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Citation: Vickery, Will and Nichol, Adam (2020) What actually happens during a practice session? A coach's perspective on developing and delivering practice. *Journal of Sports Sciences*, 38 (24). pp. 2765-2773. ISSN 0264-0414

Published by: Taylor & Francis

URL: <https://doi.org/10.1080/02640414.2020.1799735>  
<<https://doi.org/10.1080/02640414.2020.1799735>>

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**Title:** What actually happens during a practice session? A coach's perspective on developing and delivering practice.

**Running Title:** Understanding cricket practice design

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Abstract word count: 193

Manuscript word count: 6863

## **Abstract**

Despite the considerable role coaches play in the development and performance of athletes, the manner in which (i.e., *how* and *why*) they develop and implement their practice sessions is mostly unknown. The disconnect between practice and match environments within the sport of cricket makes it challenging for coaches to provide practice environments that encourage player development, are engaging, and allow for transferability. This study looked to gain insight, from the perspective of the coach, into the type of practice environments and activities that cricket coaches use and why. In-depth, semi-structured interviews were conducted with ten cricket coaches followed by thematic analysis to interpret the data. Cricket coaches used a mixture of Training and Playing Form activities, with net-based activities the most common. Regardless of the type of practice, the use of various specialised equipment was also prevalent. Developing game awareness and technical skill were the main practice objectives noted by coaches. Various external and internal factors were also suggested to impact on the development and implementation of practice environments. Findings provide novel insights into *how* and *why* coaches operationalise their practice (design) in ways which are perhaps incongruent with recommendations in current literature.

**Keywords:** Training; representative design; constraints-led; coaching behaviour

## Introduction

Regardless of the sport, playing level, or stage of an athlete's life, to be successful a significant proportion of time must be spent practicing. For many sports though, information surrounding the type of practice environment and activities that athletes take part in is limited. Only Low, Williams, McRobert and Ford [1] have specifically reported data on the practice structure of cricket. Here, the majority of time spent training by adolescent players fell within Training Form activities (e.g., isolated combinations of game actions with or without focus on technical and tactical skills) when compared to Playing Form activities (e.g., small-sided games) [2]. As noted by the authors, the large amount of time dedicated by coaches to Training Form activities contradicts current recommendations surrounding the integration of more random or variable practice types (e.g. Playing Form) that some, in contrast, consider to be optimal for the purposes of skill acquisition [3]. Specifically, it is argued that by making *greater* use of more random or variable practice types (in comparison to greater use of blocked or constant practice), athletes are afforded with greater opportunities to couple their perception and action. Cushion, Ford, and Williams [4] volubly suggested that such a theory-practice divide could be explained by coaches designing practice based upon their experiences of being coached as an athlete, or by short-term coach education programmes failing to provide opportunities to change or shape perceptions about practice design. However, without a greater appreciation of *how* and *why* coaches design training in particular ways (from the perspective of the coach) we lack a wider understanding of *how* and *why* everyday practice(s) are (in)congruent with recommendations provided by contemporary research. Indeed, here it is important to understand specific contextual challenges faced by practitioners in operationalising practice design. More detailed and nuanced evidence in this area, therefore, holds potential to close the gap between theory and practice.

Despite the array of training methods and tools currently available and used for the purposes of athlete development [5-7], one factor which is possibly more pertinent to performance within the practice environment than any other, is the influence of the coach. Much has been

published on the manner in which coaches acquire, develop, and use the knowledge they possess [8-15]. Even though a large amount of information exists relating to coaching knowledge, research surrounding the specific knowledge that coaches possess about practice design is sparse. Among the limited pool of work which has explored coaches' perceptions of practice design, Clemente, Martins, and Mendes [16] reported that association football coaches utilised their knowledge and understanding of specific practice design (e.g., small-sided games to increase physiological demands experienced by players). Otte, Millar, and Hüttermann [17] more recently highlighted typical approaches to association football goal-keeping employed by expert coaches for the purposes of skill acquisition. Despite advocating a need to create (match) representative practice environments, most of the coaches interviewed tended to use non-representative forms of practice design, thus providing limited opportunities for decision-making.

