

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

STRAFFORD, Ben <<http://orcid.org/0000-0003-4506-9370>>, DAVIDS, Keith <<http://orcid.org/0000-0003-1398-6123>>, NORTH, Jamie and STONE, Joseph

Available from Sheffield Hallam University Research Archive (SHURA) at:

<http://shura.shu.ac.uk/28781/>

This document is the author deposited version. You are advised to consult the publisher's version if you wish to cite from it.

Published version

STRAFFORD, Ben, DAVIDS, Keith, NORTH, Jamie and STONE, Joseph (2021). Exploring coach perceptions of Parkour-style training for athlete learning and development in team sports. *Journal of Motor Learning and Development*.

Copyright and re-use policy

See <http://shura.shu.ac.uk/information.html>

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

Ben William Strafford¹, Keith Davids¹, Jamie Stephen North², and Joseph Antony Stone¹

¹Sport and Physical Activity Research Centre, Department of Sport and Physical Activity,
Sheffield Hallam University, Collegiate Hall, Collegiate Crescent, Sheffield, S10 2BP

²Expert Performance and Skill Acquisition Research Group, Faculty of Sport, Allied Health,
and Performance Science, St Mary's University, Twickenham, TW1 4SX,

Author Note

Ben William Strafford <https://orcid.org/0000-0003-4506-9370>

Keith Davids <https://orcid.org/0000-0003-1398-6123>

Jamie Stephen North <https://orcid.org/0000-0003-2429-4552>

Joseph Antony Stone <https://orcid.org/0000-0002-9861-4443>

No sources of funding from any funding agency in the public, commercial, or
not for profit sectors were used to assist in the preparation of this article. We have no
known conflict of interests.

Correspondence concerning this article should be addressed to Mr. Ben William
Strafford, Sport and Physical Activity Research Centre, Department of Sport and Physical
Activity, Sheffield Hallam University, Collegiate Hall, Collegiate Crescent, Sheffield, S10
2BP B.Strafford@shu.ac.uk

*As accepted for publication in Journal of Motor Learning and Development, Human Kinetics,
Online ©*

35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64

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.

65 **Introduction**

66 Researchers with an interest in motor learning and development as well as skill
67 acquisition have increasingly sought to make use of knowledge sourced from empirical
68 research, as well as from the experiences of high-performance practitioners (termed
69 experiential knowledge) to understand how to create the best learning and talent development
70 environments in sport (e.g., see Burnie et al., 2018; Pocock et al., 2020; McCosker et al.,
71 2020; Stone et al., 2020; Woods et al., 2020a; Woods et al., 2020b). This re-balancing of the
72 relationship between experiential and empirical knowledge has emerged because the rationale
73 for evidence-based practice in motor learning and skill acquisition has been skewed towards a
74 limited categorisation of knowledge viewed as influencing practice (Rothwell et al., 2020).

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

89 pedagogy are aligned with key ideas of skill development and learning outlined in the
90 Athletic Skills Model (Rudd et al., 2020).

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

107 With origins in France, the popularity of Parkour has grown considerably since the
108 1990s and it is now practiced as a competitive sport, via different event formats, notably:
109 speed, skill, and free style (Padulo et al., 2019). Parkour requires performers (known as
110 “Traceurs”) to learn how to negotiate obstacles with differing properties such as textures,
111 surfaces, inclinations, sizes and angles in the most effective and efficient way possible
112 (Greenberg & Culver 2019). The term “traceur” originated from the French verb “tracer”
113 which broadly means “going fast” and “drawing a line” (i.e., moving one point to another).

114 The Athletic Skills Model's focus on developing a foundation of functional movements
115 shares parallels with the origins of Parkour training. Early Parkour Traceurs drew motivation
116 from George Hébert's *Méthode Naturelle*, a training method which emphasises the value of
117 functional exercises relating to physical conditioning and development of foundational
118 movement skills (i.e., attack-defence, carrying, climbing, jumping, rising, running,
119 swimming, throwing, walking) (Terret, 2010). These foundational movement skills are
120 thought to underpin execution of more complex movement patterns, supporting a well-
121 rounded athleticism (Hébert & Till, 2017). Strafford et al. (2018) have proposed Parkour as a
122 suitable donor sport to promote learning and development. Strafford et al. (2018) emphasise
123 how creativity in movement exploration afforded by Parkour is as an antidote to early
124 specialisation methods for athlete development in sport which over-rely on rehearsing
125 technical movement patterns in traditional drill-based, repetitive practices from a very young
126 age. Parkour research to date, however, has been largely quantitative and descriptive in
127 nature, for example focused on measuring mechanical components of performance such as
128 the jumping capacities of Parkour Traceurs, evaluated in isolation of Parkour environments
129 (e.g., Grosphrère & Lepers, 2015; Abellán-Aynés & Alacid, 2017 Padulo et al., 2019).
130 Strafford et al. (2021) addressed this concern by examining which functional movement skills
131 were correlated with Parkour-speed run performance. Consistent with insights of the Athletic
132 Skills Model, the data from Strafford et al. (2021) suggested that performance in Parkour-
133 speed-runs were underpinned by functional movement skills (jumping, running; arm
134 swinging) and condition of movement (agility), all of which encapsulate elements of basic
135 motor properties (speed; strength). These findings provided evidence that functional
136 movement skills (effectivities) are not isolated movements, but foundational skills that can be
137 enriched and integrated to support functional interactions of athletes within a Parkour speed-
138 run performance environment. It was suggested that repeated exposure to Parkour speed-run

139 environments developed specific functional movement skills which enabled the Traceurs to
140 navigate speed run environments more efficiently. Therefore, the findings from Strafford et
141 al. (2021) provide evidence that Parkour can be an effective donor sport to promote
142 specificity of learning and skill development in team sport athletes.

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

161 When integrating new approaches such as Parkour-style training in practice, the aim
162 should be to promote collaborations between sport practitioners and discussion on how to
163 adapt practice landscapes in athlete development programmes (Rothwell et al., 2020).

