising given the aforementioned consequences.

It is worth noting at this point that what is being discussed here (i.e. coaches' team selection decisions) does not include decisions made during talent identification (TI). Those engaging in TI, defined as "recognising and selecting players who show potential to excel at a more advanced level of competition" (Cobley, Schorer & Baker, 2012, p. 4), are in some ways engaging in a similar decision task to that of coaches who are selecting for an upcoming game, yet there are distinct differences. In both decision tasks, for instance, those involved are attempting to predict future performances. However, those involved in TI are predicting how players might perform after a long period (possibly years) of targeted development, whereas coaches' selecting for an upcoming game are making predictions on performances that typically occur every week (possibly even every few days). The key distinctions here are the temporal aspects of each decision task and the consequences for both players (e.g. failure is seen as a learning opportunity within talent development contexts, whereas it can lead to non- or de-selection from an upcoming game) and coaches (e.g. judgements of success in talent development contexts are measured on the attainment of multifaceted goals rather than a heavy focus on winning and/or participation for team selection decisions, depending on the coaching domain) (Please note, we have presented this admittedly dichotomous judgement of success for the sake of argument as in reality they are relevant in both contexts at different times).

Despite the lack of attention paid to coaches' team selection decisions, we are able to draw upon wider judgement and decision-making literature in order to build a foundational picture of how and why they are made. Defined in the current study as "the process of making a choice from a set of options, with the consequences of that choice being crucial" (Bar-Eli &

Raab, 2011, p. 6), decision-making in sport is relatively under researched (Williams & Jackson, 2019). However, there is important work in this area that has emerged. For example, recent reviews (e.g. Ashford, Abraham & Poolton, 2021; Raab, Bar-Eli, Plessner & Araújo, 2019) provide an overview of and highlight the similarities among the dominant approaches to decision-making in sport, providing researchers with a platform to investigate the same decisions from different theoretical perspectives, which drives theoretical progress (Raab, Bar-Eli, Plessner & Araújo, 2019). One of the key similarities across information processing, naturalistic decision-making and ecological psychology approaches is the significant role the perception of information plays (Ashford, Abraham & Poolton, 2021). As such several decision-making theories (e.g. decision field theory, social judgement theories and ecological dynamics) state that individuals seek, collect, or accumulate information in order to make decisions (Araújo, Davids & Hristovski, 2006; Araújo, Hristovski, Seifert, Carvalho & Davids, 2019; Brunswik, 1955; Busemeyer & Townsend, 1993; Hammond, 1996; Hammond, Stewart, Brehmer & Steinmann, 1975). Across all three theoretical concepts, therefore, the perception of information is identified as the link between the decision-maker (coach) and their environment, enabling them to make sense of the world. To this end, there is value at this formative stage in the sense making of team selection in synthesising an understanding from research that has focussed on the information coaches use to inform their selection decisions. Importantly, though it is beyond the scope of this review to precisely define “information” in the context of coaches’ decision-making, for clarity the study embraces work from perception literature suggesting it is “any sensory information that gives rise to a sensory estimate” (Ernst & Bühlhoff, 2004, p. 163).

Increasing our knowledge of coaches’ team selection decisions has a further practical advantage in (at least) two ways. Firstly, the choices we make can be seen as reflections upon our own beliefs, values, biases, or forms of life (Manktelow, 2012; Renshaw, Davids, Newcombe & Roberts, 2019; Tversky & Kahneman, 1974). Reflection-on-action (Schön, 1987) is a recognised aspect of coach learning and development (Downham & Cushion, 2020) and key (though often uncritically accepted) for coaches to develop into effective practitioners (Cushion, 2018). It is therefore essential for coaches to make sense of the selection decisions they make (among other aspects of their practice), questioning how and why they made them and the impact they might have had (Cropley, Miles & Knowles, 2019), in order to develop a skill that is said to be the defining feature of coaching expertise (Lyle & Vergeer, 2013). Secondly, providing an insight into coaches’ decision-making can be emancipatory for the very focus of a number of these decisions, the players (Kidman & Lombardo, 2010), bringing them into the decision-making process and providing transparency, rationales

and a beneficial sense of autonomy (Kavussanu & Hodge, 2019). With this in mind, the aims of this scoping review are to (1) present literature that can offer insight into the information coaches use to make team selection decisions and (2) provide a platform from which researchers, practitioners and coaches can explore this crucial but often taken-for-granted decision.

Method

A scoping review is a way of synthesising relevant research evidence, whilst also identifying gaps in the literature, to convey the breadth and depth of a particular topic (Levac, Colquhoun & O'Brien, 2010). As an approach, it has been utilised to critically review literature within the field of sports coaching (e.g. Olusoga, Bentzen & Kentta, 2019) and is said to be useful when the aims of a study are broad (Armstrong, Hall, Doyle & Waters, 2011).

Search strategy

To protect data from bias and in the interest of transparency, guidelines set out by PRISMA (Liberati et al., 2009) were followed (see [Figure 1](#)). The electronic databases used for the literature search were SPORTDiscus and Web of Science (we acknowledge that some databases were not used in the literature search, such as PubMed and Scopus, meaning this is a limitation of the current study worth noting). Further searches were made by reviewing article reference lists of the studies included in the review. A list of keyword terms, which were used in both searches (see below), was then created by examining relevant literature, including: team (player) selection, team formation, team (player) selection process, team formation process, selection (deselection) decisions, coach selections (deselections), deselection, sport, team (multi-player, individual, youth) sport, player and athlete.

Inclusion/exclusion criteria

In the initial search (February 2017), as part of the first author's PhD, studies were included in this review if they provided quantitative and/or qualitative data on the information used in team selection decisions as outlined by coaches (inclusion criteria one). Studies were to be excluded if they were not full articles, not published in peer-reviewed journals, or were not in English. However, this original search produced no results. The first author then made the decision to broaden the inclusion criteria to include studies that provided quantitative and/or qualitative data on the characteristics that discriminated between selected and non-selected players for a game or competition after selection had occurred (inclusion criteria two). This

