

Contextualised skill acquisition research : a new framework to study the development of sport expertise

UEHARA, Luiz, BUTTON, Chris, FALCOUS, Mark and DAVIDS, Keith
<<http://orcid.org/0000-0003-1398-6123>>

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1 **Contextualised Skill Acquisition Research:**

2 **A New Framework to Study the Development of Sport Expertise**

3
4 **Authors:**

5 **Luiz Uehara¹, Chris Button¹, Mark Falcous¹, & Keith Davids^{2,3}.**

6 1: University of Otago, School of Physical Education, Sport and Exercise Science, New
7 Zealand

8 2: Centre for Sports Engineering Research, Sheffield Hallam University, UK

9 3: Faculty of Sport and Health Sciences, University of Jyväskylä, Finland

10
11
12 Corresponding author contact details:

13 Luiz Uehara

14 University of Otago

15 School of Physical Education, Sport and Exercise Science

16 PO Box 56, Dunedin 9054, New Zealand

17 Tel.: 64 3 479 4923

18 Email: luiz.uehara@otago.ac.nz

19

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Abstract

21 *Objective:* Research on expertise in sport has rarely attempted to examine socio-cultural
22 constraints on athletes. Here, we outline a new contextualised approach to studying socio-
23 cultural constraints on individuals, proposing an interpretive, multi-method approach to
24 holistically investigate the interacting constraints on an athlete's development pathway.

25 *Aims:* We explain a rationale for adopting an interpretive research paradigm (in contrast to
26 traditional positivist approaches) for exploring socio-cultural constraints. The epistemological
27 and methodological assumptions of Bronfenbrenner's Bioecological Model of Human
28 Development are proposed as an underpinning framework for data collection and
29 organisation of material. We advocate for ethnographic strategies of inquiry, followed by a
30 discussion of potential methods for generating and analysing data: contextual analysis,
31 participant-observation, and open-ended interviews. Finally, we discuss evaluation criteria for
32 this contextualised approach viewed from a coherence theory of truth.

33 *Purpose:* This position statement seeks to: 1) promote methodological possibilities to
34 investigate the effect of socio cultural constraints on expertise acquisition in sport; and 2),
35 offer significant new theoretical and epistemological insights from the constraints-led
36 approach to expertise and to integrate some of the interdisciplinary differences that exist in
37 the body of sciences.

38

39 *Keywords*

40 socio-cultural constraints, ethnography, constraints-led approach, bioecological model,
41 coherence theory of truth

42

43 **Introduction**

44 The acquisition of perceptual-motor expertise in different performance domains (e.g.,
45 clinical, physical education, music, sport coaching) is a complex, contextualised process.
46 Theoretically, the constraints-led¹ approach to motor learning has provided major insights,
47 mainly from empirical research on individual and task constraints (see 2008). However, there
48 is a need to further explore the socio-cultural environmental constraints of this model.
49 Environmental constraints that impinge upon a learner's development are multiple,
50 intangible, intertwined and dynamic (Davids et al. 2013). To understand such processes, a
51 broad, yet sensitive set of research tools is required. Motor learning research has traditionally
52 persevered with a relatively narrow range of research tools emanating from a long history of
53 a positivistic, laboratory-based research paradigm. Such tools seem suitable for investigating
54 how unique personal constraints interact with task-related factors in the skill acquisition
55 process (Araújo and Davids 2011). However, for the study of socio-cultural constraints, other
56 methodologies may be more functional.

57 On a day-to-day basis, physical education and sports coaching practitioners are
58 confronted with learners whose personal experiences and attributes have been shaped by the
59 socio-cultural constraints that surround them. Movement preferences, individual differences
60 and nonlinear rates of development are as much a function of social milieu in which learners
61 have developed as they are of an individual's physiology, anatomy or psychology. Here, we
62 highlight the importance of socio-cultural constraints during learning and argue that
63 practitioners and researchers would benefit from greater awareness of their influence.

64 We propose contextualised skill acquisition research as a new research framework
65 that is relevant for examining the nature of interacting, dynamic socio-cultural constraints on
66 expertise acquisition. In advocating exploration of socio-cultural constraints via this

67 methodological framework, we also hope to offer new epistemological insights on how to
68 integrate quantitative and qualitative research approaches, as well as positivist and
69 social/interpretive research paradigms. We are not the first to propose a potential solution for
70 these limitations of kinesiology and physical education (e.g., Ingham 1997; Andrews 2008).
71 Andrews et al. (2013) paint an explicitly socially critical vision for kinesiology – under the
72 aegis of Physical Cultural Studies as: “an interdisciplinary field ground within a critical
73 curriculum of the corporeal that draws on a range of exciting and innovative methodologies
74 that can provide the languages of, and possibilities for, a politically progressive, socially just,
75 and democratic citizenry.” Although not grounded in critical paradigms and political projects
76 in precisely the same way, we too envisage future possibilities in which biophysical sciences
77 and socio-cultural sciences may be inextricably linked. We acknowledge that our tentative
78 contribution to the development of this new paradigm is to build bridges across the
79 methodological boundaries between sociology and motor learning in the first instance, rather
80 than offering a unifying approach for the whole field.

81 Our aim here is to construct a rationale for contextualised skill acquisition
82 exemplified by philosophical, theoretical and methodological foundations (see Table 1). The
83 scope of this paper is limited to justification and explanation of the new contextualised skill
84 acquisition approach. Later in this position paper, we will refer to the first author’s PhD
85 research programme to clarify how contextualised skill acquisition processes can be
86 investigated. The specific purpose of this position statement is to provide a foundation for
87 future empirical papers on this topic and to stimulate other researchers to consider the
88 framework.

89 Insert Table 1 about here

90 **Philosophical Foundations of Contextualised Skill Acquisition Research**

91 Research in the related sub-disciplines of movement science and motor learning has
92 burgeoned over the past five decades (Button and Farrow 2012). Traditionally, studies in this
93 area have been guided primarily by methods of quantitative inquiry (Mullineaux, Bartlett, and
94 Bennett 2001), underpinned by philosophical assumptions of the positivist paradigm (see
95 Abernethy and Sparrow 1992). Laboratory-based research has been ubiquitous in this
96 positivist approach, where experimental design and methods are rigorously controlled.
97 Traditional analyses have been limited to movement models involving few motor system
98 degrees of freedom (i.e. joints, muscles, body segments). A considerable challenge for
99 researchers is to apply the data and models of motor learning, developed with such
100 laboratory-based tasks, to the study of behavioural phenomena in sport performance and
101 learning environments (Davids et al. 2006). On a broader but related note, there are
102 increasing concerns that the field of kinesiology has become too fragmented and that the
103 current positivist hegemony may be restricting our understanding of human behaviour. An
104 implication of traditional approaches is the marginalisation of the study of the broader
105 socio-cultural contexts and problematics of human performance and learning (e.g., Andrews
106 2008; Larsson and Quennerstedt 2012).

