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Title: Investigating the athlete-environment relationship in a form of life: An ethnographic study

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1 **Abstract**

2 From the theoretical perspective of ecological dynamics, skilful behaviour in performance
3 contexts like sport and education is predicted on the establishment of a functional relationship
4 between an individual and the environment. The strength of this functional relationship is
5 shaped over time by everyday behaviours, values, and customs (sociocultural practices)
6 within a specific sport organisation. A growing body of research seeks to identify these
7 influential sociocultural practices that emerge and exist in sport cultures and organisations.
8 However, little is known from an ecological realism perspective how these practices affect an
9 athlete's engagement with opportunities offered by the environment (e.g., affordances). In this
10 study, we draw on ethnographic data and theoretical tenets of James Gibson's ecological
11 psychology to identify how the sociocultural practices of a British rugby league football
12 academy might shape an athlete's engagement with affordances. Findings revealed that
13 masculinity and disciplined behaviours were the dominant sociocultural practices,
14 instrumental in developing beliefs, values, and customs of athlete development practices. An
15 ecological realism analysis of the data suggested that cultural pressures meant that key actors
16 ignored the potential for development and learning of athletes' self-organisation tendencies,
17 and inhibited individuals' capacities to respond to opportunities for action offered in many
18 traditional practice designs. We conclude by discussing implications for sport practitioners
19 that promote 'affordance-regulated' practice designs to enhance athlete-environment
20 interactions.

21

22

23 **Keywords:** ecological realism, athlete-environment relationship, affordances, a form of life,
24 sociocultural practices, ethnography, rugby league.

25

26 **Introduction**

27 Uehara et al. (2018) provided evidence illuminating how organizational and societal
28 sociocultural practices shape the development of functional athlete-environment relationships
29 in sport performance and practice. Sociocultural practices are deeply embedded in the
30 inherent values, beliefs, traditions, customs, and behaviors of specific communities, societies
31 and sport organisations, and they can shape the learning and development opportunities of
32 athletes seeking to interact with a performance environment (Rothwell et al., 2019). Broader
33 sociocultural factors influencing sport can lead to the normalisation of athlete development
34 practices that have, at their core, an acceptance of disciplinary power, reductionist views of
35 performance, and hegemonic masculine attitudes.

36 Athlete development practices of this nature can silence or marginalise individuals
37 who demonstrate other resources, such as dexterity, skill, and creativity that may not fit with
38 cultural norms like adhering to rigid team structures and patterns of play, following orders
39 and 'playing tough'. Denison et al. (2017) illustrated these ideas with their Foucauldian
40 analysis of 'disciplinary legacy and the challenge of coaching differently'. They argued that
41 discipline forces, emanating from social and political ideals, align with coaching practices
42 that they considered to render athletes as compliant 'docile bodies' (Denison & Avner, 2011).
43 Similarly, Stewart et al.'s (2019) investigation of a Scottish secondary physical education
44 context identified that male pupils embodied a particular form of masculinity, aligned to an
45 influential rugby culture, through the importance placed on 'trying hard' and 'physical ability'
46 to maintain participants' social standing in the educational institution.

47 A growing body of research has continued to identify the normative practices
48 apparent in sport cultures and organisations (e.g., Adams, 2020; Blackett et al., 2019; Purdy
49 et al., 2009). To advance these findings for the benefit of athletes and coaches, Anver et al.
50 (2020, p. 14) have argued for a "deeper understanding of the docility-producing effects" that

51 are a consequence of attitudes toward coaching, learning and knowledge, deeply rooted in
52 historical sociocultural factors. Aligned with Anver et al.'s (2020) sentiments, our intention in
53 this paper is to explore an alternative perspective on docility-producing effects, by drawing
54 on theoretical tenets of James Gibson's (1979) ecological psychology. Here, we seek to
55 develop our understanding of how particular sociocultural practices can continually shape an
56 athlete's intentional engagement with opportunities for behavioural interactions provided by
57 the task constraints of practice and competition (e.g., affordances; see Reed, 1993). Adopting
58 an ecological realism perspective can offer new insights for understanding why and how
59 athletes behave as they do in different sporting contexts and why individuals are intentionally
60 and selectively responsive to one opportunity for action rather than another (Araújo et al.,
61 2019a).

62

63 *An ecological dynamics conceptualisation of sport performance*

64 Implementing an underlying conceptual framework in athlete development and performance
65 preparation programmes can protect sport organisations, coaches, performance managers, and
66 athletes against effects of 'path dependency' (inherent biases) by mitigating against values,
67 beliefs, traditions, customs, and behaviors that are detrimental to supporting the long-term
68 development and functionality of athletes (Ross et al., 2018; Woods et al., in press).
69 Rasmussen et al. (2019) exemplified this point to counter deterministic views of athlete
70 performance by proposing an interdisciplinary, theoretical framework to stimulate creative
71 actions in sport, and to challenge traditional customs within coaching.

