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Exploring coach perceptions of Parkour-style training for athlete learning and development in team sports

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Abstract

Contemporary learning and development models have identified Parkour-style training as a vehicle for athlete enrichment. However, perceptions of team sport coaches and their receptiveness to such models of athlete enrichment have not been investigated and remain unclear. To explore how Parkour-style training could be integrated into athlete development programs in team sports, we interviewed sport practitioners to explore their pre-existing knowledge of Parkour and their perceptions on its potential applications. Experienced talent development (n=10) and strength and conditioning coaches (n=10) were interviewed using an open-ended, semi-structured approach, with a two-stage thematic analysis being conducted to identify themes. Three dimensions were identified: Coaches’ General Perceptions of Parkour, Potential Applications of Parkour, and Feasibility of Integrating Parkour into athlete development programs. Participant perceptions revealed that: 1) Parkour activities were viewed as supplementary activities to enrich sport-specific training routines, including use of obstacle courses and/or tag elements, 2) Parkour-style obstacle environments needed to be scalable to allow individual athletes and coaches to manipulate object orientation and tasks using soft play and traditional gym equipment, and 3) The implementation of continued professional development opportunities, athlete-centred approaches to learning designs in sport, and coach-parent forums were recommended to support the integration of Parkour-style training.
Introduction

Researchers with an interest in motor learning and development as well as skill acquisition have increasingly sought to make use of knowledge sourced from empirical research, as well as from the experiences of high-performance practitioners (termed experiential knowledge) to understand how to create the best learning and talent development environments in sport (e.g., see Burnie et al., 2018; Pocock et al., 2020; McCosker et al., 2020; Stone et al., 2020; Woods et al., 2020a; Woods et al., 2020b). This re-balancing of the relationship between experiential and empirical knowledge has emerged because the rationale for evidence-based practice in motor learning and skill acquisition has been skewed towards a limited categorisation of knowledge viewed as influencing practice (Rothwell et al., 2020).

To develop a more nuanced understanding of effective learning designs in athlete development programs, recent research informed by ecological dynamics theory has transitioned towards a deeper integration of experiential and empirical knowledge (Pocock et al., 2020; Stone et al., 2020). Such integration is utilised to create a new and integrated understanding predicated on psychological science, knowledge, and practice experiences (see also; McKay & O’Connor, 2018; Browne et al., 2019). This integrative approach has contributed to the development of models such as Nonlinear Pedagogy (Chow et al., 2015) and the Athletic Skills Model, a practitioner-informed model of skill learning and development (Wormhoudt et al., 2018; Savelsbergh & Wormhoudt, 2019). Nonlinear Pedagogy provides an ‘explore-discover-adapt’ approach to learning via the application of five learner-centered principles (representativeness, constraints manipulation, task simplification, informational constraints, and functional variability), which emphasize how to create learning designs which support the emergence of functional goal-directed behaviours in performers at all skill levels (Renshaw & Chow, 2019). These principles of nonlinear
pedagogy are aligned with key ideas of skill development and learning outlined in the Athletic Skills Model (Rudd et al., 2020).

As a concentric, skill-centred approach to athlete development, the Athletic Skills Model emphasises the importance of enriching an athlete’s basic movement skills (termed Functional Movement Skills (Newell, 2020) (aiming; balance; climbing; jumping; kicking; rolling; romping/fighting; running; swinging; throwing), promoting further gains in coordinative abilities (adaptability; balance; coupling; kinetic differentiating; spatial orientation; rhythmic ability) and adaptations to conditions of movement (agility; stability; flexibility; power and endurance) at a foundational level (Wormhoudt et al., 2018). The integration of these foundational movement skills encapsulate elements of basic motor properties (coordination; speed; strength; flexibility and endurance) which enrich an athlete’s potential to learn specific skills needed to participate and compete in particular sports at a later stage. Therefore, activities promoting the acquisition of functional movement skills are considered essential for the functional development of athletes, regardless of sport specialisation (Newell, 2020; Rudd et al., 2020). The Athletic Skills Model proposes the benefits of experience in ‘donor sports’ which can “donate” elements of basic movement skills that enable performers to excel in a target sport through transfer of motor skill learning between sports or sport elements (Savelsbergh & Wormhoudt, 2019).

