

**Horses Are Not Machines: An Equestrian Sports Pedagogy  
Needs to Reflect the Relational and Coadaptive Nature of  
Skill Acquisition in Show Jumping Dyads**

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RUNNING HEAD: HORSES ARE NOT MACHINES

## **Horses are not machines: An equestrian sports pedagogy needs to reflect the relational and co-adaptive nature of skill acquisition in showjumping dyads.**

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15

16 **Abstract**

17 Much is changing in our understanding of animals in relation to acknowledging their non-  
18 humancentric intelligence and sentience. Alongside emerging attitudes toward animal welfare, these  
19 changes have led to criticism of traditional coaching pedagogies in equestrianism. Elucidating an  
20 ecological process of learning in horse-human dyads may be valuable for guiding the development of  
21 a contemporary equestrian pedagogy. This study used thematic analysis to identify influential  
22 constraints on eleven elite showjumpers in the United Kingdom. Thematic analysis revealed common  
23 themes of: (i) Becoming attuned to horses (organismic constraints), (ii) Becoming skilful through  
24 active problem solving (task constraints), (iii) Pervasive socio-cultural and historical narratives  
25 influencing affordance salience (environmental constraints), and (iv), Participants' perceptions of  
26 current trends in coaching. Results suggest that socio-cultural and historical narratives, rather than a  
27 lack of care or attentiveness, may shape affordance perception in learning and coaching, perpetuating  
28 many practices currently embedded in British equestrian sports. Participant insights suggest that the  
29 development of a pedagogical framework for equestrian activities should foreground the relational  
30 and problem-solving nature of the horse-rider dyadic system. These perceptions imply that skill  
31 development is a process of ongoing co-adaptation between horse and rider with riders both learning  
32 from, and teaching, horses.

33

34 **Keywords:** dynamical systems, skill acquisition, nonlinear pedagogy, socio-cultural constraints,  
35 equestrian coaching.

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39 **Introduction**

40 Sports that involve horses, such as racing and polo, can be traced back thousands of years,  
41 and the three Olympic disciplines of showjumping, dressage, and eventing have been established for  
42 centuries (de Haan & Dumbell, 2016). The global influences of millennia-old military, class, and  
43 utilitarian traditions, concerning the keeping and training of horses render equestrian sports highly  
44 stable with a propensity to hold onto historical practices and teachings (McVey, 2021; Rigg, 2023;  
45 Waerner et al., 2024). Examples include the writings of military ‘old masters’ such as Xenophon (l.  
46 430 to c. 354 BCE), a contemporary of Plato and student of Socrates, still being influential in the  
47 training of horses through translations of his ideas ‘On Horsemanship’ (e.g., Xenophon, 1979). More  
48 recently, the equestrian world is experiencing challenges to the traditional ways of being with horses  
49 (Pearson et al., 2023; Wolfram et al., 2023). These challenges focus on the perceived unethical use  
50 of horses in sport, as highlighted in “I Can’t Watch Anymore: The Case for Dropping Equestrian from  
51 the Olympic Games” (Taylor, 2022). Numerous factors have contributed to this situation, most  
52 notably a growing interest in how the public view animals and their uses (Shapiro & Demello, 2010),  
53 the ease of sharing content on social media (Taylor, 2022), and research suggesting that many  
54 domestic and sports horses experience a poor quality of life (Dyson et al., 2018; Luke et al., 2022).  
55 Consequently, equestrianism, encompassing both competitive events and recreational participation,  
56 has found itself navigating shifts in societal perceptions and expectations concerning the treatment  
57 and well-being of horses (Douglas et al., 2022), along with a perception that equestrian sports have  
58 not adapted to these social and cultural shifts in opinions (McVey, 2021; Williams, 2023).