72 Ecological dynamics (the integration of ecological psychology and dynamical systems
73 theory) is one such theoretical framework that can support sport practitioners in recognising
74 social and cultural biases to coaching and talent development practices (Rothwell et al.,
75 2020). Ecological dynamics rejects a traditional assumption that an individual's interactions

76 with a performance environment are mediated through internally stored mental
77 representations of the world. Instead, ecological dynamics emphasises the development and
78 enrichment of a reciprocal and functional relationship between an individual and environment
79 to form a complex, interconnected system (Araújo & Davids, 2011). This perspective is
80 inspired by the direct realism of ecological psychology (Lobo et al., 2018), where the starting
81 point for understanding human behaviour is the engagement between the active organism
82 (individual), and the constraints of the surrounding environment, predicated on the
83 continuous use of information to regulate actions (Richardson et al., 2008). From the inherent
84 complexity of the athlete-environment system, functional, goal-directed behaviours emerge
85 as an athlete learns to satisfy multiple interacting constraints, deeply integrated and related to
86 personal (e.g., genetic composition and physical and emotional attributes), task (e.g., the
87 relationship between fundamental rule changes, equipment (re)design and performance
88 demands) and environmental (e.g., social, cultural, economic, historical and political) factors
89 (Phillips et al., 2010; Newell, 1986).

90 Embedding an athlete's practice experiences in environmental contexts that consist of
91 value (opportunities for action) and meaning (information) can strengthen functionality
92 within a performance environment (Araújo et al., 2019b). Opportunities for action,
93 continuously offered by properties of playing surfaces and markings, positioning of
94 teammates and competitors, equipment, technology and features of competition exemplify
95 *affordances* in ecological dynamics (Davids et al., 2017; Gibson, 1979). In the most
96 simplistic form, affordances are 'possibilities for action' that an environment offers an
97 organism (Gibson, 1979). Rietveld and Kiverstein (2014) have proposed a broader conceptual
98 framework of affordances, suggesting that possibilities for action provided by an environment
99 are dependent on the specific abilities possessed by an individual to integrate mind and body
100 to perceive and act on the rich information sources available in the environment (Woods et

101 al., 2020). To advance conceptual understanding, Rietveld and Kiverstein (2014) highlighted,
102 that, in human behaviour, effectivities (abilities, capacities and tendencies) and affordances
103 can only be understood in the context of an ecological niche and the relationship with a *form*
104 *of life* (Wittgenstein, 1953). Rietveld and Kiverstein (2014, p. 330) elaborated:

105 Affordances are possibilities for action the environment offers to a form of life, and
106 an ecological niche is a network of interrelated affordances available in a particular
107 form of life on the basis of the abilities manifested in its practices—its stable ways of
108 doing things.

109 In human behavioural contexts, a form of life describes standard sociocultural
110 practices that are "manifest in the normative behaviors and customs of our communities"
111 (Rietveld & Kiverstein, 2014, pp. 328, 329). It is this intertwined relationship between a form
112 of life captured in an ecological niche, which serves as a significant reference point for
113 understanding the functionality of human behaviours in specific performance contexts
114 (Ramstead et al., 2016). An ecological niche reflects how a species or group of individuals,
115 actively construct and modify their own and each other's evolutionary niches (Odling-Smee
116 et al., 2013). Several examples have illustrated how, in a sport performance context, an
117 ecological niche may be formed by a support team of practitioners, sport scientists,
118 performance analysts, and athletes (classed as a performance and development preparation
119 team) within a high-performance programme (McCosker et al., 2019). Exemplified by a
120 Department of Methodology, such integrated teams can modify, reproduce and implement a
121 shared methodological approach that influences each performer's ability to interact with
122 affordances in the microstructure of practice or competition (Rothwell et al., 2020).
123 Therefore, an athlete's ability to respond to *solicitations* (multiple promoted affordances that
124 have great relevance to an individual in a specific performance context) is highly dependent

125 on how the form of life influences the practices of athlete development teams that exist in a
126 particular ecological niche (Araújo et al., 2019a).

127 These ideas are exemplified by consecutive NBA champions, the Detroit Pistons, who
128 infamously employed a tough, highly structured, machine-like, defensive style renowned for
129 the 'Jordan Rules' (illegal tactics used when playing the Chicago Bulls to minimise the
130 dominating influence of Michael Jordan's attacking game). Additionally, Detroit's famous
131 Kronk boxing gym has nurtured many World Champions who adopted a similar
132 confrontational and gritty front foot, power punching, fighting style (Lee, 2019). From an
133 evolutionary perspective it is perfectly logical that these sport performance characteristics
134 were a resonant legacy of the socio-cultural and historical characteristics of Detroit city's
135 mechanized, mass-production, automotive industry. These performance characteristics seem
136 to have formed deeply engrained ideologies shared between coaches, athletes and consumers
137 that fostered tough, reductionist and mechanistic attitudes towards sport performance
138 (Zehntner et al., 2019).

139 To date, research adopting a perspective of ecological realism to investigate the effect
140 of sociocultural practices on the individual-environment relationship is limited (for some
141 exceptions see Rothwell et al., 2019; Rynne, 2016; Sanderud et al., 2019). An ecological
142 realism perspective may provide unique insights into how the everyday practices of a sport
143 organisation influence an athlete's engagement with affordances. One way to increase
144 understanding and generate knowledge about the relationship between sociocultural practices
145 and underlying structures that influence human behaviour, is to adopt an ethnographic
146 approach (Atkinson, 2017). Through taking an ethnographic approach, and adhering to an
147 ecological realist framework, we sought to consider the following question: What are the
148 sociocultural practices that influence a form of life, and how do they affect the athlete-
149 environment relationship? Additionally, in considering the research question we intended to

150 address the following aims: 1) identify and observe first-hand the sociocultural practices of a
151 sport organisation, and characterise the relationship with the existent form of life, and 2),
152 conceptualise, from an ecological realist perspective, how a form of life influences the
153 athlete-environment relationship.