This type of non-representative practice environment is not uncommon within other sports, despite the suggestion against the use of high levels of training form activities when compared to representative environments [1, 18, 19]. Many authors have advocated for practitioners to consider taking a constraints-led approach [20, 21], in an effort to provide athletes with more random or variable practice environments which simulate the informational constraints likely to be encountered during competition [22]. Indeed, rather than viewing skill acquisition as a linear, mechanistic process whereby skills are learned in isolation and then 'applied' to a game, a constraints-led approach would argue that skills are learned and developed in and through emergent interactions with our environment [22, 23]. Consistent with a dynamical systems approach, three main types of constraint interact to produce behaviour or performance: a) organismic, b) environmental, and c) task. By affording athletes with opportunities to practice in environments which present the same (or similar) types of constraints (to those in a game), it is suggested that athletes are provided opportunities to better able to perceive relevant affordances, and, accordingly, couple their actions with the aim of transferring this into match settings [20]. However, little is known about how coaches

perceive the implementation of such practice types. Indeed, there is a lacuna of information surrounding the challenges which practitioners face in attempting to operationalise more random or variable practice types. Clearly a broader range of perspectives from coaches (within different sports) are required, in order to provide more nuanced and situated insights which can be used to better understand the deployment of specific practice types and *how* or *why* this might be effective (or not) within different contexts. Given the limited data that exists concerning coaches' knowledge of practice design, the objective of this study was to form a clearer picture of *how* (i.e., how coaches (thought they) designed their practices in particular ways) and *why* coaches plan and operationalise their practice sessions as they do.

## **Method**

### ***Participants***

Purposeful sampling was used to recruit cricket coaches from various parts of the world. To be included within the study each coach was required to meet the following criteria: a) Have a minimum of three years cricket coaching experience, b) Currently working within an academy-level environment or higher, and c) Currently hold a minimum of an England and Wales Cricket Board Level 3 accreditation (or the participant's country's equivalent). Ten cricket coaches took part in the study ranging in both age (29-57 y) and coaching experience (5-28 y). Each coach worked in a youth development environment (age range of players was 15-21 y) which included cricket-specific academies, private schools, or state-based representative teams. The involvement that each coach had with their players varied, however, each was involved with their players for a minimum of three training sessions per week during the playing season, in addition to attendance at matches. Although each coach worked in a different environment and location, the underlying training objectives of each focused on the holistic development of their players in order to provide opportunities for self-improvement both in the short- and long-term. Prior to the manuscript being submitted and upon the request of one of the coaches, their responses from the semi-structured interviews were removed, meaning the total number of coaches involved decreased to nine.

## **Procedure**

Based on the *a priori* knowledge of the lead researcher, a semi-structured interview schedule was drafted before performing a number of pilot interviews with experienced cricket coaches. Importantly, in line with the research questions (to explore perceptions of *how* and *why* coaches design practice from their own perspective), authors did not employ a specific theoretical framework to generate the interview questions. Doing so would have limited the power of the dataset and participants' responses, by meaning that findings were deductively collected and shoehorned into a particular framework. Allowing the dataset to 'speak for itself', while remaining cognisant of previous theory was considered to be a strength of the research approach, which allowed us to engage with, challenge or refine (and generate fresh) theoretical insights [24]. Typical questions included: 'Describe the types of activities you would typically use during a training session' and 'what influences you to use [x] when planning and developing a training session?'. Minor changes were made to the original interview schedule (e.g., to explore pressures faced by coaches). Using in-depth, semi-structured interviews allowed each participant to discuss and elaborate on their own personal experiences regarding the research topic [25]. Each semi-structured interview was performed either in person or via video link with the lead researcher. Interviews lasted between 129-233 min; 25 h of interview data were collected in total. To ensure the information elicited from the interviews was sufficiently detailed to address the research aims, probe questions were also utilised. The interview questions were ordered and designed around the *how* and *why* of:

1. Coaching knowledge and experience.
2. The design and implementation of cricket training sessions.
3. The link between cricket training and match-performance.

## **Data Analysis**

All interviews were digitally recorded and transcribed verbatim. Thematic analysis was conducted to search for “*patterns of meaning*” across the data set [26]. Here, the emphasis was to split transcripts into segments that represented contextual explanations of *how* and *why* coaches designed practice as they did. Importantly, in line with the qualitative approach adopted, the purpose of this analysis was not to generate a set of definitive concepts which could be transferred into all coaching contexts. Instead, in line with the research questions, the analysis developed interpretations of data and (previous) theory which provide an opportunity to *think with* and *reflect upon how* and *why* coaches design practice, and how this might have implications for different coaching contexts or stakeholders [27].

A six-stage process, using both an inductive and deductive reading of the data was implemented [26, 28]. Initially, the lead researcher engaged in a period of familiarisation and immersion within the data, making notes related to potential themes. Following this, codes were generated based on the text from the transcripts alongside the creation of ‘analytical memos’ to make connections between the data and how it connected to previous work/theory [29]. Subsequently, codes were grouped to represent prominent themes which related to the research question. During the next stage, themes were reviewed based on the nature of relationships between them. Themes were then constructed into a thematic network and each theme was subsequently named and defined (Figures 1-3). To ensure anonymity, each coach was assigned an identifier (C1-C9). In line with contemporary recommendations to develop quality and rigour in qualitative work, the researchers engaged with critical friends and member reflections [30]. Here, themes (and their interpretations) were discussed with critical friends and participants throughout the project to reflexively consider the pertinence of findings in line with the research questions.