107 These issues raise a number of philosophical challenges. While there has been a lot of
108 quantitative research on informational and instructional constraints on action (e.g., Renshaw
109 et al. 2010), there is a paucity of qualitative research addressing socio-cultural constraints in
110 the environment (Araújo et al. 2010). It is beyond the scope of this article to fully explicate
111 the foundation of positivism, as well as other philosophical orientations, but we briefly
112 highlight and contrast key paradigmatic concepts to discuss how future research might be
113 guided.

114 ***Positivist, Quantitative Paradigms***

115 Historically, positivism has been the *dominant paradigm* in many different academic
116 disciplines (see Sparkes 1992). The positivist paradigm is conceptualised according to realist
117 external ontology, objectivist epistemology, and experimental/manipulative methodology. A
118 major assumption is that a singular reality exists independent of the researcher and that it
119 operates according to natural laws. Thus, the aim of science is to objectively elucidate such a
120 reality through controlled manipulations by the inquirer, while attempting to avoid biases by
121 controlling unwanted interference. In addition, rigorous controlled experimental conditions
122 are used to yield a *valid* and *reliable* nomothetic research programme that can test pre-
123 conceived hypotheses and assumptions underpinned by theoretical frameworks (Guba 1990).
124 The field of motor learning readily adopted such assumptions from its parent discipline of
125 experimental psychology as it sought to establish itself as a valid, rigorous field of study in its
126 own right (Abernethy and Sparrow 1992).

127 The positivist paradigm leans toward quantitative modes of data collection, through
128 which deterministic relationships of *cause* and *effect* are sought in order to report outcomes
129 that can be *generalised and representative* (see Denzin and Lincoln 2005; Guba 1990).
130 However, in the last few decades many qualitative researchers have been critical of this
131 reductive model that is premised on being independent of cultural context and politically
132 neutral when it is applied to the infinite, multiply layered complexities of the social world. A
133 key question concerns how movement cultures are the product of social, economic and
134 historical contexts.

135 ***Interpretive, Qualitative Paradigms***

136 Andrews (2008) rejects the notion that socio-cultural constraints can be productively
137 investigated in the same objective way as the natural sciences. Indeed, the richly complex,
138 socio-cultural contexts in which skill acquisition occurs contains a plethora of unconventional

139 ‘variables’ that can be best illuminated from an interpretive perspective. Specifically, this
140 interpretive approach is centred upon understanding phenomena *within*, not *independent of*
141 their social context.

142 Qualitative research, however, is not a unified ‘church’, but cuts across disciplines
143 and fields and encompasses different methods, strategies of inquiry, and paradigms (Table 1).
144 It has a long history and tradition in the humanities, sociology and cultural anthropology
145 (Denzin et al. 2000). On a philosophical level, Denzin et al. (2005) proposed that qualitative
146 research is located on a continuum between postpositivism at one extreme and
147 poststructuralist perspectives at the other. The closer research is to postpositivism, the more
148 realist and objectivist it will be¹. In contrast, the closer research is situated to
149 poststructuralism, the more relativist and subjectivist the research will be² (see Denzin et al.
150 2005).

151 Across the qualitative spectrum, there are several paradigms that have undergirded
152 qualitative research in physical education (see Sparkes 1992). Pertinent to our multi-method
153 approach is the interpretive paradigm. Interpretivists adopt an internal-idealist ontology and a
154 subjectivist epistemology (see Table 1). The internal-idealist ontology takes reality to be
155 mind-dependent. Consequently, mind and object cannot be separated, signifying that ‘the
156 knower and the process of knowing cannot be separated from what is known and we can
157 never hope to see the world outside of our place in it’ (Sparkes 1994, 13). Further,
158 interpretivists believe that there are multiple realities, which means that an inquiry must
159 engage multiple interpretations (Sparkes 1992). With regard to the subjectivist epistemology,

¹ Postpositivists believe that reality exists, as positivists do. But such reality is imperfectly attainable due to the inevitable influence of the researcher (for further details, see Guba 1990).

² Poststructuralism refers to a school of thought that is very similar to the theoretical perspectives of postmodernism (Fawcett 2008). “One general distinction (with many exceptions) is that poststructuralism tends to be more abstract, more philosophical, and less political, than postmodernism” (Ritzer 1997).

160 reality is constructed and sustained through the meanings and actions of the individual and
161 the researcher interacts and personally engages in the process of investigation (Sparkes
162 1992). Therefore, the researcher is the main research tool, which differs to positivism where
163 the main tool of investigation is typically a detached technical instrument, such as, for
164 example, a highly structured questionnaire or a high-speed camera to film skill performance
165 (Sparkes 1992). Interpretivists believe that investigated phenomena, and hence *data*, cannot
166 be understood in an objective way, but are subject to interpretation.

167 In summary, the traditional philosophical paradigms that have been adopted by skill
168 acquisition researchers (i.e., positivist, objective) have arguably created an *organismic*
169 *asymmetry* (Davids & Araújo, 2010) in which the role of the learning environment has been
170 underemphasised. Furthermore, the traditional reductionist tendency to consider factors in
171 isolation does little to capture the richness of the complex interactions that typify an athlete's
172 world. A less radical and arguably more practical message, however, is that when it comes to
173 choosing between either qualitative or quantitative research paradigms, one is not superior to
174 the other. Rather each provides a different means with which to conduct research. This is the
175 position adopted in our current programme of work investigating socio-cultural constraints on
176 the acquisition of expertise in sport. It also aligns with the views of Silverman (2006), who
177 stated that 'the choice between different research methods should depend upon what you are
178 trying to find out' (p. 34). These ideas suggest that movement scientists need to consider how
179 a range of interpretive, qualitative philosophies can provide added benefit when examining
180 skill acquisition.

181 **Theoretical Foundations of Contextualised Skill Acquisition Research**

182 In recent decades, the dominant research philosophy within motor learning has been
183 questioned through emerging theories, namely ecological psychology and dynamical systems

184 theory under the umbrella of the constraints-led approach (see Davids, Button & Bennett,
185 2008). The framework of ‘ecological dynamics’ conceptualises movement coordination as an
186 emergent property resulting from interacting individual, task, and environment constraints
187 (Seifert, Button, and Davids 2013). As indicated in Table 1, researchers have also advocated
188 strongly for *representative design*, resulting in a better understanding of the information
189 needed to be included in empirical investigations, whether in the field or laboratory (Pinder et
190 al. 2011). However, whilst theoretical advances such as representative design have had a
191 positive impact within the motor learning discipline, the influence of the environment, and in
192 particular socio-cultural constraints, upon learning have yet to be fully elucidated. The social
193 and historical “context” in which skill acquisition occurs is still undervalued in empirical
194 investigations.