59 A consequence of challenges to framing animal welfare has been increasing pressure on  
60 equestrian sports to retain their Social Licence to Operate (Douglas et al., 2022), resulting in the  
61 Federation Equestre Internationale (FEI) forming an Equine Ethics and Wellbeing Commission  
62 (equinewellbeing.fei.org) in 2022. Additionally, there has been a call for equestrian sports to develop  
63 their own pedagogical methodology that encompasses the unique interspecies and complex nature of  
64 equestrianism (Fredriksen, 2019; Staunæs & Raffnsøe, 2019). Here, we investigate the perceptions  
65 and insights of competitive equestrian athletes on their lived experiences of learning and the skill  
66 acquisition process in the context of United Kingdom (UK) showjumping, as part of a wider research

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67 project designed to elucidate whether principles of a nonlinear pedagogy could be applied to the  
68 equestrian sport of showjumping. In this paper, 'pedagogy' is broadly defined to include learning and  
69 teaching activities for all organisms. Nonlinear pedagogy is a theoretical framework that views  
70 teaching and learning as a dynamic process of exploratory self-organisation, occurring over multiple  
71 nested timescales. Based on ecological dynamics, it emphasises the importance of context, creation of  
72 action with information (and vice versa), perception-action coupling, and self-directed exploration of  
73 affordances in the environment (Davids, 2012).

74 Despite the long history of equestrian sports, there is a paucity of research exploring learning  
75 in horse-human dyads, equestrian sport pedagogy, or equestrian coaching practice (Davies et al.,  
76 2022). It has been argued that current coaching in equestrianism is influenced by traditional socio-  
77 cultural norms, reflected in shared practices, narratives, and discourses rooted in an anthropocentric  
78 and Cartesian worldview (McVey, 2021; Waerner et al., 2024). This paradigm tends to view horses,  
79 and other non-human species, as mechanical, passive objects to be controlled and reduced to  
80 simplified parts of a system, rather than as sentient, autonomous beings. In the UK, many equestrian  
81 disciplines have developed coaching qualifications (e.g. 1st4sport Certificate in Equestrian Coaching,  
82 Showjumping, 2025) uncritically adopting coaching pedagogies and practices from other sports which  
83 Cushion et al. (2022) designated 'ineffective' following a two-year investigation of a high-  
84 performance coach education programme. These pedagogies may uphold the equestrian coaching  
85 tendency to emphasise coaches' control of rider behaviours and riders' control of horse behaviours  
86 (Waerner et al., 2024).

87 Two theoretical perspectives are currently influencing equestrian sports pedagogy and  
88 guiding research into how horses and humans learn and communicate: 1. Research led by the  
89 International Society of Equitation Science (ISES), a not-for-profit organisation set up with the aim to  
90 improve horse welfare, and 2., Research in Human-Animal Studies that focuses on the relationships  
91 between humans and horses. The theoretical underpinnings of the Equitation Science research stem  
92 from ethology, physics, and veterinary science (McGreevy, 2007; McGreevy & McLean, 2007),  
93 championing the adoption of behaviourist learning theory, founded on the assertion that interspecies  
94 communication and horse learning result primarily through training methods using principles of

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95 classical and operant conditioning. In contrast, theoretical foundations of Human-Animal Studies  
96 stem from the humanities, anthropological, and social sciences (Argent, 2012; Dashper, 2014;  
97 Maurstad et al., 2013) that lean toward embodied perspectives of communication where horses and  
98 humans are understood to change and adapt to each other leading to co-adaptation and co-being. Both  
99 perspectives prioritise improving the horse-human relationship but reflect two broadly different  
100 underpinning theoretical frameworks about the nature of learning, communication, and skill  
101 acquisition in equestrian sports.

102 A behaviourist approach provides an effective way to communicate riders' 'intentions' to  
103 horses in the absence of shared verbal language. Behaviourism is an environmental theory  
104 emphasising the creation of conditions which favour training (through reinforcement) of desired  
105 behaviours as conditioned responses, tending to neglect agency, motivation, or non-verbal  
106 communication between horse and rider (Argent, 2012). Research prioritises quantitative studies of  
107 conditioned responses over short time scales, for example learning to respond to, or accept a novel  
108 stimulus as an 'aid' (movement from the rider that communicates an intention, for example for the  
109 horse to speed up) (Christensen et al., 2006). As such, competing opportunities for action  
110 (affordances) that may emerge and decay, for riders and horses, over longer timescales in more  
111 complex environments are not directly acknowledged. Human-Animal Studies approaches attend to  
112 understanding the quality of collaborative contextualised dyadic relationships over longer time scales,  
113 embracing the development of emotional connection and empathy between partners in sport.  
114 However, there is little guidance on how that key idea may be applied in practical coaching, learning,  
115 or training sessions within equestrian sports.