## **Results**

Following thematic analysis of the data, a total of twenty lower-order themes, eight higher-order themes and three dimensions were identified. The three dimensions include *Practice Structure*, *Practice Objectives*, and the *Factors Impacting on Practice* (see Figures 1-3).

#### *Practice Structure (How)*

A typical practice environment included the use of either turf or synthetic cricket nets (or a combination of both), typically used for batting and bowling development, and a larger, more open space mostly for the development of fielding. In some cases, coaches also had access to a turf or synthetic pitch where centre-wicket practice could be performed:

*“... split guys up into, typically, what we have is two grass nets and then the machine net. Generally speaking, it would be a seamers net, spinner’s net or a fast and slow net. The two batters in each net, crossing every three balls or whatever it is.” (C5)*

**\*\*INSERT FIGURE 1 ABOUT HERE\*\***

Various activities used by the coaches within these practice environments could be classified as either *Training Form* or *Playing Form* (see Figure 1). The use of *drills* (repetitive activities) and net-based activities appeared to be the most common Training Form activity, with each coach advocating their use during practice (when compared to the use of other training methods mentioned by the coaches). This was not limited to any one specific aspect of cricket, however, the use of drills for the purpose of increasing the volume of fielding-specific skills appeared to be common across coaches:

*“The outside, we’ll do more groundwork, we’ll do more high catching obviously. Again, volume is a bit more useful I think in fielding in that you can do a lot in a short time.” (C7)*

A derivation of net-based activities was the use of *scenarios*. In these instances, practice still had a focus on skill-specific development, however, coaches explained that they tried to create

match-like situations within the net-based environment to provide some context/relevance to a game: “*Maybe we throw out a scenario where everyone who’s batting, we’re 4/15.*” (C4). In attempt to alleviate challenges constraining a coach’s ability to use greater volumes of Playing Form activities, coaches instead often tried to provide a picture of what the players would likely encounter *if they were* in a match situation: “*And I would say, hey, there’s no backward point [fielding position], there is only a slip [fielding position], try it.*” (C4). Coaches also used net-based environments to try and recreate various time points and associated circumstances of a match:

*“They’ll bowl the 6 overs based off their role in the team, whether they’re bowling with the new ball, they’ll have a new ball or an old ball for a change bowler. They’ll bowl two spells, I’ll break their session up in to 2 sets, new and old, whatever it may be.”* (C8)

The majority of coaches also employed the use of *consequence* training in a Training Form environment. Here, the objective was to create a pressurised situation for the players to perform with some consequence if they could not perform the specific skill to the required level. These consequences mostly impacted players either physically: “*...I [the players] may have to run 20 shuttles with my [their] kit on.*” (C4) or had implications on the length of time they were able to practice “*If you’re out, you’re out...so my session could end in 5 minutes or it can last an hour and a half.*” (C6).

The *Playing Form* environment was completed outside of the nets, utilising either the entirety of a centre-wicket set-up (*match-replication*) or a smaller section of this (*scenarios*). When looking to replicate a match, coaches tended to use this as an opportunity for players to develop not only their technical skills, but also their tactical and decision making ability:

*“...it’s just trying to replicate as much as closely as possible to the situation they’re going to come across in a match. There’s the technical, mechanical component, and also the dealing with performance pressure component.”* (C1)

This practice structure, though, was not simply about playing a practice match. In most cases it involved having the players focus on a particular aspect of their game (e.g., “*anticipation of the bat [for fielders]*” C7). *Scenarios* were also commonly used as part of the Playing Form practice activities. These were often performed on a modified centre-wicket set-up (e.g. “*...cut off half the field in terms of putting a net up.*” C1) or a space unlike the net-based structure (e.g. “*...sometimes on a hockey court or a tennis court.*” C2). The purpose of these scenarios was to provide context to the players whilst they were developing cricket-specific skills:

*“So as much as possible I try to create environments where they were going to be similar visual cues, not necessarily with a bowler coming in, but for someone perhaps throwing a ball, or someone playing a cut shot or a pull shot or a cover drive.” (C1)*

Although not specifically part of the structure of a cricket practice environment, the majority of coaches noted that the use of various *equipment and technology* also played an important role in what practice looked like. The most commonly used piece of equipment was a ball projection machine with many coaches suggesting that its inclusion was mostly for “*convenience*” (C7) and to minimise the workload of their bowlers. In many cases, coaches would include a net during Training Form activities that only included the use of a ball projection machine. The use of a side-arm® (training aid) was another common piece of equipment used in place of a live bowler during Training Form activities. Many coaches also used equipment to *modify* the practice environment with the intention of creating a match-specific environment. C2 in particular, highlighted how various flooring surfaces were used to create match environments that players may not be accustomed to:

*“...we’ve got a lot of mats and carpets...that the main way we do it...change in the surface really is great, particularly from a spin perspective because actually, it gives these guys something they really don’t get that in [location]...they just don’t get exposure to wickets that turn and bounce or even turn and keep low”.*

A number of coaches also emphasised how video footage plays an important role in how a practice session is structured. This was not specific to one type of practice structure, with

many including the use of video footage as a means to provide information regarding a player's performance, before adapting the practice environment to allow for development. Most coaches also noted the inclusion of practice that was focused on the *physical conditioning or rehabilitation* of their players in addition to cricket-specific practice. These sessions tended to either be performed alongside cricket-specific activities (e.g. "*While those guys are bowling, the other two guys are getting to that net or probably working on a bit of agility, medicine ball, whatever it is...*" C5), or as a separate part of the overall practice session.

#### *Practice Objectives and Factors Impacting Practice (Why)*

Unsurprisingly, one of the key areas of focus for the coaches during cricket practice was the development of *cricket-specific skills* (see Figure 2), with improving a player's *technical skills* identified as one of the main objectives. Coaches suggested that the inclusion of technical skill development was usually centred on one particular aspect of a cricket-specific skill (i.e. batting, bowling, or fielding), "*...we would be very skill-focused in working on a cover drive or cut or yorker...*" (C1), with the purpose of this type of training activity to develop the execution of specific movements, "*Winters a lot of focus on being in good position, strong head position, hitting the ball late, really emphasising that.*" (C6).

**\*\*INSERT FIGURE 2 ABOUT HERE\*\***

The main objective of practice though appeared to be the development of a player's *game awareness*. Each of the coaches highlighted a number of areas relating to game awareness that they tried to incorporate within their practice sessions such as decision-making ("*...even if it's just a simple decision to make, we must have some element of decision-making.*" C1), and communication between players ("*I want one and two to bat together, three and four, again, just to enhance that relationship, to develop communication.*" C9). The coaches noted the importance of including game awareness into their practice sessions as a way to allow their players to perform various technical skills within a specific context that they may face

when competing in a match, or to think about what might be required during a specific match situation, as highlighted by C6, *“Spinners being able to set a plan, set a trap, understanding what fields are attacking, what fields are defensive, what fields are defensive attacking”*.

Another objective of practice was to include some element of psychological development, particularly those working with youth athletes. Instilling confidence within players appeared to be a major priority for these coaches, with this either focused on players becoming confident in performing a specific skill (*“...confidence to catch the ball, confidence to just throw your body around.”* C6), or creating an environment in which players became more confident about their own ability:

*“For me, the purpose of the batting session is to make sure that when you as a player leave the session, that the three or four things you as a batter need to be doing every ball, that you’ve done those in the session. You leave that session confident within your, I suppose the controllables, what I can control. As long as I’m leaving the session, I’m confident in that, then I think it’s good because you’re not always going to nail the, I suppose the situation.”* (C4)

Trying to create situations that placed the players under pressure was another main objective of practice. Specifically, coaches looked to tailor practice types (e.g., Training Form) to ensure players experienced nuanced match situations in order to understand how they should perform. C4, in particular, noted the importance of having players experience pressurised situations and how this would impact on match performance: *“If we’re not replicating what’s happening in a game, then how can we expect our players to be able to manage those situations in game time?”*.

The coaches employed a number of methods to try to incorporate pressure into training. The most common method appeared to be the inclusion of competition,

*“Again fielding under pressure, 2 minutes you want to hit the stumps 6 times in this drill, the first group take X amount of catches, the first group to hit the stump X amount of times etcetera, etcetera.”* (C4)

Although only highlighted by a small number of coaches, the final psychological objective included during practice was the development of *culture* (or a player's '*character*'). A small number of coaches looked to create a practice environment that was fun and enjoyable but struggled to articulate what impact this might generate on a player's performance, or how this was linked to practice design. C6 in particular, used practice as a means to strengthen the relationship or bond between the players,

*"...developing your team culture, um, and really embracing that and creating that really finely tuned brotherhood, because you're going to need to be out there every day together, they're going to be in each other's faces for 5 days."*

Coaches also highlighted that practice sessions included a *physical conditioning* objective. This was achieved by having players perform various practice activities at either match-intensity or intensity which aimed to replicate the demands of a typical cricket match. Alternatively, coaches physically fatigued players, with the intention of testing to see whether they could still perform required cricket-specific skills.