195 Urie Bronfenbrenner (1995) proposed an important model which may help to
196 strengthen the theoretical basis of ecological dynamics. In general terms, the bioecological
197 model conceives human development as function of the *interaction* between nature *and*
198 nurture (see Krebs 2009). Under the notion of contextualisation, mutual co-determination
199 between individual and context provides common ground between the bioecological
200 approach and the constraints-led approach to skill acquisition (Davids et al. 2008). The
201 mutual interactions between performers and context create an ecological dynamic which can
202 eliminate the organismic asymmetry (bias towards the person) typical of traditional research
203 approaches in the behavioural sciences (Davids and Araújo 2010). In addition, within the
204 parameters of contextualisation, analysis cannot be maintained with a linear deterministic
205 focus. For this reason, Bronfenbrenner advocated that environmental properties cannot be
206 ‘distinguished by reference to linear variables but analysed in systems terms’ (Krebs 2009,
207 117).

208 While the bioecological model serves as both a theoretical and methodological
 209 framework to investigate socio-cultural constraints on expertise development, it cannot serve
 210 as a general explanatory theory of skill acquisition. Indeed, as Araújo et al. (2010, 174) admit,
 211 ‘...this model is more a framework for organising knowledge than a [general] theory of sport
 212 expertise’. Thus, as we describe below, the bioecological model should be used to provide
 213 methodological guidance for identifying relevant constraints that affect the development of
 214 athletes. To our knowledge, the bioecological model is unique in the literature in offering an
 215 holistic, longitudinal and contextual overview of human development.

216 ***Bioecological model of human development***

217 The bioecological model is predicated on the interaction of four key elements which constrain
 218 human development (see Figure 1). These elements are the *process*, *person*, *context* and *time*
 219 (PPCT) (see Krebs 2009).

220 Insert Figure 1 near here

221 Within the bioecological model, the *process* is deemed to be a principal constraint on human
 222 development (Krebs 2009). Bronfenbrenner and Morris (2006) stated, ‘this construct
 223 encompasses particular forms of interaction between organism and environment, called
 224 proximal processes, that operate over time and are posited as the primary mechanisms
 225 producing human development’ (795). Proximal processes can generate both positive and
 226 negative effects on a developing individual. For example, young talented athletes attending an
 227 elite sports academy may thrive in that process or may find the experience traumatic without
 228 the requisite psycho-behavioural attributes and drop-out altogether (Abbott et al. 2005).
 229 Bronfenbrenner (1995) pointed out, ‘what is most revealing about proximal processes,
 230 however, is not the gains in predictive power that they provide, but their substantive and
 231 theoretical significance as the mechanisms of organism-environment behavioural

232 interaction...’ (626). A contextualised historical analysis recognises these proximal processes
233 and their evolution over time, as non-linear idiosyncratic interactions between athlete and
234 environment, which co-constrain skill development. Clearly each individual has the capacity
235 to influence proximal processes through their unique experience and attributes.

236 The second component of the Bioecological Model is the *person*, analysed by means
237 of his/her biopsychological characteristics developed during person-environment interactions
238 (Bronfenbrenner and Morris 1998). As a specific example, (Stattin and Magnusson 1990)
239 illustrate person-environment interactions by assessing the implications of the biological
240 maturation rate for the developmental process of females. They showed that the behavioural
241 patterns (social adaptation) of post-pubescent girls were related to factors such as age of
242 menarche and association with older, working boys. The authors acknowledge that to
243 understand the role of biological factors on personal development one must also consider
244 mental factors and environmental factors simultaneously.

245 The third component of the bioecological model is *context*. In human development,
246 context is emphasised as a joint function of characteristics of the person and the environment.
247 It ‘encompasses the physical, social, and cultural features of the immediate settings in which
248 human beings live (e.g. family, school, and neighbourhood) as well as the still broader
249 contemporary and historical context in which an individual is born (Moen 1995). Steinberg et
250 al. (1995) recognised the importance of context in analysing parenting style on youngsters’
251 development. They suggest that although authoritative parenting “works”, in that adolescents
252 typically fare better when their parents behave this way, it works better in some contexts than
253 others. In certain ecologies, proximal processes outside the control of parents may entirely
254 overwhelm the benefits of authoritative parenting (Steinberg, Darling, and Fletcher 1995).

255 Bronfenbrenner conceptualised the environment in terms of nested systems of four
256 levels: microsystem (e.g. family support), mesosystem (e.g. training facility), exosystem (e.g.
257 demography), and macrosystem (e.g. national historical context) (see Krebs 2009). These
258 systems can be conceived of as a fitting concentric structure, each containing the other,
259 forming the ecological environment (see Figure 1).

260 The microsystem is the innermost level in which the developing person is directly
261 involved in activities, roles, and interpersonal relationships with the immediate physical,
262 social and symbolic features of their environment. In a microsystem, the mechanism of
263 proximal process functions to initiate development, but its quality depends on structure and
264 content of the microsystem (Bronfenbrenner et al. 1998). To exemplify, interactions between
265 family, school, clubs, and neighbourhood in a particular society will shape the quality of a
266 child's development. Domingues & Gonçalves (2012) demonstrated how the bioecological
267 model can be used to help influence how environmental practices and significant others
268 operate over time to shape sport experiences. In contrasting social and youth football club
269 settings, they observed that sport can be a social mechanism of change which can reduce anti-
270 social, delinquent behaviours and develop close relationships between athletes, coaches and
271 significant others.

272 The mesosystem is a system of microsystems. When a person transits from one
273 microsystem to another, a mesosystem is created. A mesosystem entails interrelations
274 emerging between two or more settings containing the developing person. In other words,
275 interactions of a person in one place, (e.g., workplace) are influenced by interaction with other
276 contexts, such as the family (see Bronfenbrenner 1979; Krebs 2009).

277 The exosystem comprises the settings in which the developing person participates,
278 including at least one which does not contain that person, but in which events occur that

279 indirectly influence the person's development (Bronfenbrenner 1979; Krebs 2009). Three
280 important exosystems that are likely to indirectly affect the development of children and
281 youth are the parents' workplace, and the family social network, and neighbourhood-
282 community. In line with these ideas, it's worth noting that previous researchers in skill
283 acquisition have reported how certain characteristics of a neighbourhood community, such as
284 population size of a city, may influence expertise acquisition in sport (see Carlson 1988).

285 The last level of the nested system is the macrosystem which embraces all the possible
286 linkages amongst microsystems, mesosystems and exosystems. This system was defined by
287 Bronfenbrenner (2005) as 'the overarching pattern of micro, meso-, and exosystems
288 characteristics of a given culture, subculture or other broader social context'. As such the
289 macrosystem level includes a range of putative influences (such as political, economic, and
290 sociocultural) upon the developing individual which are undeniably present but rarely
291 considered within the context of motor learning. For example, the broad macrosystem
292 dimension may help us to describe and interpret historical playing styles, cultures and
293 stratifications that characterise certain sports and nations (e.g., New Zealand rugby union,
294 Brazilian football, Australian rules football, Indian cricket, American basketball, Russian
295 gymnastics, and Nordic winter sports).