154

155 **Methodology**

156 *Background and context*

157 A British rugby league football academy provided a research base due to the sport's rich and
158 unique socio-cultural-historical backdrop. Formally organised in 1895, with its origins
159 embedded in the Victorian era (1837–1901) and its industrialisation of manufacturing and
160 labour, rugby league football has developed its influential structures, culture and traditions
161 (synonymous with the social and political ideals of the time and hegemonic masculinities
162 discussed earlier) that remain today (Collins, 2006). A season-long (September to June)
163 ethnographic study at a professional club's England Talent Pathway (ETP) programme was
164 conducted to gain meaningful insights into these systems and processes. The ETP is a talent
165 development initiative developed by the Rugby Football League (RFL) and aims to increase
166 the number of talented 12 to 14-year-old rugby league players (Rugby Football League 2015).
167 Every British Super League professional club runs the ETP provision and, unlike traditional
168 talent pathways, the ETP removes selection and de-selection through an inclusive approach
169 where any registered school or club player has the autonomy to attend any ETP provision in
170 the country.

171 Situated within a Super League club in the north of England, the ETP was considered
172 to be an integral part of the club's player development pathway, insofar that all the 2017/18
173 scholarship players were recruited from the club's ETP. The club ran multiple coaching
174 sessions during the week and on weekends, and all sessions took place at a local school's

175 floodlit artificial pitch. All sessions were field-based and aimed to improve players'
176 understanding of the game, mental attributes, movement, and coachability (Rugby Football
177 League, 2015). The first author gained access to the ETP through personal contact at the
178 Super League club, and throughout the study was immersed as a full participant (Patton,
179 2002). To achieve this position, the first author volunteered as an ETP coach on the
180 programme, but fully disclosed his position and aim of the research to fellow coaches during
181 the first coach development meeting. Although disclosure was initially met with some
182 scepticism from some of the coaches who viewed the lead author as an outsider, an insider
183 position was adopted due to the lead author's previous coaching experiences and coaching
184 qualifications.

185

186 ***Research design and procedures***

187 To develop a sophisticated understanding of the culture of groups or organisations from the
188 perspective of the members, ethnographic studies are considered a legitimate means for
189 generating insights into the sociocultural mechanisms that influence human forms of life
190 (e.g., Sparkes et al., 2020). This ethnographic study built on previously-collected interview
191 data to adopt a *critical realist* ethnography (Atkinson, 2017), positioning the underlying
192 socio-cultural-historical contexts to generate a deeper understanding of the factors that
193 influence traditions, customs, and practices in the specific ecological niche (see Rothwell et
194 al., 2018). In doing so, we take the position that the talent development setting alone cannot
195 account for the behaviour of its inhabitants. Instead, their behaviour is a product of, not only,
196 the ETP, but the wider sociocultural practices of the communities they live in (Hammersley,
197 2006).

198 The ten-month period provided multiple data collection opportunities. Initially, coach
199 meetings and coach development sessions generated observation data, followed by weekly

200 observations of activities before, during, and after practice sessions. An observational funnel
201 approach was adopted (Alder & Alder, 1994), to gain a general understanding of the broader
202 sociocultural context (Tjora, 2006). Field notes were used throughout the observations to
203 capture and describe routines, behaviours, interactions, and specific incidents relevant to the
204 research aim (Walford, 2009). Writing field notes during coaching sessions was not practical,
205 therefore, in line with the advice of Thorpe and Olive (2017), detailed field notes were
206 written away from the training facility immediately after practice had finished. Interview data
207 were also collected in the form of casual conversations and organised individual unstructured
208 interviews to generate a more sophisticated understanding of the form of life present in the
209 talent programme (Smith, 2013). Discussions between the researcher and participants also
210 provided opportunities to further explore experiences and to attach meaning to specific
211 situations that were explicitly related to the research aims (Smith & Sparkes, 2016).

212 The host university ethics board granted institutional ethical approval, and all the
213 coaches (pseudonyms for the study are Barrie, head coach; Simon, Terry and Phil assistant
214 coaches) in the study provided informed consent. Additionally, throughout the research
215 process, a relational ethics position was adopted (Lahman et al., 2011). This approach was
216 motivated by the research team's desire to develop "respectful connections" with the
217 participants to fully appreciate how embedded sociocultural practices are in the talent
218 development programme (Palmer, 2016, p. 319).

219

220 *Data Analysis*

221 A relativist ontology and subjective epistemology guided the study, exposing researchers to
222 their own "value system", which can lead to the misinterpretation and distortion of data (Baur
223 & Ernst, 2011, p. 120). Evident here, because of the first author's research position and
224 sociocultural biases acquired during previous experiences of managing a rugby league

225 football talent development programme. However, Elias (1956) argued that analysis of social
226 life must move between the researcher's subjective experiences of the world under study and
227 a level of distancing gained through an analytically detached perspective, allowing theory and
228 reflection to provide a more objective view of the social environment under study. The first
229 author engaged in involvement-detachment theory by grounding continuous reflections and
230 the thematic analysis in the theoretical positions informing the research (Braun et al., 2016).
231 The first author did struggle to become entirely detached from the experiences of the ETP,
232 although a conscious effort was made to remain detached throughout the data analysis process.
233 Indeed, Elias himself maintained that the involvement-detachment dynamic was a balance
234 and that a fully detached position was impossible (Sinclair, 2016). Exemplified in this study
235 by the first author becoming empathetic towards the participants' (coaches') views towards
236 the highly disciplined and coach-led nature of practice. However, this fluid relationship
237 between the involvement and detachment dynamic served to focus future observations, field
238 notes, and topics of conversation with the coaches. To further encourage reflexivity on how
239 the first author's presuppositions may have impacted on the construction of knowledge, the
240 second and third authors acted as "critical friends". Specifically, they provided opportunities
241 to engage in the process of critical dialogue to challenge interpretations made and to provide
242 a sounding board for reflection and exploration of multiple and alternative explanations for
243 the data (Smith & McGannon, 2018).