**\*\*INSERT FIGURE 3 ABOUT HERE\*\***

Primarily, a number of *external* and *internal* factors (see Figure 3) seemed to impact on why coaches structured their practice in specific ways. Every coach suggested that the *engagement of the players* or the access that these players had to training were the main factors in shaping practice. Since many of the coaches worked in an academy environment, typically with younger athletes, one of the main contributors to (a lack of) player engagement was the various other priorities that these athletes were likely to have, such as school commitments and other sports that they may also be playing. Another major contributor to practice structure was the (standard of) *facilities* available to the coaches, with many coaches

identifying the difficulty in trying to replicate the demands of a cricket match (i.e., technical and game awareness) in a confined environment,

*“You’re extra limited in what you can do when you are inside, so there’s certain things which you almost have to write off completely and other things where you have to just do your best with what you have. The sports hall is a constrained space within itself and then within that hall the nets are even more constrained.”*  
(C7)

*Culture* was an additional factor that impacted on the type of practice employed by coaches (e.g., the perceptions of players toward certain practice types). This sometimes presented challenges to the coaches in terms of balancing the type of practice that players *preferred* (to increase engagement) with the type of practice that coaches felt players *needed* (to improve) (*“I’ve probably found that here in terms of the approach to fielding [specific demographic] players are not as excited about fielding, not as interested or engaged.”* C1). As a result of working with youth athletes as well, some coaches felt pressure from parents to deliver specific practice types (*“...parents will ask you, “Okay, this is all games, they’re playing great but when are you going to start working on technique?”* C7). Other less common external factors that some of the coaches suggested had an impact on practice included the *weather*, the upcoming *match*, and the *governing body* that oversees or employs the coach and players. Only two coaches suggested that *internal* factors (i.e., coaches’ personal circumstances), had an impact on practice. C2 suggested that their own challenges and factors that might influence their own well-being may then transfer into how they interact with their athletes or what might be involved during a practice session,

*“My ability to listen to the athlete I think changes daily depending on the time of the day where I’m at. I’d like to think I’m always trying to listen...after a long day it’s going to be harder for me to display and self-control that you need to listen and provide your feedback to the player.”*

## **Discussion**

The aim of this research was to provide insights into *how* cricket coaches develop and implement their practice sessions, as well as *why* they use these specific methods. Unsurprisingly, the most commonly used practice environment by cricket coaches was perceived to be Training Form activities (i.e., net-based drills and scenarios for batting and bowling, in addition to specific fielding drills), as opposed to Playing Form activities (i.e., centre-wicket practice). Much of the current literature surrounding practice design advocates for greater use of Playing Form activities (in conjunction with other practice types), mainly due to the increased opportunity to develop various skills in response to specific affordances and contextual information presented in a match environment [2, 31]. The majority of research regarding practice design and encouraging Playing Form, though, is grounded within team-based field-sports (e.g. soccer, rugby) [4, 32, 33], that utilise open-space practice environments and are more easily transformed and manipulated to suit practice objectives. Cricket, though, requires much more space for this type of environment to be achieved, especially if trying to perform activities representative of a full-sided match [1]. The limited access to training facilities that allowed for a more match-representative training environment was felt to be a key barrier in a coach's ability to design such practice types in the current study.

Despite barriers and limitations to the increased use of more representative practice environments and activities, the coaches in this study were aware of the advantages these would bring for their players and noted that, given the chance, they would include this type of training more often (*"I'd love to get out of the nets more and I'd love to be in the middle practice more, I'd love to be on the grass more."* C7). Generally, coaches perceived representative games to be more impactful on the development of their players through creating opportunities for more than just technical skill improvement, but were constrained in their ability to use such (full-sided) training formats. Building upon the work of Cushion et al. [4], who suggested that coaches' practice design is heavily influenced by previous observations of coaching (e.g., as an athlete) and coach education programmes, our study suggests that, even where coaches

are aware of the merits of contemporary practice design recommendations from literature, they may be unable to operationalise greater levels of these practice types. Indeed, this is often due to specific contextual constraints faced by coaches (identified earlier in the results section), such as the available facilities, perceived pressures from other stakeholders, and the engagement of the players (e.g. how many athletes attend practice).

To overcome a perceived inability to use greater Playing Form activities, many of the coaches included scenario-based training, particularly when restricted to the nets for the development of batting and bowling. This is not uncommon, as the use of scenario-based training within cricket has previously been suggested as a beneficial environment for the development of game-awareness [34-36]. As game-awareness appeared to be of high importance, providing an environment where characteristics such as decision-making could be developed alongside the technical skills associated with cricket was perceived to be ideal. Due to the difficulty faced in replicating match-specific scenarios (as a result of often being restricted in their capacity to implement Playing Form activities), coaches within the current study often employed a constraints-led approach to their practice sessions in order to create a *more* representative environment. Evidence now exists which documents that this type of environment is more conducive to coupling the perceptual and cognitive skills of players to their actions or motor skills [37-40]. Therefore, following a constraints-led approach which looks to replicate a match as closely as possible, but within a more structured (Training Form) environment, may provide an advantageous and accessible environment for coaches to work in to develop a player's game-awareness. Here, careful consideration is required of how constraints are representative of the game is required. For example, when creating scenarios using net-based activities, the batter may be able to respond to affordances from a live bowler, but may then be unable to perceive whether the ball that they have struck has gone past a fielder (and whether they should run or not).