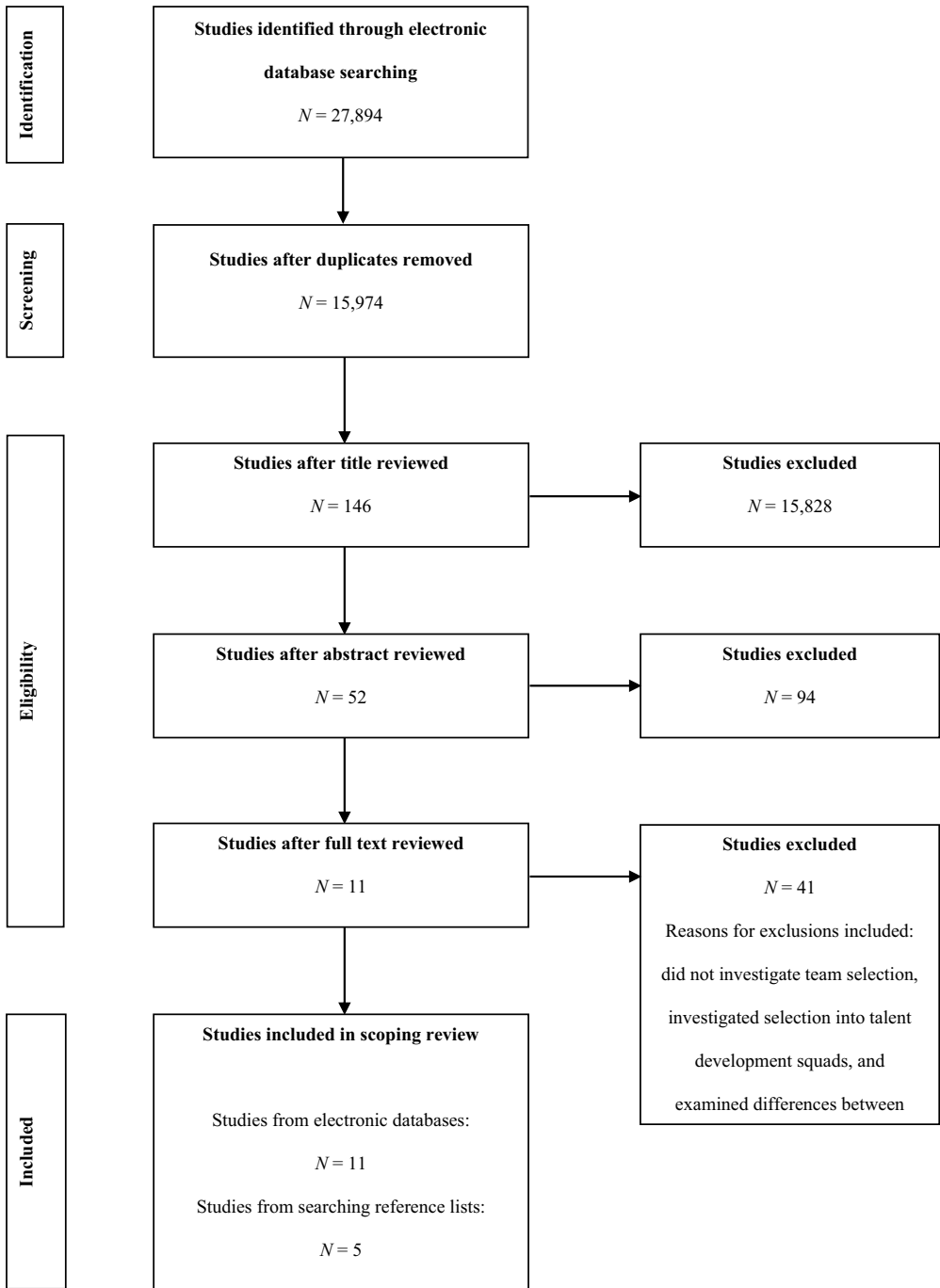


Figure 1. PRISMA flowchart showing the identification and selection of literature (adopting inclusion criteria one and two).

decision was made to try and capture studies that might have retrospectively (but likely unintentionally) explored coaches' team selection decisions by investigating measurable differences between selected and non-selected players, which might offer insight into the information the coaches used to make their decisions and/or provide a platform for further discussion. A second search, using the same search strategy above, was carried out in January 2018, using both inclusion criteria, to capture any research published after the original search date (i.e. February 2017).

Procedure

The keywords were used in both electronic databases, which generated an initial list of studies. Information about each study was extracted into a Microsoft Excel© spreadsheet to make data analysis more manageable. Once any duplicates were removed, studies were first reviewed by title, then abstract, and then by full text, with those not meeting the inclusion/exclusion criteria being removed at each stage. Further searches of study reference lists were also completed. Data extracted (but not analysed) were author(s), year of publication, sample size and participants' demographic information (i.e. participant sex and age). Data extracted and analysed were contextual information (i.e. participants' stated coaching domain and sport), key findings that related to the review aims (i.e. information used in selection decisions as outlined by coaches and differences in selected and non-selected players) and information pertaining to research design for studies that investigated coaches' selection decisions.

Results

A total of 16 studies were included in this review, with one study (i.e. Johansson & Fahlén, 2017) meeting inclusion criteria one (i.e. the information used in team selection decisions as outlined by coaches). Coaches from this study reported 47 pieces of information in total (see [Table 1](#)). It is worth noting that the results from this study were based on "selections to a team/squad for a season and selections to specific games or competitions" (p. 473). As the authors did not distinguish between these two types of selection decisions in their study, all information has been reported. Consequently, these results (and the subsequent discussion) should be interpreted with this in mind.

The remaining 15 studies met inclusion criteria two (i.e. studies that examined characteristics that discriminated between selected and non-selected players for a game or competition after selection had occurred). Ten characteristics that related to athletes' demographics, anthropometric measurements, physical and technical performances and experience were

Table 1. Summary of Johansson and Fahlén (2017).

Author(s) and Year	Domain	Sport(s)	Sample	Sex	Age(s) (mean \pm s)	Information used in team selection decisions as outlined by coaches
Johansson & Fahlén, 2017	Elite	Football; alpine skiing	14	-	-	Age; attitude; work together as a team; personality; player's capacity; abilities of players; potential; current and past performances; previous results; current form; predictions of future performances; ranking lists; skills; technique; behaviour; career impact on athlete; injuries; experience; price of player; potential selling of player Amount of time spent with athlete; coaches' intuition; coaches experience of analysing athletes; experience of selection processes; coaches' knowledge of sport; coaches' knowledge of athletes; coaches' goals; coaches' winning mentality; game plan; feelings Other players; team goals; other coaches; federation boards; federation goals; club boards; club goals; media; agents; general public; sponsors; parents Opponents; position; rules; quotas; number of athletes

Note. - = No explicit statement of relevant information.



Table 2. Summary of studies that examined the differences between selected and non-selected players after selection occurred.