244 **Results**

245 Data analysis resulted in three main dimensions about the study aims and started to highlight
246 responses to the complex and dynamic relationships between people, context and the
247 sociocultural practices. The three dimensions are categorised as: (a) sociocultural practices
248 (masculinity and disciplined behaviour), (b) a socially- and culturally-constructed ecological
249 niche, and (c), the athlete-environment relationship.

250 *Sociocultural practices*

251 Sociocultural practices refer to the specific details of how the dominant individuals within the
252 talent development setting influenced attitudes towards the development and performance of
253 the young players. Masculinity and disciplined behaviour were socially and culturally
254 constructed and reproduced by the actions, attitudes, and practices of key agents. These
255 attitudes were exemplified by one of the first author's encounters with the coaches during a
256 planning meeting, where a more established cohort of coaches was discussing a recent Super
257 League game. The discussion focused on the reasons why the losing team had not performed
258 well, where the consensus was that the losing team were not 'tough enough' and 'lacked
259 discipline' (field notes). The weekly practice activities that the academy players participated
260 in reflected these masculine and disciplined attitudes. In one practice session, observations
261 revealed that performance expectations followed a path of over-valuing and over-
262 emphasising physical size and toughness, rather than emphasising skill performance,
263 innovation, and dexterity. Apparent when two coaches were discussing a player who
264 demonstrated skilful play but was considered to lack 'heart':

265 Simon: I really like him, he plays some nice stuff.

266 Phil: The problem with him he's a soft cunt, he doesn't like the contact.

267 Simon: Yea but look at him he's tiny. He'll grow over time.

268 Phil: I watched him last week at xxxxxxxx (club), he went missing when it got tough.

269 Simon: Won't he develop (physically) over time? He's only 15.

270 Phil: He ain't got the heart for it. (Field notes)

271 This apparent toughness value was explored further through interviews, where masculine
272 identity was attributed to the sociocultural backdrop of the sport and the working class nature
273 of the rugby league community. Terry elaborates:

274 Your city clubs, i.e., your xxxxxx clubs, you know you're gonna get some rougher
275 lads who are open to a good fight and all that and even at an early (age), I mean, I
276 know for a fact.

277 The sociocultural context also embedded disciplined behaviour in the player
278 development practices, reflected in attitudes towards how the players should behave during
279 practice. These behavioural expectations were set and reinforced by the coaches' instructions
280 and actions, where, the norms of the environment restricted players from deviating away
281 from these expectations (i.e., running, passing, jumping and landing in a prescribed way and
282 demonstrating compliance with the 'right' attitude to learn). These expectations were (mostly)
283 reproduced by the players' willingness to conform to these normative behaviours, to comply
284 with instructions and avoid the critical, watchful eye of the coaches who were ultimately
285 responsible for their destiny. In one instance, during a warm-up task, a group of players were
286 considered to be 'messaging around' by one of the more senior coaches because of their lack of
287 adherence to a task (the players had broken out into an impromptu tag game after completing
288 the warm-up task). The coach became frustrated by this, and his reaction revealed a
289 dissonance regarding players' expectations and the learning culture held by the coaches',
290 discussed here:

291 Phil: I would have bollocked them if I wasn't here, but at the club.

292 Lead author: Why not here?

293 Phil: The problem is kids come here to play games, not to learn.

294 Lead author: Ok.

295 Phil: They can't think, they need telling what to do and when to do it. (Field notes)

296

297 The conversation demonstrates the reciprocal and influential nature of individual and
298 environment interactions. On the one hand, the coach suppresses his initial instincts to have
299 "bollocked" (castigated) the players for not conforming with instructions, due to the
300 environmental expectations set by the professional club. Whereas, the players' expectation to
301 "play" games during practice ultimately influences (some) parts of practice. These conflicting
302 positions demonstrate how specific attitudes towards behaviour and practice are part of a

303 complex social and cultural dimension that can ultimately influence player and coach
304 intentions.

305 *A socially- and culturally- constructed ecological niche*

306 A goal of the talent development programme was to support player development through a
307 *game sense* approach. The rationale behind the professional club moving towards a game
308 sense approach was to support players to become more 'aware' and to improve their 'decision
309 making' behaviour. This aim was evident from the experiences of the coach development
310 sessions, where coaches designed a range of games to support the development of 'decision
311 making' skills. The ETP coach resource also guided how to structure coaching sessions (e.g.,
312 warm-up, game, movement, game, cool down, and summary (Rugby Football League, 2015),
313 where a 'game sense' element features twice during a session. Barrie also reinforced this
314 position during the practice sessions, where he reminded the coaches about the approach to
315 practice.

316 The coaches are waiting to start practice. Players are starting to arrive, as they do
317 most start kicking a ball to each other. Some play a small-sided game of touch rugby.
318 Coaches are setting up the practices, discussing their session plans, and confirming
319 who is doing which bit of the session. Barrie calls the coaches over to him and
320 reminds them about his expectations. "Let the players enjoy and express themselves
321 and don't be too worried about them making a mistake, let them learn without
322 actually realising it through the game." (Field notes)

323 Although the professional club and national governing body promoted a game sense
324 approach, deeper probing and observation revealed there was a clear disparity between the
325 recommended method of practice and the coaches' customs and habits. Although a game
326 sense method was used (because the coaches were instructed to), most of the coaches often
327 reverted to traditional coaching methods (i.e., high levels of instruction and critical feedback).