164 Enhancing clarity of practitioner understanding could ensure a successful longer-term
165 integration of Parkour into athlete learning and development programmes, rather than it being
166 treated as a mere “fad” which may not be sustainable. In meeting the challenge of
167 contextually integrating Parkour practice landscapes into high performance sport
168 organisations, it is important to sample the experiential knowledge and understanding of two
169 groups central to talent development in team sports: talent development specialists and
170 strength and conditioning coaches. Sampling their experiential knowledge and understanding
171 could afford practical recommendations from key stakeholders concerning the potential
172 integration of Parkour-style training into talent development and learning environments in
173 sport.

174 **Study Purpose**

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

183 **Method**

184 **Research Design**

185 A pragmatic research paradigm was adopted to place the research aim centrally, by
186 emphasising communication, shared meaning-making, and transferability of research findings
187 to the potential practical applications of Parkour-style training in team sport settings (Creswell
188 & Creswell, 2017). In accordance with a pragmatic approach, qualitative inquiry using semi-

189 structured interviews was adopted, as the use of open-ended questions permits flexible
190 observations of participants' experiences and perceptions (Smith & Sparkes, 2016).

191 **Participant Recruitment and Demographics**

192 Twenty experienced coaches were interviewed, including ten talent development
193 specialists (Mean age: 34.8 ± 10.1 years) and ten strength and conditioning coaches (Mean
194 age: 32.7 ± 7.9 years). Participants were recruited online and in person using a combination
195 of purposive and snowball sampling (Tongco, 2007). At the time of interview, participants
196 had to be active in sport coaching and been in their working setting for a minimum of three
197 years (talent development specialists: 15.0 ± 8.2 years, strength and conditioning coaches:
198 12.3 ± 7.4 years). A summary of participant demographic information is displayed in Table 1.
199 Institutional ethical approval was granted by the university ethics committee of the lead
200 author, with all participants providing informed written consent prior to commencing the
201 interviews.

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

203 **Data Collection**

204 Development of a semi-structured interview guide ensured that each coach, regardless
205 of coaching specialism, was asked the same set of central questions, which enabled
206 participants to lead the conversation, and discuss and elaborate on their coaching philosophy,
207 perceptions of Parkour and recommendations for integrating Parkour into coaching practice.
208 All interviews were conducted by the lead author in person ($n = 3$) or over video call ($n = 17$)
209 and lasted between 24-52 minutes (Mean Duration: 31.6 ± 7.2 minutes). The interview guide
210 began with a warm-up question that was relevant to each coach, to develop rapport between
211 coach and interviewer, and to encourage each coach to talk descriptively in the presence of an
212 audio recording device (Dicicco-Bloom & Crabtree, 2006). The discussion then transitioned
213 on to specific questions about each participant's background and journey into coaching,

214 philosophy towards athlete development, perceptions on the potential applications of Parkour
215 for athletic development, and recommendations for integrating Parkour into coaching
216 practice. Probe questions were used, where deemed necessary, to encourage participants to
217 expand on responses and provide depth to articulated responses (Smith & Sparkes, 2016). All
218 interviews were recorded, with permission, in their entirety using a digital voice recorder and
219 transcribed verbatim, using desktop transcription software (Audio Notetaker, Sonocent Ltd,
220 Leeds, United Kingdom).

221 **Data Analysis**

222 To identify themes across the data set, a two-stage, reflexive thematic analysis was
223 employed (Braun & Clarke, 2019). The interview transcripts were coded in Microsoft Excel
224 (Version 18, Microsoft Cooperation, Washington, United States). During the thematic
225 analysis, the research team did not adopt an ‘either or approach’ (i.e., inductive approach:
226 with little pre-determined structure, theory or framework, or deductive approach: the of
227 structure, theory or a pre-determined framework). A pragmatic form of enquiry was
228 undertaken that comprised of deductive and inductive approaches (Robertson et al., 2013;
229 Braun, Clarke & Weate, 2016). The first coding stage employed deductive analysis to
230 organise the data into three dimensions (general perceptions of Parkour, potential applications
231 of Parkour, and feasibility of integrating Parkour into coaching practice). The first coding
232 stage was initially undertaken by the lead author, who read the transcripts several times
233 to identify language related to general perceptions of Parkour and feasibility of integrating
234 Parkour into coaching practice. After the first coding stage, a period of peer consultation was
235 undertaken, which involved the authors reading the transcripts independently to facilitate an
236 open discussion on the initial dimensions determined by the lead author. The authors
237 accepted that theory-free knowledge cannot be achieved, in that knowledge can be both
238 explicit (as with theoretical understanding on the subject) or implicit (as with practical skill of

239 expertise) (Dewey, 1938). Therefore, once data were organised into these three dimensions,
240 both deductive and inductive analyses were undertaken in a second coding stage (Guba &
241 Lincon, 2005). This reflexive and collaborative approach to the analytic process was
242 employed to develop a more nuanced and richer interpretation of the data, rather than seek
243 consensus on meaning (Braun & Clarke, 2019). Codes were next grouped into higher and
244 lower order themes in relation to the research questions. Codes classified in more than one of
245 the themes were assigned into the one perceived to best ‘fit’. To maintain analytical rigour,
246 additional discussions of the higher and lower order themes were conducted between the
247 authorship team (Tracy, 2010). **During this process members of the authorship team gave**
248 **voice to their interpretations of higher and lower order themes via the medium of critical**
249 **verbal dialogue.** Where any coding differences were identified, these were resolved through
250 peer discussion and evaluation and alteration of codes as appropriate. **For example, critical**
251 **dialogue informed the (re) wording of the higher order theme “Addressing Potential Barriers**
252 **to the Integration of Parkour-Style Training”, where the word ‘Addressing’ was added to best**
253 **represent the recommendations outlined by coaches on how potential barriers for integration**
254 **of Parkour-style training could be resolved.**

255 **Research Quality and Rigour**

256 Pilot interviews with two participants who had experience either as a talent
257 development specialist or strength and conditioning coach were undertaken to facilitate
258 methodological rigour. These pilot interviews acted as a consultation process which allowed
259 the authors to appraise the flexibility and suitability of the interview format in the context of
260 the population group. The interview guide was not amended following pilot interviews.

