Feasibility of parkour-style training in team sport practice: a Delphi study

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SPORTS PERFORMANCE

Feasibility of Parkour-style training in team sport practice: A Delphi study

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ABSTRACT

Research has suggested Parkour-style training could act as a donor sport for athlete development in team sports. This study aimed to interrogate expert consensus on the feasibility of integrating Parkour-style training into team sport practice, by employing a three-round, online Delphi method. Talent development and strength and conditioning coaches working in team sport settings were invited to participate. Twenty-four coaches completed Round One, 21 completed Round Two and 20 completed Round Three. In Round One, coaches answered 15 open-ended questions across four categories: (1) General Perceptions of Parkour-style training; (2) Potential Applications of Parkour-style training; (3) Designing and Implementing Parkour-style training Environments; and (4), Creating an Inclusive Learning Environment. Responses from Round One were analysed using reflexive thematic analysis with deductive and inductive coding resulting in 78 statements across three dimensions (Application of Parkour Style Training in Team Sports; Designing and Implementing Parkour-style training Environments; Overcoming Potential Barriers when Integrating Parkour-style training). In Rounds Two and Three, coaches rated these statements using a four-point Likert scale and measures of collective agreement or disagreement were calculated. This study established consensus around a set of design principles for integrating Parkour-style training into team sport practice routines.

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Introduction

Traditionally, the value of coaches' experiential knowledge has been neglected in pedagogical science research (Greenwood et al., 2014; Rothwell et al., 2020). However, recent investigations, informed by ecological dynamics theory, have transitioned towards integrating empirical data from quantitative studies *and* experiential knowledge of coaches to develop an integrated understanding of coaching practice (e.g., Browne et al., 2019; McCosker et al., 2021; Mckay & O'Connor, 2018). Application of these research designs has informed a more contextualised understanding, advancing models of pedagogical practice and talent development such as Nonlinear Pedagogy (Chow et al., 2015), and the Athletic Skills Model (Savelsbergh & Wormhoudt, 2019; Wormhoudt et al., 2018).

Ecological dynamics is a theoretical framework to understand athlete development on an ecological scale (Button et al., 2020) and considers successful coaching and learning to be underpinned by effective pedagogical design principles that encourage learners to search for individualised movement solutions (Chow, 2013; Chow et al., 2021). Nonlinear Pedagogy (Chow et al., 2015), and the Athletic Skills Model (Savelsbergh & Wormhoudt, 2019; Wormhoudt et al., 2018), are distinct models of athlete development informed by ecological dynamics' theory and consider coaches as "environmental designers" (Rudd et al., 2020). Nonlinear Pedagogy consists of five learner-centred principles to practice design (representative design, constraints manipulation, task simplification, informational constraints, and functional variability) that satisfy developmental needs of an athlete via an "explore-discover-adapt" approach to learning (Chow et al., 2016; Rudd et al., 2020; Renshaw & Chow, 2019). These five learner-centred principles operate through the key pedagogical channels of practice, information, and constraints, with less emphasis placed on verbalised instructions (extrinsic feedback) and greater emphasis placed on implicit learning to allow for the emergence of functional goal-directed movements in the learner (Chow et al., 2016; Rudd et al., 2020; Renshaw & Chow, 2019). The long-term impact of engaging with practices designed using these principles of Nonlinear Pedagogy entails the acquisition of functional movement solutions that are attuned and adaptable across performance domains and physical activity environments (Chow & Atencio, 2014).

The Athletic Skills Model (ASM) provides a concentric approach to athlete development which emphasises the benefits of enriching an athlete's basic movement skills (termed "Functional Movement Skills" by Newell (2020)). The ASM promotes continuing development of coordinative abilities and adaptations to environment conditions, at a foundational level (Wormhoudt et al., 2018). Integrating functional movement skills encapsulates elements of basic motor properties (coordination; speed; strength; flexibility and endurance) which enrich an athlete's potential to develop specific skills needed to participate and compete in particular sports at a later stage. Consequently, activities which promote the acquisition of functional movement skills are deemed important for

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the functional development of athletes, irrespective of sport specialisation (Rudd et al., 2020; Newell, 2020). Accordingly, the Athletic Skills Model proposes the benefits of engaging in activities termed "donor sports", which may "donate" elements of functional movement skills that support performers to transfer skill learning between sports or sport-specific elements to their "target sport" in which they are seeking to specialise.

Consistent with proposals outlined in the Athletic Skills Model and Nonlinear Pedagogy, Strafford et al. (2018) positioned Parkour-style training as a donor sport to promote physical and psychological development in team sport athletes. More recently, researchers have addressed *how* Parkour-style training might be integrated as a donor sport using coaches' experiential knowledge (Strafford et al., 2020; Strafford et al., 2021a). Experiential knowledge of Parkour Traceurs sampled by Strafford et al. (2020) emphasised that indoor Parkour environments should promote exploratory and creative movement behaviours to condition the athlete psychologically and physically. Traceurs also recommended that indoor Parkour environments should include modular practice landscapes, where set ups can be manipulated to alter task difficulty. Subsequent research by Strafford et al. (2021b) showed that performance in Parkour-speed-runs were supported by functional movement skills (arm swinging; jumping; running) and condition of movement (agility), all of which encapsulate elements of basic motor properties (speed; strength).

When integrating novel approaches such as Parkour-style training in practice, the aim should be to encourage partnerships between sport coaches and trainers considering how to best adapt practice landscapes to enrich athlete movement repertoires (Rothwell et al., 2020). Therefore, as Parkour would represent a novel addition to team sport practice routines, developing clear practitioner understanding could ensure a successful longer-term integration of Parkour-style training into athlete development programmes. Strafford et al. (2021a) sought to meet the challenge of integrating Parkour practice landscapes in team sports by collecting experiential knowledge of talent development specialists and strength and conditioning coaches. For successful integration of Parkour-style training, it was recommended that continued professional development opportunities for sport coaches, athlete-centred approaches to learning design, and opportunities for coach-parent forums should be integrated in team sport settings (Strafford et al., 2021a). However, whilst the findings reported by Strafford et al. (2021a) provided an initial insight into how Parkour-style training could be integrated into team sport settings, they did not provide practitioner insights on recommendations for implementation in practice design. Therefore, it is important to interrogate practice understanding on implementation in practice and seek consensus from a broader sample of expert talent development specialists and strength and conditioning coaches on how Parkour-style training could be integrated as a donor sport in team sport settings.

To gain expert consensus on a topic, researchers in sport science domains have recently used the Delphi method (e.g., Fliess Douer et al., 2021; Krause et al., 2018; Runswick et al., 2021; Villiere et al., 2021). The Delphi method is regarded as a particularly useful tool for investigating subjects that have had relatively little research devoted to them and typically consists of a sample of experts responding anonymously to a series of iterative questionnaires, with feedback used between rounds to reach consensus among the group (Hasson & Keeney, 2011; Hasson et al., 2000; Thangaratinam & Redman, 2005). Given the limited research on effects of Parkour-style training, utilising a 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 practice design and be of value for researchers seeking to employ Parkour-style training interventions. The aim of this study was, therefore, to gain expert opinion on the feasibility of integrating Parkour-style training into team sport practice routines and to establish a framework and set of design principles for its integration.

Methods

Research Design

An online-Delphi study, consisting of three iterative rounds was employed (Holloway, 2012). For each round, participants received an ad-hoc online-questionnaire, developed and administered using a commercial survey provider (Qualtrics©, Provo, Utah, United States). To ensure rigour in the Delphi process, the authors decided on the inclusion and exclusion criteria for selecting "experts", the number of rounds, the analytical approach and thresholds for consensus prior to the commencement of the study (Bahl et al., 2016). These decisions were guided by a pragmatic approach and placed centrally to address the research aims, with emphasis on shared meaning-making, communication, and transferability of research findings to coaching practice in team sport settings (Creswell & Creswell, 2017).

Panel Selection

Talent development specialists and strength and conditioning coaches with expertise in team sports were specifically targeted for inclusion in the study. Participants that fitted more than one of the categories were categorised as "both" (Robertson et al., 2017). Participants were recruited using purposive sampling via social media and associated contacts from applied coaching science networks in Africa, Asia, Europe, and North America. To be eligible to participate in the study, at the time of recruitment coaches had to have a minimum of three years of experience working in applied team sport settings and possess accreditation from a relevant governing body and/or university degrees in related subject areas. Sample sizes in Delphi studies are dependent on group dynamics in reaching consensus, with 10–18 expert respondents considered sufficient for consensus to be achieved in the present study (Akins et al., 2005; Okoli & Pawlowski, 2004; Vogel et al., 2019). Fifty-three participants were invited to participate, with 24 completing Round One (45.3% response rate), 21 of 24 completed Round Two (87.5% response rate) and 20 of 21 completed Round Three (95.2% response rate). The panel included two talent development specialists and four strength and conditioning coaches who were previously interviewed in the Strafford et al. (2021a) study and 18 new participants. Panel demographics are

outlined in Table 1. Institutional ethical approval was granted by the university ethics committee of the lead author, with all participants providing informed written consent.