116 An ecological dynamics theoretical framework embraces complexity sciences, dynamical  
117 systems theory, ecological psychology, and theories of self-determined motivation (Chow et al.,  
118 2016). While ecological dynamics shares a non-representational theory of mind with behaviourism, it  
119 embraces agency in non-human animals with many scholars influenced by the work of Merleau  
120 Ponty, Wittgenstein and Ingold (also influential in Human-Animal Studies research). It conceptualises  
121 learning as a process of becoming attuned to meaningful information within an animal's physical and  
122 social environment (Woods & Davids, 2021). This ecological emphasis leads to the prioritisation of

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123 learners gaining *knowledge of* (Gibson, 1979) a performance environment, rather than declarative  
124 *knowledge about* (Gibson, 1979) an environment. An example of knowledge about the environment is  
125 being able to describe how a horse moves. In contrast, knowledge of the environment focuses on the  
126 ability to move (locomote, jump and land) synchronously with a horse whilst riding. Knowledge of a  
127 performance environment necessitates attunement to perceptual information that specifies action.  
128 Ecological dynamics builds on the Human-Animal Studies perspective by connecting action to  
129 perception, linking the calibration of the motor system to perception and intentionality. Ecological  
130 dynamics situates the horse-rider dyad as a complex, synergetic system where riders synchronise their  
131 movements with their horses (Lagarde et al., 1996). This approach emphasises behavioural flexibility  
132 as a fundamental aspect of learning and skill acquisition (Adolph, 2020). It offers a promising  
133 framework for developing an understanding of skill acquisition in equestrian sports, capturing the  
134 inherent complexity of the horse-rider dyad and providing a non-anthropocentric perspective that  
135 supports long-term skill adaptation and development.

136 From an ecological dynamics' perspective, performance emerges through the continuous  
137 interactions of the organism (horse-human dyad), undertaking an activity (task) in an environment  
138 (ecological niche, both physical and socio-cultural) over multiple, nested timescales. Thus, an  
139 understanding of the factors (including organismic, task and environmental constraints) impacting  
140 how riders learn and become skilful, may be foundational for developing a contemporary pedagogy  
141 for equestrian sports. To identify factors that make an elite equestrian rider, research has investigated  
142 the biographies of riders and the influence that riders have on horse performance. For example,  
143 Lamperd et al. (2016) interviewed eight international riders from the three Olympic disciplines and  
144 used a grounded theory approach to understand the developmental factors contributing to them  
145 achieving elite status. Lamperd et al. (2016) findings highlighted riders' perceptions of having a  
146 natural aptitude for horse sports, having opportunities to ride and compete and being motivated to ride  
147 initially for enjoyment, and then more for the relationship with their horses. Williams and Tabor  
148 (2017) conducted a review and analysis of scientific literature that evaluated rider and horse impacts  
149 on success in showjumping highlighting the complexity and diverse influences on performance in the  
150 horse-rider dyad. The findings of Williams and Tabor (2017) drew attention to the influence of

151 complex social factors, the difficulty of dividing factors into separate categories, and the important  
152 role of opportunities for the dyadic system to learn together, emphasising the importance of the  
153 partnership between the horse and rider.

154 The current study uses the theoretical framework of ecological dynamics and a nonlinear  
155 pedagogy as a guide to elucidate the organismic, task and environmental constraints influencing the  
156 process of learning to ride by framing the learner's knowledge of the sport performance environment,  
157 gained through attentive dwelling in a performance context (Woods & Davids, 2021). The study was  
158 designed to explore the early lived experiences of riders in the equestrian context, highlighting  
159 activities and practices that likely influenced skill acquisition in the showjumping horse-rider dyad in  
160 the UK. A focus on the discipline of showjumping was chosen as it is the only Olympic discipline  
161 with no subjective element and as such it is easier to define skill, representative practice, and  
162 successful outcomes. Showjumping requires a horse and rider to learn to work collaboratively to clear  
163 a series of obstacles in a set order and within a set time without incurring any penalties. There are  
164 many variations in equestrian courses with different heights, number of obstacles, number of rounds,  
165 and time allowed for course completion, with the final winner producing the fastest final round with  
166 the least number of penalties with a few exceptions such as five bar and puissance (British  
167 Showjumping Member Handbook, 2025).