With origins in France, the popularity of Parkour has grown considerably since the 1990s and it is now practiced as a competitive sport, via different event formats, notably: speed, skill, and free style (Padulo et al., 2019). Parkour requires performers (known as “Traceurs”) to learn how to negotiate obstacles with differing properties such as textures, surfaces, inclinations, sizes and angles in the most effective and efficient way possible (Greenberg & Culver 2019). The term “traceur” originated from the French verb “tracer” which broadly means “going fast” and “drawing a line” (i.e., moving one point to another).
The Athletic Skills Model’s focus on developing a foundation of functional movements shares parallels with the origins of Parkour training. Early Parkour Traceurs drew motivation from George Hébert’s Méthode Naturelle, a training method which emphasises the value of functional exercises relating to physical conditioning and development of foundational movement skills (i.e., attack-defence, carrying, climbing, jumping, rising, running, swimming, throwing, walking) (Terret, 2010). These foundational movement skills are thought to underpin execution of more complex movement patterns, supporting a well-rounded athleticism (Hébert & Till, 2017). Strafford et al. (2018) have proposed Parkour as a suitable donor sport to promote learning and development. Strafford et al. (2018) emphasise how creativity in movement exploration afforded by Parkour is as an antidote to early specialisation methods for athlete development in sport which over-rely on rehearsing technical movement patterns in traditional drill-based, repetitive practices from a very young age. Parkour research to date, however, has been largely quantitative and descriptive in nature, for example focused on measuring mechanical components of performance such as the jumping capacities of Parkour Traceurs, evaluated in isolation of Parkour environments (e.g., Grosphrêre & Lepers, 2015; Abellán-Aynés & Alacid, 2017 Padulo et al., 2019).

Strafford et al. (2021) addressed this concern by examining which functional movement skills were correlated with Parkour-speed run performance. Consistent with insights of the Athletic Skills Model, the data from Strafford et al. (2021) suggested that performance in Parkour-speed-runs were underpinned by functional movement skills (jumping, running; arm swinging) and condition of movement (agility), all of which encapsulate elements of basic motor properties (speed; strength). These findings provided evidence that functional movement skills (effectivities) are not isolated movements, but foundational skills that can be enriched and integrated to support functional interactions of athletes within a Parkour speed-run performance environment. It was suggested that repeated exposure to Parkour speed-run
environments developed specific functional movement skills which enabled the Traceurs to navigate speed run environments more efficiently. Therefore, the findings from Strafford et al. (2021) provide evidence that Parkour can be an effective donor sport to promote specificity of learning and skill development in team sport athletes.

Nonlinear Pedagogy and the Athletic Skills Model consider coaches as ‘environmental designers’, responsible for facilitating an individualised and inclusive learning environment for developing athletes. Strafford et al. (2020) explored Parkour Traceurs’ experiences and the skills they believed were developed through Parkour, and how they developed Parkour practice landscapes to support their development of necessary physical, perceptual, psychological and social skills. Parkour Traceurs explained that, for athletic development, indoor Parkour environments have to promote creative and exploratory movement behaviours, whilst physically and psychologically conditioning the athlete through heightened opportunities for enhancing decision making and acquiring functional actions (Strafford et al., 2020). Practically, Parkour Traceurs discussed how these enrichment processes are achieved through the development of modular practice landscapes, where the spacing, orientation and angles of the installation blocks and bar set ups are manipulated to adapt task difficulty. These recommendations provided rich insights into how ‘affordances’ (opportunities for action; Gibson (1979), offered by the Parkour environment, could be designed into practice environments to facilitate their utilisation, and the development and transfer of skilful behaviours. However, this suggestion has yet to be examined and research on the insights of parkour and team sport coaches is needed to address the feasibility of integrating Parkour performance installations into traditional team sport training programmes.

When integrating new approaches such as Parkour-style training in practice, the aim should be to promote collaborations between sport practitioners and discussion on how to adapt practice landscapes in athlete development programmes (Rothwell et al., 2020).
Enhancing clarity of practitioner understanding could ensure a successful longer-term integration of Parkour into athlete learning and development programmes, rather than it being treated as a mere “fad” which may not be sustainable. In meeting the challenge of contextually integrating Parkour practice landscapes into high performance sport organisations, it is important to sample the experiential knowledge and understanding of two groups central to talent development in team sports: talent development specialists and strength and conditioning coaches. Sampling their experiential knowledge and understanding could afford practical recommendations from key stakeholders concerning the potential integration of Parkour-style training into talent development and learning environments in sport.

Study Purpose

The purpose of this study was to address how Parkour-style training could be integrated into team sport athlete development programmes. To achieve this purpose, the study had three aims: (1) explore talent development specialists’ and strength and conditioning coaches’ pre-existing knowledge about Parkour-style training, (2) explore the perceptions held by talent development specialists and strength and conditioning coaches on the potential applications of Parkour-style training for athlete development in their sports, and (3) explore the feasibility of integrating Parkour-style training into team sport practice routines, based on recommendations arising from the coaches’ experiential knowledge.

Method

Research Design

A pragmatic research paradigm was adopted to place the research aim centrally, by emphasising communication, shared meaning-making, and transferability of research findings to the potential practical applications of Parkour-style training in team sport settings (Creswell & Creswell, 2017). In accordance with a pragmatic approach, qualitative inquiry using semi-
structured interviews was adopted, as the use of open-ended questions permits flexible
observations of participants’ experiences and perceptions (Smith & Sparkes, 2016).