Procedure

With three rounds being considered optimal to reach consensus (Iqbal & Pipon-Young, 2009) this online-Delphi procedure aimed to reach consensus after three iterative rounds. The procedures undertaken are outlined in Figure 1.

Round 1

Consistent with a pragmatic approach, open-ended, free-text questions were used in Round One to permit observation of participants' perceptions and experiences (Smith & Sparkes, 2016). Fifteen, open-ended questions were developed, based upon findings from previous Parkour-style training research (e.g., Strafford et al., 2020; Strafford et al., 2021a, 2021b) that aligned with concepts from Nonlinear Pedagogy and the Athletic Skills Model. In particular, the higher order themes, lower order themes and quotes from the qualitative data outlined in Strafford et al. (2021a) were used to structure the wording of these open-ended questions. Open-ended questions were separated into four categories: (1) General Perceptions of Parkour-style training; (2) Potential Applications of Parkour-style training; (3) Designing and Implementing Parkour-style training Environments, and (4) Creating an Inclusive Learning Environment. Once initial questions were developed by the lead author, the authorship team met to discuss the relevance of each question, relative to answering the research aims. These discussions fostered a collaborative working environment where ideas and suggestions from each member of the authorship were critically appraised and incorporated into question development where appropriate. To ensure uniformity and remain as faithful as possible to the original wording of findings and concepts outlined in the Parkour literature, these questions were either accepted without revision, modified to remove bias in language, or deleted (Figure 1; Fischer et al., 2013). The online questionnaire for Round One was then distributed to participants via a secure email link and remained open for 4 weeks. The full list of questions used in Round One is available in the supplementary material.

Responses from Round One were analysed in Microsoft Excel (Version 19, Microsoft Cooperation, Washington, United States), using a two-stage reflexive thematic analysis which incorporated both deductive and inductive coding to identify higher and lower order themes (Braun & Clarke, 2019). During the reflexive thematic analysis, an "either or approach" (i.e., inductive approach: with little pre-determined structure, theory, or framework, or deductive approach: of structure, theory, or a pre-determined framework) was not adopted. Instead, a pragmatic form of analysis which included a mixture of deductive and inductive approaches was undertaken (Robertson et al., 2013; Braun et al., 2016; Braun & Clarke, 2019). A deductive analysis represented the first coding stage, where free-text response from the open-ended questions were

Table 1. Sample demographics.

	Round 1 (n = 24)	Round 2 (n = 21)	Round 3 (n = 20)
Descriptives:			
Age (Years) (Mean ± SD)	34.1 ± 9.4	33.2 ± 8.8	32.8 ± 8.8
Experience (Years) (Mean ± SD)	13.4 ± 7.1	13.4 ± 7.1	11.9 ± 6.4
Current role:			
Talent development coach	41.7% (10)	38.1% (8)	38.1% (8)
Strength and conditioning coach	41.7% (10)	42.9% (9)	38.1% (8)
Both	16.7% (4)	19.0% (4)	19.0% (4)
Sports currently working with:			
American Football	4.2% (1)	4.8% (1)	5.0% (1)
Basketball	4.2% (1)	4.8% (1)	5.0% (1)
Gaelic Football	4.2% (1)	4.8% (1)	5.0% (1)
Ice Hockey	4.2% (1)	4.8% (1)	5.0% (1)
Multi-Sport	33.3% (8)	28.6% (6)	35.0% (7)
Rugby League	8.3% (2)	9.5% (2)	10.0% (2)
Rugby Union	4.2% (1)	4.8% (1)	5.0% (1)
Soccer	33.3% (8)	38.1% (8)	40.0% (8)
Team athletic sports	4.2% (1)	0.0% (0)	0.0% (0)
Academic qualifications:			
Undergraduate degree	79.2% (19)	81.0% (17)	80.0% (16)
Master's degree	54.2% (13)	57.1% (12)	55.0% (11)
Doctorate degree	12.5% (3)	9.5% (2)	10.0% (2)
Professional qualification:			
Strength and conditioning accreditation	45.8% (11)	38.1% (8)	35.0% (7)
Sport coaching qualification	45.8% (11)	47.6% (10)	50.0% (10)
Country of employment:			
Finland	4.2% (1)	4.8% (1)	5.0% (1)
Ireland	8.3% (2)	9.5% (2)	10.0% (2)
Morocco	4.2% (1)	4.8% (1)	5.0% (1)
Netherlands	4.2% (1)	4.8% (1)	5.0% (1)
Portugal	4.2% (1)	4.8% (1)	5.0% (1)
Singapore	4.2% (1)	0.0% (0)	0.0% (0)
United Kingdom	62.5% (15)	61.9% (13)	60.0%(12)
United States	8.3% (2)	9.5% (2)	10.0% (2)

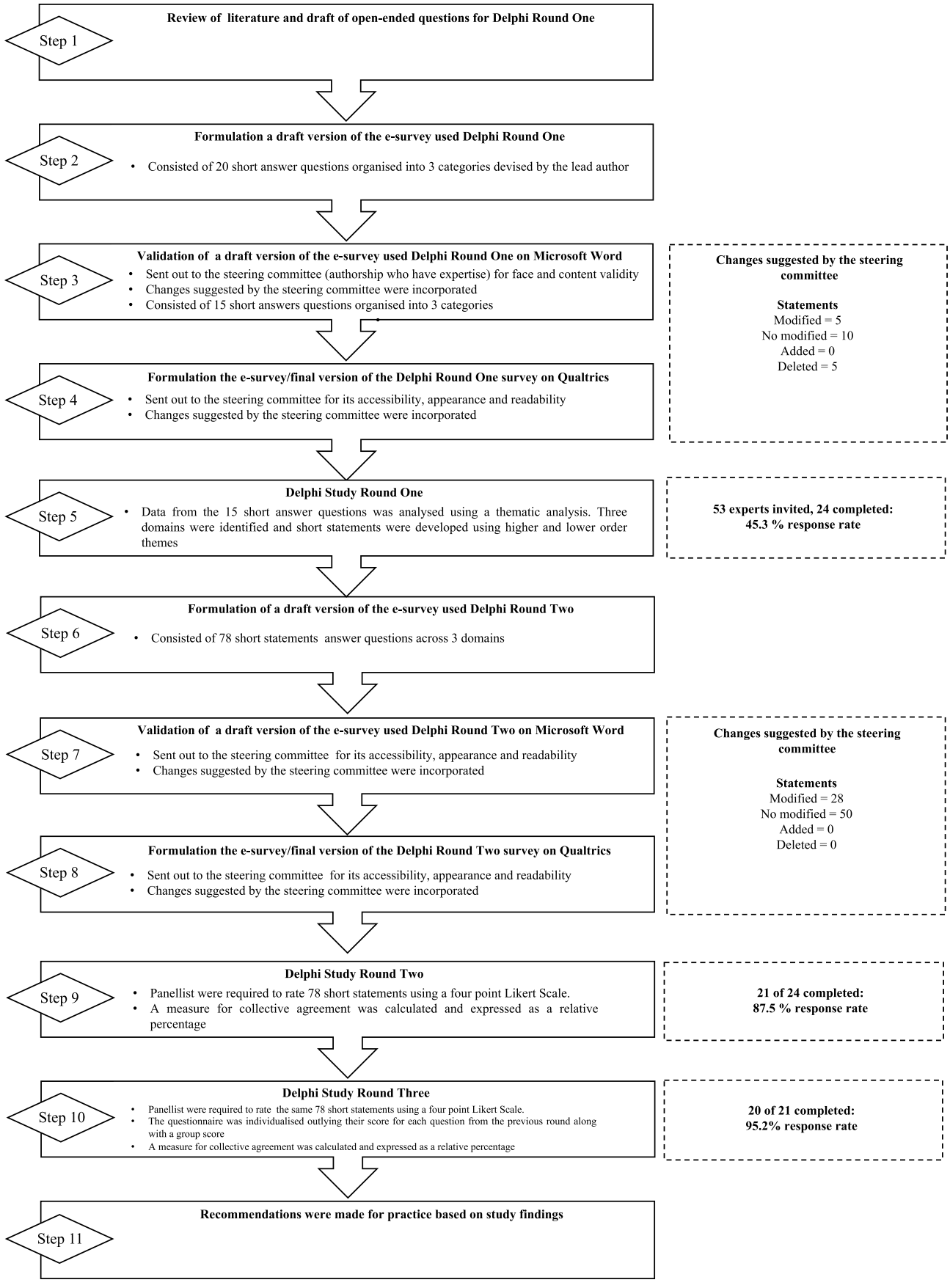

Figure 1. Delphi procedure.

organised into three dimensions (Potential Applications of Parkour-style training in team sports, Designing and Implementing Parkour-style training environments, Overcoming Potential Barriers when Integrating Parkour-Style training). This first coding stage was conducted by the lead author, who read the free-text responses several times to identify language relating to potential applications of Parkour-style training in team sports, designing and implementing Parkour-style training environments and overcoming potential barriers when integrating Parkour-Style training. After this first coding stage, the authorship undertook a period of peer-consultation, which consisted of independently reading Round One responses and undertaking open discussion regarding the initial dimensions determined by the lead author.