168 Specifically, the study used thematic analysis as a method to gain an understanding of  
169 constraints on the development of skill by identifying the early learning experiences of elite  
170 showjumping riders (competing over obstacles over 130cm in affiliated national or international  
171 competitions). The questions aimed to explore participants' perceptions of their learning experiences.  
172 The questions investigated childhood memories, perceptions and insights of learning to ride,  
173 recollections of the ponies involved, and early experiences of being coached. Given the limited  
174 research on equestrian athletes' perceptions, these accounts are valuable for gaining insight into  
175 personal, contextually-situated influences on skill acquisition in showjumping.

176

177 **Method**

178 ***Research Design and Philosophical Underpinning***

179        Here, the research questions were underpinned by an interpretivist and post-human  
180        epistemological framework which sought to understand the subjective experiences and perspectives of  
181        the participants in the context of equestrian sports. The interpretivist perspective acknowledges that  
182        individuals construct their own meanings and interpretations of the world, emphasising the  
183        importance of understanding the social and cultural context in which these meanings are situated (Van  
184        Der Walt, 2020). The post-human epistemology recognises the agency of non-human entities, such as  
185        horses, in shaping human experiences and relationships despite humans being the narrators of such  
186        experiences (Adams, 2024; Coulter, 2018). The researchers are aware that what is remembered, and  
187        how memory is interpreted, is not the same as what may have been attended to and the intentions of  
188        that moment. However, there is value in elucidating the narrated experiences as they play a role in  
189        shaping future intentions and actions as well as shaping the context and constraints of coaching  
190        practice. The questions were formulated between the authors to explore the participants' early  
191        interactions and relationships with ponies, their social environments including receiving instruction  
192        and coaching, and the activities that they participated in.

193        ***Participants***

194        Ethical approval was granted [removed for blind peer-review] by the [removed for blind peer-  
195        review] University ethics committee before commencing the research. Eleven participants (female = 9  
196        and male = 2, aged 19 – 52 years), recruited via social media, agreed to take part in this study. The  
197        sample size was judged to be sufficient, based on previous research highlighting that between 9-17  
198        interviews typically achieve thematic saturation (Hennink & Kaiser, 2022). The participants self-  
199        selected in response to a request on social media for participation in the study (British Showjumping  
200        official page and several riding club pages) based on their affiliation with British Showjumping,  
201        specifically those competing nationally in events  $\geq 130\text{cm}$  and over the age of 18 years (defined as  
202        elite by Williams & Tabor, 2017). Additionally, all participants identified themselves as professional  
203        equestrians, with their primary source of income derived from competing horses, schooling horses,  
204        and/or coaching riders. The social media post was titled 'Identifying the experiential knowledge of  
205        elite showjumpers – your answers will help us to better understand the process of becoming skilful at  
206        showjumping.'

207 Table 1. Participant demographics

208

Pseudonym	Sex	Age (years)	Age started riding (years)
Adam	M	23	9
Ben	M	26	11
Daisy	F	26	2
Eve	F	19	under 2
Fiona	F	50	6
Gail	F	22	under 2
Hattie	F	29	8
Izzy	F	19	2
Jane	F	20	11
Kate	F	52	2
Lucy	F	30	10

209

210

211 ***Procedure***

212 The study employed a semi-structured interview conducted remotely using Zoom. Each semi-  
 213 structured interview lasted, on average, 43.10 minutes (range 31.12 – 85.89 minutes). Prior to the  
 214 interviews, participants were provided with detailed information about the study including its  
 215 objectives, purpose, ethics details, and they provided informed consent to participate. At the end of  
 216 the interviews participants were asked if there was anything that they would like to add. The interview  
 217 questions were designed to explore the participants' early learning experiences and relationships with  
 218 horses.

219 The starting questions for the semi-structured interviews were: 1. Tell me in your own words what  
 220 you remember about learning to ride; 2. What else do you remember about those early experiences  
 221 and the ponies/ horses you learnt to ride on?; 3. Did you have lessons or any formal coaching?; 4. Is  
 222 there anything else that you would like to share?

223 After asking the initial questions the interviewer then followed lines of enquiry, asked for clarity, for  
 224 examples, and definitions of terms used. For example, in the questioning around early experience and  
 225 the ponies, participants talked about having to be 'brave' because of "naughty ponies", but through  
 226 further exploration into this line of enquiry from the interviewer, participants expressed they  
 227 themselves did not think ponies were "naughty", rather horses had specific reasons for not being

228 obedient. After the first two semi-structured interviews the recordings were reviewed to ensure that  
229 the questions were eliciting responses related to the study aims.