**Participant Recruitment and Demographics**

Twenty experienced coaches were interviewed, including ten talent development
specialists (Mean age: 34.8 ± 10.1 years) and ten strength and conditioning coaches (Mean
age: 32.7 ± 7.9 years). Participants were recruited online and in person using a combination
of purposive and snowball sampling (Tongco, 2007). At the time of interview, participants
had to be active in sport coaching and been in their working setting for a minimum of three
years (talent development specialists: 15.0 ± 8.2 years, strength and conditioning coaches:
12.3 ± 7.4 years). A summary of participant demographic information is displayed in Table 1.

Institutional ethical approval was granted by the university ethics committee of the lead
author, with all participants providing informed written consent prior to commencing the
interviews.

**Table 1. Participants demographic information (about here)**

**Data Collection**

Development of a semi-structured interview guide ensured that each coach, regardless
of coaching specialism, was asked the same set of central questions, which enabled
participants to lead the conversation, and discuss and elaborate on their coaching philosophy,
perceptions of Parkour and recommendations for integrating Parkour into coaching practice.

All interviews were conducted by the lead author in person (n = 3) or over video call (n = 17)
and lasted between 24-52 minutes (Mean Duration: 31.6 ± 7.2 minutes). The interview guide
began with a warm-up question that was relevant to each coach, to develop rapport between
coach and interviewer, and to encourage each coach to talk descriptively in the presence of an
audio recording device (Dicicco-Bloom & Crabtree, 2006). The discussion then transitioned
on to specific questions about each participant’s background and journey into coaching,
philosophy towards athlete development, perceptions on the potential applications of Parkour for athletic development, and recommendations for integrating Parkour into coaching practice. Probe questions were used, where deemed necessary, to encourage participants to expand on responses and provide depth to articulated responses (Smith & Sparkes, 2016). All interviews were recorded, with permission, in their entirety using a digital voice recorder and transcribed verbatim, using desktop transcription software (Audio Notetaker, Sonocent Ltd, Leeds, United Kingdom).

**Data Analysis**

To identify themes across the data set, a two-stage, reflexive thematic analysis was employed (Braun & Clarke, 2019). The interview transcripts were coded in Microsoft Excel (Version 18, Microsoft Cooperation, Washington, United States). During the thematic analysis, the research team did not adopt an ‘either or approach’ (i.e., inductive approach: with little pre-determined structure, theory or framework, or deductive approach: the of structure, theory or a pre-determined framework). A pragmatic form of enquiry was undertaken that comprised of deductive and inductive approaches (Robertson et al., 2013; Braun, Clarke & Weate, 2016). The first coding stage employed deductive analysis to organise the data into three dimensions (general perceptions of Parkour, potential applications of Parkour, and feasibility of integrating Parkour into coaching practice). The first coding stage was initially undertaken by the lead author, who read the transcripts several times to identify language related to general perceptions of Parkour and feasibility of integrating Parkour into coaching practice. After the first coding stage, a period of peer consultation was undertaken, which involved the authors reading the transcripts independently to facilitate an open discussion on the initial dimensions determined by the lead author. The authors accepted that theory-free knowledge cannot be achieved, in that knowledge can be both explicit (as with theoretical understanding on the subject) or implicit (as with practical skill of
expertise) (Dewey, 1938). Therefore, once data were organised into these three dimensions, both deductive and inductive analyses were undertaken in a second coding stage (Guba & Lincon, 2005). This reflexive and collaborative approach to the analytic process was employed to develop a more nuanced and richer interpretation of the data, rather than seek consensus on meaning (Braun & Clarke, 2019). Codes were next grouped into higher and lower order themes in relation to the research questions. Codes classified in more than one of the themes were assigned into the one perceived to best ‘fit’. To maintain analytical rigour, additional discussions of the higher and lower order themes were conducted between the authorship team (Tracy, 2010). During this process members of the authorship team gave voice to their interpretations of higher and lower order themes via the medium of critical verbal dialogue. Where any coding differences were identified, these were resolved through peer discussion and evaluation and alteration of codes as appropriate. For example, critical dialogue informed the (re) wording of the higher order theme “Addressing Potential Barriers to the Integration of Parkour-Style Training”, where the word ‘Addressing’ was added to best represent the recommendations outlined by coaches on how potential barriers for integration of Parkour-style training could be resolved.