Having aligned with pragmatism, the authors accepted that theory-free knowledge cannot be achieved, in that knowledge can be both implicit (as with practical skill of expertise) and explicit (as with theoretical understanding of the subject; Dewey, 1938). Therefore, once data were organized into these three dimensions, both deductive and inductive analyses were undertaken in a second coding stage (Guba & Lincoln, 2005). This collaborative and reflexive approach to the analytic process was employed to develop a richer and more nuanced interpretation of the data, rather than seek consensus on meaning (Braun & Clarke, 2019). Initial codes generated from the analysis of round one responses were next grouped into higher and lower order themes in relation to the research question. 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 voiced their interpretations of higher and lower order themes via the medium of critical verbal dialogue. Where 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 "Overcoming Potential Barriers to the Integration of Parkour-Style Training", where the word 'Overcoming" was added to best represent the recommendations outlined by coaches on how to "Overcome" potential barriers for integration of Parkour-style training could be resolved.

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 prospective (which concerns the effect of the whole-person-researcher on the research) and retrospective (which concerns the effect of the research on the researcher) reflexivity. This process confirmed the significance of their knowledge, values and feelings, that the authors brought to the analytical lens applied to the findings and the conceptualisation of the research issues (Attia & Edge, 2017; Braun & Clarke, 2019). In accordance with recommendations from Smith and McGannon (2018), the authorship engaged with an independent critical friend during the reflexive thematic analysis process to discuss interpretations made throughout. During these discussions, the role of the critical friend was to encourage reflexivity by challenging the authors' *"construction of knowledge"* (Cowan & Taylor, 2016; Smith & McGannon, 2018). The process of engaging with a critical friend enabled the analysis process to develop richer and more nuanced interpretations, rather than seeking consensus on meaning (Braun & Clarke, 2019). The thematic analysis of free-text responses highlighting a total of 3 dimensions, 10 higher-order themes and 78 lower-order themes. A thematic map is provided in the supplementary material of this article.

Round 2

Using the higher and lower order themes from the thematic analyses and the language from the free-text responses from the questions presented in Round One, the lead author developed 78 short statements which were organised into three dimensions: (1) Application of Parkour Style Training in Team Sports; (2) Designing and Implementing Parkour-style training Environments; (3) Overcoming Potential Barriers when Integrating Parkour-style training. The development of these short statements involved the lead author writing one idea per statement, written as an action, with no ambiguity, and minimum overlap with other items (Jorun, 2015). The authorship then met again to discuss the relevance of each statement relative to answering the research aims and to refine the draft statements to ensure uniformity and remain as faithful as possible to the original wording of the participants' free-text responses (Fischer et al., 2013). Statements were either accepted without revision, modified to remove bias in language, or deleted (Figure 1). The full list of final statements used in Round Two and Round Three are available in the supplementary material. The second online questionnaire was distributed to participants that responded in Round One via a secure email link and remained open for 2 weeks. Participants were asked to rate each statement using a four-point Likert scale as either: strongly agree, agree, disagree, strongly disagree (Vogel et al., 2019). An additional option of "don't know" was also provided. The inclusion of a "don't know" option was a pragmatic decision, to ensure participants had an opportunity to accurately report if they did not have an opinion/attitude on a particular issue, rather than feel pressured to give a substantive perspective option (strongly agree, agree, strongly disagree, disagree; Lavrakas, 2008). Raw response data were analysed descriptively using relative and absolute frequencies.

Round 3

The final round consisted of participants that responded to Round Two being presented with a personalised online questionnaire, which consisted of their answers from Round Two, along with a summary of the group responses expressed as

Table 2. Summary of grouped statements by dimension.

Statement dimensions	Number of statements in each domain		Proportion of statements where consensus was achieved (n)	
	Round 2	Round 3	Round 2	Round 3
Applications of Parkour-style training in Team Sports[a]	13	13	100.0% (13)	100.0% (13)
Designing and Implementing Parkour-style training Environments[a]	32	32	71.9% (23)	78.1% (25)
Overcoming Potential Barriers when Integrating Parkour-style training [a]	33	33	81.9% (27)	78.8% (26)

Note: Consensus was achieved when ≥70% of participants strongly agreed/agreed or strongly disagreed/disagreed with a statement. [a]Stability of consensus (≤10% variation) was achieved between Round 2 and Round 3.

a relative frequency. This method provided participants with the opportunity to amend their answers from Round Two if they wished to do so. Raw response data were analysed descriptively using relative and absolute frequencies.

Criteria for Consensus

Delphi studies typically include a specific number of rounds to elicit consensus among participants, without addressing if stability (consistency) of responses is attained between successive rounds, and without a formal definition of what is going to be considered consensus or even without specifying a threshold value that determines when consensus has been achieved (Barrios et al., 2021; Boulkedid et al., 2011; Diamond et al., 2014; Foth et al., 2016; Humphrey-Murto et al., 2017). Delphi studies have used a wide range of consensus levels ranging from 50% to 80% (Hasson et al., 2000). Based on previous work and after formal discussion between the authorship, consensus was defined as ≥70% of the panel agreeing/strongly agreeing or disagreeing/strongly disagreeing with a statement in Round Three (Runswick et al., 2021; Vogel et al., 2019). All "don't know" responses were excluded to ensure that the reported percentage agreement or disagreement for each statement represented the consensus among only those who believed they held a firm view. Absolute frequencies of "don't know" responses for each statement in Round Two and Round Three are available in the supplementary material. As directed by Duffield (1993), stability of consensus was considered reached if the between round group responses (between Round 2 and Round 3 in this instance) varied by ≤10%.

Results

Table 2 provides a summary of the Delphi statements and the number of statements which reached consensus in Round Two and Round Three. Stability of consensus was achieved across all three dimensions. Findings from Round Three were used to develop the recommendations which are reflective of the consensus achieved.

Applications of Parkour-style training in Team Sports

In this dimension, the panel reached consensus (Table 3) on which physical and psychological skills may be developed through Parkour-style training.

According to the panel, Parkour-style training would be useful for developing adaptive athletes as the activities challenged athletes to move in a dynamic way. The panel also agreed that engaging with Parkour-style training could improve competitive performance in team sport athletes' main sport, due to transfer of movement competences between practice domains. Specifically, the panel agreed that Parkour-style training could play a role in supporting team sport athletes to develop movement skills that are not strictly

Table 3. Responses to statements in the applications of Parkour-style training in Team Sports dimension.

Applications of Parkour-style training in Team Sports	Round 2 (n = 21)		Round 3 (n = 20)	
	Agreement (%)	Disagreement (%)	Agreement (%)	Disagreement (%)
General structure of Parkour-style training in Team Sports				
Parkour-style raining may take the form of an obstacle course in team sport settings.	100.0%	0.0%	**100.0%**	**0.0%**
Parkour-style training may take the form of tag-games in team sport settings.	100.0%	0.0%	**100.0%**	**0.0%**
Skills developed through Parkour-style training				
Engaging with Parkour-style training could develop adaptive athletes.	100.0%	0.0%	**100.0%**	**0.0%**
Parkour-style training challenges athletes to move in a dynamic way.	100.0%	0.0%	**100.0%**	**0.0%**
Parkour-style training could play a role in supporting athletes to develop movement skills relevant for a range of sports.	100.0%	0.0%	**100.0%**	**0.0%**
Parkour-style training targets movements that are not strictly sport specific but can provide strong foundational movements for athletes to build upon.	100.0%	0.0%	**100.0%**	**0.0%**
Parkour-style training could be used to develop problem solving skills in team sport athletes.	100.0%	0.0%	**100.0%**	**0.0%**
Parkour-style training could be used to develop resilience in team sport athletes.	92.3%	7.7%	**92.9%**	**7.1%**
Parkour-style training could be used to develop confidence in team sport athletes.	90.0%	10.0%	**94.7%**	**5.3%**
Parkour-style training could be used by team sports athletes to develop risk appraisal skills.	100.0%	0.0%	**100.0%**	**0.0%**
Parkour-style training could be used to develop coordinative abilities in team sport athletes.	100.0%	0.0%	**100.0%**	**0.0%**
Parkour-style training could be used to develop conditions of movement (agility; stability; flexibility; power and endurance) in team sport athletes.	100.0%	0.0%	**100.0%**	**0.0%**
Parkour-style training could improve competitive performance in athletes' main sport due to transfer of movement competence between practice domains.	100.0%	0.0%	**100.0%**	**0.0%**

Note: Bold % denotes that ≥70% consensus was achieved; Agreement = agree+strongly agree; Disagreement = disagree+strongly disagree.

sport-specific but could support strong skill development via conditions of movement (agility; stability; flexibility; power and endurance) relevant for a range of varied sports. In addition to physical skills, panellists also agreed that engaging with Parkour-style training may be useful for developing psychological skills: problem solving, resilience, confidence, emotional regulation, risk appraisal and coordinative abilities.