261 Concurrent with a pragmatic research paradigm, it is important to acknowledge the
262 personal biography of the authors, given that their previous work was a motivation for
263 undertaking the current study, and that their past research may have informed the

264 development of the study's methodology (Tracy, 2010). All authors were, at the time of
265 writing, academics at universities across the United Kingdom with varying experiences of
266 working in research (5-41 years). Authors' previous work is underpinned by the ecological
267 dynamics approach to motor learning. Rather than viewing such influences as potential
268 contamination of the data to be avoided, the authors engaged with retrospective (which
269 concerns the effect of the research on the researcher) and prospective (which concerns the
270 effect of the whole-person-researcher on the research) reflexivity. This process confirmed the
271 significance of their values, feelings, and knowledge that they brought to the
272 conceptualisation of the research issues and the analytical lens applied to the findings (Attia
273 & Edge, 2017; Braun & Clarke, 2019). In line with recommendations from Smith and
274 McGannon (2018), an independent critical friend was utilised during the data analysis
275 process, to discuss interpretations made throughout with the co-authors. During these
276 discussions, the role of the critical friend was to encourage reflexivity by challenging the
277 authors' "construction of knowledge" (Cowan & Taylor, 2016).

278 **Results and Discussion**

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

283 **Coaches' General Perceptions of Parkour**

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

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

288 ***Underlying Knowledge about Parkour***

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

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

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

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

310 In gymnastics, the athlete’s body has to be oriented in specific position, according to
311 set criteria, to score points evaluated by the judges. This type of structure for the sport can
312 lead athletes to become dependent on explicit coach feedback in practice, due to the need to
313 satisfy set criteria, which, in turn, may impede performance due to reduced reliance on
314 intrinsic feedback (Button et al., 2020). In contrast, the implicit nature and landscape of the

315 Parkour environment offers an array of affordances for jumping, landing, and changing direct
316 through a process of self-regulation (Rudd et al., 2020). Athletes who are repeatedly exposed
317 to Parkour environments have copious opportunities to discover, explore and exploit
318 movement solutions to navigate through the environment, and so develop or enhance their
319 functional movement skill capacities.

320 ***Resources used to gain knowledge on Parkour***

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

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

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

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

339 **Potential Applications of Parkour**

340 Within the 'Potential Applications of Parkour' dimension, coaches discussed ideas
341 surrounding application of Parkour for the psychological and physical development of
342 athletes (Figure 2).

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

344 *Parkour for Psychological Development*

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

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

356 Parkour can develop some real good problem solving for movement challenges.
357 Ultimately this enables our athletes a sense of exploration, fun, and danger which we
358 know is going to strengthen the feedback that is given. If I think back to team
359 invasion sport athletes and what makes good movers, this is often being rhythmical or
360 being smooth or being easy on the eye. Ultimately, I think that comes down to them
361 (athletes) having a good understanding to where their limbs are in time and space and
362 how to create shapes and patterns with their body. I think Parkour is one modality that
363 can enable us to better understand where our bodies are in time and space. (Strength
364 and Conditioning Coach 8)

365 With the exception of variants of Parkour-style formats like ‘world chase tag’,
366 Parkour is an individual event without opponents, and unlike team sports does not require
367 ball handling skill. However, engaging in Parkour may led to the transfer of general
368 movement (e.g., dynamic balance, postural regulation, changing direction, landing, twisting
369 and turning, and using limbs in separate ways) and psychological skills between Parkour and
370 team sport domains due to a shared affordance landscape (Strafford et al., 2018). In terms of
371 developing resilience, exposure to interactions with the environment in Parkour landscapes
372 may enable team sport athletes to become more resilient in overcoming emergent movement
373 challenges in their performance environment by self-regulating and exploring their own
374 movement capabilities, relative to the positioning and orientation of their limbs in space
375 (Merrit & Tharp 2013; Aggerholm & Højbjerg Larsen, 2017). In addition to problem-solving
376 and resilience, coaches outlined how exposure to Parkour may develop athletes’ capabilities
377 to manage fear and take educated (i.e., understood and evaluated) risks in team sport settings,
378 as this coach outlined:

379 I think that can help in pushing the boundaries in other sports as well. So, some things
380 in Parkour might be perceived as dangerous or, they might be afraid of some things
381 and I think in the process of learning those skills they learn like ok, I was scared at
382 first, but while practising and learning this, I did manage to do so. So, this could also
383 translate to other sports, when they face difficulties as like ok well I have had this
384 before and I know how to help by influencing this skill. (Talent Development Coach
385 6)

386 Here, the coach outlined how a willingness to take educated risks during Parkour
387 practice can transfer to willingness to explore new behaviours in the athlete’s target sport
388 through heightened cognitive awareness of their own abilities. The link between Parkour and
389 cognitive appraisal has been previously examined by Taylor, Witt and Sugovic (2011) who
390 demonstrated that athletes skilled in Parkour perceived a Parkour obstacle as being shorter

391 than a novice control group. These findings from Taylor, Witt and Sugovic (2011) are
392 consistent with the notion of reciprocity between perception and action, advocated for
393 learning designs in Nonlinear Pedagogy. This reciprocal relationship was outlined originally
394 by James Gibson (1979), proposing that a performer's perception of information for
395 utilisation of affordances is scaled by their perceived abilities and capacities, described as
396 *effectivities* in ecological psychology (Fajen, Riley, & Turvey, 2008). Given that self-efficacy
397 and confidence refer to an individual's perceptions and appraisal of their capabilities, this
398 psychological function may develop with Parkour training (Baundura, 1997; Llewellyn et al.,
399 2008; Strafford et al., 2020). Indeed, many coaches in this study outlined how exposure to
400 Parkour leads to increases in athletes' confidence of their general movement abilities, which
401 is missing in other sports:

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

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

416 ***Parkour for Physical Development***

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

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

427 (Strength and Conditioning Coach 1)

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

438 I think there is a lot of benefit in (Parkour) training, you know in that inner ear and
439 balance aspect, the proprioception aspect. For example, I was able to use some tenets
440 of Parkour with some of our soccer athletes. So, how I was able to implement that was
441 with some rolling patterns, so low level tumbling like a forward roll, a backward roll
442 then into a sprint. So, now we have the aspect of orientation so the inner ear has to

443 adjust to the new orientation of the body and figure out where they are going and what
444 the next task is. Then, you know again readjusting to the new task. (Strength and
445 Conditioning Coach 9)