**Research Quality and Rigour**

Pilot interviews with two participants who had experience either as a talent development specialist or strength and conditioning coach were undertaken to facilitate methodological rigour. These pilot interviews acted as a consultation process which allowed the authors to appraise the flexibility and suitability of the interview format in the context of the population group. The interview guide was not amended following pilot interviews. Concurrent with a pragmatic research paradigm, it is important to acknowledge the personal biography of the authors, given that their previous work was a motivation for undertaking the current study, and that their past research may have informed the
development of the study's methodology (Tracy, 2010). All authors were, at the time of writing, academics at universities across the United Kingdom with varying experiences of working in research (5-41 years). Authors’ previous work is underpinned by the ecological dynamics approach to motor learning. Rather than viewing such influences as potential contamination of the data to be avoided, the authors engaged with retrospective (which concerns the effect of the research on the researcher) and prospective (which concerns the effect of the whole-person-researcher on the research) reflexivity. This process confirmed the significance of their values, feelings, and knowledge that they brought to the conceptualisation of the research issues and the analytical lens applied to the findings (Attia & Edge, 2017; Braun & Clarke, 2019). In line with recommendations from Smith and McGannon (2018), an independent critical friend was utilised during the data analysis process, to discuss interpretations made throughout with the co-authors. During these discussions, the role of the critical friend was to encourage reflexivity by challenging the authors’ “construction of knowledge” (Cowan & Taylor, 2016).

Results and Discussion

Thematic analysis highlighted a total of three dimensions, seven higher-order themes, and 24 lower-order themes. The 3 dimensions were: (1) Coaches General Perceptions of Parkour, (2) Potential Applications of Parkour, and (3), Feasibility of Integrating Parkour into Coaching Practice.

Coaches’ General Perceptions of Parkour

Within the coaches’ general understanding of Parkour dimensions, two higher order themes emerged, first, underlying knowledge of Parkour and, second, the resources they have engaged with to acquire knowledge on Parkour (Figure 1).

**Figure 1. Thematic Map: Coaches General Understanding of Parkour (about here)**

Underlying Knowledge about Parkour
The coaches described Parkour as an ‘athlete-centred sport’, which requires participants to solve unstructured movement challenges to move from point a to point b creatively:

Yeah I have heard of Parkour, my understanding of the activity is that it challenges whoever take parts in it, will have a set out route where they might want to get from say A to B, with lots of different obstacles in the way. But they can be creative in how they are going to go over those obstacles to get from A to B, and they might set up their own way of doing that and different movements to be able to do it. (Talent Development Coach 1)

This coach’s description of Parkour is consistent with that provided by expert Parkour Traceurs in Strafford et al. (2020), who also emphasised the unstructured and creative value of Parkour participation and the requirement for athletes to move from one point to another creatively. By highlighting the use of obstacles, the coaches identify varied opportunities for action (affordances) that they believe are innate to Parkour learning environments (Strafford et al., 2018). When discussing the structural features of Parkour, some coaches drew on their experiences in gymnastics for contrast:

So, I think it (Parkour) is a nice way of moving and, to me, it’s a bit similar to gymnastics but without all the rules and everything being nice and perfectly straight and stuff. So, it’s more you get to do some similar moves with obstacles, running, jumping, turning, flipping, and everything like that. But, then move more in a freeway than the strict way of competition gymnastics. (Talent Development Coach 6)

In gymnastics, the athlete’s body has to be oriented in specific position, according to set criteria, to score points evaluated by the judges. This type of structure for the sport can lead athletes to become dependent on explicit coach feedback in practice, due to the need to satisfy set criteria, which, in turn, may impede performance due to reduced reliance on intrinsic feedback (Button et al., 2020). In contrast, the implicit nature and landscape of the
Parkour environment offers an array of affordances for jumping, landing, and changing direction through a process of self-regulation (Rudd et al., 2020). Athletes who are repeatedly exposed to Parkour environments have copious opportunities to discover, explore and exploit movement solutions to navigate through the environment, and so develop or enhance their functional movement skill capacities.

**Resources used to gain knowledge on Parkour**

Concurrent with the advent of new technologies in sports coaching, the coaches’ understanding of Parkour was primarily founded from media sources such as social media, YouTube and television shows:

> Through my time working in academy football, I have used online videos just to get ideas. So, I first came across it (Parkour) as a tool for the athletes of young ages to develop different movements in football. (Talent Development Coach 4)

> Yeah that’s just kind of adapting as I see things on Twitter, if I like it, I will give it a try basically. (Strength and Conditioning Coach 1)

It is clear how online resources on Parkour (which were beyond sport-specific disciplines) have provided a platform for integration and innovation of new approaches to athlete development in football-specific settings (Nicolescu, 2002). It is important to note, however, that some online sources are not always appropriate and could lead to the integration of unsafe or incorrect Parkour-style training. It is important to develop resources on Parkour that could be provided to coaches (and published on social media platforms) which are appropriately informed and relevant, not only for coaches, but also for parents, athletes, and academics. These resources should be developed in consultation with Parkour experts to ensure that they are representative of a safe and inclusive, yet enriching, Parkour environment.