In addition to game-awareness, coaches also identified the development of a player's cricket-specific technical skill as a major focus of their practice sessions. In most cases this related to the technique involved in either batting or bowling, typically within a net-based environment, although, players were still afforded the opportunity to complete this training in a scenario-based or match-representative environment. Again the use of various constraints were used to provide players with different scenarios to develop their cricket-specific skills. On occasion, coaches did note that when batting or bowling, specific technical characteristics were essential to optimal performance, however, there was no indication that players were expected to conform to a specific or "idealised" technique, unlike players within the study conducted by Otte et al. [17]. This aligns with much of the current skill acquisition literature, which encourages coaches to shape practice design in ways which allow athletes to develop functional movement variability [41, 42]. Opposing this, though, was the use of ball projection machines and training aides, typically used for batting development by most of the coaches. Here, coaches often used ball projection machines for their perceived ability to develop the technique of specific shots with high levels of repetition. The use of ball projection machines, however, limits the coupling of perception to movement amongst batters when compared to batting against a live bowler [43, 44]. As Pinder [45] states, batters in this instance (although this can transfer to other playing positions) should be provided with a practice environment which affords them an opportunity to learn and develop appropriate behaviours in a match representative environment.

Possibly the most significant finding arising from interviews was the similarity in the structure of the practice sessions (and/or components of the practice sessions) and the overall environment in which the current coaches trained their players. As previously mentioned, only Low et al. [1] has reported on the practice activities used by cricket coaches, highlighting a reliance on Training Form activities. Although the current study did not systematically observe coaches' direct practice, it appears that this reliance on Training Form activities remains. This is even more significant given that coaches of the current study were working within a more

performance-oriented setting, suggesting that the ability level of the athletes does not appear to vastly change the manner in which coaches structure their practice. This is not uncommon as high-performance players within other sports, such as rugby union, also seem to participate in a high amount of Training Form practice environments that provide a narrow landscape of affordances [46]. Perhaps this highlights that, despite in some cases wanting to employ greater levels of Playing Form activities, coaches often feel unable to do so as a result of constraints or pressures (e.g., the fact that athletes will get fewer opportunities to develop skill individually in a game or as a result of limited space). This finding resonates with the work of Jones and Wallace [47] who introduced the metaphor of coaches as 'orchestrators'. Here, it is suggested that, rather than being a straightforward, rationalistic endeavour, coaching is instead imbued with ambiguity, uncertainty, and pathos [48]. Specifically, pathos refers to a gap between goals that have been set by coaches and their actual ability to achieve these goals in practice [47]. Coaches orchestrate by employing strategies to manage or 'work with' this pathos. In the present context, findings suggested that, in recognising challenges associated with achieving their goals (i.e., to incorporate greater levels of Playing Form activities and by extension develop technical skill and game awareness in players), coaches orchestrated by modifying other practice types (i.e., Training Form environments) in attempt to manage this pathos and still meet their developmental goals. Although much of the current research suggests that greater use of a Playing Form environment (alongside other training forms) is more conducive to holistic development [1, 3, 31], the current group of coaches highlighted that they were rarely able to utilise this type of environment. Resultantly, in adapting their practice environments, coaches felt that developmental opportunities afforded to players within Playing Form environments were still able to be achieved.

### **Limitations**

The current study used a qualitative approach in order to gain insight into the design and implementation of practice from the coach's perspective; a perspective which, until recently, has been widely omitted from the literature. However, as no quantitative information (e.g., a

systematic observation of the practice structure and coaching behaviours) was collected, a more complete understanding of *what* currently takes place at cricket practice (alongside the *how* and *why*) in a more professional setting still remains unknown. To provide a more robust understanding, future research could look to combine the methodology employed in the current study with quantitative-based systematic observations of practice. This information would potentially provide both practitioners and researchers with greater information about more effective practice environments for cricketers in their own specific context. Further, it would allow research to effectively underpin continued professional development by comparing and contrasting what coaches *think* they do and *why* to what they *actually* do in their practice.

## **Conclusion**

Greater use of Training Form activities, as opposed to Playing Form activities is characteristic of many cricket coaches' contemporary practice. This study sheds novel insights on the range of pressures and constraints faced by coaches which help to explain *how* and *why* they operationalise practice design in such ways. Indeed, findings suggest that despite practical barriers (e.g., limited access to quality facilities) often faced in replicating full-sided match conditions (Playing Form), coaches often look to instead create a match-representative practice environment by *adapting* their (Training Form) practice design. This is mainly achieved by adopting a constraints-led approach, including specific match scenarios, which can sometimes be conflicted by the use of various training aids. By taking this approach, coaches perceive that players are more likely develop cricket-specific skills, alongside game awareness, despite mostly training within a practice environment not typically linked with holistic development.