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

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

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

466 **Feasibility of Integrating Parkour into Coaching Practice**

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

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

471 ***Practical Recommendations***

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

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

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

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

484 I love tag, I love tag games, and at *** we introduced as part of the warm up a load
485 of tag based games, which I think is about agility, it's about reacting to the opponent,
486 reacting to obstacles and so on and so forth...If I had the budget I would create a
487 performance playground (obstacle course), with crash mats, soft base blocks and so
488 on and so forth...That is the challenge in the gym, once you put a fixed gym it place,
489 it is quite fixed where I think when you have the soft area you can move things
490 around and change the environment, change the stimulus and again you can have so
491 much variety... What you have with Parkour based or gymnastics based equipment, is
492 hundreds of different exercises that you can create.... For me it makes sense, if you

493 got a small budget to focus on the things that can give you that and can increase that
494 bandwidth by giving an infinite number of different exercises. (Talent Development
495 Coach 9)

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

514 I would just try and include a range of obstacles. I would still have to keep in mind
515 that they are footballers at the end of the day, no matter how young they are, it is what
516 they are doing being in a football institute. I think that would not be the emphasis at
517 every point, but just through experience at football clubs, coaches need to see
518 something football based. So, even if that included a Parkour obstacle course that had

519 a football kicking to a goal, something little but I think I would just try to include as
520 many movement patterns. So, whether that be, hurdles so they have to jump over,
521 whether that be manakins lined up so they have to sidestep, I would try and get every
522 plane of movement involved. I would also try and make it competitive, so whether
523 that be a race or be like a tag, cat and mouse, one going after the other. (Talent
524 Develop Coach 4)

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

536 *Addressing Potential Barriers to the Integration of Parkour-Style Training*

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

542 I have a good relationship with soccer coaches and athletes, but even when I brought
543 it (Parkour) to the athletes themselves, initially, they were a little bit hesitant to act
544 and participate, they thought it was joke and wasn't sure I was serious. But, as the

545 weeks went on it just became part of the culture, part of what we did and they dove
546 into it. (Strength and Conditioning Coach 9)

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

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

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

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

566 ...I think the parents are more open to listening, that has been my experience as
567 opposed to when you are with your other coach colleagues, so I think there is
568 probably more in the way of that communication happening as opposed to parents
569 who are maybe a little bit more open to listening in many ways. I have had parents ask

570 me just straight up, what is this about and I say that I am happy to discuss if you want
571 to listen. (Talent Development Coach 2)

572 It is important to get ‘as many interactions as possible’ with the parents to challenge
573 culturally-resistant beliefs about the role of Parkour in athlete enrichment. Hence,
574 coordinating an open forum would allow parents to, not just ask questions about the reasons
575 for integrating Parkour-style training, but also allow them to be involved with the
576 developmental pathway of their child. Parents could also partake in ‘Parkour taster sessions’
577 where they ‘experience’ Parkour, as this could promote meaning making and consensus on
578 the benefits of Parkour-style training for athlete enrichment through shared experiences.
579 Coaches also outlined how potential barriers could be negated through continued professional
580 development about Parkour:

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

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

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

593 Parkour is a relatively new sport and so its reach across domains is limited at present.
594 Therefore, efforts needs be made at developing an understanding of, not only what Parkour
595 *is*, but also *how* it can be specifically applied in learning and development programs in

596 different sport settings. Whilst some continued professional development courses are offered
597 by Parkour companies, researchers should look to enhance online learning materials by
598 including examples from applied practice to enhance their own learning. To achieve this aim,
599 continued professional development under the rubric of a '*Department of Methodology*'
600 could be integrated (Rothwell et al., 2020). According to Rothwell (2020), a Department of
601 Methodology is an approach where a group of practitioners work collaboratively within a
602 unified conceptual framework to: (1) coordinate activity through shared language and
603 principles, (2) communicate coherent ideas, and (3) collaboratively design practice
604 landscapes enriched in information (i.e., acoustic, haptic, proprioceptive, visual) and guide
605 emergence of multi-dimensional behaviours in athlete performance. It is anticipated that such
606 an integrated structural organisation of sport science disciplines will facilitate a working
607 environment where coaches, trainers, educators and other practitioners can adopt an
608 individualised approach to developing athletes, sharing knowledge beyond discipline
609 boundaries that will promote collaborative problem-solving (Nicolescu, 2002; Rothwell et al.,
610 2020).

611 **Conclusion**

612 In summary, coaches identified that Parkour-style activities and games could be useful for
613 enrichment of functional movement skills in helping to develop a well-rounded and adaptive
614 'mover' in team sport athletes, supporting the notion in the Athletic Skills Model of Parkour
615 as a donor sport (Strafford et al., 2018; Savelsbergh & Wormhoudt, 2019). The applications
616 arising from the experiential knowledge explored in this study are: 1) Parkour activities
617 should be viewed as supplementary to typical sport training routines and be inclusive of
618 obstacle courses with or without sport specific skills and or tag elements, 2) Parkour-style
619 obstacle environments should be scalable to allow both the developing athlete and coach to
620 manipulate tasks and object orientation using soft play and traditional gym equipment, and

621 3), The implementation of continued professional development opportunities for sport
622 practitioners, and athlete-centred approaches to learning design and opportunities for coach-
623 parent forums, are recommended to support the integration of Parkour-style enrichment
624 environments.