**Potential Applications of Parkour**
Within the ‘Potential Applications of Parkour’ dimension, coaches discussed ideas surrounding application of Parkour for the psychological and physical development of athletes (Figure 2).

**Figure 2. Thematic Map: Potential Applications for Parkour (about here)**

*Parkour for Psychological Development*

The coaches described how exposure to Parkour-style training could develop athlete self-regulation through enriching problem-solving, resilience, confidence and risk-appraisal skills. Some coaches referenced how practising Parkour could be beneficial for developing psychological skills in team sport athletes, in particular problem-solving and resilience following physical movement challenges:

It (Parkour) would certainly build problem solving and resilience, because obviously within the challenge they (athletes) might not fulfil it and obviously build resilience from that…You know, in a way that would develop their decision-making skills to, you know, in a Rugby game scenario. For, example in a penalty kick in Rugby, or catching the drive, which requires you to look at the what the opposing team are doing and react. (Talent Development Coach 1)

Parkour can develop some real good problem solving for movement challenges. Ultimately this enables our athletes a sense of exploration, fun, and danger which we know is going to strengthen the feedback that is given. If I think back to team invasion sport athletes and what makes good movers, this is often being rhythmical or being smooth or being easy on the eye. Ultimately, I think that comes down to them (athletes) having a good understanding to where their limbs are in time and space and how to create shapes and patterns with their body. I think Parkour is one modality that can enable us to better understand where our bodies are in time and space. (Strength and Conditioning Coach 8)
With the exception of variants of Parkour-style formats like ‘world chase tag’, Parkour is an individual event without opponents, and unlike team sports does not require ball handling skill. However, engaging in Parkour may led to the transfer of general movement (e.g., dynamic balance, postural regulation, changing direction, landing, twisting and turning, and using limbs in separate ways) and psychological skills between Parkour and team sport domains due to a shared affordance landscape (Strafford et al., 2018). In terms of developing resilience, exposure to interactions with the environment in Parkour landscapes may enable team sport athletes to become more resilient in overcoming emergent movement challenges in their performance environment by self-regulating and exploring their own movement capabilities, relative to the positioning and orientation of their limbs in space (Merrit & Tharp 2013; Aggerholm & Højbjerre Larsen, 2017). In addition to problem-solving and resilience, coaches outlined how exposure to Parkour may develop athletes’ capabilities to manage fear and take educated (i.e., understood and evaluated) risks in team sport settings, as this coach outlined:

I think that can help in pushing the boundaries in other sports as well. So, some things in Parkour might be perceived as dangerous or, they might be afraid of some things and I think in the process of learning those skills they learn like ok, I was scared at first, but while practising and learning this, I did manage to do so. So, this could also translate to other sports, when they face difficulties as like ok well I have had this before and I know how to help by influencing this skill. (Talent Development Coach 6)

Here, the coach outlined how a willingness to take educated risks during Parkour practice can transfer to willingness to explore new behaviours in the athlete’s target sport through heightened cognitive awareness of their own abilities. The link between Parkour and cognitive appraisal has been previously examined by Taylor, Witt and Sugovic (2011) who demonstrated that athletes skilled in Parkour perceived a Parkour obstacle as being shorter
than a novice control group. These findings from Taylor, Witt and Sugovic (2011) are consistent with the notion of reciprocity between perception and action, advocated for learning designs in Nonlinear Pedagogy. This reciprocal relationship was outlined originally by James Gibson (1979), proposing that a performer’s perception of information for utilisation of affordances is scaled by their perceived abilities and capacities, described as *effectivities* in ecological psychology (Fajen, Riley, & Turvey, 2008). Given that self-efficacy and confidence refer to an individual’s perceptions and appraisal of their capabilities, this psychological function may develop with Parkour training (Bandura, 1997; Llewellyn et al., 2008; Strafford et al., 2020). Indeed, many coaches in this study outlined how exposure to Parkour leads to increases in athletes’ confidence of their general movement abilities, which is missing in other sports:

So, where I see the value for Parkour is, I think the confidence that can come from like if you’ve got movement skill and coordination and all of those great things that are important in any sport, you got confidence... So, when it comes to sport, say transfer back into their own context, their own world, they can utilise their body in a far more diverse way than they ever could prior to that form of exposure. (Strength and Conditioning Coach 5)

It is also important to note that the coaches are outlining the integrated relationship between physical and psychological development highlighted in the Athletic Skills Model (Wormhoudt et al., 2018). From an ecological dynamics perspective, exposure to Parkour would afford team sport athletes with opportunities to develop cognitive appraisal skills relative to both the actual and perceived action capabilities of their developing movement system. This enrichment process would assist risk-benefit analysis during sport performance, in addition to heightening perceptual awareness of their body in relative space and decision making (i.e., scaled ego-centrically) (Jacobs & Michaels, 2007; Immonen et al., 2017).