Designing and Implementing Parkour-style training Environments

In this dimension, the panel reached consensus (Table 4) on Recommendations for: The Structure of Parkour-style training in Team Sport, Creating Variability in Parkour-style training Environments, Maintaining Enjoyment and Engagement, and Session Delivery and Coach Feedback Methods.

Recommendations for the Structure of Parkour-style training in Team Sport

According to the panel, Parkour-style training in team sport settings can be used in a variety of ways, such as: (i) using obstacle courses both with or without tag game elements, (ii) integrated as a section of the warm-up for the main sport-specific coaching session, and (iii), as a separate session to supplement strength and conditioning work. The panel agreed that soft-play equipment and/or equipment found in gym-based settings (mats, boxes, hurdles, cones, horses, benches, sausage bags, shields and other items) could be used in Parkour-style training landscapes, as long as the set up does not increase injury risk. Whilst the panel agreed that seeking to integrate sport-specific skills into Parkour-style training could help coach and athlete *"buy in"*, there was little consensus on if/how sport-specific skills should be integrated – this issue requires future investigation.

Recommendations for Creating Variability in Parkour-Style Training Environments

The panellists agreed that equipment used in Parkour-style training environments should be modular so their properties can be manipulated to create variability in practice task constraints. Specifically, the height of some objects should be scalable to allow for increases or decreases in task difficulty. The panellists also agreed that the position and angle of some objects should be scalable to allow task difficulty to be altered. The panel agreed that the equipment layout in these Parkour-style environments should not be exclusively symmetrical, but could be exclusively asymmetrical, with a mixture of symmetrical and asymmetrical components being preferable.

Recommendations for Maintaining Enjoyment and Engagement

To promote high and sustained levels of enjoyment and engagement in Parkour-style training, the panel agreed that athletes should actively involve partners (i.e., co-designing) in their development, allowing them to create relevant, challenging, engaging and fun learning environments.

Recommendations for Session Delivery and Coach Feedback Methods

The panel agreed that for safety purposes Parkour-style training should be delivered by coaches who have engaged with related coach education resources (Parkour-style training workshops and material). Panellists agreed that Parkour-style training should be primarily athlete-led, where athletes create (co-design) their own Parkour-style environment with equipment that is made available to them by the coach. However, the panel agreed that some level of athlete induction and awareness training should be conducted when first integrated. Panellists agreed that Parkour-style training should be delivered via guided discovery and free play methods, driven by the athletes rather than being coach-led.

To exemplify, Figure 2 provides a coaching resource which outlines principles for integrating and delivering Parkour-style training in team sport settings, across four pillars: equipment, session structure, creating variability, and session delivery and feedback. Figure 2 is created using statements reaching consensus in Round 3 for the "Designing and Implementing Parkour-style training Environments" domain. Figure 2 is reviewed by the authorship to ensure uniformity and remain as faithful as possible to the original wording of statements reaching consensus. Before integrating Parkour-style training in team sport settings, it is recommended that coaches engage with this resource and relevant coach education material to aid the development and delivery of a Parkour-style learning environment as a platform for athlete development.

Overcoming Potential Barriers when Integrating Parkour-style training

In this dimension, panellists reached consensus (Table 5) on Potential Barriers and Recommendations for Resolution, Recommendations for the Development and Application of Coach-Parent Forums, and Recommendations for the Development and Application of Coach Education.

Potential Barriers and Recommendations for Resolution

Panellists agreed that Parkour-style training would be easier to implement in team sport settings when it is proposed to coaches as "obstacle courses" with or without tag elements (e.g., gamifying Parkour). This description was consistent with the panel's recommendation on the structure of Parkour-style training.

Panellists agreed that Parkour-style training workshops should be integrated to challenge traditional coach thinking and resistant beliefs and attitudes around practice design and address the common misconception that Parkour-style training is a high injury risk activity. Panellists agreed that integrating Parkour-style training using equipment typically found in team sport settings would overcome barriers related to specialist

Table 4. Responses to statements in the Designing and Implementing Parkour-style training Environments dimension.

	Round 2 (n = 21)		Round 3 (n = 20)	
Designing and Implementing Parkour-style training Environments	Agreement (%)	Disagreement (%)	Agreement (%)	Disagreement (%)
Maintaining enjoyment and engagement				
For Parkour style-training interventions to succeed there should be a culture where athletes are actively involved partners (i.e., co-designing) in their development, allowing them to create relevant, engaging and fun learning environments.	95.0%	5.0%	**94.4%**	**5.6%**
Equipment recommendations				
Any equipment found in a typical (traditional) coaching environment can be used for Parkour-style training as long as the set up does not increase injury risk of players.	94.7%	5.3%	**94.1%**	**5.9%**
Equipment found in a typical (traditional) coaching environment typically includes: mats, boxes, hurdles, cones, horses, benches, sausage bags, shields and other items.	90.0%	10.0%	**78.9%**	**21.1%**
In Parkour-style training, the less equipment used the better.	36.4%	63.6%	38.5%	61.5%
Parkour-style training should only use specialist equipment (e.g., specialist parkour installations and facilities).	0.0%	100.0%	**15.0%**	**85.0%**
Recommendations for session structure				
Parkour-style training taking the form of obstacle courses could use equipment found in traditional gym based settings.	100.0%	0.0%	**100.0%**	**0.0%**
Parkour-style training taking the form of obstacle courses could use soft-play equipment.	100.0%	0.0%	**100.0%**	**0.0%**
Parkour-style training taking the form of obstacle courses should form a part of the warm up of the main sport specific coaching session.	100.0%	0.0%	**100.0%**	**0.0%**
Parkour-style training taking the form of obstacle courses should be integrated as a separate session to supplement strength and conditioning work.	66.7%	33.3%	**81.3%**	**18.8%**
Parkour-style training taking the form of obstacle courses with a tag-game element could use equipment found in traditional gym based settings.	94.4%	5.6%	**100.0%**	**0.0%**
Parkour-style training taking the form of obstacle courses with a tag-game element could use soft-play equipment.	95.0%	5.0%	**100.0%**	**0.0%**
Parkour-style training taking the form of obstacle courses with a tag-game element should form a part of the warm up of the main sport specific coaching session.	94.7%	5.3%	**89.5%**	**10.5%**
Parkour-style training taking the form of obstacle courses with a tag-game element should be integrated as a separate session to supplement strength and conditioning work.	68.8%	31.3%	**81.3%**	**18.8%**
Parkour-style training should integrate sport-specific skills (e.g., ball handling, passing, shooting).	46.7%	53.3%	50.0%	50.0%
Integrating sport-specific skills into Parkour-style training could help coach and athlete "buy in" as it would be clear how sport-related movements are being integrated.	85.7%	14.3%	**90.0%**	**10.0%**
Parkour-style training should be used on the day of sport specific competition.	15.4%	84.6%	35.7%	64.3%
Parkour-style training should not be used on the day of sport specific competition.	50.0%	50.0%	43.8%	56.3%
Strategies for creating variability in Parkour-style training environments				
All objects in the Parkour-style environment should be modular so that their height, can be scalable to allow for increases or decreases in task difficulty.	66.7%	33.3%	**70.6%**	**29.4%**
Some objects in the Parkour-style environment should be modular so that their height can be scalable to allow for increases or decreases in task difficulty.	95.2%	4.8%	**100.0%**	**0.0%**
All objects in the Parkour-style environment should be modular so that their position can be scalable to allow for increases or decreases in task difficulty.	55.6%	44.4%	58.8%	41.2%
Some objects in the Parkour-style environment should be modular so that their position can be scalable to allow for increases or decreases in task difficulty.	90.5%	9.5%	**100.0%**	**0.0%**
All objects in the Parkour-style environment should be modular so that their angle can be scalable to allow for increases or decreases in task difficulty.	57.9%	42.1%	52.9%	47.1%
Some objects in the Parkour-style environment should be modular so that their angle can be scalable to allow for increases or decreases in task difficulty	95.0%	5.0%	**94.7%**	**5.3%**
Parkour style training environment's should be symmetrical.	0.0%	100.0%	**12.5%**	**87.5%**
Parkour style training environment's should be asymmetrical.	75.0%	25.0%	**86.7%**	**13.3%**
Parkour style training environments should have a mixture of symmetrical and asymmetrical objects.	100.0%	0.0%	**100.0%**	**0.0%**
Recommendations for session delivery and coach feedback methods				
The coach should attend Parkour-style training workshops and or related coach education courses before integrating Parkour-style training.	89.5%	10.5%	**83.3%**	**16.7%**
When first integrated, Parkour-style training requires some level of athlete induction and awareness training, with coach directed input for safety purposes.	94.10%	5.90%	**85.7%**	**14.3%**
Parkour-style training should be delivered by a mixture of the coach and Parkour specialists.	60.0%	40.0%	52.6%	47.4%
Parkour-style training should be primarily athlete-led, where athletes create (co-design) their own Parkour-style environment with equipment that is made available to them by coach.	78.6%	21.4%	**80.0%**	**20.0%**
Parkour-style training should be primarily delivered via guided discovery and free play methods, driven by the athletes.	90.0%	10.0%	**94.1%**	**5.9%**
Parkour style-training should be primarily coach-led and organised without guided discovery and free play.	0.0%	100.0%	**6.3%**	**93.8%**