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

641

642

643

644

645

References

- 646
647 Abellan-Aynés, O., & Alacid, F. (2016). Anthropometric profile, physical fitness and
648 differences between performance level of Parkour practitioners. *Archivos de Medicina*
649 *del Deporte*. 33(5), 312-316.
- 650 Aggerholm, K., & Højbjerg Laresen, S. (2017). Parkour as acrobatics: an existential
651 phenomenological study of movement in parkour. *Qualitative Research in Sport,*
652 *Exercise and Health* 9(1), 69-86. <https://doi.org/10.1080/2159676X.2016.1196387>
- 653 Attia, M., & Edge, J. (2017). Be(com)ing a reflexive researcher: a developmental approach to
654 research methodology. *Open Review of Educational Research* 4(1), 33–45.
655 <https://doi.org/10.1080/23265507.2017.1300068>
- 656 Bandura, A. (1997). *Self-efficacy: The exercise of control*. Macmillan Publishers.
- 657 Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative*
658 *Research in Sport, Exercise and Health* 11(4), 589–597.
659 <https://doi.org/10.1080/2159676X.2019.1628806>
- 660 Braun, V., Clarke, V., & Weate, P. (2016). Using thematic analysis in sport and exercise
661 research. In *Routledge handbook of Qualitative Research in Sport and Exercise*,
662 (Eds),. Smith, B., & Sparkes, A. (213-227). Routledge.
- 663 Browne, P. R., Robertson, S., Sweeting, A., and Davids, K. (2019). Prevalence of interactions
664 and influence of performance constraints on kick outcomes across Australian football
665 tiers: implications for representative practice designs. *Human Movement Science*, 66,
666 621–630. <https://doi.org/10.1016/j.humov.2019.06.013>
- 667 Burnie, L., Barrett, P., Davids, K., Stone, J., Worsfold, P. & Wheat J. (2018). Coaches’
668 philosophies on the transfer of strength training to elite sports performance.
669 *International Journal of Sports Science and Coaching* 13(5), 729–736.
670 <https://doi.org/10.1177/1747954117747131>

- 671 Button, C., Seifert, L., Chow, J.Y., Davids, K., Araujo, D. (2020). *Dynamics of Skill*
672 *Acquisition: An Ecological Dynamics Approach* (2nd ed.). Human Kinetics
- 673 Chow, J.Y., Davids, K., Button, C., & Renshaw, I. (2015). *Nonlinear Pedagogy in Skill*
674 *Acquisition: An Introduction* (1st ed.). Routledge.
675 <https://doi.org/10.4324/9781315813042>
- 676 Cowan, D., & Taylor, I. (2016). ‘I’m proud of what I achieved; I’m also ashamed of what I
677 done’: a soccer coach’s tale of sport, status, and criminal behaviour. *Qualitative*
678 *Research in Sport, Exercise and Health*, 8(5), 505–518.
679 <https://doi.org/10.1080/2159676X.2016.1206608>
- 680 Creswell, J., & Creswell, D. (2017). *Research design: Qualitative, quantitative, and mixed*
681 *methods approaches*. SAGE Publications.
- 682 Croft, J., & Bertram, J. (2017). Affordance boundaries are defined by dynamic capabilities of
683 parkour athletes in dropping from various heights. *Frontiers in Psychology*, 8, 1571.
684 <https://doi.org/10.3389/fpsyg.2017.01571>
- 685 Dewey, J. (1938). *Experience And Education*. Macmillan.
- 686 Diccio-Bloom, B., & Crabtree, B. (2006). The qualitative research interview. *Medical*
687 *Education*, 40(4), 314–321. <https://doi.org/10.1111/j.1365-2929.2006.02418.x>
- 688 Fajen, B., Riley, M., & Turvey, M. (2009). Information, affordances, and the control of
689 action in sport. *International Journal of Sport Psychology*, 40(1): 79-107.
- 690 Gibson, J.J. (1979). *The Ecological Approach to Visual Perception*. Lawrence Erlbaum
691 Associates.
- 692 Greenberg, E., & Culver, D. (2019). “How parkour coaches learn to coach: Coaches’ sources
693 of learning in an unregulated sport.” *Journal of Adventure Education and Outdoor*
694 *Learning*. <https://doi:10.1080/14729679.2018.1557060>

- 695 Grosprêtre, S., & Lepers, R. (2015). Performance characteristics of Parkour practitioners:
696 Who are the traceurs? *European Journal of Sport Science*, 16(5), 526–535.
697 <https://doi.org/10.1080/17461391.2015.1060263>
- 698 Guba, E., & Lincoln, Y. (2005). Paradigmatic controversies, contradictions, and emerging
699 confluences. In Norman. Denzin and Yvonna Lincoln (Eds.), *The Sage Handbook of*
700 *Qualitative research* (3rd ed., pp. 191-216). Thousand Oaks, CA: SAGE
- 701 Hébert G., & P. Till (2017). *The Natural Method: Training Guide: Programming according*
702 *to Georges Hébert: Volume 6*. Create Space, Amazon: South Carolina, United States
- 703 Immonen, T., Brymer, E., Orth, D., Davids, K., Feletti, F., Liukkonen, J., & Jaakkola, T.
704 (2017). Understanding action and adventure sports participation—an ecological
705 dynamics perspective. *Sports Medicine-Open*, 3(1). [https://doi.org/10.1186/s40798-](https://doi.org/10.1186/s40798-017-0084-1)
706 [017-0084-1](https://doi.org/10.1186/s40798-017-0084-1)
- 707 Jacobs, D., & Michaels, C. (2007). Direct learning. *Ecological Psychology*, 19(4), 321-349.
708 <https://doi.org/10.1080/10407410701432337>
- 709 Llewellyn, D., Sanchez, X., Asghar, A., & Jones, G. (2008). Self-efficacy, risk taking and
710 performance in rock climbing. *Personality and Individual Differences*, 45(1), 75-81.
711 <https://doi.org/10.1016/j.paid.2008.03.001>
- 712 McCosker, C., Renshaw, I., Russell, S., Polman, R., & Davids, K. (2020). The role of elite
713 coaches' expertise in identifying key constraints in long jump performance: How
714 practice task designs can enhance athlete self-regulation in competition. *Qualitative*
715 *Research in Sport, Exercise and Health*.
716 <https://doi.org/10.1080/2159676X.2019.1687582>
- 717 Mckay, J., & O'Connor, D. (2018). Practicing Unstructured Play in Team Ball Sports: a
718 Rugby Union Example. *International Sport Coaching Journal*, 5(3), 273-80.
719 <https://doi.org/10.1123/iscj.2017-0095>.