*Parkour for Physical Development*
In addition to psychological skills, coaches also outlined physical skills that could be developed through exposure to Parkour style-training. The coaches often referenced the input of Parkour in building functional movement skills. Coaches described how a series of functional movement skills, conditions of movement and coordinative abilities developed during Parkour could be beneficial for performance in team sports:

"Around the young ages, I am just looking for them to be able to move as well as possible. I don’t really mind if they go on to be a hockey player, a footballer, a cricketer, a tennis player. I just know that I want them to have a large foundation of movement that they can then draw upon when needed in a particular situation further down the line. I think at the young age groups Parkour has got a lot of transfer." (Strength and Conditioning Coach 1)

This emphasis on developing foundational movements at young ages aligns with the Athletic Skills Model, which describes how athletes must become versatile and adaptive movers before they can develop into an expert athlete (Wormhoudt et al., 2018). The above quote also references the transfer of functional movement skills between Parkour and team sport domains, which is consistent with the notion that Parkour can serve as a donor sport for athletic development in team sports (Strafford et al., 2018; Wormhoudt et al., 2018). The development of functional movement skills through Parkour may contribute to performance improvement in the target sport, although the long term benefits of Parkour interventions require investigation in future studies. Coaches also described how developing functional movement skills will lead to gains in coordinative abilities and conditions of movement:

"I think there is a lot of benefit in (Parkour) training, you know in that inner ear and balance aspect, the proprioception aspect. For example, I was able to use some tenets of Parkour with some of our soccer athletes. So, how I was able to implement that was with some rolling patterns, so low level tumbling like a forward roll, a backward roll then into a sprint. So, now we have the aspect of orientation so the inner ear has to..."
adjust to the new orientation of the body and figure out where they are going and what
the next task is. Then, you know again readjusting to the new task. (Strength and
Conditioning Coach 9)

The Athletic Skills Model proposes that functional movement skills and coordinative
abilities are intrinsically linked:

Parkour could definitely be useful for developing physical skills in rugby… for
example in the 5,6,7-year-olds to develop ABC skills. It is through developing
movement patterns and using strength through mobility that prepares them (younger
athletes) for what they face when do they do finally get through to the full stage of
rugby. But also, in the junior section when they are going through maturation, and the
stages of growth, it is going to be very important to allow them to access that
movement and develop muscle to go along with their longer limbs that they are
developing at the time as well. (Talent Development Coach 1)

Here, the coach refers to how the focus on physical conditioning during training
routines is relative to individual maturation. This periodised approach to training is
concurrent in the Athletic Skills Model, which suggests that for younger ages (up until age at
peak height velocity), athletic development should be more focused around developing
functional movement skills, while training for athlete development in older age groups (post
age at peak height velocity) should be more related to conditions of movement (Wormhoudt
et al., 2018). All elements of conditions of movement and coordinative abilities may be
developed through the Athletic Skills Model continuum, by not only enhancing specific
functional movement skills, but also engaging in technical adaptive training, as well as donor
sports- in the case of the present study, Parkour-style training.

**Feasibility of Integrating Parkour into Coaching Practice**
Feasibility of integrating Parkour into coaching practice emerged as a dimension from the data set, with coaches outlining practical recommendations for integrating Parkour environment in team sport practice (Figure 3).

**Figure 3. Thematic Map: Feasibility of Integrating Parkour into Coaching Practice**

**Practical Recommendations**

Coaches described how the implicit nature of Parkour-style training must be maintained when being integrated into team sport practice:

The more implicit we can make movement mastery, the better for me… I think something like Parkour is a brilliant way of focusing on completing the task set, the movement will happen as a solution to that. (Talent Development Coach 10)

It was also apparent that some coaches were already using Parkour-style activities, notably tag games and obstacle courses, suggesting that these approaches could be successfully integrated into other domains:

Yeah we are using it (Parkour) already. We have got our obstacle course and often I will get the kids to try and create it so that they can be imaginative in what they want to do. The kids are sort of the environmental designer so to speak. (Strength and Conditioning Coach 1)

I love tag, I love tag games, and at *** we introduced as part of the warm up a load of tag based games, which I think is about agility, it’s about reacting to the opponent, reacting to obstacles and so on and so forth…If I had the budget I would create a performance playground (obstacle course), with crash mats, soft base blocks and so on and so forth…That is the challenge in the gym, once you put a fixed gym it place, it is quite fixed where I think when you have the soft area you can move things around and change the environment, change the stimulus and again you can have so much variety… What you have with Parkour based or gymnastics based equipment, is hundreds of different exercises that you can create…. For me it makes sense, if you
got a small budget to focus on the things that can give you that and can increase that bandwidth by giving an infinite number of different exercises. (Talent Development Coach 9)