Author(s) and Year	Domain	Sport(s)	Sample	Sex	Age(s) (mean ± s)	Differences in selected and non-selected players
Baker, 2017	Professional	Rugby league	34	Male	23.3 (4.0)	Age; playing experience; 1RM bench press; 1RM squat; 1RM bench press/body mass; 1RM squat/body mass (Forwards: 1RM bench press; 1RM squat; 1RM bench press/body mass; 1RM squat/body mass; age; body mass) One repetition squat; vertical jump power; static vertical jump power
Barker et al., 1993	University (USA)	American football	59	-	19.7 (1.0)	
Thissen-Milder & Mayhew, 1991	University (USA)	Volleyball	10	Female	19.6 (0.6)	36.6-m sprint; lower back-hip-hamstring flexibility; one repetition bench press; military press; power clean
Gabbett, 2009	Junior	Rugby league	88	-	13.2 (0.6), 15.1 (0.6), 16.5 (0.3)	Under 14: Playing experience; maximal aerobic power Under 16: 10-m sprint; 20-m sprint; 40-m sprint; 0–10-m velocity; 10–20-m velocity; 20–40-m velocity Under 18: Playing experience
Gabbett, Jenkins & Abernethy, 2011	Professional	Rugby league	86	-	23.3 (3.8)	10-m sprint; 40-m sprint; maximum velocity
Gabbett, Kelly, Ralph & Driscoll, 2009	Elite and sub-elite	Rugby league	64	-	16.0 (0.2), 15.9 (0.6)	Elite: Height; weight
Gabbett & Seibold, 2013	Semi-professional	Rugby league	32	-	24.0 (3.0)	Playing experience; vertical jump; three reputation squat and chin-up; body-mass maximum repetition bench press; prolonged high-intensity; intermittent running Flat sprint; sprint with cones No differences found Leg press
Gravina et al., 2008	-	Football	66	Male	10–14 years	
Hoffman et al., 2009	University (USA)	Lacrosse	22	Female	19.2 (1.0)	
Lawton, Cronin, & McGuigan, 2013	Elite	Rowing	12	Female	23.1 (3.8)	
Le Rossignol, Gabbett, Cornerford & Stanton, 2014	Professional	Australian rules football	20	-	21.7 (2.4)	Repeated sprint-times
Mayhew, Wolfe & McCormick, 1987	University (USA)	American football	70	-	-	Bench press; power clean; 10-yd dash; vertical jump
Schmidt, 1999	University (USA)	American football	78	Male	19.9 (1.4), 19.9 (1.6), 19.9 (1.2)	Seated medicine ball puts; one repetition bench press; one repetition leg press Agility; ball-handling skills
Thissen-Milder & Mayhew, 1991	High school	Volleyball	50	Female	14.1 (0.6), 15.7 (0.6), 16.0 (0.6)	
Young et al., 2005	Professional	Australian rules football	34	-	22.7 (3.4)	Age; playing experience; prolonged high-intensity, intermittent running; countermovement jump; 10-m time; flying 30-m time; right hamstring flexibility

Note. - = No explicit statement of relevant information. RM = Repetition maximum. m = metre. yd = yard.

found to separate selected and non-selected players (see [Table 2](#)). One study (Hoffman et al., 2009), however, found no differences between selected and non-selected players. Taken together, these findings demonstrate that some of the characteristics that differentiated selected from non-selected players were also information reportedly used by coaches (i.e. age, experience and skills) from Johansson and Fahlén (2017) study.

Discussion

It is important to make clear from the outset that only one study was found that explicitly investigated the information used in team selection decisions as outlined by coaches (inclusion criteria one). Given that coaching is fundamentally a decision-making process (Abraham, Collins & Martindale, 2006), it seems counterintuitive that the decision-maker (i.e. the coach) does not feature prominently in the literature. Still, the results of this study are critically analysed and evaluated before moving on to the results that investigated the characteristics that discriminated between selected and non-selected players after selection occurred (inclusion criteria two). During both discussions, we draw upon dominant theoretical approaches to decision-making (Ashford, Abraham & Poolton, 2021) to critically unpick and help make sense of the studies and to also use as frameworks for future study recommendations.

Inclusion criteria 1: Johansson and Fahlén (2017) study

The importance of Johansson and Fahlén (2017) study cannot be stressed enough because coaching requires descriptive research to accumulate knowledge and develop an understanding of what coaches actually do (Gilbert & Trudel, 2004; Potrac, Jones & Cushion, 2007) as it is still a developing field (Cushion, Harvey, Muir & Nelson, 2012). Therefore, the contribution of this study is to provide something for academics to develop, build on, challenge and refute, especially as the results reported encompass a broad overview of the selection process (i.e. selection decision goals, criteria, processes, and outcomes and consequences). The authors chose to utilise interviews, allowing for the gathering of rich and insightful data (Bryman, 2016). Regarding the information used for selection decisions, coaches reported drawing upon information related to the players (e.g. skills, behaviour, injuries), themselves (e.g. knowledge about athletes, game plan, intuition), other sources (e.g. assistant coaches, team goals, other players) and the situation (e.g. positional demands, opponents, rules). Some of this information has been discussed elsewhere (e.g. coaches' intuition; Nash & Collins, 2006) or could be thought of as obvious for practical reasons (e.g. injuries; Podlog & Eklund, 2007); however, some of

the information reveals the inherent complexity in coaches' perceptions of team selection decisions. For example, there is a temporal aspect to team selection decisions that extends beyond the recognisable purpose of the decision (i.e. an upcoming game or competition) exemplified with coaches stating that the career impact on an athlete is taken into consideration during selection decisions. Furthermore, the number of stakeholders potentially influencing coaches' team selection decisions ranges from those close to the coach (e.g. other players, coaches, parents, agents, clubs) through to wider political, economic, social and cultural agents (e.g. federations, sponsors, the media, the general public). These results remind us that coaches' team selection decisions (and decision-making more broadly) should not only be studied from a cognitive perspective, instead adopting a social view too (Lyle & Muir, 2020). Insightful as these results are, they are bound by the authors interviewing football and alpine skiing coaches (see below for a detailed discussion of the contextual limitations) and so there is a need to broaden our research attention to include a diverse mixture of coaches operating within different sports and contexts.

Whilst not explicitly discussed in this study, asking coaches about, for example, the information used in their selection decisions seems to draw upon an information processing perspective because of the implied conscious element to the decision-making process (Busemeyer & Townsend, 1993). If selection decisions are made over a lengthy period of time in which coaches consciously seek information, adopting a theoretical framework that is synonymous with a System 2 view of decision-making (i.e. a consciously monitored and deliberately controlled process; Kahneman, 2003; Stanovich & West, 2000) is appropriate. However, often selection decisions are made during training or games (Fiander, 2019), contexts in which coaches make decisions under time pressure. Therefore, there is a need for researchers to apply a System 1 view (i.e. fast, automatic and implicit view of decision-making; Kahneman, 2003; Stanovich & West, 2000) or naturalistic decision-making (Harvey, Lyle & Muir, 2015) or ecological psychology (Araújo, Davids & Hristovski, 2006) approach because they consider decision-making from a person-environment lens in time sensitive contexts. These approaches show how the coach could be both an active (i.e. coaches moving position in training to seek information) and passive (e.g. information in games emerges and dissolves because of player movements in the environment) part of the selection process. Coaches may not be fully aware of the specific facets of the selection process (e.g. intuitive pattern matching; Klein, 1989) meaning they cannot articulate it, but these approaches give researchers a window into these hidden features.

Interestingly, when reporting the information coaches claim to use when making selection decisions, Johansson and Fahlén (2017) seem to have

made the assumption that when coaches use the same terminology the meaning associated with these terms is also the same. “Language in its abstract sense is a socially shared tool allowing its users to create and exchange meaning,” though the use of language does not necessarily “guarantee complete and mutual understanding” (Holtgraves & Kashima, 2008, p. 74). If coaches communicate, through language, the information they use to select their players but the interpretation of another coach, player or researcher is not the same as what was intended then our practical and theoretical understanding of team selection decisions is limited at best. To address this, researchers might adopt a social cognitive perspective (Bar-Eli & Raab, 2011) to investigate whether the meaning behind the language used to describe the information utilised is shared (or not) across different coaches, contexts and domains. For example, Fiander (2019) reported that coaches often selected the “best players” (p. 116). It is not clear, however, what being the “best” actually means to each coach, whether this meaning is shared or what information or experiences led to the use of this language. We know the importance and impact of language in sport coaching (e.g. Gearity & Metzger, 2017); however, it is less clear how language and its use shapes and impacts upon team selection decisions.