## **References**

1. Low, J., et al., *The microstructure of practice activities engaged in by elite and recreational youth cricket players*. Journal of Sports Sciences, 2013. **31**(11): p. 1242-1250.
2. Ford, P.R., I. Yates, and A.M. Williams, *An analysis of practice activities and instructional behaviours used by youth soccer coaches during practice: Exploring the link between science and application*. Journal of Sports Sciences, 2010. **28**(5): p. 483-495.
3. Williams, A.M. and N.J. Hodges, *Practice, instruction and skill acquisition in soccer: Challenging tradition*. Journal of Sports Sciences, 2005. **23**(6): p. 637-650.
4. Cushion, C., P.R. Ford, and A.M. Williams, *Coach behaviours and practice structures in youth soccer: Implications for talent development*. Journal of Sports Sciences, 2012. **30**(15): p. 1631-1641.
5. Cummins, C., et al., *Global positioning systems (GPS) and microtechnology sensors in team sports: a systematic review*. Sports Medicine, 2013. **43**(10): p. 1025-1042.
6. Nicholls, S.B., et al., *Elite coaches' use and engagement with performance analysis within Olympic and Paralympic sport*. International Journal of Performance Analysis in Sport, 2018. **18**(5): p. 764-779.
7. Passos, P., D. Araújo, and A. Volossovitch, *Performance analysis in team sports*. 2016: Taylor & Francis.
8. Côté, J., *The development of coaching knowledge*. International Journal of Sports Science and Coaching, 2006. **1**(3): p. 217-222.
9. Coté, J., et al., *The coaching model: A grounded assessment of expert gymnastic coaches' knowledge*. Journal of Sport and Exercise Psychology, 1995. **17**(1): p. 1-17.
10. Erickson, K., et al., *Gaining insight into actual and preferred sources of coaching knowledge*. International Journal of Sports Science and Coaching, 2008. **3**(4): p. 527-538.
11. Irwin, G., S. Hanton, and D. Kerwin, *Reflective practice and the origins of elite coaching knowledge*. Reflective Practice, 2004. **5**(3): p. 425-442.

12. Jones, R., K. Armour, and P. Potrac, *Constructing expert knowledge: A case study of a top-level professional soccer coach*. Sport, Education and Society, 2003. **8**(2): p. 213-229.
13. Saury, J. and M. Durand, *Practical knowledge in expert coaches: On-site study of coaching in sailing*. Research Quarterly for Exercise and Sport, 1998. **69**(3): p. 254-266.
14. Shulman, L.S., *Those who understand: Knowledge growth in teaching*. Educational Researcher, 1986. **15**(2): p. 4-14.
15. Stoszkowski, J. and D. Collins, *Sources, topics and use of knowledge by coaches*. Journal of Sports Sciences, 2016. **34**(9): p. 794-802.
16. Clemente, F.M., F.M.L. Martins, and R.S. Mendes, *How coaches use their knowledge to develop small-sided soccer games: A case study*. South African Journal for Research in Sport, Physical Education and Recreation, 2015. **37**(1): p. 1-11.
17. Otte, F.W., S.-K. Millar, and S. Hüttermann, *How does the modern football goalkeeper train?—An exploration of expert goalkeeper coaches' skill training approaches*. Journal of Sports Sciences, 2019: p. 1-9.
18. Ireland, D., et al., *Do we train how we play? Investigating skill patterns in Australian football*. Science and Medicine in Football, 2019. **3**(4): p. 265-274.
19. Woods, C.T., et al., *Training programme designs in professional team sport: An ecological dynamics exemplar*. Human Movement Science, 2019. **66**: p. 318-326.
20. Renshaw, I., et al., *The Constraints-Led Approach: Principles for Sports Coaching and Practice Design*. 2019: Routledge.
21. Renshaw, I., K. Davids, and G.J.P. Savelsbergh, *Motor learning in practice: A constraints-led approach*. 2010: Routledge.
22. Davids, K., *The constraints-based approach to motor learning: Implications for a non-linear pedagogy in sport and physical education*, in *Motor Learning in Practice*. 2010, Routledge. p. 23-36.