The interchangeability of Parkour-style equipment, in terms of manipulating the position and orientation of objects affords the athlete a greater variety of potential interactions with their environment. Practically, Parkour style-equipment could take the form of the soft plyometric boxes that are used to train explosive jump capacity, or traditional gymnastic wooden benches that are used in traditional gym-based settings, if the sport clubs are constrained by budget. Theoretically, altering the orientation and position of objects in the environment changes the affordance landscape (Croft & Bertram, 2017), which may invite different problem-solving and re-coupling of perception and action, facilitating feelings of enjoyment and creativity in movement exploration, as participants seek innovative movement solutions to task goals. However, enjoyment in these tasks may also decrease if athletes cannot successfully adapt and repeatably fail. Coaches should, therefore, remain of aware and manipulate task difficult according to athlete experience and functional skills to accommodate different levels of movement competency. For example, Tag games with soft blocks positioned in a varied format could form a section of the warm up in team sport, where exposure to Parkour-style training inclusive of an obstacle course (without or without a tag element) could be integrated as a separate session to supplement strength and conditioning work. Coaches also emphasised the importance of integrating competitive and sport-specific elements into Parkour-style training:

I would just try and include a range of obstacles. I would still have to keep in mind that they are footballers at the end of the day, no matter how young they are, it is what they are doing being in a football institute. I think that would not be the emphasis at every point, but just through experience at football clubs, coaches need to see something football based. So, even if that included a Parkour obstacle course that had
a football kicking to a goal, something little but I think I would just try to include as
many movement patterns. So, whether that be, hurdles so they have to jump over,
whether that be manakins lined up so they have to sidestep, I would try and get every
plane of movement involved. I would also try and make it competitive, so whether
that be a race or be like a tag, cat and mouse, one going after the other. (Talent
Develop Coach 4)

Whilst it is not proposed that, as a donor sport, Parkour improves sport-specific skill
directly, the integration of sport-specific skills into these Parkour-style obstacle activities
could make the activity more representative of the task, environmental and organismic
constraint in the sport specific domain (Strafford et al., 2020). One benefit would be coach
and athlete “buy in” as it would be clear how football-related movements are being
integrated, as identified by Talent Development Coach 4. For example, Parkour-style
variants, such as world-chase tag with or without a football, could be integrated as the global
constraints governing the activity (i.e., the first person to tag their opponent wins) are
comparable to the offensive phases in football, where to regain possession of the ball, athletes
have to couple their movements relative to the constant (re)positioning of teammates,

Addressing Potential Barriers to the Integration of Parkour-Style Training

Coaches described potential, athlete-facing barriers when implementing Parkour
style-training, such as gaining athlete cooperation. As a recommendation, coaches outlined
that for Parkour style-training interventions to succeed there should be a culture where
athletes are active (i.e., co-designing) partners, fully engaged in their own performance
development, allowing them to create meaningful learning environments:

I have a good relationship with soccer coaches and athletes, but even when I brought
it (Parkour) to the athletes themselves, initially, they were a little bit hesitant to act
and participate, they thought it was joke and wasn’t sure I was serious. But, as the
weeks went on it just became part of the culture, part of what we did and they dove
into it. (Strength and Conditioning Coach 9)

The first one you can offer is the idea that it (Parkour) is fun. So, the potential buy in
will be far greater by the athlete. (Strength and Conditioning Coach 2)

The idea of athletes and sport practitioners working together to co-design learning and
development environments has gained traction in recent times (e.g., Woods et al., 2020a).

Emphasising enjoyment, and allowing athletes to co-design their own Parkour environments,
may elicit the core social dimension of Parkour where interactions with coaches and peers
help athletes regulate resilience and self-confidence through a shared network of affordances,
rooted in a desire to interact with others while having fun (O'Grady, 2012). Coaches who
were primarily involved with youth performers outlined how an open forum with parents
should be arranged to challenge culturally-resistant beliefs about what support for skills
learning and practice should look like:

We have mixed groups and have invested more in having qualified coaches working
with parent coaches to this age group. And of course, there are challenges because
some have culturally resistant beliefs around the mantra 'we must select the best as
early as possible'…… You have to persevere, and get as many interactions as possible
around the microsystems of practice with people…As many as possible that you can
do. Which is why I don’t like these places that exclude parents from training, they’re
not good. The parents are important parts of any learning environment, very important
parts. (Talent Development Coach 3)

…I think the parents are more open to listening, that has been my experience as
opposed to when you are with your other coach colleagues, so I think there is
probably more in the way of that communication happening as opposed to parents
who are maybe a little bit more open to listening in many ways. I have had parents ask
me just straight up, what is this about and I say that I am happy to discuss if you want to listen. (Talent Development Coach 2)

It is important to get ‘as many interactions as possible’ with the parents to challenge culturally-resistant beliefs about the role of Parkour in athlete enrichment. Hence, coordinating an open forum would allow parents to, not just ask questions about the reasons for integrating Parkour-style training, but also allow them to be involved with the developmental pathway of their child. Parents could also partake in ‘Parkour taster sessions’ where they ‘experience’ Parkour, as this could promote meaning making and consensus on the benefits of Parkour-style training for athlete enrichment through shared experiences.