Note: Bold % denotes that ≥70% consensus was achieved; Agreement = agree+strongly agree; Disagreement = disagree+strongly disagree.

equipment and cost, concurrent with the panel's suggestion on equipment properties. Panellists agreed that having equipment that is easily moveable reduces set up time, which is beneficial as Parkour-style environment can either be set up before the athlete arrives or by the athlete during the session.

Recommendations for the Development and Application of Coach-Parent Forums

Panellists agreed that coach-parent forums could be delivered in-person and/or online to give parents opportunities to ask questions about the rationale for using Parkour-style training in

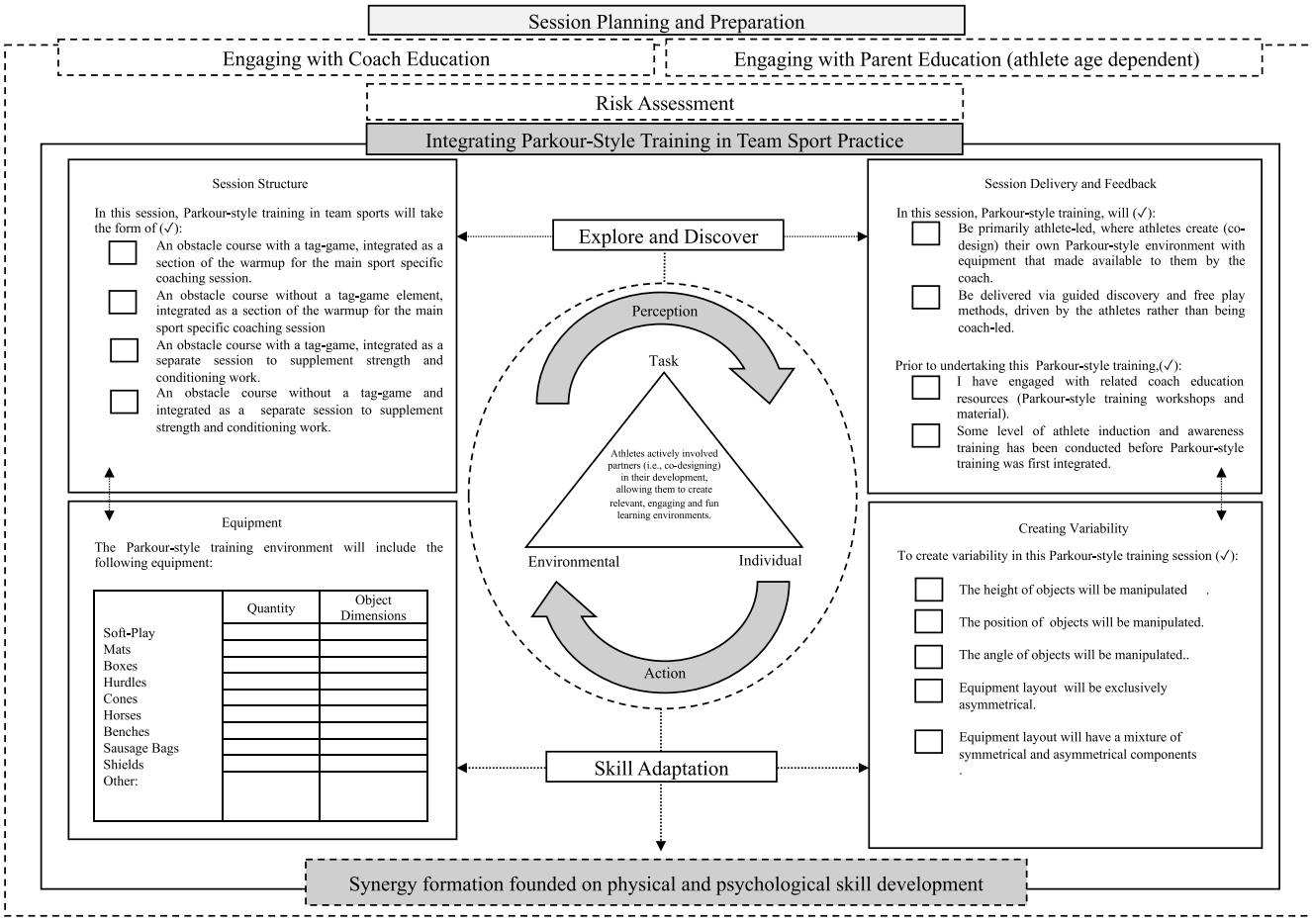

Figure 2. Principles framework for integrating and delivering Parkour-style training in team sport settings.

the developmental pathway of their child/ren. This idea should be relayed to parents in a variety of multi-media (e.g., videos, presentations, podcasts) formats. Panellists agreed that coach-parent forums should use non-technical language so that the rationale for using Parkour style training in the developmental pathway of their child/ren can be clearly understood. The coach-parent forums should emphasise two key aspects: 1) safety aspects of Parkour-style training by outlining to parents what Parkour-style training is (e.g., obstacle course/tag) and what it is not (e.g., jumping off buildings and riding on the tops of trains), 2) the added-value of Parkour-style training for the development of their child/ren's athletic skills and foundational capacities. Where possible, panellists outlined how parents should be provided with opportunities to partake in 'Parkour taster sessions' to allow them to 'experience' the Parkour-style training that their child/ren will undertake.

Recommendations for the Development and Application of Coach Education

Panellists agreed that Parkour-style training workshops should be developed and delivered in conjunction with professional training programmes of sport national governing bodies. According to the panellists, this material should be developed in consultation with Parkour specialists to ensure that they are representative of a safe and inclusive Parkour environment by outlining to coaches what *Parkour-style training* is (e.g., obstacle course/tag) and what it is not (e.g., 'free running' involving jumping off buildings and riding on top of trains). Specifically, the material and delivery should demonstrate a range of activities that can be implemented with and without equipment, implemented in different environments (e.g., outdoors and indoors) and with varying athlete numbers. The material should also demonstrate how to progress, regress, and manipulate the difficulty of Parkour-style training relative to age, skill level and functional capacities of athletes. These materials could also provide examples of animal flow and primal movement pattern activities found in contemporary strength and conditioning programmes. Panellists agreed that coach education workshops should offer support and advice for coaches to design Parkour-style training and receive feedback from Parkour specialists, other coaches in their sport (peer-consultation) and athletes (co-design). The panellists also recommended that coaches should be given opportunities to partake in 'Parkour taster sessions' where they 'experience' the Parkour-style training that athletes may undertake.

Figure 3 and Figure 4 provides principles for supporting the successful integration of Parkour-style training via education opportunities. Figure 3 and Figure 4 are created using statements reaching consensus in Round 3 for the "Overcoming Potential Barriers when Integrating Parkour-style training"

Table 5. Responses to statements in the overcoming potential barriers when integrating Parkour-style training dimension.