23. Davids, K.W., C. Button, and S.J. Bennett, *Dynamics of skill acquisition: A constraints-led approach*. 2008: Human Kinetics.
24. Bott, G. and D. Tourish, *The critical incident technique reappraised*. *Qualitative Research in Organizations and Management: An International Journal*, 2016. **11**(4): p. 279-300.
25. Smith, B. and A.C. Sparkes, *Routledge handbook of qualitative research in sport and exercise*. 2016: Taylor & Francis.
26. Braun, V. and V. Clarke, *Using thematic analysis in psychology*. *Qualitative Research in Psychology*, 2006. **3**(2): p. 77-101.
27. Smith, B., *Generalizability in qualitative research: Misunderstandings, opportunities and recommendations for the sport and exercise sciences*. *Qualitative Research in Sport, Exercise and Health*, 2018. **10**(1): p. 137-149.
28. Patton, M.Q., *Qualitative evaluation and research methods*. 1990: SAGE Publications, inc.
29. Sparkes, A.C., *Illness, premature career termination, and the loss of self: a biographical study of an elite athlete*, in *Sociology of Sport: Theory and Practice*, R. Jones and K. Armour, Editors. 2000, Addison Wesley Longman: London.
30. Smith, B. and K.R. McGannon, *Developing rigor in qualitative research: Problems and opportunities within sport and exercise psychology*. *International Review of Sport and Exercise Psychology*, 2018. **11**(1): p. 101-121.
31. Miller, A., et al., *Exposing athletes to playing form activity: Outcomes of a randomised control trial among community netball teams using a game-centred approach*. *Journal of Sports Sciences*, 2017. **35**(18): p. 1846-1857.
32. McKay, J. and D. O'Connor, *Practicing unstructured play in team ball sports: A rugby union example*. *International Sport Coaching Journal*, 2018. **5**(3): p. 273-280.
33. Partington, M. and C. Cushion, *An investigation of the practice activities and coaching behaviors of professional top-level youth soccer coaches*. *Scandinavian Journal of Medicine & Science in Sports*, 2013. **23**(3): p. 374-382.

34. Cotterill, S.T., *Developing decision-making for performance: A framework to guide applied practice in cricket*. Journal of Sport Psychology in Action, 2014. **5**: p. 88-101.
35. Renshaw, I., et al. *The Battle Zone: Constraint-Led Coaching in Action*. in *Conference of Science, Medicine and Coaching in Cricket*. 2010. Sheraton Mirage, Gold Coast, Queensland, Australia, 1-3 June.
36. Renshaw, I. and D. Holder, *The "nurdle to leg" and other ways of winning cricket matches*, in *Motor learning in practice: A constraints-led approach*. , I. Renshaw, K. Davids, and G.J.P. Savelsbergh, Editors. 2010, Routledge: London. p. 109-199.
37. Chapman, S.J., *Spin it to win it: A comparison of constraints-led versus traditional coaching approaches*. 2015, Queensland University of Technology.
38. Chow, J.Y., et al., *Effects of different instructional constraints on task performance and emergence of coordination in children*. European Journal of Sport Science, 2014. **14**(3): p. 224-232.
39. Gray, R., *Comparing cueing and constraints interventions for increasing launch angle in baseball batting*. Sport, Exercise, and Performance Psychology, 2018. **7**(3): p. 318-332.
40. Timmerman, E.A., D. Farrow, and G.J. Savelsbergh, *The effect of manipulating task constraints on game performance in youth field hockey*. International Journal of Sports Science & Coaching, 2017. **12**(5): p. 588-594.
41. Barris, S., D. Farrow, and K. Davids, *Increasing functional variability in the preparatory phase of the takeoff improves elite springboard diving performance*. Research Quarterly for Exercise and Sport, 2014. **85**(1): p. 97-106.
42. Davids, K., et al., *How small-sided and conditioned games enhance acquisition of movement and decision-making skills*. Exercise and Sport Sciences Reviews, 2013. **41**(3): p. 154-161.
43. Peplow, C., M. King, and A. Harland, *The effects of different delivery methods on the movement kinematics of elite cricket batsmen in repeated front foot drives*. Procedia Engineering, 2014. **72**: p. 220-225.

44. Pinder, R., *The changing face of practice for developing perception: action skill in cricket*, in *Motor Learning in Practice: A Constraints-Led Approach*. 2010, Routledge (Taylor & Francis Group). p. 99-108.
45. Pinder, R.A., *Information-movement coupling in developing cricketers under changing ecological practice constraints*. *Human Movement Science*, 2009. **28**: p. 468-479.
46. Rothwell, M., et al., *Development of expertise in elite and sub-elite British rugby league players: A comparison of practice experiences*. *European Journal of Sport Science*, 2017. **17**(10): p. 1252-1260.
47. Jones, R.L. and M. Wallace, *Another bad day at the training ground: Coping with ambiguity in the coaching context*. *Sport, Education and Society*, 2005. **10**(1): p. 119-134.
48. Jones, R.L., J. Bailey, and A. Thompson, *Further thoughts on managing the complex coaching context*, in *Coaching, Pedagogy, and Communication in Sports Coaching*, P. Potrac, W.D. Gilbert, and J. Denison, Editors. 2013, Routledge: London. p. 271-283.