328 Simon explained that the problem was that some of the coaches' just didn't 'get' a game sense
329 approach; he elaborated:

330 Probably because it's ingrained (traditional practice methods) and they've been around
331 it for that long, and that's what they see as normal, that's what the current coaching
332 education programmes have kind of rammed down their throat. Scared to do anything
333 different and they don't quite understand, but at the same time there's probably a
334 small number of coaches that really do get it and are open and get the concepts so it's
335 probably down to the individual and how open they are or how maybe intelligent they
336 are, but also what a lot of clubs have got going against them is the norms what they've
337 seen for the last ten-twenty years maybe.

338 The 'norms' that Simon discussed indicated strong historical traditions of practice
339 ingrained over time and aligned to a deterministic view of human behaviour. Simon discussed
340 how previous playing experiences (creating a path dependency) might play a part in
341 supporting these strongly-held coaching assumptions and traditions, leading to a status quo
342 bias for a very specific coaching approach. Simon elaborates:

343 They've played with a successful amateur team, and they've obviously got a vision of
344 how it was done back then, and if it doesn't look like what they were doing back, then
345 they don't understand the way that things have changed.

346 Thus, the coaches tended to coach the way that they themselves were coached, exemplifying
347 the 'path dependence' that haunts many sports organisations with strong cultural and
348 historical biases towards traditional ways of working. These customs, habits and traditions of
349 practice reinforced the provision of explicit knowledge and mental representations,
350 exemplified by the coaches' disproportionate use of instruction, demonstrations, and feedback
351 based on a putative, internalised, 'technical' model of player behaviour.

352 The intricacies of a rugby league 'technical' model (e.g., technical components such as
353 pass, catch, tackle, kick) dominated conversations before and after practice sessions. Barrie
354 explained that ensuring players mastered these optimal technical movement patterns,
355 considered essential to play rugby league successfully, was a common goal across the sport.
356 The result was an over-emphasis on repetitive, coach-driven practice designs that focused on
357 all players acquiring basic technical competence, he elaborated:

358 On a typical training night where there's six squads training, and it all looks very the
359 same and it's people queuing, it's people not listening being shouted at just the old
360 traditional kind of they very much drill, stop listen to me. Just not a general
361 understanding of how players develop and how different people learn and the need to
362 put variety to sessions and players will develop at different rates, they all expect it to
363 be a real linear process.

364 During the interviews the commonly held reductionist view of learning was explored.
365 Coaches valued an ideology that the complex multi-dimensional actions during competition
366 needed to be 'broken down' for players to learn them and to adequately play the game. This
367 propensity for 'task decomposition' was exemplified by Terry, who explained about the
368 importance of being 'more skilful' to compete, he explains:

369 The detail we put into players now and they've got more to think about in that
370 detailed way of where to pass, kids nowadays know. Especially into this environment
371 in a Super League club, they know that there's not gonna be weak players in front of
372 them, so they've got to do everything more skilful and more detailed to try and break
373 it down.

374 Terry's comments demonstrate the commonly-held view of determinate human behaviours,
375 where coaches' associated being 'skilful' with acquiring technical skills in highly specific

376 ways that closely replicated the sequentially-listed coaching points highlighted in rugby
377 league coaching manuals. For example, when coaching the sidestep, players must perform
378 these action components in sequence: 1. push off either foot when 1–2 metres away from the
379 defender, 2. drive selected foot hard against the ground and step away from a defender into
380 space, 3. land on opposite foot with a slight lean forward, 4. accelerate into space to reach top
381 speed (Rugby Football League, 2014). This reductionist and deterministic ideology to
382 measure players' performance improvement, reinforced the view of the human body as a
383 machine. This belief held by the coaches' resulted in them seeking mechanistic principles to
384 quantify performance improvement by providing explicit knowledge and mental
385 representations to hone technical outputs. This approach was exemplified by Terry, who
386 explained how he supported one player at the club who had a chance of 'making it', by
387 providing him with information about these complex actions:

388 I'm putting a lot of input into him, I'm putting a lot of information into him because
389 I know he can make it. It tell him don't practice poor, every time you practice make
390 sure that everything is just more quality than quantity, just do it and just practice it
391 really good and it'll come naturally to you then.

392 The dissonance between (most of) the coaches' socially and culturally constructed
393 beliefs towards coaching practice and the approach promoted through the talent development
394 programme of this professional sport organisation was evident throughout the programme.
395 Interestingly, the cohort of coaches who held these strong beliefs never consciously
396 challenged alternative methods and would agree that players needed better decision-making
397 skills. However, ultimately the strong sociocultural influences ensured the status quo was
398 maintained.

399 *The athlete-environment relationship*

400 Players' experiences of practice tasks and the coaches' behaviour during the field-based
401 sessions were considered influential in shaping players' thoughts and actions during
402 performance. Barrie felt that certain reductionist practice methods were supporting 'robotic'
403 player behaviours, meaning players could only react mechanistically to external features of
404 the environment, a limitation in the dynamic performance context of team sports. He
405 elaborates:

406
407 I think it (traditional practice methods) makes them (players) very coach dependent so
408 not necessarily very aware of themselves, what they need to improve on, not great at
409 making decisions, very robotic at times, unable to work things out for themselves so
410 the game's very, very structured now and as a result, people can't make great
411 decisions, yeah very robotic more than anything.