296 The final component of the Bioecological system is *time*, which permits an analysis of
297 both '...the historical period through which a person lives [and the] ...timing of biological
298 and social transitions as they relate to the culturally defined age, role expectations, and
299 opportunities occurring throughout the life course' (Bronfenbrenner 1995, 641).
300 Bronfenbrenner and Morris (1998) classified time into three levels: micro-time, meso-time
301 and macro-time. These different timescales distinguish between the rapid discontinuities
302 associated with certain momentary proximal processes (micro), the regular periodicity of

303 other interactions over days, weeks and months (meso), in contrast to the more gradual
304 evolution of other episodes that may occur over a lifespan (macro).

305 **Methodological Foundations of Contextualised Skill Acquisition Research**

306 To summarise so far, contextualised skill acquisition research can be conceived of as a
307 general framework to identify and classify key constraints on an athlete's development.

308 Although many scholars have attempted to apply the bioecological model in new research
309 designs (see Moen et al. 1995), the model has seldom been used to examine skill acquisition
310 processes (Krebs 2009). It is possible that a lack of familiarity with qualitative research
311 methods has hindered application of Bronfenbrenner's model, particularly in sports science
312 (Mullineaux, Bartlett & Bennett, 2001). However, according to Krebs (2009, p. 123)

313 "Bronfenbrenner's bioecological model offers a possibility to use new research designs to
314 conduct better investigations to assess the athlete's personal attributes". In a similar line of
315 focus, Salmon and Timperio (2007) highlighted that more multilevel study designs that
316 incorporate various dimensions (i.e., PPCT) of Bronfenbrenner's model are needed. Gabbard
317 and Krebs (2012) go one step further providing two examples on how the PPCT model might
318 be applied by motor learning researchers. The first suggested line of research concerns
319 environmental influences on fundamental motor skill ability and later physical activity level
320 in children. The second line of enquiry addresses the relationship between motor
321 development and cognitive ability (for further details see Gabbard and Krebs 2012).

322 More pertinent to the examples used in this article, Araújo et al.'s (2010) study
323 exemplifies how to perform qualitative research to investigate the role of ecological
324 constraints on the development of Brazilian footballers. Findings were interpreted and
325 organised by the nested contextualised systems of Bronfenbrenner's model. For instance, the
326 following constraints identified as *unstructured practice environment* (micro), *training*

327 *quality* (micro) and *family support* (meso), *birth of location* (exo), and *poverty* (macro) were
328 organised under the scope of the different systems of Bronfenbrenner's model.

329 However while Araújo et al. (2010) provide an important contribution on how to address and
330 investigate socio-cultural constraints influencing expertise development, their scope was
331 limited by an empirical design which only included a document analysis form of inquiry. As
332 such, it lacks on explaining how the environment is connected with individual and vice-versa.

333 This paper proposes a framework that addresses this issue by relating the different
334 environmental dimensions (e.g. the macrosystem) with individual's lived experiences. To
335 achieve that, we propose an extensive thorough investigation by using other forms of
336 qualitative inquiries such as interview and participant-observation. Thus, contextualised skill
337 acquisition research follows the initial steps taken by Araújo et al. (2010) but extends that
338 work by using the bioecological model to organise prospective findings from different
339 aspects of qualitative research inquiry (see further details on the ethnographic section below).
340 Next, we shall demonstrate how the bioecological model can be applied to identify
341 constraints that affect development of expertise of perceptual motor skills of Brazilian
342 football players.

343 *Researcher as a Tool and as a Bricoleur*

344 As discussed earlier, direct and active involvement of researchers is a key characteristic of
345 interpretivism. The researcher's personal background needs to be acknowledged so 'the
346 audience can better understand the topic, the setting, or the participants and the researcher's
347 interpretation of the phenomenon' (Creswell 2009).

348 An example taken from the first author's current doctoral programme is helpful to
349 consider at this point. As such the narrative of this article will temporarily transit to the first
350 person. In my PhD research programme, I (first author) aim to adopt the contextualised skill

351 acquisition approach to examine the development of football players in Brazil. As a Brazilian
352 myself, I understand that my personal, cultural, and historical experiences inevitably shape
353 how I approach fieldwork, interact with participants, and interpret findings. Throughout my
354 analysis, my background will be acknowledged so that readers understand the dialogic
355 interpretation of the empirical findings emerging from field notes (participant-observation)
356 collected at different venues as well as from interviews conducted with players, coaches and
357 other relevant people. To make sense of their understanding of how football players in Brazil
358 acquire relevant perceptual-motor skills, I inductively explore their views and subsequently
359 attempt to develop a theory or patterns of meanings. In doing so, my secondary aim is to
360 offer a methodological and epistemological framework for investigating effects of socio-
361 cultural-historical constraints on skill acquisition.

362 To achieve this aim, I need to proceed as a *bricoleur*. In qualitative research terms, a
363 bricoleur implies a qualitative researcher who can draw coherently from multi-disciplinary
364 perspectives, distinct theoretical and philosophical orientations, and various methods of
365 inquiry in order to interpret a complex phenomenon generated by complex variables, such as
366 those evidenced in socio-cultural studies (see Denzin et al. 2005).

367 Bricolage supports an adequate multi-method approach that can inform the parameters
368 of interpretive inquiry. In the context of Brazilian football these include: music; dancing;
369 social inequalities; education; and even corruption that are embedded in Brazilian culture.
370 These socio-cultural constraints are important because they affect skill acquisition within
371 Brazilian football, leading players to infuse their movement coordination processes with
372 unique characteristics such as the idea of playing with *ginga* (sway), flamboyance and flair.
373 Thus, my principal challenge is how to analyse and integrate these constraints that
374 anecdotally have been at the root of the development of the skills of Brazilian football
375 players?

376 To effectively conduct such an analysis, it is necessary to employ a multi-qualitative
377 approach that offers suitable theoretical and methodological insights to excavate linkages
378 between socio-cultural environmental forces and cultural and corporeal practices of Brazilian
379 footballers. Further, such analyses have to be historically contextualised so that meaningful
380 interpretations of the acquisition of expertise in football can be made in Brazil.

381 Contextualised skill acquisition research requires a bricolage that intertwines epistemological
382 and methodological concepts from the following: Bronfenbrenner's bioecological model of
383 human development, ethnography, and the coherence theory of truth.