Overcoming Potential Barriers when Integrating Parkour-style training	Round 2 (n = 21)		Round 3 (n = 20)	
	Agreement (%)	Disagreement (%)	Agreement (%)	Disagreement (%)
Recommendations for the development and application coach-parent forums:				
In youth sport, where possible, parents should be given opportunities to partake in "Parkour taster sessions" to allow them to "experience" the Parkour-style training that their child/ren will undertake.	93.8%	6.3%	**93.8%**	**6.3%**
In youth sport, in-person coach-parent open forums should be organised to give parents opportunities to ask questions about the rationale for using Parkour-style training in the developmental pathway of their child/ren.	89.5%	10.5%	**94.4%**	**5.6%**
In youth sport, online coach-parent open forums should be organised to give parents opportunities to ask questions about the rationale for using Parkour-style training in the developmental pathway of their child/ren.	78.9%	21.1%	**88.9%**	**11.1%**
In youth sport, coach-parent forums should use non-technical language so that the rationale for using Parkour style training in the developmental pathway of their child/ren can be clearly understood.	90.0%	10.0%	**89.5%**	**10.5%**
In youth sport, coach-parent open forums should emphasise the safety aspects of parkour by outlining to parents what Parkour-style training is (e.g., obstacle course/tag) and what it is not (e.g., jumping off buildings and riding on the tops of trains).	95.5%	5.0%	**94.7%**	**5.3%**
In youth sport, coach-parent open forums should emphasise the added-value of Parkour-style training for the development of their child/ren's athletic skills and foundational capacities.	100.0%	0.0%	**100.0%**	**0.0%**
In youth sport, the rationale for using Parkour-style training sessions in the developmental pathway of their child/ren, should be relayed to parents in a variety of multi-media (e.g., videos, presentations, podcasts).	94.4%	5.6%	**94.1%**	**5.9%**
In youth sport, coach-parent forums, should not take time away from discussing any sport-specific opportunities of their child/ren.	50.0%	50.0%	53.3%	46.7%
Recommendations for the development and application of coach education:				
Parkour-style training workshops and coach education materials should demonstrate a range of activities that can be implemented with and without equipment.	100.0%	0.0%	**100.0%**	**0.0%**
Parkour-style training workshops and coach education materials should demonstrate a range of activities that can be implemented in different environments (e.g., outdoors and indoors).	100.0%	0.0%	**100.0%**	**0.0%**
Parkour-style training workshops and coach education materials should demonstrate a range of activities that can be implemented with varying athlete numbers.	95.2%	4.8%	**100.0%**	**0.0%**
Where possible, Parkour-style training workshops should give coaches opportunities to partake in "Parkour taster sessions" where they "experience" the Parkour-style training that athletes may undertake.	95.2%	4.8%	**100.0%**	**0.0%**
Parkour-style training workshops and coach education materials should demonstrate how to progress, regress and manipulate the difficulty of Parkour-style training relative to age.	95.0%	5.0%	**94.7%**	**5.3%**
Parkour-style training workshops and coach education materials should demonstrate how to progress, regress and manipulate the difficulty of Parkour- style training relative to skill level and functional capacities of athletes.	95.0%	5.0%	**90.0%**	**10.0%**
Parkour-style training workshops and coach education materials should offer support and advice for coaches to design Parkour-style training and receive feedback from Parkour specialists.	100.0%	0.0%	**100.0%**	**0.0%**
Parkour-style training workshops and coach education materials should offer support and advice for coaches to design Parkour-style training and receive feedback from other coaches in their sport (peer-consultation).	100.0%	0.0%	**100.0%**	**0.0%**
Parkour-style training workshops and coach education materials should offer opportunities for coaches to design Parkour-style training and receive feedback from athletes.	100.0%	0.0%	**100.0%**	**0.0%**
Parkour-style training workshops and coach education materials, should provide examples of animal flow and primal movement pattern activities found in contemporary strength and conditioning programmes.	86.7%	13.3%	**93.8%**	**6.3%**
The development and delivery of Parkour workshops and coach education materials should be linked to professional training programmes of sport national governing bodies.	70.6%	29.4%	**81.3%**	**18.8%**
Parkour-style training workshops and coach education materials should be developed in consultation with Parkour specialists to ensure that they are representative of a safe and inclusive Parkour environment.	95.2%	4.8%	**90.0%**	**10.0%**
Parkour-style training workshops and coach education materials should emphasise the safety aspects of parkour by outlining to coaches what Parkour-style training is (e.g., obstacle course/tag) and what it is not (e.g., jumping off buildings and free-riding on top of trains).	100.0%	0.0%	**100.0%**	**0.0%**
Potential barriers and recommendations for resolution:				
Parkour-style training would be difficult to implement in team sports settings due to traditional coach thinking and resistant beliefs around practice design.	55.6%	44.4%	61.1%	38.9%
Parkour-style training workshops and coach education materials could be implemented in team sport settings to challenge traditional coach thinking and resistant beliefs and attitudes around practice design.	95.2%	4.8%	**90.0%**	**10.0%**
Parkour-style training would be difficult to implement in team sports due to common misconceptions that Parkour is a high injury risk activity.	44.4%	55.6%	41.2%	58.8%
Parkour-style training workshops and coach education materials should address the common misconception that Parkour-style training is a high injury risk activity.	100.0%	0.0%	**95.0%**	**5.0%**
The availability of specialist equipment is a barrier to integrating Parkour-style training.	36.8%	63.2%	50.0%	50.0%
Parkour-style training could use equipment typically found in team sport settings which would overcome barriers related to specialist equipment.	94.4%	5.6%	**100.0%**	**0.0%**
Parkour-style training would be easier to implement when it is proposed to coaches as tag games or negotiation of obstacle courses (e.g., gamifying Parkour).	90.5%	9.5%	**80.00%**	**20.0%**

(*Continued*)

Table 5. (Continued).

Overcoming Potential Barriers when Integrating Parkour-style training	Round 2 (n = 21) Agreement (%)	Round 2 (n = 21) Disagreement (%)	Round 3 (n = 20) Agreement (%)	Round 3 (n = 20) Disagreement (%)
Having the development and delivery of Parkour-style training workshops and coach education materials linked to sport national governing bodies would help challenge traditional coach thinking and resistant beliefs around Parkour-style training.	76.5%	23.5%	68.8%	31.3%
The time it takes to set up the physical environment and equipment is a barrier to implementing Parkour-style training successfully.	38.9%	61.1%	44.4%	50.0%
An environment where equipment is easily moveable would reduce time as the Parkour-style environment can either be set up before the athlete arrives or by the athlete during the session.	100.0%	0.0%	**95.0%**	**5.0%**
Finance and cost is a barrier to implementing Parkour-style training.	36.8%	63.2%	44.4%	55.6%
Where finance and costs may be a barrier to implementing Parkour-style training, creating Parkour-style environments with equipment typically found in team sport settings could be useful and inexpensive alternative to specialist Parkour equipment.	100.0%	0.0%	**94.7%**	**5.3%**

Note: Bold % denotes that ≥70% consensus was achieved; Agreement = agree+strongly agree; Disagreement = disagree+strongly disagree.

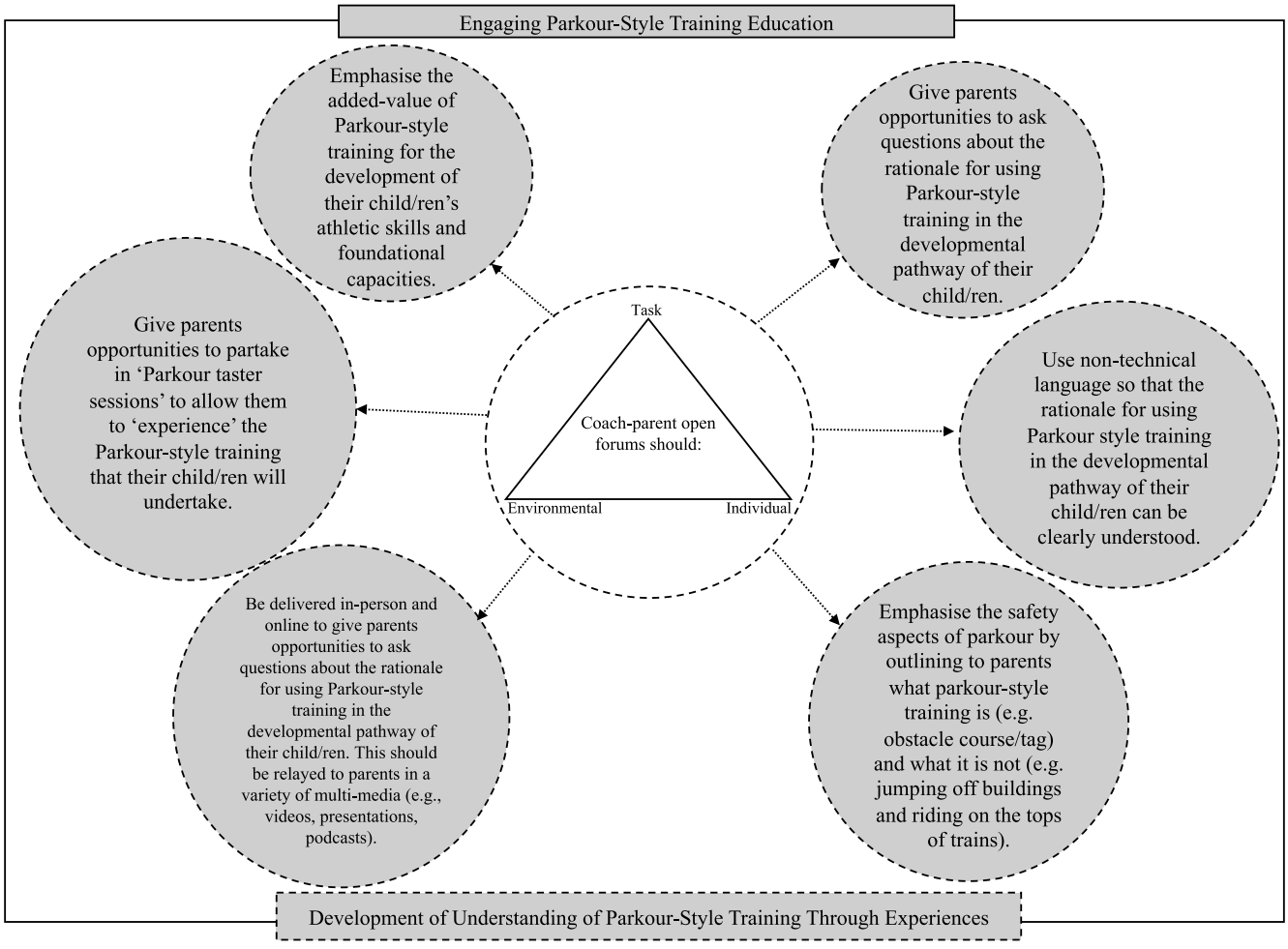

Figure 3. Principles for supporting the successful integration of Parkour-style training via parent education opportunities.