230 ***Data Analysis***

231 Thematic analysis aims to identify and analyse patterns or themes within explorative conversations to  
232 uncover meaningful insights (Braun & Clarke, 2006). Braun and Clarke's (2006) recommended six-  
233 part process of thematic analysis was followed. First, the audio recordings of the interviews were  
234 listened to multiple times by the lead researcher to gain a holistic familiarisation with the meanings  
235 before they were transcribed verbatim (stage 2) making notes of potential codes for the data sets,  
236 removing any data that could identify the participants and providing each participant with a  
237 pseudonym. The redacted transcriptions were then shared with a non-equestrian independent  
238 researcher (critical friend), familiar with the use of phenomenology and thematic analysis in  
239 researching gender studies, to code the data sets and triangulate with the codes of the lead researcher.

240 Accepting that theory-free knowledge cannot be achieved (Guba & Lincoln, 2005), during the  
241 thematic analysis the research team did not adopt a dichotomous approach with regards to adopting an  
242 inductive or deductive method (i.e. deductive approach: use of structure, theory or a pre-determined  
243 framework, or inductive approach: with little predetermined structure, theory or framework). Rather, a  
244 more pragmatic line was followed using *both* a deductive and inductive approach. Deductive coding  
245 involved applying pre-existing theoretical or conceptual frameworks (identifying organismic, task and  
246 environmental constraints) to guide the coding process. This approach allows for a more structured  
247 analysis based on predetermined themes or concepts that are framed by the questions asked. Inductive  
248 coding involved generating codes directly from the data without any preconceived notions or  
249 predefined categories. This approach allowed for the construction of codes directly from the  
250 participants' responses. The responses were interrogated for unexpected and conflicting codes by the  
251 primary researcher and critical friend. The third stage involved the lead researcher sorting the codes  
252 into potential themes using NVivo (Version 12, Lumivero) and a Figma whiteboard to create a map of  
253 how the codes clustered around the themes. These themes were then shared with a cohort of 15  
254 coaches who had volunteered to explore a nonlinear pedagogy in their own practice as part of a follow  
255 up study in the wider research project. This additional group was included to gather external

256 reflections to the emerging themes, thereby enriching the validity and depth of findings of the study.  
257 Unlike with the critical friend, the full transcripts were not shared with the cohort of coaches. Instead,  
258 a selection of quotes from the main emerging themes were shared by email. There were two main  
259 reasons for this decision; first, the coaches were giving up their time to support the research project  
260 and it seemed unrealistic to ask them to read and interpret nearly 8 hours of transcribed semi-  
261 structured interviews. Second, the coaches were equestrian experts, not academics with experience in  
262 qualitative research. The coaches were asked if: (i) the quotes represented familiar narratives within  
263 showjumping, (ii) they seem biased, (iii) they believed there were experiences that were missing, and  
264 (iv), there was anything else that they wished to add.

265 In the fourth stage of the thematic analysis, the lead researcher focused on refining key  
266 emerging themes that directly related to the research question. This process involved synthesising the  
267 complex, intertwined, and often messy narratives shared by participants into coherent themes that  
268 demonstrated internal homogeneity. The aim was to distil the rich, nuanced stories into meaningful  
269 patterns while respecting the voices of the participants and the depth and variability of the individual  
270 experiences. Stage five consisted of naming and defining the themes including giving each a quote  
271 style sentence that summed up the theme, for example 'For the love of horses'. This communication is  
272 the result of stage six, representing our attempt to share the data and our interpretation of the themes  
273 observed in relation to the research aims.