384 *Ethnographic Strategy of Inquiry*

385 In its most basic sense, ethnography refers to a 'sketch' of life in its everyday lived context.

386 Ethnographic strategies are influenced by Paul Willis' (2000) notion of '*the ethnographic*
387 *imagination*', which involves the subjectivity and bias of the researchers; practical criticism,
388 rather than being only descriptive; and analysis of lived everyday culture from different
389 sources. As Willis (2000) pointed out '... [the] ethnographic imagination is relevant to the
390 production of all kinds of intellectual work. Non-field-based writing and intellectual work
391 can certainly inform the crafts and methods of ethnography' (113). Thus, under the umbrella
392 of the ethnographic imagination, methods of data collection and analysis consider 'the
393 importance of maintaining a sense of the investigator's history, subjectivity and theoretical
394 positioning as a vital resource for the understanding of, and respect for, those under study'
395 (Willis 2000, 113).

396 To describe the ethnographic data collection methods undertaken by the first author, it
397 is appropriate once more to adopt the first person narrative. I shall highlight the methods
398 employed for my doctoral studies: contextual analysis (conducted prior to field-work in
399 Brazil); participant-observation, and unstructured interviews (conducted during field-work in

400 Brazil). These three methods are complementary and interrelated meaning that they do not
401 follow a one-way linear path in the analysis. Rather, it was a nonlinear, non-sequential
402 research process based on the notion of reflexivity described by Dowling (2008). From this
403 view, I had to reflexively move back and forth between the methods, theories and paradigms
404 in order to adjust and in turn enhance the quality of empirical procedures. Each of these
405 methods are discussed below beginning with contextual analysis which is predominantly
406 informed by written texts (document analysis) regarding the social history of Brazilian
407 football as well as the general history of Brazil.

408 *Contextual Analysis*

409 Contextual analysis investigates the socio-cultural context in which a phenomenon has been
410 historically constructed. The historical, economic, political, socio-cultural context in which
411 acquisition of football expertise in Brazilian players occurs is significant for this
412 investigation. Indeed, the *historical contextual analysis* was required to reconstruct a number
413 of socio-cultural and political-economic sites of articulation – that is, how these pressures and
414 contexts interact to shape patterns – of Brazilian football in order to inform the participant
415 observation and interview methods. From a methodological viewpoint, such analysis has
416 been useful in informing what data should be collected in the field. In contrast, given the
417 exploratory nature of the present research, emerging data from fieldwork may also be used to
418 inform what should be added or changed to the contextual analysis as the research proceeds.

419 *Participant Observation*

420 Fieldwork in the form of participant-observations, or sometimes only observations, was
421 performed in São Paulo, Brazil in 2011. Through my contacts as a former player in this
422 region and current football agent, I gained access to a professional football club called
423 Paulista FC, a football school affiliated with São Paulo FC, and to a football pelada in a

424 favela called Vila Ana. I also took notes from children playing informal football in parks and
425 streets of my hometown Jundiai.

426 The parameters used around the chosen locations for data collection were based on
427 contemporary commentaries regarding the '*History of Brazilian football*', which shows that
428 many successful players emerged from underprivileged suburbs around Brazil. Before they
429 were scouted and sent to a club, they used to make and improvise their own playing field,
430 whether it was on the street, waste ground, or beach (see Goldblatt 2006; Taylor 1998).

431 To be able to scrutinise the topic and generate rich and relevant evidence, I was
432 prepared to collect data from whatever and whoever provided an opportunity, be it from
433 structured or non-structured settings, professional or non-professional people related to
434 football. However, fieldwork practice was limited by the funding available and also by
435 accessibility in Brazil. In this sense, growing up in the city of Jundiai, province of São Paulo,
436 I was privileged to gain access to football professionals and clubs in the local area that would
437 not have occurred in other regions. There, I started with two key *gatekeepers* (i.e. contacts)
438 **who** helped to “open the door” to this world by introducing me to the right people. Through a
439 *snowball sampling technique* (i.e. one person indicates other(s)) accessibility was further
440 expanded (see Patton 2002).

441 ***Open-Ended Unstructured Interview***

442 Concurrently with the participant observation fieldwork, a *face to face unstructured open-*
443 *ended interview technique* was undertaken. In order to maximise the exploration of this topic,
444 I asked open-ended questions, eliciting the views and opinions of participants (see Denzin, et
445 al. 2000; Patton 2002). **As an example, when the topic of socio-cultural such as dance,**
446 **poverty (etc.) was brought into the discussion, I then asked: “Tell me about how you perceive**
447 **the relationship between dance and Brazilian football?” Depending on the response received,**

448 I could be more specific and probe further: “Tell me about how you perceive the effect of
449 samba on the development of skills of Brazilian football players?” As such the broad macro-
450 level dimension of samba as a socio-cultural constraint in Brazil can be explicitly linked with
451 each individual’s lived skill experiences. Bear in mind that, as explained above, such topics
452 and lines of questioning were informed by the historical-context analysis performed prior to
453 the field work in Brazil.

454 Given the open-ended nature of this study, the amount of data collection required to
455 make this study coherent was based on the parameters of ‘*point of saturation*’ or the point
456 where new information no longer emerges (Lincoln and Guba 1985). This is important
457 because, if the amount of data is insufficient, then important information may be missed,
458 providing an incomplete exploration of the topic. On the other hand, if data were
459 oversaturated, then redundant information will be displayed (see Patton 2002).

460 ***Evaluation in the form of Coherence Theory of Truth***

461 Having described some of the methods that can be used to conduct a contextualised skill
462 acquisition research study, our final task is to explain how the quality of the research can be
463 evaluated. Paradigmatic differences that influence the way that research is conducted result in
464 different ways of evaluating the quality and adequacy of research. With regard to the
465 evaluation of the positivist research paradigm, key gauges are validity and reliability. Validity
466 is the degree to which a test or instrument measures what it purports to measure. Whereas,
467 reliability refers to acceptable agreement between repeated tests made under similar
468 conditions (Thomas and Nelson 2001). In order to achieve valid and reliable research,
469 positivists adhere to a correspondence theory of truth, by which ‘true statements are those
470 that are judged to have accurately reflected the qualities and characteristics of what are out
471 there’ (Sparkes 1994, 23). Thus, ‘reality’ can be understood by the correct application of

472 formalised methods, such as, highly structured questionnaires, essential in ensuring validity
473 and reliability. This application permits the separation of personal opinions from the object of
474 study (Sparkes 1992).

475 In qualitative research evaluation criteria are underpinned by the interpretive
476 paradigm, in which validity and reliability are substantively reframed in a subjective
477 epistemology. That is, the researcher is observing and interviewing participants in their
478 natural settings, and given that he or she is the main tool, there are no reliability and validity
479 coefficients for the researcher (Brow 1988, cited in Sparkes 1992).