There is however a further limitation with Johansson and Fahlén (2017) study, namely the different sports and contexts the coaches operated in. Whilst the authors addressed this issue in relation to the representativeness of their sample, the notion that coaching is an endeavour that is bound by domain-specific context (Lyle & Cushion, 2017) is somewhat overlooked. For example, participants in this study were alpine skiing coaches, an individual sport, and football coaches, a team sport. Together, these two sets of coaches reported that winning was the intended outcome of their team selection decisions. However, an alpine skier’s performance is measured on an individual level (i.e. a single alpine skier outperforming any other alpine skier), whereas a football team’s performance is measured at a group level (Rylander, 2016). This means that, with regard to the information used to select athletes, alpine skiing coaches would likely concentrate on information about the individual athletes (e.g. previous results), whereas football coaches also need to consider information on, for example, an interpersonal level (e.g. athlete–athlete relationships). Though the goal is the same for both sets of coaches (i.e. winning), the information used can differ as a result of the context. Moving forward, researchers adopting any theoretical perspective on decision-making need to outline the context their participants (coaches) are working in and how this may have shaped the results found (Sparkes & Smith, 2014) to avoid implying coaching is a unidimensional, generalisable and homogenous construct (Lyle & Cushion, 2017).

Inclusion criteria 2: differences between selected and non-selected players

It is worth noting that this section should be read and interpreted with caution for the very limitation we highlighted earlier in our discussion, namely the influence of context. We are aware that we have seemingly fallen into the same trap that we suggested Johansson and Fahlén (2017) fell into, but as we also suggested there are some shared characteristics across coaching contexts, which allow us to speculate about selection information being utilised by coaches working in different contexts (or recognisability; Delmar, 2010). Rugby union coaches working in a professional context, for example, will have access to player performance data and be able to use these in their selection decisions (Calder & Durbach, 2015), whereas those in the amateur context may not have the resources required to have access to this information. So, suggesting all rugby union coaches use player performance data to select their teams would be inappropriate. However, the rules of rugby union are consistent across both contexts. This means that we are able to speculate that information that is, for instance, linked to the rules of the game, such as height for (usually lock) forwards because they are required to jump in the line out (Lombard, Durandt, Masimla, Green & Lambert, 2015), may be used by all rugby union coaches.

We also acknowledge that the discussion we have presented below has made the assumption that if selected and non-selected players were separated by characteristics (from different sports and contexts), this information might have been used by coaches during their selection decisions. However, this is done to offer insights into coaches' selection decisions in an abstract sense, not to be taken as a literal proposition. Where appropriate these statements can be made; however, what we hope to have done is to stimulate debate and provide a platform for researchers, practitioners and coaches to develop, build on, challenge and refute our ideas about the information coaches use to make team selection decisions.

Age and playing experience

Results from two studies found that selected players were consistently older than those not selected. Athletes from the same selection year can vary in age by up to 12 months, leading to significant cognitive, physical and emotional differences between those born early and late in the year (Wattie, Schorer & Baker, 2015). This phenomenon, called the relative age effect (RAE), is more likely to occur in physically demanding sports (Baxter-Jones, 1995), such as those included in the above studies (i.e. rugby league and Australian rules football; Cobleby & Till, 2017; Coutts, Kempton & Vaeyens, 2014), and has been reported at both youth and adult levels (although there is evidence that in some cases RAEs do not exist in sport; Andronikos, Elumaro, Westbury & Martindale, 2016). However, it is

difficult to state that RAEs occurred in these studies because the participants' month of birth was not available.

Age being used as selection information is supported by coaches stating that they select players for this reason (although it was not clear whether coaches selected younger or older athletes; Johansson & Fahlén, 2017). Older players being selected may have, however, been linked to playing experience. Four studies found that selected players had more playing experience than non-selected players, and as Baker (2017) stated, older players tend to have more playing experience. This suggests coaches may perceive older players to have more playing experience. Coaches have also stated that they select players based on their age and experience (Johansson & Fahlén, 2017), suggesting that coaches do intentionally select older and more experienced players.

These results might also highlight more fundamental aspects of the decision-making process, namely the aggregation of information into patterns and associative learning and memory retrieval of different information. The former, based on the recognition-primed decision (RPD) model (Klein, 1989), may occur when team selection decisions are made under conditions of limited time, uncertainty and instability, such as during training or a game. The latter could happen after the associated memory forms between the perception of information regarding a player's age (e.g. skin texture and appearance; Rhodes, 2009) and playing experience (Wasserman & Miller, 1997), meaning a player's perceived age might bring with its inferences about playing experience (possibly without any direct information about a player's experience) during the decision-making process. Future studies might attempt to map the patterns coaches draw upon when making their selection decisions, as this could reveal the most relevant information in the coaches' environments, and the associations coaches have made between information. This would allow coaches to critically assess the relationship between this information and the desired outcome of their decisions (such as the success, however it is defined, of the players they selected based on this information).

Skills

Selected players had greater skill levels than non-selected players. Coaches could conceivably place importance on the execution and display of sport-specific skills when making selection decisions because coaches often adopt technique-focused coaching styles that advocate the rehearsal of movement templates (Rothwell, Stone, Davids & Wright, 2017). Although there has been a call to move away from these traditional, linear coaching pedagogies towards more holistic, non-linear approaches (e.g. Potrac, Brewer, Jones, Armour & Hoff, 2000), it is commonly reported that coaches still use traditional approaches to coaching that emphasise the display of sport-

specific skills (Vinson, Brady, Moreland & Judge, 2016). It is, therefore, understandable to assume that selected players would display higher levels of skills than non-selected players especially as the coach, who is making the team selection decisions, may believe that a set of favourable sport-specific skills are a prerequisite for selection (Oorschot, Chiwaridzo & Smits-Engelsman, 2017). It should be considered, however, that the targeting of any particular skill, and indeed any perceptions on competence thereabouts, are likely to be determined socio-culturally rather than objectively (Cushion, 2011). To this end, coaches may be creating idiosyncratic, familiar training environments that accentuate previously embedded perception-action couplings (i.e. decisions regarding selections). Ecological psychology provides a lens to explore this likely occurring circumstance, providing a language from which to reflect upon the coach-created structure of training environments and any subsequent effect this may have on the information received by coaches regarding players' skills (e.g. action fidelity; Araújo, Davids & Passos, 2007). However, if these coach-created training environments are consistently homogeneous then in reality they could be unintentionally creating the conditions for some players, who offer the "right" selection information under these conditions, to be repeatedly selected, creating a never-ending cycle of reaffirming selection decisions and limiting the opportunities for those players who offer the "wrong" selection information. Certainly, it has been shown by Johansson and Fahlén (2017) that coaches do consider technical skills as a prerequisite for selection. In their study, coaches described how players would be selected if they had the necessary skills (or abilities) which aligned to the demands of different strategic positions and/or the intended game plan. As such, how training is structured by coaches needs to be questioned as the actual purpose might be more (unintentionally) self-serving than altruistic.