domain. Figure 3 and Figure 4 are reviewed by the authorship to ensure uniformity and remain as faithful as possible to the original wording of statements reaching consensus. Whilst these recommendations are provided, future work is required to develop parent and coach education materials and examine the feasibility of these developmental activities in team sport settings.

Discussion

This study sampled expert opinion from coaches in team sports on the feasibility of effectively integrating Parkour-style training into team sport practice routines. The study systematically gained consensus on factors relating to: 1) Applications of Parkour-style training in Team Sports, 2) Designing and Implementing Parkour-style training Environments, and 3),

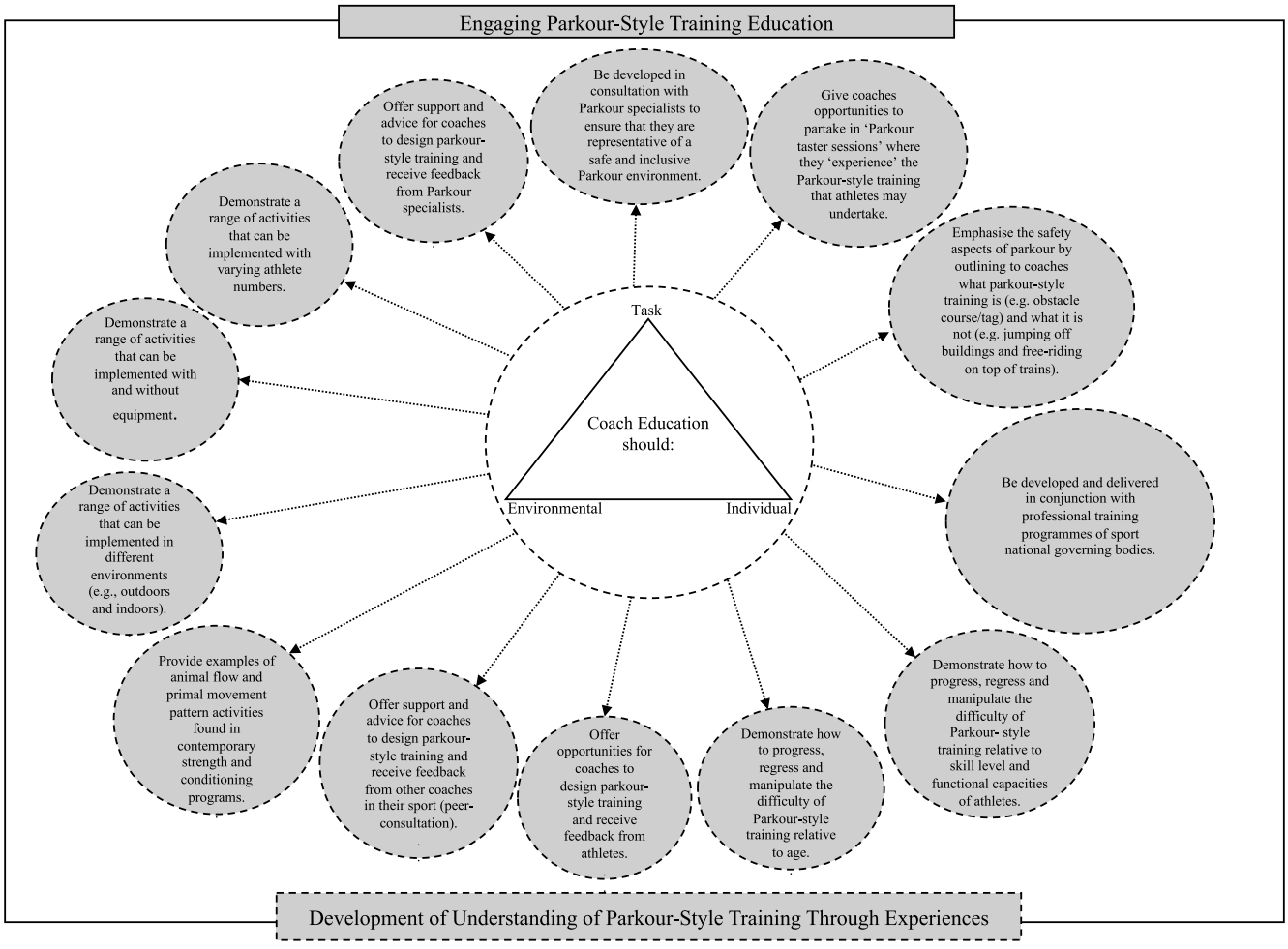

Figure 4. Principles for supporting the successful integration of Parkour-style training via coach education opportunities.

Overcoming Potential Barriers when Integrating Parkour-style training. The findings contribute new knowledge for advancing coaching practice by exploring consensus on a series of theoretically-sound and practitioner-informed recommendations for the successful integration of Parkour-style training as a donor sport for development of team sports athletes. The results outline the practical significance of experiential knowledge for developing and understanding new approaches in skill development. Such advances in applied scientific and theoretical knowledge may be viewed as a symbolic process where scientists, theorists and coaches co-create new knowledge and understanding on Parkour-style training.

A key point of agreement amongst the coaches was that Parkour-style training could improve competitive performance in a team sport athlete through transfer of movement competencies from more general play and physical activity experiences. Parkour-style training provides opportunities for athletes to explore available affordances (opportunities for action; Gibson, 1979) in their performance landscape and expand their effectivities (capacities and foundational abilities) in achieving intended task goals, exploiting it as an effective donor sport (Ribeiro et al., 2021; Strafford et al., 2018). In Parkour-style training, these opportunities are afforded by an enriched platform for athlete development predicated on the integrated relationship between physical and psychological skill development outlined in the Athletic Skills Model (Savelsbergh & Wormhoudt, 2019; Wormhoudt et al., 2018). Practically, enrichment of an athlete's effectivities via Parkour-style training may support exploration and negotiation of the dynamic landscape of competitive performance in a target sport (Button et al., 2020).

Coaches agreed that Parkour-style training can take the form of obstacle courses. By placing athletes in an obstacle course environment, which is goal-directed and allowing time and space for adaptive skill exploration, athletes may learn to seek and develop individualised and creative actions (Otte et al., 2021). Moreover, task constraints governing the tag aspect (i.e., the first person to tag their opponent wins) are comparable to offensive phases in team sports, such as soccer, where to regain possession of the ball, athletes have to couple their movements relative to the constant (re)positioning of teammates, opponents and the direction of the ball. A process of "wayfinding" in obstacle course activities could challenge athletes to develop and refine decision-making, self-awareness, and engagement with various constraints of their environment. These experiences could help athletes discover how to detect the most relevant information to regulate their intended actions in performance (Woods et al., 2020a 2020b).

Findings from this study suggest that coaches could look to embrace the "unpredictability of performance" in practice

designs, by including opportunities for exploring and exploiting movement variability. Higher levels of variability are typically conducive to greater movement repertoires and more functional solutions in response to changing constraints in performance (Otte et al., 2019; Seifert et al., 2013, Seifert et al., 2019). In team sports, given that performance environments are highly dynamic and variable, it is important that athletes are continuously encouraged to explore their environments and adapt their actions. Task constraint manipulations can help learners experience and explore movement variability and skill adaptation in training (Chow, 2013; Ranganathan & Newell, 2013). It is important to transition away from highly symmetrical "playscapes" which lack variety to challenge athletes beyond entry level interactions (Rudd et al., 2021). As agreed, and recommended by coaches in the present study, arranging objects and surfaces in a mixture of symmetrical and asymmetrical formats will enable coaches to manipulate constraints in Parkour-style training landscapes, affording athletes opportunities to continually adapt their action and solve movement problems (Jongeneel et al., 2015). The modular interchangeability of equipment properties in Parkour-style training affords the athlete a variety of potential interactions with their environment (Strafford et al., 2020). Altering the orientation, height, and angle of objects in the environment as recommended by the coaches will modify the dynamic affordance landscape (Croft & Bertram, 2017). Such variations will invite continuous re-coupling of perception and action and problem-solving, facilitating movement exploration as well as creativity and enjoyment as athletes seek innovative movement solutions to task goals (Seifert et al., 2019). However, enjoyment and confidence may also decline if athletes repeatedly fail and cannot successfully adapt (Rudd et al., 2020). Therefore, as participants agreed here, coaches should monitor closely and manipulate task difficulty according to athlete experience and functional skills to accommodate different levels of movement competency.