- 720 Merritt, C., & Tharp, I. (2013). Personality, self-efficacy and risk-taking in parkour (free-
721 running). *Psychology of Sport and Exercise, 14*(5), 608-611.
722 <https://doi.org/10.1016/j.psychsport.2013.03.001>
- 723 Newell, K. M. (2020). What are Fundamental Motor Skills and What is Fundamental About
724 Them?. *Journal of Motor Learning and Development, 8*(2), 280-314.
725 <https://doi.org/10.1123/jmld.2020-0013>
- 726 Newell, K. M. (2020). What are fundamental motor skills and what is fundamental about
727 them? *Journal of Motor Learning and Development, 8*(2), 280-314.
- 728 Nicolescu, B. (2002). *Manifesto of transdiscipli- narity*. State University of New York Press.
- 729 O'Grady, A. (2012). Tracing the city–parkour training, play and the practice of collaborative
730 learning. *Theatre, Dance and Performance Training, 3*(2), 145-162.
731 <https://doi.org/10.1080/19443927.2012.686450>
- 732 Padulo, J., Ardiga, L., Bianco, M., Cular, D., Madic, D., Markoski, B., & Dhahbi, W. (2019).
733 Validity and Reliability of a New Specific Parkour Test: Physiological and
734 Performance Responses. *Frontiers in Physiology*.
735 <https://doi.org/10.3389/fphys.2019.01362>
- 736 Pocock, C., Bezodis, N. E., Davids, K., Wadey, R., & North, J. S. (2020). Understanding key
737 constraints and practice design in Rugby Union place kicking: Experiential
738 knowledge of professional kickers and experienced coaches. *International Journal of*
739 *Sports Science & Coaching, 15*(5–6), 631–641.
740 <https://doi.org/10.1177/1747954120943073>
- 741 Renshaw, I., and Chow, J.Y. (2019). A constraint-led approach to sport and physical
742 education pedagogy. *Physical Education and Sport Pedagogy 24*, 103-116.
- 743 Robertson, S., Zwolinsky, S., Pringle, A., McKenna, J., Daly-Smith, A., & White, A. (2013).
744 ‘It is fun, fitness and football really’: a process evaluation of a football-based health

- 745 intervention for men. *Qualitative Research in Sport, Exercise and Health*, 5. 419-439.
746 <https://doi.org/10.1080/2159676X.2013.831372>
- 747 Rothwell, M., Davids, K., Stone, J.A., O'Sullivan, M., Vaughan, J., Newcombe., D., &
748 Shuttleworth, R (2020). A department of methodology can coordinate
749 transdisciplinary sport science support. *Journal of Expertise*, 3(1), 55-65.
- 750 Rudd, J.R., Pesce, C., Strafford, B.W. & Davids, K. (2020). Physical Literacy - A Journey of
751 Individual Enrichment: An Ecological Dynamics Rationale for Enhancing
752 Performance and Physical Activity in All. *Frontiers in Psychology*, 11:1904.
753 <https://doi.org/10.3389/fpsyg.2020.01904>
- 754 Savelsbergh, G., & Wormhoudt, R. (2019). Creating adaptive athletes: the athletic skills
755 model for enhancing physical literacy as a foundation for expertise. *Movement &*
756 *Sport Sciences*, 102, 31–38. <https://doi.org/10.1051/sm/2019004>
- 757 Smith, B., & McGannon, K. (2018). Developing rigor in qualitative research: Problems and
758 opportunities within sport and exercise psychology. *International Review of Sport and*
759 *Exercise Psychology*, 11(1), 101-121.
760 <https://doi.org/10.1080/1750984X.2017.1317357>
- 761 Smith, B., & Sparkes, A. (2016). Qualitative interviewing in the sport and exercise sciences.
762 (Eds). In *Routledge Handbook of Qualitative Research in Sport and Exercise* (103-
763 123). Routledge.
- 764 Stone, J., Rothwell, M., Shuttleworth, R. & Davids, K. (2020). Exploring sports coaches'
765 experiences of using a contemporary pedagogical approach to coaching: an
766 international perspective, *Qualitative Research in Sport, Exercise and Health*.
767 <https://doi.org/10.1080/2159676X.2020.1765194>
- 768 Strafford, B. W., Van Der Steen, P., Davids, K., & Stone, J. A. (2018). Parkour as a donor
769 sport for athletic development in youth team sports: insights through an ecological

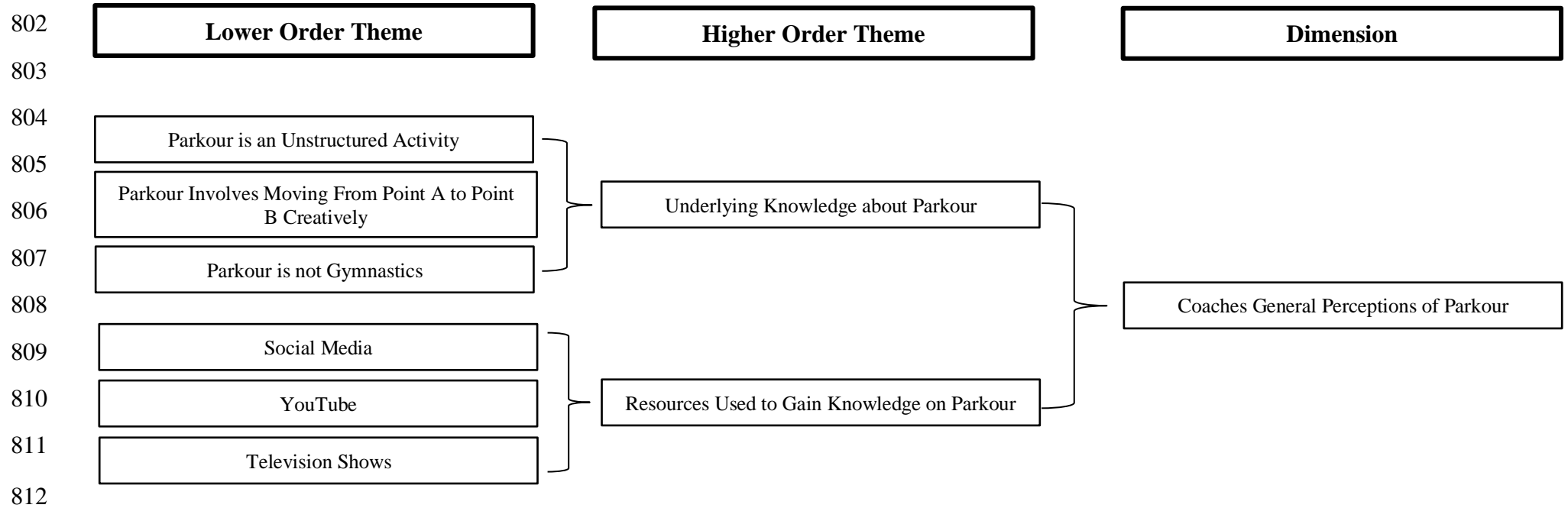
- 770 dynamics lens. *Sports Medicine-Open*, 4(1), 21. [https://doi.org/10.1186/s40798-018-](https://doi.org/10.1186/s40798-018-0132-5)
771 [0132-5doi:10.1186/s40798-018-0132-5](https://doi.org/10.1186/s40798-018-0132-5).
- 772 Strafford, B.W., Davids, K., North., J. S., & Stone, J. A. (2020). Designing Parkour-style
773 training environments for athlete development: Insights from experienced Parkour
774 Traceurs. *Qualitative Research in Sport, Exercise and Health*.
775 <https://doi.org/10.1080/2159676X.2020.1720275>
- 776 Strafford, B.W., Davids, K., North., J. S., & Stone, J. A. (2021). Effects of functional
777 movement skills on Parkour speed-run performance. *European Journal of Sport*
778 *Science*, <https://doi.org/10.1080/17461391.2021.1891295>
- 779 Taylor, E., Witt, J., & Sugovic, M. (2011). When walls are no longer barriers: Perception of
780 wall height in parkour. *Perception*, 40(6), 757-760. <https://doi.org/10.1068/p6855>
- 781 Terret, T. (2012). Gendering physical education: The role of the French state in the aftermath
782 of the First World War. *European Journal of Sport Science*, 12(2), 179–184.
783 <https://doi.org/10.1080/17461391.2010.551419>
- 784 Tongco, M. (2006). Purposive Sampling as a Tool for Informant Selection. *Ethnobotany*
785 *Research Applied*, 5. <https://doi.org/10.17348/era.5.0.147-158>.
- 786 Tracy, S. (2010). Qualitative Quality: Eight “Big-Tent” Criteria for Excellent Qualitative
787 Research. *Qualitative Inquiry*, 16(10), 837-851.
788 <https://doi.org/10.1177/1077800410383121>
- 789 Woods, C., Mckeown, I., Rothwell, M., Araújo, D., Robertson, S. & Davids, K. (2020b).
790 Sport practitioners as sport ecology designers: How ecological dynamics has
791 progressively changed perceptions of skill acquisition in the sporting habitat.
792 *Frontiers in Psychology: Movement Science and Sport Psychology 11*, 654.
793 <https://doi.org/10.3389/fpsyg.2020.00654>