480 In order to evaluate research, interpretivists adhere to a coherence theory of truth
481 whereby “the basis of truth or trustworthiness is social agreement; what is judged true or
482 trustworthy is what we can agree, conditioned by time and place, is true or trustworthy”
483 (Sparkes 1992, 30). Within a coherence theory of truth, one event can have many co-existing
484 interpretations so that a richer and broader view of a culture is given (Sparkes 1994).
485 However, this multiple interpretation might be challenging for researchers studying culture to
486 agree on the most correct interpretation (Sparkes 1994, 14). Such a problem falls within the
487 notion of relativism, which generally challenges the notion of the legitimacy of a single
488 reality or absolute truth. From a relativist researcher’s point of view, truth of a phenomenon
489 is subjectively constructed by the writer and ultimately by readers of the research.

490 Despite these issues, the coherence theory of truth is best equipped for purposes of the
491 interpretive paradigm and qualitative philosophical assumptions of this research approach. In
492 applying the coherent theory of truth as an attempt to ensure the quality and adequacy of
493 research, this approach draws upon an eclectic body of theoretical informants and research
494 strategies, including the concept of contextualisation, ethnographic strategy of inquiry

519 examination and explanation of how they have influenced a research project (747)'. With this
520 in mind, throughout the development of this project I have continuously questioned the
521 methodological decisions made so that, if necessary, I can adjust my research focus without
522 necessarily losing the purpose of it. For example, under constant thorough investigation and
523 reflective actions, a multi-methodology approach has been employed to explore the present
524 research.

525 Finally, in order to make the notion of reflexivity meaningful, it is crucial to take into
526 consideration one of the key aspects of qualitative methods of inquiry: the researcher
527 him/herself. As can be seen, the researcher has a key role in making ontological,
528 epistemological and methodological decisions, and his/her experience and background
529 inevitably influences the analysis and interpretation of the research. The role and background
530 of the researcher has to be acknowledged in advance so readers can interpret the researcher's
531 interpretation of the practice and beliefs of others, and make their own "truth" conclusions.
532 Accordingly, I have reflected, examined, and as highlighted earlier, explained how my
533 Brazilian background and subsequent experience living overseas may influence the way that I
534 will dialogically/dialectically interpret this research.

535 **Discussion and Conclusions**

536 In this article we have proposed a novel research framework (contextualised skill acquisition
537 research) that has considerable potential for analysis of socio-cultural constraints upon skill
538 acquisition. We signalled the need to extend beyond positivist research philosophies in order
539 to investigate unconventional variables in motor learning. We also justified why the
540 interpretive paradigm and its qualitative research tools are best suited this purpose.
541 Bronfenbrenner's Bioecological model has considerable value to help decide what factors
542 and processes to consider and how best to organise material into suitable levels. To underpin

543 the parameters of this approach, we provided an account of the subjectivist focus of the study,
544 the function of the multi-method approach employed, and a researcher's role as a bricoleur
545 for dialogical interpretations. Finally, we explained the coherence theory of truth as the
546 evaluation criteria employed to maximise the quality or credibility of findings. We also
547 discussed the process of reflexivity, in which researchers need to continuously reflect and
548 analyse all phases of research so that epistemological and methodological adjustment can be
549 made as a means to raise a meaningful interpretation.

550 Overall, it is proposed that this framework will contribute to the epistemological,
551 theoretical and methodological knowledge across the sub-disciplines of motor learning and
552 sociology. In particular the approach provides researchers with the tools/rationale to link
553 different systems within which an individual develops. As such an enriched understanding of
554 the individual's lived experiences within the broader social, geographical, historical (etc.)
555 context can be reached. In practical terms, the proposed approach may benefit understanding
556 of processes of skill acquisition, talent identification and athlete development. The
557 limitations, however, suggest that practical implications of the framework may not be directly
558 obvious to teachers, coaches and professionals alike. Indeed to influence either social or
559 cultural influences on the learner is not a simple process due to the extended timescales over
560 which such variables act. Moreover, results viewed from interpretive paradigms can have
561 multiple interpretations and unlike traditional research in motor learning, results cannot be
562 generalised. It is our hope that this article will provoke feedback, discussion and possibly
563 inspire others to consider the contextualised skill acquisition research framework in the
564 future.

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566

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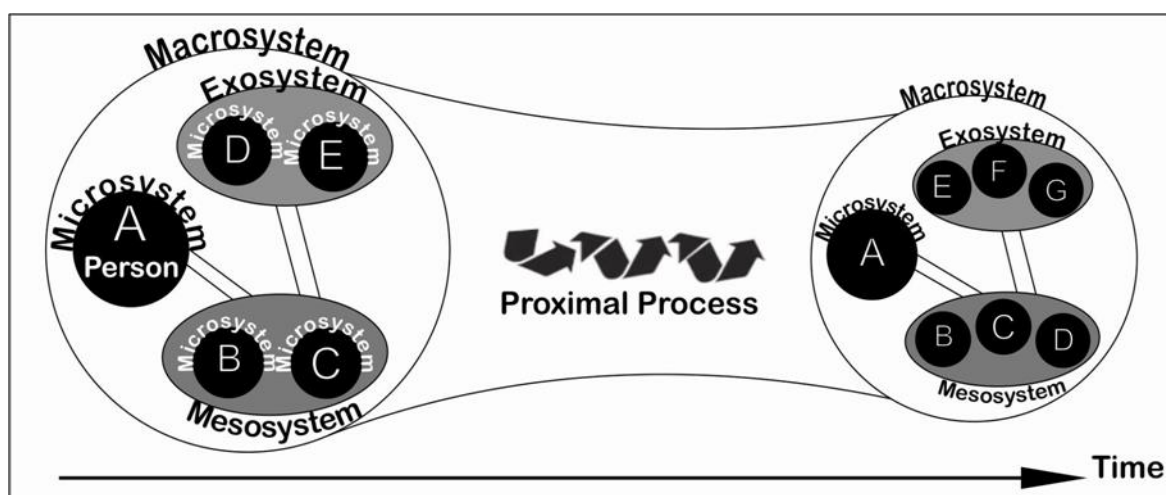
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700 Figure 1. Illustration of Bronfenbrenner's bioecological model. N.B.: In relation to the
 701 context, only microsystems are physically located. The others are "events or forces"
 702 that influence the person and the particular microsystem under analysis. The
 703 mesosystem encompass other microsystems frequented by the person. The exosystem
 704 comprises the microsystems that indirectly influence the person and the microsystem
 705 under analysis. The macrosystem embraces the overarching patterns of the micro-,
 706 meso, and exosystems contexts of a given culture. Further than the person and the
 707 context, the bioecological model comprises time and process. Process expresses the
 708 characteristics of person-context interactions over time. Additionally, person and
 709 context change over time (Based on ideas of Araújo, et al., 2010).
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724 Table 1. The philosophical, theoretical and methodological basis of contextualised skill
 725 acquisition research. N.B.: for explanatory purposes it is necessary to describe constructs and
 726 concepts as independent, however several concepts and ideas in the table are closely linked.
 727 Rather than attempting to capture such complex and important relationships through a
 728 simplified figure we recommend consulting the suggested sources of evidence and
 729 background reading for further clarification.