412 An example of the traditional practice methods that Barrie discussed aimed to
413 enhance predictability and reduce uncertainty through rigid role specification and the
414 reduction of personal autonomy. These traditional practice methods simply required players
415 to 'go through the motions', to rehearse pre-planned actions, with very little emphasis on
416 players to be responsive to the opportunities that may *emerge* in the practice environment.
417 Exemplified here by a coach's session plan:

418 Mark out an area with 3 cones in a triangle shape with player 1 at the peak and 2 and
419 3 on the other corners. Player 1 starts with ball. Once he sets off player 2 and 3 time
420 their run so that P1 passes to P2 who in turn passes to P3. Every pass as to be
421 backwards and timed so that the ball stays in the middle area of the triangle. (Session
422 plan)

423 Reducing players' openness to information emerging within the environment was a
424 consistent feature of practice. Rather than letting the players interact with the practice

425 environment, coaches would use the experience to identify and correct poor 'technique' (i.e.,
426 not reproducing a movement as per the coaching manual). This situation was evident on
427 many occasions where coaches would pre-empt technical deficiencies before the session
428 starting, rather than enhancing opportunities to experience decision making actions. This
429 experience was exemplified here by pre-session email correspondence from a coach to the
430 lead researcher:

431 One coach will lead with it being game-based, and the other can pull players out
432 while the game is running to make sure they are using correct techniques, 2nd game
433 we will switch roles, so both coaches are involved in both aspects of the session if
434 you're ok with that. (email communication)

435 This approach fostered an environment that valued players' 'reproduction of technique'
436 capacity as opposed to the programme aim of developing better decision-making behaviours,
437 where coach control, rather than player autonomy, was a constant feature of practice. The
438 result was that coaches adopted a 'coach-centred' approach by continually interrupting the
439 flow of practice to provide verbal instructions and corrective feedback if they felt that players
440 were not adhering to 'appropriate' technical competence, regardless of the outcome.

441 Demonstrated here by an exchange between Terry and the lead author:

442 Terry: Stop it, you need to stop it (the session), they're getting sloppy (at passing)

443 Lead author: Right, ok

444

445 Terry walks onto the pitch, stops the practice and speaks to the players.

446

447 Terry: Remember your passing, I don't want to see this any more (demonstrated an
448 incorrect passing action), right crack on.

449

450 Terry returns to the pitchside.

451

452 Terry: You've got to keep on at them, or they get sloppy. Don't be afraid to stop it
453 (the practice) and tell them. (Field notes)

454 The consequence of this technical bias was the influence on players' exploratory
455 behaviours during the chaos of gameplay. Demonstrated during a game designed to improve
456 players' ability to identify and attack space, a playing area was set up with increased width,
457 allowing more space for the attacking team to explore and exploit attacking opportunities.

458 During the 8 v 8 game players are using approximately 30 meters of the 60 meter
459 wide pitch. Both teams are crowding around the ball. The attacking team are not
460 making much ground, attacking players are happy to run into multiple defenders and
461 get tackled. Phil is getting frustrated. He starts shouting instructions to the attacking
462 team "space!" "where's space!", players don't respond, the coach gets more frustrated.
463 He stops the game and calls the players over to him and questions them about the
464 practice.

465 Phil: What's the aim of this game? (10 seconds passes, and the players have not
466 responded)

467 Phil: Attackers, what are you trying to do?

468
469 One of the more confident players responds.

470

471 Player: Find space

472 Phil: So why are you only attacking the middle? (Another period of silence passes)

473 Phil: This time I want you to use the whole width of the pitch. What will that create?

474 Player: More space to attack.

475 Phil: Ok, good, let's go.

476 The game resumes, and for a short, while the attacking team uses the full width, this
477 results in the performance behaviours the coach is expecting but also increased handling
478 errors and mistakes. Leading to the attacking team reverting to playing down the
479 "middle". (Field notes)

480 Although a minority of players were willing to respond to questions and explore the practice
481 landscape when encouraged to do so, the majority of players remained passive, unresponsive,
482 compliant and 'robotic' during practice (i.e., could only act when told to do so). This situation

483 illuminates the risks involved when a dichotomy of coaching approaches (identified
484 previously) contradict one another, creating dissonance and leaving players 'unsure' and
485 'apprehensive' about how they should interact with the coaches and the opportunities that
486 practice and competition provided for them.

487 **Discussion**

488 *Sociocultural practices and the form of life*

489 The study identified masculinity and disciplined behaviour as the dominant sociocultural
490 practices that influenced the coaches' and players attitudes towards performance and
491 development. Historically, masculinity and disciplined behaviour have been synonymous
492 with rugby league since the sport's birth in 1895, a sport played and watched by members of
493 the industrial working class. The industrial workhouses shaped men and women through
494 arduous, masculine, and disciplined work conditions. This work organisation pattern was
495 influenced by Frederick Winslow Taylor's 'task system of management' (Taylor, 2008),
496 which aimed to remove manufacturing uncertainty by applying hierarchal systems of control
497 through rigid role specification and task repetition (Taylor, 1911). The workforce was merely
498 a cog in the system and was submissive to institutional regimes. Consequently, on the rugby
499 field, these individuals were governed by the same institutional regimes honed on the shop
500 floor in the workhouses of the industrial north (Smith & Davids, 1992). These same
501 synergistic interactions between sport and society were demonstrated and reproduced by the
502 coaches (in the current study) perfunctory and inflexible attitudes towards player
503 performance and were ultimately maintained by the complex power relations embedded
504 within the rugby league academy (Bronfenbrenner & Morris, 2007; Gearity & Mills, 2012).