Physical characteristics

Most of the characteristics that discriminated between selected and non-selected players related to physical appearance (height and weight) and the performance of physical tasks (strength, speed, agility, aerobic fitness and flexibility). This finding is not surprising given the high physical demands required to play the sports included in these studies (e.g. rugby league; Till, Darrall-Jones, Weakley, Roe & Jones, 2017). Though this finding might also lend support to research in other areas, which have found that coaches inappropriately rely on assessments of players' physical attributes to aid selection decisions (in this instance, talent selection decision: Wattie, Schorer & Baker, 2015). Interestingly, the RAE phenomenon that occurs in talent identification in sport might inform our understanding of the above finding. Coaches might be selecting players for an upcoming game based on (perceived) information relating to superior physical attributes

and performances, which are simply the result of an advanced level of growth and maturation.

Players' strength was also found to distinguish between selected and non-selected players. Despite this, questions remain as to whether coaches actually select players based on their strength. Given that muscle size is a major determinant of muscle strength (Akagi et al., 2011), and that coaches do rely on "sight" when judging and making selection decisions (Fiander, Jones & Parker, 2013; Johansson & Fahlén, 2017), coaches may base their selection decisions (or part of their selection decisions) on players' size rather than strength. When coaches from Johansson and Fahlén's study (2017) were asked, however, they did not state that they used any physical characteristics to select their teams. If coaches are not stating that they base their selection decisions on physical characteristics, but selected players are taller, heavier, stronger, faster, more agile, fitter and more flexible than non-selected players, then there is the possibility that information related to these characteristics is unintentionally influencing coaches' selection decisions (there is also the possibility that coaches could have omitting selection information based on players' physical qualities for social desirability reasons; Holtgraves, 2004). This notion resonates with the heuristics and biases approach (Gilovich, Griffin & Kahneman, 2002; Kahneman, Slovic & Tversky, 1982) which suggests that coaches' intuitive thinking may be biased towards players with superior physical characteristics. Whilst these traits might be desirable in some sports, such as rugby union (Lombard, Durandt, Masimla, Green & Lambert, 2015), in specific contexts (e.g. youth sport) this may lead to physical mismatches between players and negative consequences (e.g. catastrophic injuries; Nutton et al., 2012) as a result of biased selection decisions.

Conclusion

Given the well-documented consequences of coaches' team selection decisions, it is problematic that the decision-maker (i.e. the coach) does not feature prominently in the literature. Therefore, this review aimed to (1) present literature that can offer insight into the information coaches use to make team selection decisions and (2) provide a platform from which researchers, practitioners and coaches can explore this crucial but often neglected decision. Whilst a small number of studies were included in this review (and only one that directly investigated coaches' team selection decisions), we call for greater discussion, debate and research in this area. Researchers specifically have been offered a number of areas in which to apply different theoretical approaches to decision-making (i.e. information processing, naturalistic decision-making, ecological psychology) in different contexts (e.g. training and games) which will drive theoretical progress in

this area (Raab, Bar-Eli, Plessner & Araújo, 2019). If coaching is to be viewed as a decision-making process (Abraham, Collins & Martindale, 2006), then we strongly urge researchers to increase our knowledge and understanding of coaches' team selection decisions as this is crucial to understanding the coaching process. We also believe that a greater awareness in this vein will present gateways into related topics, such as the role and use of language, the influence of associated memory on decisions, how coaches evaluate athletes' skills, the impact decisions have on athlete well-being, and the social approach to decision-making, that also require further study.

Here, we have drawn the attention of academics and coaches alike towards the importance of exploring team selection decisions, rather than providing a comprehensive account of this process. Our intention is that academics and practitioners alike will find value in the theoretical approaches we have proposed, though crucially we encourage the questioning, discussion, debate and further study of what we have presented so that the ubiquitous nature of coaches' selection decisions is recognised and further explored.

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ORCID

Matthew F. Fiander  <http://orcid.org/0000-0002-4704-7493>

References

- Abraham, A., Collins, D., & Martindale, R. (2006). The coaching schematic: Validation through expert coach consensus. *Journal of Sports Sciences*, 24(6), 549–564. <https://doi.org/10.1080/02640410500189173>
- Akagi, R., Takai, Y., Ohta, M., Kanehisa, H., Fukunaga, T., & Kawakami, Y. (2011). Size–strength relationships of the elbow flexors and extensors are not affected by age or gender. *European Journal of Sport Science*, 11(4), 277–282. <https://doi.org/10.1080/17461391.2010.509890>
- Andronikos, G., Elumaro, A., Westbury, T., & Martindale, R. J. J. (2016). Relative age effect: Implications for effective practice. *Journal of Sports Sciences*, 34(12), 1124–1131. <https://doi.org/10.1080/02640414.2015.1093647>
- Araújo, D., Davids, K., & Hristovski, R. (2006). The ecological dynamics of decision making in sport. *Psychology of Sport and Exercise*, 7(6), 653–676. <https://doi.org/10.1016/j.psychsport.2006.07.002>
- Araújo, D., Davids, K., & Passos, P. (2007). Ecological Validity, Representative Design, and Correspondence between Experimental Task Constraints and Behavioral Setting: Comment on Rogers, Kadar, and Costall (2005). *Ecological Psychology*, 19(1), 69–78. <https://doi.org/10.1080/10407410709336951>