730

Construct	Concept	Suggested evidence & background information
Philosophical influences	Interpretive paradigm	Internal-idealist ontology: <i>Denzin (1989); Sparkes (1992)</i> Subjectivist epistemology: <i>Andrews (2008)</i>
	Holistic model of skill acquisition	Constraints-led approach, e.g., <i>Davids, Button & Bennett (2008); Handford et al., (1997); Newell (1985)</i>
Theoretical underpinnings	The athlete and environment conceptualised as a complex, dynamic system	Dynamical systems theory, e.g., <i>Kelso (1995)</i> Ecological psychology, e.g., <i>Gibson (1979)</i>
	Field-based study	Representative design, e.g., <i>Brunswik (1955); Pinder et al., (2011)</i>
	Sensitive to socio-cultural influences	Bioecological model of human development e.g., <i>Bronfenbrenner (2006); Moen, Elder & Lüscher (2005)</i>
Methodological tools	Bricolage	e.g., <i>Denzin & Lincoln (2005); Creswell (2009)</i>
	Ethnography, multi-method	e.g., contextual analysis, observation, field notes, interviews. For overviews, see: <i>Patton (2002); Silverman (2006)</i>
	Versatility and reflexivity	e.g., <i>Dowling (2008); Fawcett (2008)</i>
	Evaluation and coherence	e.g., <i>Sparkes (1992; 1994)</i>

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738 Table 2. Examples of inclusion criteria to be cross-referenced against information generated
739 in interpretive research (Denzin 1989, 81).

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	Inclusion criteria
1.	Do they illuminate the phenomenon as lived experience?
2.	Are they based on thickly contextualised materials?
3.	Are they historically and relationally grounded?
4.	Are they processual and interactional?
5.	Do they engulf what is known about the phenomena?
6.	Do they incorporate prior understandings of the phenomena?
7.	Do they cohere and produce understanding?
8.	Are they unfinished or inconclusive?

746 ***Rebuttal letter***

747 Once more we thank the Editor and reviewers for inviting us with the opportunity to revise
 748 and resubmit our article. The questions raised by the reviewers prompted us to make the
 749 following changes to the manuscript:

- 750 1) Inclusion of Figure legends and Table titles which were missing in the last
 751 submission.
- 752 2) Clarification and additional references to support the rationale in the Introduction for
 753 an interdisciplinary approach in PE and kinesiology.
- 754 3) More detail and references in the section on Bronfenbrenner's bioecological model to
 755 elucidate the important role of this framework.
- 756 4) Clarification of the nonlinear/non-sequential processes suggested in the methods as
 757 well as an example open-ended question.
- 758 5) Discussion of ways to link the broader (macro) context with individual skill
 759 experiences.

760 The changes to the manuscript are clearly marked in highlighted text. A more detailed point-
 761 by-point response to each reviewer also follows this letter. We should point out that due to
 762 space limitations imposed by the journal we have been unable to act upon all of the
 763 reviewers' suggestions but hope that the changes we have made sufficiently address the
 764 concerns raised.

765 ***Reviewer: 1***766 ***1) More comprehensive explanation of Figure 1***

767 ***The authors have tried to explain Figure 1 in the main body of the manuscript. However, I***
 768 ***was hoping that more detailed reference to what Figure 1 really means can be provided.***

769 It appears that the legends for Figure 1 and Tables 1/2 were not included in the original
 770 submission. We apologise if this was our oversight (and not an upload error), the
 771 explanations of the Tables and Figure are now included in the latest revision.

772 ***2) Additional reference to support statement***

773 ***Can the authors provide more references to support the statement made in line 51?***

774 Thank you for drawing our attention to these useful references and our slight
 775 misinterpretation of Physical Cultural Studies. We have made subtle changes to the text to
 776 reflect the different positions of the works that Reviewer 2 recommended to us. This new
 777 information is highlighted on pg. 3:

778 "We are not the first to propose a potential solution for these limitations of kinesiology and
 779 physical education (e.g., Ingham, 1997; Andrews, 2008). Andrews et al. (2013) paint an
 780 explicitly socially critical vision for kinesiology – under the aegis of Physical Cultural
 781 Studies as: "an interdisciplinary field ground within a critical curriculum of the corporeal that
 782 draws on a range of exciting and innovative methodologies that can provide the languages of,

783 and possibilities for, a politically progressive, socially just, and democratic citizenry.”
 784 Although not grounded in critical paradigms and political projects in precisely the same way,
 785 we too envisage future possibilities in which biophysical sciences and socio-cultural sciences
 786 may be inextricably linked. We acknowledge that our tentative contribution to the
 787 development of this new paradigm is to build bridges across the methodological boundaries
 788 between sociology and motor learning in the first instance, rather than offering a unifying
 789 approach for the whole field.”

790

791 **3) *Further clarification on nonlinear and non-sequential research process***

792 ***How would the authors define these nonlinear and non-sequential processes? Do you***
 793 ***follow any pre-set parameters to determine how to do these?***

794 These ‘reflexive’ processes in which qualitative researchers may need to switch between
 795 different aspects of the research process are described comprehensively by Dowling (2008).
 796 There are no pre-set parameters to determine how to research with reflexivity, indeed by
 797 definition one must respond to key issues as they emerge. One might argue that one
 798 parameter that is adopted within our approach of ‘*point of saturation*’ is pre-set, however one
 799 cannot determine that point in advance instead one must carefully interpret the findings
 800 ongoingly to identify it.

801 **4) *‘eho’***

802 ***What does this mean? Line 376***

803 It should have read ‘who’ - this has been corrected.

804 **5) *Provide some sample questions***

805 ***Could the authors provide some examples of such open-ended questions? Line 382.***

806 A sample open-ended question is now provided in this section.

807 **6) *Leverage on past studies of similar nature***

808 ***Can the authors provide more examples (past studies) that have used very similar design to***
 809 ***what you intend to do? Are there any specific detailed study to provide as an example? This***
 810 ***will give the reader a better idea of what has been previously done that you are proposing***
 811 ***in your work.***

812 As we point out in the article relatively few studies to date have adopted the interdisciplinary
 813 philosophy and range of methods that we propose. That said we have added references from
 814 the motor development literature that utilise Bronfenbrenner’s model and certain aspects of
 815 the ethnographical approach that we advocate (e.g.....). Araújo et al.’s (2010) study is
 816 probably the most pertinent example that we can offer and whilst not without its limitations,
 817 we have discussed their work at length (pg.13-14).