505 The authoritarian coaching approach embraced by the coaches, synonymous with the
506 traditional daily practices of the industrial workhouses, was based on normative models of
507 how players should adhere to performance solutions that emphasised aggression, toughness,

508 and the execution of predetermined movement behaviours (e.g., Denison et al., 2017). The
509 coaches embraced these familiar structural models of human learning based on notions of
510 *linear causality* (Kelso, 2007), with the belief that the enrichment of components can achieve
511 improved athlete performance (e.g., technical component skills in rugby league), through
512 limiting performance variability, the constant repetition of single tasks, and continuous
513 monitoring for, and detection of, system errors (Schöllhorn et al., 2009). These socially- and
514 culturally-constructed beliefs and dispositions, demonstrate how powerful a form of life can
515 be in sustaining customs, habits, attitudes, and practices within a sporting ecological niche
516 (Button et al., 2020).

517 However, the dominant form of life identified here can be problematic in sport
518 because socially and culturally constructed attitudes to coaching and performance can
519 marginalise players who do not possess the required traits to fit in (Uehara et al., 2018).
520 Exemplified by the expectation of players to follow orders, be tough, demonstrate manliness,
521 and to adopt a disciplined attitude. However, these prevailing traits could be a challenge to
522 developing highly engaged and thinking athletes (e.g. Denison & Mills, 2014), to interact
523 with specific task goals and environmental information to utilise affordances to act under
524 changing performance conditions (Seifert et al., 2013).

525 ***The ecological niche and the athlete-environment relationship***

526 To advance our understanding of an individual's experience of soliciting and non-soliciting
527 affordances, based upon sociocultural constraints, it is important to reconsider that
528 affordances are not simply possibilities for action that exist in an environment to offer
529 opportunities to an individual, but affordances can also invite or repel behaviours (Withagen
530 et al., 2017). Therefore, the performance environment should not be viewed as a "collection
531 of causes, but as a manifold of action possibilities" that makes behaviour possible (Withagen
532 et al., 2012, p. 251). From this perspective, how active organisms modify their ecological

533 niche can influence selection pressures on certain action possibilities over others (Matthews
534 et al., 2014), as Levins and Lewontin (1985, p. 106) noted: "The organism influences its own
535 evolution, by being both the object of natural selection and the creator of the conditions of
536 that selection". Player evolution and the notion of niche construction were evident throughout
537 the current study, where the ETP coaches played an instrumental part in controlling,
538 regulating, and modifying the ecological niche through perceptions of performance
539 embedded in reductionist and deterministic attitudes. In the same way, as earthworms or birds
540 shape development opportunities for their offspring, the ETP coaches passed on values,
541 beliefs, traditions, customs, and behaviours to the players, that had a major effect on the
542 athlete-environment relationship, through a process known as 'ecological inheritance'
543 (Odling-Smee et al., 2013).

544 This conceptualisation of affordances has the potential to provide a different
545 perspective on practice designs (for an excellent example in the sport of Rugby Union, see
546 McKay & O'Connor, 2018), and presents an important research question regarding factors
547 that influence bodily responsiveness to action possibilities, since "solicitations are subject-
548 dependent, whereas affordances are not" (Dings, 2018, p. 4). Although research exploring
549 factors that solicit actions is in its infancy, early work has suggested that key variables such
550 as action capabilities (Warren, 1984), evolutionary history (Withagen & Chemero, 2009),
551 sociocultural factors (Rietveld & Kiverstein, 2014), and cultural pressures (Heras-Escribano
552 & de Pinedo, 2016) can influence an individual's engagement with the environment. This
553 perspective leads us to the interrelated nature of a form of life, cultural pressures, and the
554 influence of the athlete environment relationship in perceiving affordances that attract or
555 repel solicitations. The practice environments experienced by the players in the current study
556 consisted of affordances and information that could lead to successful engagement in practice
557 and competition. However, the cultural pressures forced athletes to take advantage of certain

558 affordances over others (e.g., Ramstead et al., 2016). As Reed (1996, p. 69) suggested, "[It] is
559 not the animal's brain that organises its world, but the evolutionary ecology of the animal that
560 organises its brain". Evolutionary ecology in this sense relates to the evolution of individual
561 players within the England Talent Pathway (ETP), and how cultural pressures (i.e., high
562 levels of direct instruction, masculinity, and disciplined behaviour) shape 'selective
563 sensitivity' to relevant affordances (Bruineberg & Rietveld, 2019). From an evolutionary
564 perspective of the ETP, affordances to satisfy sociocultural practices were deemed more
565 important for survival and were more likely to invite behaviour (e.g., playing safe to avoid
566 mistakes, reproducing optimal movement patterns as instructed by a coach, and reacting only
567 to pre-organised external features of the environment), as opposed to the skilful engagement
568 with the other opportunities provided by the rich practice environment. So, although
569 affordances to support skilled intentionality were available to players to help them thrive in
570 performance (Bruineberg & Rietveld, 2014), the sociocultural practices embedded in the
571 form of life meant that players only responded to certain affordances. This theoretical
572 conceptualisation of affordances offers a means of explaining how the selection of a course of
573 action is based on the engrained, traditional environmental constraints of the athlete-
574 environment system, which determine to what extent an individual is solicited by available
575 affordances (Ramstead et al., 2016).