- Araújo, D., Hristovski, R., Seifert, L., Carvalho, J., & Davids, K. (2019). Ecological cognition: Expert decision-making behaviour in sport. *International Review of Sport and Exercise Psychology*, 12(1), 1–25. <https://doi.org/10.1080/1750984X.2017.1349826>
- Armstrong, R., Hall, B. J., Doyle, J., & Waters, E. (2011). ‘Scoping the scope’ of a cochrane review. *Journal of Public Health*, 33(1), 147–150. <https://doi.org/10.1093/pubmed/fdr015>
- Ashford, M., Abraham, A., & Poolton, J. (2021). A communal language for decision making in team invasion sports. *International Sport Coaching Journal*. <https://doi.org/10.1123/iscj.2019-0062>
- Baker, D. G. (2017). Comparison of strength levels between players from within the same club who were selected vs. not selected to play in the grand final of the National Rugby League competition. *Journal of Strength and Conditioning Research*, 31(6), 1461–1467. <https://doi.org/10.1519/JSC.0000000000001604>
- Bar-Eli, M., & Raab, M. (2011). *Judgement, decision making and success in sport*. John Wiley & Sons, Ltd. <https://doi.org/10.1002/9781119977032>
- Barker, M., Wyatt, T. J., Johnson, R. L., Stone, M. H., O’Bryant, H. S., Poe, C., & Kent, M. (1993). Performance factors, psychological assessment, physical characteristics, and football playing ability. *Journal of Strength and Conditioning Research*, 7(4), 224–233. <http://doi.org/10.1519/00124278-199311000-00007>
- Baxter-Jones, A. (1995). Growth and development of young athletes. Should competition levels be age related? *Sports Medicine*, 20(2), 59–64. <https://doi.org/10.2165/00007256-199520020-00001>
- Bollnow, O. F. (1987). *Crisis and new beginning: Contributions to pedagogical anthropology*. Duquesne University Press.
- Brunswik, E. (1955). Representative design and probabilistic theory in a functional psychology. *Psychological Review*, 62(3), 193–217. <https://doi.org/10.1037/h0047470>
- Bryman, A. (2016). *Social research methods* (5th ed.). Oxford University Press.
- Busmeyer, J. R., & Townsend, J. T. (1993). Decision field theory: A dynamic-cognitive approach to decision making in an uncertain environment. *Psychological Review*, 100(3), 432–459. <https://doi.org/10.1037/0033-295X.100.3.432>
- Calder, J. M., & Durbach, I. N. (2015). Decision support for evaluating player performance in rugby union. *International Journal of Sports Science & Coaching*, 10(1), 21–37. <https://doi.org/10.1260/1747-9541.10.1.21>
- Caterisano, A., Patrick, B. T., Edenfield, W. L., & Batson, M. J. (1997). The effects of a basketball season on aerobic and strength parameters among college men: Starters vs reserves. *Journal of Strength and Conditioning Research*, 11(1), 21–24. [http://doi.org/10.1519/1533-4287\(1997\)011<0021:TEOABS>2.3.CO;2](http://doi.org/10.1519/1533-4287(1997)011<0021:TEOABS>2.3.CO;2)
- Cobley, S., Schorer, J., & Baker, J. (2012). *Identification and development of sport talent: A brief introduction to a growing field of research and practice* (J. Baker, S. Cobley, & J. Schorer, Eds.). Talent identification and development in sport: International perspectives (pp. 1–10). Routledge.
- Cobley, S. P., & Till, K. (2017). Participation trends according to relative age across youth UK rugby league. *International Journal of Sports Science & Coaching*, 12(3), 339–343. <https://doi.org/10.1177/1747954117710506>
- Cope, E., & Partington, M. (2020). *Sports coaching: A theoretical and practical guide*. Routledge.
- Côté, J., Young, B., North, J., & Duffy, P. (2007). Towards a definition of excellence in sport coaching. *International Journal of Coaching Science*, 1(1), 3–17.
- Coutts, A. J., Kempton, T., & Vaeyens, R. (2014). Relative age effects in Australian Football League national draftees. *Journal of Sports Sciences*, 32(7), 623–628. <https://doi.org/10.1080/02640414.2013.847277>

- Couturier, L. E. (2009). "Why did you cut me?" Preparing coaching education students for the team selection process. *Journal of Physical Education, Recreation & Dance*, 80(9), 39–42. <https://doi.org/10.1080/07303084.2009.10598393>
- Cropley, B., Miles, A., & Knowles, Z. (2019). Making reflective practice beneficial. In R. Thelwell & M. Dicks (Eds.), *Professional advances in sports coaching* (pp. 377–396). Routledge.
- Cushion, C. (2011). Coach and athlete learning: A social approach. In R. L. Jones, P. Potrac, C. Cushion, & L. T. Ronglan (Eds.), *The sociology of sports coaching* (pp. 166–178). Routledge.
- Cushion, C. (2018). Reflection and reflective practice discourses in coaching: A critical analysis. *Sport, Education and Society*, 23(1), 82–94. <https://doi.org/10.1080/13573322.2016.1142961>
- Cushion, C., Harvey, S., Muir, B., & Nelson, L. (2012). Developing the Coach Analysis and Intervention System (CAIS): Establishing validity and reliability of a computerised systematic observation instrument. *Journal of Sports Sciences*, 30(2), 203–218. <https://doi.org/10.1080/02640414.2011.635310>
- Delmar, C. (2010). "Generalizability" as Recognition: Reflections on a Foundational Problem in Qualitative Research. *Qualitative Studies*, 1(2), 115–128. <https://doi.org/10.7146/qs.v1i2.3828>
- Downham, L., & Cushion, C. (2020). Reflection in a high-performance sport coach education program: A Foucauldian analysis of coach developers. *International Sport Coaching Journal*, 7(3), 347–359. <https://doi.org/10.1123/iscj.2018-0093>
- Eime, R. M., Young, J. A., Harvey, J. T., Charity, M. J., & Payne, W. R. (2013). A systematic review of the psychological and social benefits of participation in sport for adults: Informing developing of a conceptual model of health through sport. *International Journal of Behavioral Nutrition and Physical Activity*, 10(1), 1–14. <http://doi.org/10.1186/1479-5868-10-135>
- Ernst, M. O., & Bülthoff, H. H. (2004). Merging the senses into a robust percept. *Trends in Cognitive Sciences*, 8(4), 162–169. <https://doi.org/10.1016/j.tics.2004.02.002>
- Fiander, M. F. (2019). "The best or the rest": An exploration of UK rugby union coaches' team selection decisions [Doctoral dissertation, Middlesex University]. Middlesex University Research Repository. <https://eprints.mdx.ac.uk/26872/1/MFFiander%20thesis.pdf>
- Fiander, M. F., Jones, M. I., & Parker, J. K. (2013). Coaches' perceptions of the use of chronological and biological age in the identification and development of talented athletes. *Athletic Insight*, 5(2), 181–196.
- Gabbett, T. J. (2009). Physiological and anthropometric characteristics of starters and non-starters in junior rugby league players, aged 13-17 years. *Journal of Sports Medicine and Physical Fitness*, 49(3), 233–239. <https://pubmed.ncbi.nlm.nih.gov/19861929/>
- Gabbett, T. J., Jenkins, D. G., & Abernethy, B. (2011). Relative importance of physiological, anthropometric, and skill qualities to team selection in professional rugby league. *Journal of Sports Sciences*, 29(13), 1453–1461. <https://doi.org/10.1080/02640414.2011.603348>
- Gabbett, T. J., Kelly, J., Ralph, S., & Driscoll, D. (2009). Physiological and anthropometric characteristics of junior elite and sub-elite rugby league players, with special reference to starters and non-starters. *Journal of Science and Medicine in Sport*, 12(1), 215–222. <https://doi.org/10.1016/j.jsams.2007.06.008>
- Gabbett, T. J., & Seibold, A. J. (2013). Relationship between tests of physical qualities, team selection, and physical match performance in semiprofessional rugby league players. *Journal of Strength and Conditioning Research*, 27(12), 3259–3265. <https://doi.org/10.1519/JSC.0b013e31828d6219>