818 **Reviewer: 2**

819 **1. The major issue centers on the lack of engagement with the various dimensions of**
 820 **Bronfenbrenner's ecological systems model. I was fully expected the macros/meso/micro**
 821 **systems to be discussed within the differing scalar contexts of Brazilian soccer culture, but**
 822 **this was rather overlooked. Some systems were alluded to, however, not in sufficient depth**
 823 **or detail. I think a paragraph on each would greatly embellished the contextualized nature**
 824 **of the approach, and of this example.**

825 Additional details in the main text and to Figure 1 have been provided. It was not the aim of
 826 this article to provide a comprehensive overview of Bronfenbrenner's bioecological model
 827 (suitable references are provided in that regard). Instead our intentions were to overview the
 828 main concepts within the model and then allude to how it may provide a supporting
 829 framework when analysing information from a contextualised skill acquisition approach. The
 830 word limit of the journal meant that we could not add more detail regarding the different
 831 scalar contexts of Brazilian soccer culture but that will certainly be a primary objective in
 832 forthcoming publications.

833 **2. I was wholly lost and confused by the tables/figures, and was never quite sure to which**
 834 **the text was referring.**

835 This was an oversight on our behalf. The legends for the Figure and Tables were not included
 836 in the original submission and this has now been addressed in the latest revision. We have
 837 also rechecked the manuscript to ensure that the references to tables and the figure are clear
 838 and accurate.

839 **3. The reference to Physical Cultural Studies is slightly awry. Ingham (1997) certainly**
 840 **advocated a "whole field" approach, whereas Andrews (2008), and for that matter Silk and**
 841 **Andrews (2011) and Andrews et al (2013) were less ambitious in their inter-disciplinary**
 842 **vision.**

843 Thank you for drawing our attention to these useful references and our slight
 844 misinterpretation of Physical Cultural Studies. We have made subtle changes to the text to
 845 reflect the different positions of the works that Reviewer 2 recommended to us. This new
 846 information is highlighted on pg. 3:

847 “We are not the first to propose a potential solution for these limitations of kinesiology and
 848 physical education (e.g., Ingham, 1997; Andrews, 2008). The words of Andrews et al. (2013)
 849 paint a utopian vision for kinesiology as: “an interdisciplinary field ground within a critical
 850 curriculum of the corporeal that draws on a range of exciting and innovative methodologies
 851 that can provide the languages of, and possibilities for, a politically progressive, socially just,
 852 and democratic citizenry.” Indeed, we too envisage a future in which biophysical sciences
 853 and socio-cultural sciences are inextricably linked. We acknowledge that our tentative
 854 contribution to the development of this new paradigm is to build bridges across the sub-
 855 disciplines of sociology and motor learning in the first instance, rather than offering a
 856 unifying approach for the whole field.”

857 **4. There could have been a little more detail regarding the outlining of precisely what new**
 858 **forms understanding this contextualized approach to skill acquisition elicited. This is**
 859 **alluded to in numerous places, I simply felt the rationale for the project would be stronger**
 860 **if these were made more explicit.**

861 Some of the new forms of understanding that the contextualised approach to skill acquisition
 862 can elicit are now explicitly discussed in the Introduction and final section of the article. For
 863 example, the following text has been added to the conclusion section (pg 23):

864 “In particular the approach provides researchers with the tools/rationale to link different
 865 systems within which an individual develops. As such an enriched understanding of the
 866 individual’s lived experiences within the broader social, geographical, historical (etc.) context
 867 can be reached.”

868 **5. Personally (and I am certainly not expecting the authors to change this, its just an**
 869 **observation I feel I needed to make), I much prefer the notion of context to constraints, as**
 870 **the latter seems to deny the possibility of enabling factors? This, of course, could be**
 871 **because I am not familiar with skill acquisition research or rhetoric, I just felt context was**
 872 **a more open category?**

873 Thank you for your suggestion. This is a common misconception of the constraints concept
 874 (i.e., that they serve only to restrict movements whereas in fact they too enable movement to
 875 occur). As the constraints-led approach is such an important theoretical and philosophical
 876 influence on our work we have chosen to stick with this concept with the inclusion of
 877 additional clarification to the enabling nature of constraints (highlighted footnote pg. 2):

878 “Constraints are the range of factors that can both limit, and facilitate, the organisation of
 879 human movement coordination. Constraints can be broadly categorised into three types,
 880 namely; Task, Environmental, and Organismic. The constraints-led approach forms a
 881 multidisciplinary and holistic foundation upon which an understanding of motor behaviour
 882 can be constructed (Davids, Button, & Bennett, 2008).”

883 **6. In their description of Bronfenbrenner's ecological systems model, the authors have**
 884 **categorized the macro system (pp. 11-12) in a manner which privileges the immediate**
 885 **sporting context, overlooks the social, political, economic, and technological contexts with**
 886 **which sport is dialectically related. Later in the discussion, these contextual dimensions**
 887 **are referred to in the Brazilian context (though in a rather vague and ambiguous way), but**
 888 **here they are not mentioned.**

889 Thank you for drawing our attention to this important point, it was not our intention to
 890 privilege any one context over any others. Additional details in the main text and to Figure 1
 891 have been provided as suggested (e.g., p. 12 & 14). Due to space limitations it was not
 892 possible to provide further detail with regard how these contextual dimensions are manifest in
 893 the Brazilian context. We have another manuscript in preparation that will achieve this
 894 purpose.

895 **7. Another key relationship that is presently under-developed is that between the broader**
896 **(macro-context) and lived/embodied/skill experience. How do we connect these different,**
897 **yet clearly interrelated dimensions? The authors did not really provide an framework for**
898 **linking them. Yes, they identified the necessary linkages, but is there a more nuanced way**
899 **of thinking through the specifics of these relations? How do we connect these two, quite**
900 **different, forms of data?**

901 This is a useful observation and we have attempted to provide suggestions about how to link
902 disparate forms of data in the revised submission. For example by adding an example of one
903 open-ended question (Reviewer 1's request) we also used the opportunity to elaborate in
904 more detail how a broad macro-level context can influence and be linked to an individual's
905 lived experiences and beliefs (pg. 19).

906 "As an example, when the topic of socio-cultural such as dance, poverty (etc.) was brought
907 into the discussion, I then asked: "Tell me about how you perceive the relationship between
908 dance and Brazilian football?" Depending on the response received, I could be more specific
909 and probe further: "Tell me about how you perceive the effect of samba on the development
910 of skills of Brazilian football players?" As such the broad macro-level dimension of samba as
911 a socio-cultural constraint in Brazil can be explicitly linked with each individual's lived skill
912 experiences. Bear in mind that, as explained above, such topics and lines of questioning were
913 informed by the historical-context analysis performed prior to the field work in Brazil."

914 **8. A few of the references (i.e. Saukko, 2005; Hall, 2006) could not be found in the**
915 **reference list.**

916 Apologies for this oversight, the missing references have now been added.

917