Feedback provided by coaches to athletes is another constraint that can influence skill learning (Robertson & Woods, 2021) and should also be considered when designing and integrating Parkour-style training environments. A point of agreement among the coaches in the present study was that Parkour-style training should involve limited explicit feedback. Limiting coach directed (explicit) feedback is concurrent with designing Parkour environments which offer an array of affordances (opportunities for action) for changing direction, jumping and landing through a process of self-regulation (Rudd et al., 2020). Over time, athletes who are repeatedly exposed to Parkour installations have copious opportunities to explore, discover and exploit movement solutions to develop or enhance their functional movement skill capacities by navigating through the environment (Strafford et al., 2021a, 2021b). Moreover, adopting this affordance-based perspective for Parkour-style training, in terms of session structure and strategies for variability affords specific "practice/play" environments to be appraised in terms of the interaction possibilities for each individual (Rudd et al., 2021). Although coaches recommended that implementing Parkour-style training should generally limit explicit feedback, it is still practically important to consider coach-directed (explicit) feedback and its potentially appropriate uses in Parkour-style training. The panel agreed that some level of athlete induction and awareness training should be undertaken when Parkour-style training is first integrated in team sport settings. This suggests that there is a role for explicit feedback in Parkour-style training for safety and induction purposes. In this athlete induction and awareness training, coaches may use questioning to guide athletes through a search process of meaningful action to underpin the athlete's movements safely in Parkour-style training environments, with a focus on outcomes to delivery, instruction and feedback (see, Machado et al., 2019).

A key feature of what any environment affords an athlete is how it shapes their intentionality (Woods et al., 2020a 2020b). Therefore, as the coaches recommended, emphasising enjoyment and allowing athletes to be active partners in the co-design of Parkour-style training environments may elicit the core social dimension of Parkour. Here, interactions with peers and coaches enable athletes to regulate self-confidence and resilience through a shared network of affordances (opportunities for action) rooted in a desire to have fun whilst interacting with others (O'Grady, 2012). According to Gee (2005), when initiated early in learning and development, engagement in co-designing activities will enrich learning opportunities by developing an athlete's general performance *"intelligence"*. This approach challenges them to appraise critical features of their learning environment which support self-regulated cognitions, perceptions, and autonomous actions in performance. Specifically, a co-design process will afford the athlete opportunities to develop *knowledge of* their learning environment so they can make informed choices about how to manipulate its design (Gee, 2005; Woods et al., 2020a). Hence, there was a consensus in the present study that coaches should look to integrate aspects of co-design when designing and implementing Parkour-style training into training sessions.

Regardless of advancements in theoretical and practical understanding of coaching methods, there will be potential barriers that have to be overcome (Stone et al., 2020). Often, local knowledge about the sport and the socio-cultural context in which the sport is carried out is required for the successful integration of new methods (Rothwell et al., 2020). This knowledge helps coaches to identify and understand the socio-cultural constraints that may be shaping the club structure, parental expectations, coach pedagogy and session design (O'Sullivan et al., 2021). The influence of social-cultural constraints can be addressed by contemporary models of talent development in sport that expedite behavioural change along two timescales: (i) at the macro-scale of talent and expertise development (observed over annual periods), and (ii) at the micro-scale of practice (hourly, daily, weekly and monthly; Davids et al., 2017). As findings from the present study suggest, a macro-level example from the present study is the integration of Parkour-style training workshops for parents and coaches which challenge traditional thinking, resistant beliefs and attitudes and address the common misconception that Parkour-style training is a high injury risk activity. Whereas a micro level example is addressing financial barriers associated with

specialist Parkour equipment by developing Parkour-style training environments using traditional gym-based equipment that are easily movable instead.

Some potential limitations of this study should also be outlined. The Delphi approach has been criticised for its potential for researcher bias, potential issues in achieving expert selection, and restrictive communication methods (Vernon, 2009). To address these potential limitations, and uphold rigour in the Delphi process, the authors aligned with a pragmatic approach.. In doing so, the authors decided the research informed inclusion and exclusion criteria for selecting "experts", the number of rounds, the analytical approach and thresholds for consensus prior to the commencement of the study (Bahl et al., 2016). In line with a pragmatic approach, a "don't know" option was provided to ensure that participants had an opportunity to report if they did not have an opinion/attitude on a particular issue, rather than feel pressured to give substantive perspective option. While the inclusion of "don't know" is justified by Lavrakas (2008), the use of language for "don't know" responses is still widely contested in the literature. Therefore, in future Delphi studies researchers should reflect on the language used, as semantically "don't know" may be interpreted differently than options such as "don't have a strong opinion".

Another limitation concerns the development of the figures displaying the principles framework for integrating and delivering Parkour-style training in team sport settings, and the principles for supporting the successful integration of Parkour-style training via coach education and parent education opportunities. These figures were developed using statements that reached consensus and the wording remained as faithful as possible to the statements presented to the participants. However, it may have been practically meaningful if a fourth round was included where participants could provide feedback on a principles framework for integrating and delivering Parkour-style training. This may have enhanced the clarity of presentation, application and understanding. Future research should seek coaches' opinions on the figure outlining the principles framework and make necessary revisions to its structure and presentation where appropriate. Future studies should also look to use a more global sample, as more than half of the sample in the current study were from the United Kingdom which may have heavily influenced the results due to different coaching and cultural practices.

It is also important to acknowledge where sport coaching governing bodies in the United Kingdom (e.g., Rugby, Hockey, Canoeing) have begun to transition in a direction of integrating what could be described as "Parkour-style training elements" into practice design. In this sense, future research could examine coaching practices across a variety of team sports to determine the extent that Parkour-style training is already being implemented or identify coaching practices that could be readily adapted to be more Parkour-like via the implementation of the findings from the current Delphi study. These future studies would also supplement the research from (Strafford et al., 2021a) which outlines that coaches may be using elements in existing practice that could align closely with the intentions of Parkour-style training, the recognition of which may help those and other coaches to understand that, in some cases, Parkour-style training may not be radically different to current practices.

Future research should address the effectiveness of translating Parkour into team sport settings as a donor sport. Such intervention studies should utilise the principles for integrating Parkour-style training into team sport practice routines that have been presented in this study and seek to assess whether there are short term (<6 weeks) benefits of Parkour-style training interventions on the development of physical and psycho-social skills in team sport athletes and also longitudinal studies to the same effect. In terms of coach decision-making, previous research outlined a key distinction between "what" decisions are made and "how" these decisions are implemented (for an example in team sports see Muir et al., 2015; for an example from strength and conditioning see, Till et al., 2019). The "what" knowledge outlined via the current study represents the empirical knowledge that will help underpin the design of Parkour-style training environments in team sport settings. Practically, the findings from the current Delphi study will broaden coach understanding and equip coaches with methods to implement Parkour-style training (i.e., an additional tool in their coaching "toolbox", see, Till et al., 2019). Informed by findings from the current study, future research could focus on "how" Parkour is delivered by coaches and how coach and athlete behaviours are aligned to generate or transition feedback, encourage player engagement and make sense of progress towards the athlete's goals (Muir et al., 2015). Specifically, via methods such as observations along with interviews, researchers should seek to "verify" what participants say about Parkour-style training and "how" coaches find running the sessions. As this area of research evolves, this will be critical to establish what good practice looks like and therefore provide practical evidence on the usefulness of the Delphi findings.

Moreover, future work should also seek to develop coach and parent education materials relating to Parkour-style training and examine the efficacy of education programmes in team sport settings. 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.

Conclusion

This study acquired expert opinion on factors relating to the feasibility of integrating Parkour-style training into team sport practice routines. Informed by the findings from the study, consensus was acquired on a set of design principles for integrating Parkour-style training into team sport practice routines relating to 1) Applications of Parkour-style training in Team Sports, 2) Designing and Implementing Parkour-style training Environments and 3) Overcoming Potential Barriers when Integrating Parkour-style training. The contextual interpretation of results outlines the receptiveness of coaches and coaches to Parkour-style training as a donor sport. The novel design principles outlined provide a theoretically and coach-informed method for integrating Parkour-style training into team sport practice routines.

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