- 794 Woods, C., Rothwell, M., Rudd, J. Robertson, S. & Davids, K. (2020a). Representative co-
795 design: Utilising a source of experiential knowledge for athlete development and
796 performance preparation. *Psychology of Sport & Exercise*.
797 <https://doi.org/10.1016/j.psychsport.2020.101804>
- 798 Wormhoudt, R., Savelsbergh, G. J., Teunissen, J. W., & Davids, K. (2018). The Athletic
799 Skills Model: Optimizing

800 **Table 1.** Participants' demographic information

| Coach ID^a | Sport Specialism (s) | Age (Years) | Coaching Experience (Years) | Country of Employment |
|----------------------------------|--------------------------------------|--------------------|------------------------------------|------------------------------|
| Talent Development Coach 1 | National Level 2 Rugby Union | 45 | 20 | United Kingdom |
| Talent Development Coach 2 | Grass Roots Soccer | 30 | 8 | United States |
| Talent Development Coach 3 | Division 1 Soccer | 52 | 30 | Sweden |
| Talent Development Coach 4 | Division 1 Soccer | 22 | 4 | Netherlands |
| Talent Development Coach 5 | Division 1 Soccer | 27 | 8 | Netherlands |
| Talent Development Coach 6 | County Gymnastics | 23 | 10 | Netherlands |
| Talent Development Coach 7 | International Soccer | 30 | 14 | Morocco |
| Talent Development Coach 8 | Rugby Union | 37 | 14 | United Kingdom |
| Talent Development Coach 9 | Academy and International Soccer | 45 | 25 | United Kingdom |
| Talent Development Coach 10 | International Field Hockey | 37 | 17 | United Kingdom |
| Strength & Conditioning Coach 1 | Sport Academy Boarding School | 25 | 8 | United Kingdom |
| Strength & Conditioning Coach 2 | League 2 Soccer Academy | 33 | 8 | United Kingdom |
| Strength & Conditioning Coach 3 | Golf and Athletics (Track and Field) | 38 | 16 | United Kingdom |
| Strength & Conditioning Coach 4 | Ballet and Weightlifting | 37 | 16 | United Kingdom |
| Strength & Conditioning Coach 5 | Basketball | 37 | 15 | United Kingdom |
| Strength & Conditioning Coach 6 | Rehab and Winter Sports | 49 | 30 | United States |
| Strength & Conditioning Coach 7 | Sport Academy Boarding School | 25 | 7 | United Kingdom |
| Strength & Conditioning Coach 8 | Championship Football Academy | 32 | 10 | United Kingdom |
| Strength & Conditioning Coach 9 | High School/College Sports | 27 | 8 | United States |
| Strength & Conditioning Coach 10 | Basketball and Track and Field | 24 | 5 | United Kingdom |

801 ^aThe names of the coaches have been transformed using a number prefix to protect their anonymity



813 **Figure 1.** Thematic Map: Coaches' General Perceptions of Parkour.