Coaches also outlined how potential barriers could be negated through continued professional development about Parkour:

So, your barriers (for integrating Parkour) are going to be, lack of knowledge, people have set attitudes about it, or people not knowing anything about it at all. (Talent Development Coach 8)

I know there are some sort of coaches that do implement this into their practice, so I would try and reach out to them for CPD. Then there is the body of evidence, any peer reviewed articles with practical applications at the end would be beneficial. (Strength and Conditioning Coach 7)

I don’t really understand how parkour relates to football or how could it relate to football. I think it is important to know that football is played on grass, attacking one goal and defending the other, with one ball…. So, where does running off a wall come in?, it doesn’t I can’t do that in football. I just don’t know the relevance to football. I would have to understand parkour more. (Talent Development Coach 7)

Parkour is a relatively new sport and so its reach across domains is limited at present. Therefore, efforts needs be made at developing an understanding of, not only what Parkour is, but also how it can be specifically applied in learning and development programs in
different sport settings. Whilst some continued professional development courses are offered
by Parkour companies, researchers should look to enhance online learning materials by
including examples from applied practice to enhance their own learning. To achieve this aim,
continued professional development under the rubric of a ‘Department of Methodology’
could be integrated (Rothwell et al., 2020). According to Rothwell (2020), a Department of
Methodology is an approach where a group of practitioners work collaboratively within a
unified conceptual framework to: (1) coordinate activity through shared language and
principles, (2) communicate coherent ideas, and (3) collaboratively design practice
landscapes enriched in information (i.e., acoustic, haptic, proprioceptive, visual) and guide
emergence of multi-dimensional behaviours in athlete performance. It is anticipated that such
an integrated structural organisation of sport science disciplines will facilitate a working
environment where coaches, trainers, educators and other practitioners can adopt an
individualised approach to developing athletes, sharing knowledge beyond discipline
boundaries that will promote collaborative problem-solving (Nicolescu, 2002; Rothwell et al.,
2020).

Conclusion

In summary, coaches identified that Parkour-style activities and games could be useful for
enrichment of functional movement skills in helping to develop a well-rounded and adaptive
‘mover’ in team sport athletes, supporting the notion in the Athletic Skills Model of Parkour
as a donor sport (Strafford et al., 2018; Savelsbergh & Wormhoudt, 2019). The applications
arising from the experiential knowledge explored in this study are: 1) Parkour activities
should be viewed as supplementary to typical sport training routines and be inclusive of
obstacle courses with or without sport specific skills and or tag elements, 2) Parkour-style
obstacle environments should be scalable to allow both the developing athlete and coach to
manipulate tasks and object orientation using soft play and traditional gym equipment, and
The implementation of continued professional development opportunities for sport practitioners, and athlete-centred approaches to learning design and opportunities for coach-parent forums, are recommended to support the integration of Parkour-style enrichment environments.

This study has provided some of the first documented insights into how Parkour-style training could be integrated into team sport practice to provide opportunities for athletes to learn to self-regulate and support the development of functional movement skills. However, with limited research to date, these findings should be considered with caution and further research is required to evaluate such approaches in practice. To address the effectiveness of translating Parkour into team sport settings as a donor sport, future intervention studies utilising applied experiential designs could seek to verify whether there are short term (<6 weeks) benefits to Parkour-style training interventions on the development of physical and psycho-social skills in team sport athletes and also more longitudinal studies to the same effect. An issue in the future design and development of such interventions, is to provide further evidence from sports coaches on how Parkour could be effectively implemented in practice. For example, employing designs such as the Delphi method to gain expert consensus on a set of design principles and a framework for the integration of Parkour-style training in team sport settings would help guide further intervention research designs. Such studies will provide both theoretical and applied insights on athlete learning and development as advocated in the Athletic Skills Model, with respect to the donor sport concept.
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Table 1. Participants’ demographic information

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<tr>
<th>Coach ID</th>
<th>Sport Specialism(s)</th>
<th>Age (Years)</th>
<th>Coaching Experience (Years)</th>
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*The names of the coaches have been transformed using a number prefix to protect their anonymity*
Figure 1. Thematic Map: Coaches’ General Perceptions of Parkour.
Figure 2. Thematic Map: Potential Applications of Parkour.
Figure 3. Thematic Map: Feasibility of Integrating Parkour into Coaching Practice.