- Gearity, B. T., & Metzger, L. H. (2017). Intersectionality, microaggressions, and microaffirmations: Toward a cultural praxis of sport coaching. *Sociology of Sport Journal*, 34(2), 160–175. <https://doi.org/10.1123/ssj.2016-0113>
- Gilbert, W. D., & Trudel, P. (2004). Role of the coach: How model youth team sport coaches frame their roles. *The Sport Psychologist*, 18(1), 21–43. <https://doi.org/10.1123/tsp.18.1.21>
- Gilovich, T., Griffin, D., & Kahneman, D. (Eds.). (2002). *Heuristics and biases: The psychology of intuitive judgment*. Cambridge University Press.
- Gonzalez, A. M., Hoffman, J. R., Rogowski, J. P., Burgos, W., Manalo, E., Weise, K., Fragala, M., S., & Stout, J. R. (2013). Performance changes in NBA basketball players vary in starters vs. nonstarters over a competitive season. *Journal of Strength and Conditioning Research*, 27(3), 611–615. <https://doi.org/10.1519/JSC.0b013e31825dd2d9>
- Gonzalez, A. M., Hoffman, J. R., Scallin-Perez, J. R., Stout, J. R., & Fragala, M. S. (2012). Performance changes in national collegiate athletic association division I women basketball players during a competitive season: Starters vs nonstarters. *Journal of Strength and Conditioning Research*, 26(12), 3197–3203. <https://doi.org/10.1519/JSC.0b013e318273665d>
- Gravina, L., Gil, S. M., Ruiz, F., Zubero, J., Gil, J., & Irazusta, J. (2008). Anthropometric and physiological differences between first team and reserve soccer players aged 10–14 years at the beginning and end of the season. *Journal of Strength and Conditioning Research*, 22(4), 1308–1314. <https://doi.org/10.1519/JSC.0b013e31816a5c8e>
- Güllich, A. (2014). Selection, de-selection and progression in German football talent promotion. *European Journal of Sport Science*, 14(6), 530–537. <https://doi.org/10.1080/17461391.2013.858371>
- Hammond, K. R., Stewart, T. R., Brehmer, B., & Steinmann, D. (1975). Social judgment theory. In M. F. Kaplan & S. Schwartz (Eds.), *Human judgment and decision processes* (pp. 271–312). Academic Press.
- Hammond, K. R. (1996). *Human judgment and social policy: Irreducible uncertainty, inevitable error, unavoidable injustice*. Oxford University Press.
- Harvey, S., Lyle, J. W. B., & Muir, B. (2015). Naturalistic decision making in high performance team sport coaching. *International Sport Coaching Journal*, 2(2), 152–168. <https://doi.org/10.1123/iscj.2014-0118>
- Hoffman, J. R., Ratamess, N. A., Neese, K. L., Ross, R. E., Kang, J., Magrelli, J. F., & Faigenbaum, A. D. (2009). Physical performance characteristics in national collegiate athletic association division III champion female lacrosse athletes. *Journal of Strength and Conditioning Research*, 23(5), 1524–1529. <https://doi.org/10.1519/JSC.0b013e3181b3391d>
- Holtgraves, T. (2004). Social desirability and self-reports: Testing models of socially desirable responding. *Personality and Social Psychology Bulletin*, 30(2), 161–172. <https://doi.org/10.1177/0146167203259930>
- Holtgraves, T. M., & Kashima, Y. (2008). Language, meaning, and social cognition. *Personality and Social Psychology Review*, 12(1), 73–94. <https://doi.org/10.1177/1088868307309605>
- Johansson, A., & Fahlén, J. (2017). Simply the best, better than all the rest? Validity issues in selections in elite sport. *International Journal of Sports Science & Coaching*, 12(4), 470–480. <https://doi.org/10.1177/1747954117718020>
- Kahneman, D. (2003). A perspective on judgment and choice: Mapping bounded rationality. *American Psychologist*, 58(9), 697–720. <https://doi.org/10.1037/0003-066X.58.9.697>
- Kahneman, D., Slovic, P., & Tversky, A. (Eds.). (1982). *Judgment under uncertainty: Heuristics and biases*. Cambridge University Press.

- Kavussanu, M., & Hodge, K. (2019). The coach's role on moral behaviour in sport. In R. Thelwell & M. Dicks (Eds.), *Professional advances in sports coaching* (pp. 166–180). Routledge.
- Kidman, L., & Lombardo, B. J. (2010). Being athlete-centred: The humanistic coach. In L. Kidman & B. J. Lombardo (Eds.), *Athlete-centred coaching: Developing decision makers* (2nd ed., pp. 11–34). IPC Resources.
- Klein, G. A. (1989). Recognition-primed decisions. In W. B. Rouse (Ed.), *Advances in man-machine systems research* (Vol. 5, pp. 47–92). JAI Press.
- Lawton, T. W., Cronin, J. B., McGuigan, & McGuigan, M. R. (2013). Factors that affect selection of elite women's sculling crews. *International Journal of Sports Physiology and Performance*, 8(1), 38–43. <https://doi.org/10.1123/ijsp.8.1.38>
- Le Rossignol, P., Gabbett, T. J., Comerford, D., & Stanton, W. R. (2014). Repeated-sprint ability and team selection in Australian Football League players. *International Journal of Sports Physiology and Performance*, 9(1), 161–165. <https://doi.org/10.1123/ijsp.2013-0005>
- Levac, D., Colquhoun, H., & O'Brien, K. K. (2010). Scoping studies: Advancing the methodology. *Implementation Science*, 5(1), 1–9. <https://doi.org/10.1186/1748-5908-5-69>
- Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P. A., Clarke, M., Devereaux, P. J., Kleijnen, J., & Moher, D. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: Explanation and elaboration. *Methods of Systematic Reviews and Meta-Analysis*, 62(10), E1–E34. <https://doi.org/10.1016/j.jclinepi.2009.06.006>
- Lombard, W. P., Durandt, J. J., Masimla, H., Green, M., & Lambert, M. I. (2015). Changes in body size and physical characteristics of South African under-20 rugby union players over a 13-year period. *Journal of Strength and Conditioning Research*, 29(4), 980–988. <https://doi.org/10.1519/JSC.0000000000000724>
- Lyle, J., & Vergeer, I. (2013). Recommendations on the methods used to investigate coaches' decision making. In P. Potrac, W. D. Gilbert, & J. Dennison (Eds.), *The Routledge handbook of sports coaching* (pp. 121–132). Routledge.
- Lyle, J., & Muir, B. (2020). Coaches' decision making. In D. Hackfort & R. J. Schinke (Eds.), *The Routledge international encyclopedia of sport and exercise psychology: Volume 2: Applied and practical measures* (pp. 135–153). Routledge. <https://doi.org/10.4324/9781315187228>
- Lyle, J., & Cushion, C. J. (2017). *Sports coaching concepts: A framework for coaching practice* (2nd ed.). Routledge.
- Manktelow, K. (2012). *Thinking and reasoning: An introduction to the psychology of reason, judgment and decision making*. Psychology Press.
- Mayhew, J. L., Wolfe, D. R., & McCormick, T. (1987). Determination of starters on a college football team from speed, strength, and power measurement. *Journal of Strength and Conditioning Research*, 1(3), 143–147.
- Nash, C., & Collins, D. (2006). Tacit knowledge in expert coaching: Science or art? *Quest*, 58(4), 465–477. <https://doi.org/10.1080/00336297.2006.10491894>
- Neely, K. C., McHugh, T. L. F., Dunn, J. G. H., & Holt, N. L. (2017). Athletes and parents coping with deselection in competitive youth sport: A communal coping perspective. *Psychology of Sport and Exercise*, 30, 1–9. <https://doi.org/10.1016/j.psychsport.2017.01.004>
- Nutton, R. W., Hamilton, D. F., Hutchison, J. D., Mitchell, M. J., Simpson, A. H. R. W., & MacLean, J. G. B. (2012). Variation in physical development in schoolboy rugby players: Can maturity testing reduce mismatch? *BMJ Open*, 2(4), e001149. <https://doi.org/10.1136/bmjopen-2012-001149>