576 Another challenge to the players actively engaging with the environment was the
577 determinate, top-down, hierarchical model of human behaviour. Ribeiro et al. (2019) have
578 referred to such external, top-down influences to the regulation of behaviour, as having a
579 'global-to-local' direction where external agents such as parents, teachers, and coaches
580 oversee rehearsed set plays and pre-planned, coordinated collective actions, considered
581 essential to regulate conscious thinking and action. These global-to-local tendencies were
582 evident within the ecological niche, where wider sociocultural beliefs suggested that the

583 direction of interactions was dominated by a hierarchical, determinate, external influence to
584 globally orchestrate the dynamics of player coordination during practice and performance
585 (Araújo & Davids, 2016). Consequently, coaches designed learning tasks that enhanced
586 predictability and reduced uncertainty through rigid role specification and the reduction of
587 personal autonomy, with players becoming coach-dependent to satisfy global constraints.
588 However, this environmental determinism ignored the potential of players self-organisation
589 tendencies (athletes adapting and organising without external input in a ‘local-to-global’
590 direction), to capture the reciprocity between the athlete-environment relationship to form a
591 deeply entwined, complex, adaptive system (Davids & Araújo, 2010).

592 In contrast, a Gibsonian account of human behaviour suggests that individuals do not
593 need external input or the guidance of conscious thinking to find their way in the world;
594 rather they act unreflectively to harness a selective openness and responsiveness to the
595 relevant opportunities for action (affordances) (Gibson, 1979; Kiverstein & Rietveld, 2015).
596 Interestingly, players demonstrated an openness and responsiveness to multiple affordances
597 during self-led activities (e.g., small-sided touch games before practice started), where
598 players demonstrated unique movements to skillfully engage with affordances, which in the
599 coach-led session, would be actively discouraged. In this sense, highly responsive and skilful
600 athlete behaviour is not the result of a form of life that promotes practice tasks requiring
601 athletes to rehearse, repeat and fluently perform isolated actions devoid of environmental
602 context. Rather, it is the degree to which individuals respond to relevant solicitations that
603 leads to exceptional engagement whilst exploring a landscape of affordances (affordances
604 available in an ecological niche) (Kiverstein, van Dijk, & Rietveld, 2019).

605

606 *Implications for understanding the practitioner role in sport*

607 Athletes who inhabit an ecological niche that encourages exploratory behaviours to
608 continuously search an affordance landscape (e.g., identifying and exploiting space, engaging
609 in interpersonal coordination to promote collaborative and creative behaviours between
610 teammates, and using variability of actions to de-stabilise attacker-defender dyads) to solicit
611 actions, will more likely be in a state of action readiness to be selectively open to the specific
612 demands of a performance environment (Renshaw et al., 2019). Such ideas offer a means for
613 designing practice tasks that can harness an athlete's responsiveness to relevant affordances.
614 Practitioners can harness these practice designs to appeal to an individual's motivation to seek
615 value (affordances) and meaning (information) in a performance environment (Reed, 1996).
616 Task constraint manipulations can be employed to provide practice settings that allow
617 athletes to unreflectively search (using implicit learning to explore functional coordination
618 modes), discover (exploring task solutions), and exploit (exploiting inherent self-organisation
619 tendencies in the perceptual-motor system) whilst satisfying goal-directed behaviour
620 (Renshaw et al., 2016).

621 In team sports performance, this aim can be achieved by implementing tactical
622 principles of play to constrain co-existing 'local-to-global' self-organisation tendencies to
623 help athletes utilise relevant affordances through their continuous interactions in practice
624 (Ribeiro et al., 2019). For example, game-based practices designed around tactical principles
625 of play (i.e., go forward, attack space, support the ball, apply pressure, and regain
626 possession), where athletes are constantly striving towards satisfying these specific intentions
627 by searching and exploring the practice landscape (Fajen et al., 2008). Ribeiro et al., (2019)
628 argued that training in team sports needed to be re-designed to be more 'affordance regulated'
629 to capture a much more nuanced balance between pre-planned, structured actions (global-to-
630 local direction of control) and the unstructured interactions of players with events and plays
631 as they emerge on the field (local-to-global direction of control by players). It is this striving

632 that can enhance athlete-environment interactions to search for more functional movement
633 solutions and enrich an athlete's relationship with the environment (Kiverstein & Rietveld,
634 2015).

635

636 **Conclusion**

637 In this study, we have considered how a form of life in a sport organisation influences athletic
638 experiences and an athlete's engagement with available affordances of a competitive
639 performance environment. Positioning the athlete-environment relationship as an important
640 unit of analysis for understanding behaviour can advance our understanding of how to
641 strengthen an individual's functional relationship with practice and competition. In this
642 respect, our conceptualisation of affordances in a talent development programme as an
643 ecological niche can support groups of practitioners in designing high-quality learning and
644 development experiences. The insights provided in this study of a rugby league club, aligned
645 to concepts in ecological dynamics, suggest that, more broadly, the aim of sport practitioners
646 and applied scientists should be to design learning environments embedded in an
647 environmental context that consists of value (affordances) and meaning (information) for the
648 learners. A limitation of this study was not drawing on the athlete's experience of the
649 ecological niche to determine factors that influence soliciting and non-soliciting affordances.
650 To further understand these theoretical insights in preparation for sport performance, it is
651 important to conduct similar field-based studies that combine quantitative athlete
652 development measures (i.e., performance analysis, evaluation and assessments) with
653 phenomenological data to provide a more rich and insightful understanding of factors that
654 continually shape the athlete-environment relationship. Conducting research of a deeply
655 integrated nature will also help applied scientists and practitioners determine how individuals

656 learn to satisfy a range of interacting constraints in the ecological context of sport

657 performance.

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