814

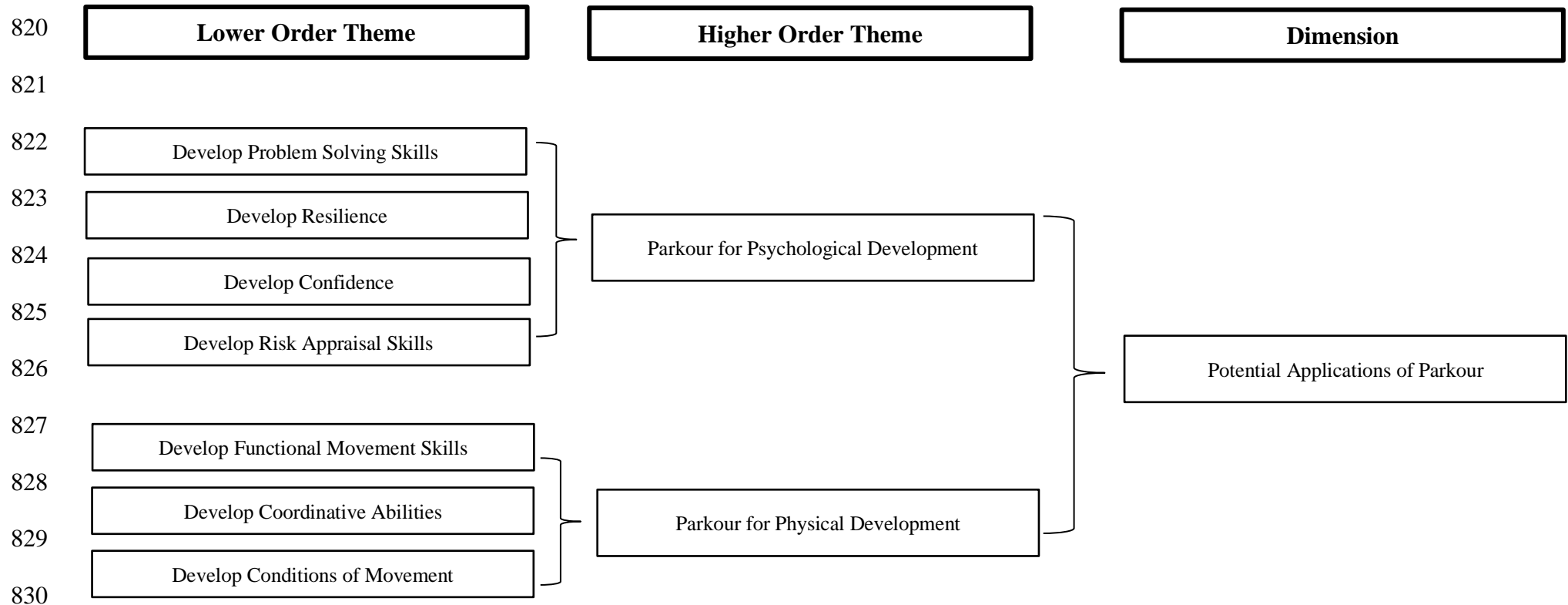
815

816

817

818

819



831 **Figure 2.** Thematic Map: Potential Applications of Parkour.

832

833

834

835

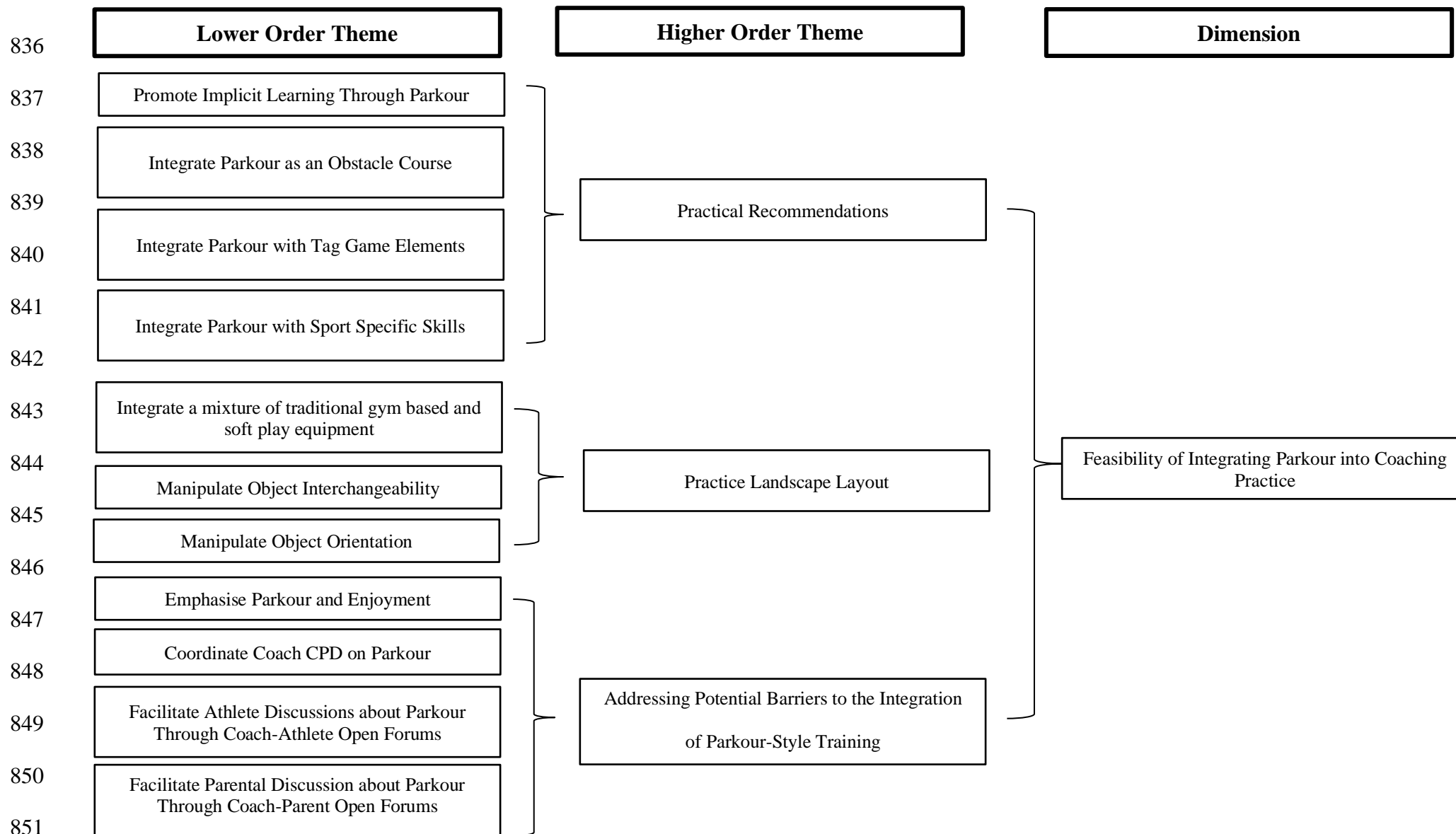


Figure 3. Thematic Map: Feasibility of Integrating Parkour into Coaching Practice.