- Olusoga, P., Bentzen, M., & Kentta, G. (2019). Coach burnout: A scoping review. *International Sport Coaching Journal*, 6(1), 42–62. <https://doi.org/10.1123/iscj.2017-0094>
- Oorschot, S., Chiwaridzo, M., & Smits-Engelsman, B. C. M. (2017). Psychometric evaluation of commonly used game-specific skills tests in rugby: A systematic review. *BMJ Open Sport & Exercise Medicine*, 3(1), e000281. <https://doi.org/10.1136/bmjsem-2017-000281>
- Podlog, L., & Eklund, R. C. (2007). Professional coaches' perspectives on the return to sport following serious injury. *Journal of Applied Sport Psychology*, 19(2), 207–225. <https://doi.org/10.1080/10413200701188951>
- Potrac, P., Brewer, C., Jones, R., Armour, K., & Hoff, J. (2000). Toward an holistic understanding of the coaching process. *Quest*, 52(2), 186–199. <https://doi.org/10.1080/00336297.2000.10491709>
- Potrac, P., Jones, R. L., & Cushion, C. J. (2007). Understanding power and the coach's role in professional English soccer: A preliminary investigation of coach behaviour. *Soccer and Society*, 8(1), 33–49. <https://doi.org/10.1080/14660970600989509>
- Raab, M., Bar-Eli, M., Plessner, H., & Araújo, D. (2019). The past, present and future of research on judgment and decision making in sport. *Psychology of Sport and Exercise*, 42, 25–32. <https://doi.org/10.1016/j.psychsport.2018.10.004>
- Renshaw, I., Davids, K., Newcombe, D., & Roberts, W. (2019). *The constraints led approach principles for sports coaching and practice design*. Routledge.
- Rhodes, M. G. (2009). Age estimation of faces: A review. *Applied Cognitive Psychology*, 23(1), 1–12. <https://doi.org/10.1002/acp.1442>
- Ronkainen, N. J., Aggerholm, K., Ryba, T. V., & Allen-Collinson, J. (2020). Learning in sport: From life skills to existential learning. *Sport, Education and Society*, 26(2), 1–14. <http://doi.org/10.1080/13573322.2020.1712655>
- Rothwell, M., Stone, J. A., Davids, K., & Wright, C. (2017). Development of expertise in elite and sub-elite British rugby league players: A comparison of practice experiences. *European Journal of Sport Science*, 17(10), 1252–1260. <https://doi.org/10.1080/17461391.2017.1380708>
- Rylander, P. (2016). Coaches' bases of power and coaching effectiveness in team sports. *International Sport Coaching Journal*, 3(2), 128–144. <http://dx.doi.org/10.1123/iscj.2015-0046>
- Sampaio, J., Ibáñez, S., Lorenzo, A., & Gómez, M. (2006). Discriminative game-related statistics between basketball starters and nonstarters when related to team quality and game outcome. *Perceptual and Motor Skills*, 103(2), 468–494. <https://doi.org/10.2466/pms.103.2.486-494>
- Scanlan, A. T., Tucker, P. S., & Dalbo, V. J. (2015). The importance of open- and closed-skill agility for team selection of adult male basketball players. *The Journal of Sports Medicine and Physical Fitness*, 55(5), 390–396. <https://pubmed.ncbi.nlm.nih.gov/26068324/>
- Schmidt, D. W. (1999). Strength and physiological characteristics of NCAA Division III American football players. *Journal of Strength and Conditioning Research*, 13(3), 210–213. [http://doi.org/10.1519/1533-4287\(1999\)013<0210:SAPCON>2.0.CO;2](http://doi.org/10.1519/1533-4287(1999)013<0210:SAPCON>2.0.CO;2)
- Schön, D. A. (1987). *Educating the reflective practitioner*. Jossey-Bass.
- Sparkes, A. C., & Smith, B. (2014). *Qualitative research methods in sport, exercise and health: From process to product*. Routledge.
- Stanovich, K. E., & West, R. F. (2000). Individual differences in reasoning: Implications for the rationality debate? *Behavioral and Brain Sciences*, 23(5), 645–665. <https://doi.org/10.1017/S0140525X00003435>
- Thelwell, R., & Dicks, M. (2019). *Professional advances in sports coaching*. Routledge.

- Thissen-Milder, M., & Mayhew, J. L. (1991). Selection and classification of high school volleyball players from performance tests. *The Journal of Sports Medicine and Physical Fitness*, 31(3), 380–384. <https://pubmed.ncbi.nlm.nih.gov/1798309/>
- Till, K., Darrall-Jones, J., Weakley, J. J., Roe, G. A., & Jones, B. L. (2017). The influence of training age on the annual development of physical qualities within academy rugby league players. *Journal of Strength and Conditioning Research*, 31(8), 2110–2118. <https://doi.org/10.1519/JSC.0000000000001546>
- Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science*, 185(4157), 1124–1131. <https://doi.org/10.1126/science.185.4157.1124>
- Vinson, D., Brady, A., Moreland, B., & Judge, N. (2016). Exploring coach behaviours, session contexts and key stakeholder perceptions of non-linear coaching approaches in youth sport. *International Journal of Sports Science & Coaching*, 11(1), 54–68. <https://doi.org/10.1177/1747954115624824>
- Wang, J., Callaghan, D., & Goldfine, B. (2001). Coaches' challenges working with substitute players of collegiate team sports. *Applied Research in Coaching and Athletics Annual*, 16, 110–124. <https://www.americanpresspublishers.com/ARCAAContents2001.html>
- Wasserman, E. A., & Miller, R. R. (1997). WHAT'S ELEMENTARY ABOUT ASSOCIATIVE LEARNING? *Annual Review of Psychology*, 48(1), 573–607. <https://doi.org/10.1146/annurev.psych.48.1.573>
- Wattie, N., Schorer, J., & Baker, J. (2015). The Relative Age Effect in Sport: A Developmental Systems Model. *Sports Medicine*, 45(1), 83–94. <https://doi.org/10.1007/s40279-014-0248-9>
- Williams, A. M., & Jackson, R. (2019). *Anticipation and decision making in sports*. Routledge.
- Woods, B., & Thatcher, J. (2009). A qualitative exploration of substitutes' experiences in soccer. *The Sport Psychologist*, 23(4), 451–469. <https://doi.org/10.1123/tsp.23.4.451>
- Young, W. B., Newton, R. U., Doyle, T. L. A., Chapman, D., Cormack, S., Stewart, G., & Dawson, B. (2005). Physiological and anthropometric characteristics of starters and non-starters and playing positions in elite Australian Rules football: A case study. *Journal of Science and Medicine in Sport*, 8(3), 333–345. [https://doi.org/10.1016/S1440-2440\(05\)80044-1](https://doi.org/10.1016/S1440-2440(05)80044-1)