274 ***Research Quality and Rigor***

275 It is important to acknowledge that the personal biography of the authors was a motivation for  
276 undertaking the current study. The interviews were conducted by the lead researcher, who possesses  
277 extensive personal experience and involvement in non-elite equestrian sports and activities spanning  
278 nearly five decades. This insider position allowed the researcher to establish a level of rapport and  
279 trust with the participants that may not have been easily achievable by a non-equestrian researcher  
280 (Lamperd et al., 2016). The authors have worked within academic and applied scientific contexts in  
281 the specific theoretical underpinning and topic area of the research. Hence, it is acknowledged this  
282 prior knowledge would have influenced the constructed themes. In particular, the extensive prior  
283 work of the research team in the use of ecological dynamics and nonlinear pedagogy to inform sports

284 coaching, human movement science, and motor learning research should be acknowledged. This  
285 transparency promotes the idea that the authors need not be assumed to enter the research process  
286 with 'an empty head', but rather with knowledge of the area that increases, rather than compromises,  
287 the theoretical sensitivity for interpreting findings (Weed 2009).

288 The critical friend was familiar with ecological dynamics and sport but had no experience  
289 with equestrian sports or activities. The coding similarities and differences of this individual and the  
290 lead researcher were discussed at length with a high level of agreement about codes and emerging  
291 themes, although the focus of the nonexpert was drawn toward the codes that alluded to potential  
292 harm to children due to historical norms and the evolving commercialisation of children's sport. Of  
293 the 15 coaches who reviewed the themed codes, most just responded that the quotes and themes  
294 reflected their experiences and did not add further comment. Four of the coaches shared more detailed  
295 reflections agreeing that the quotes and themes were familiar and representative of their experiences.  
296 In their reflections, the coaches tended to emphasise the negative experiences shared by the  
297 participants, along with their observations on how equestrian sports are changing in the UK and  
298 beyond, highlighting both the positive developments and the challenges. They also discussed the  
299 potential implications of these changes for the future of equestrian sports and their social license to  
300 operate. The themes of the recorded discussions with the four coaches are not included in this paper as  
301 they are part of a separate study. Finally, by providing thick descriptions of the data directly recorded  
302 from the participants, the aim is to offer enough detail to enable readers to come to their own  
303 conclusions (Smith 2017), demonstrating both the complexity and the specificity of the authors'  
304 interpretations of the participants' experiences (Sparkes & Smith, 2014).

305 ***Results and Discussion***

306 The analysis led to four main themes associated with early skill acquisition in equestrian  
307 sports. These were: (i) Becoming attuned to horses (organismic constraints), (ii) Becoming skilful  
308 through active problem solving (task constraints), (iii) Pervasive socio-cultural narratives influencing  
309 affordance salience (environmental constraints), and (iv), Perceptions of current trends in coaching.

310 Table 2. Summary of themes

High order theme	Second order theme
<i>Organismic constraints</i> – Becoming attuned to horses	Perceptual attunement - perceptual awareness of ponies, connection, communication and noticing the details of movement, and their emotional and physical states  Care, consideration, and attentiveness - a desire to nurture ponies  Love and emotional bond - the feelings of love as motivation to be with ponies  Motivation - descriptions of why they enjoyed riding, ambitions, and what they thought motivated the ponies
<i>Task constraints</i> - Becoming skilful through active problem solving	Variable experiences – multiple ponies, disciplines, and sports - early start but not early specialisation  Unsupervised practice - opportunity for self-determined exploration  Teaching and learning from ponies - necessity to be co-adaptive, developing and training ponies  Competing as children  Problem / naughty ponies - need for problem solving for challenged/ challenging ponies
<i>Environmental constraints</i> - Pervasive socio-cultural narratives influencing affordance salience	Form of life - shared fundamental ways of living, acting, and interacting within a community that underpin language and meaning  Opportunity and support/ luck – enriched equestrian environments  The influence of socially constructed narratives of ‘toughness’ and ‘disobedience’ on intentions and what is attended to  External pressures - 'owners', sponsors, and social media
<i>Perceptions of current trends in coaching.</i>	Changes in expectations – coach dependence, micromanaging, instant gratification  Children's loss of freedom  Changes in accessibility/ ownership  Dysfunctional horse-rider relationships - horses treated as equipment, feared, discarded, and replaced

311

312

313 ***Becoming attuned to horses (For the love of horses)***

314        The emotional bond and feelings of love for horses came through strongly from all the  
315        participants when describing their early memories of learning to ride, as Lucy illustrates:  
316        But that was a really big thing for me as a kid, to have that bond with an animal that you put your  
317        own emotions on because he's there and he loves me.

318 All participants spoke passionately about the horses in their lives, with many describing them as their  
319 best friends and part of their family, reflecting previous research findings (e.g., Maurício et al., 2024).  
320 This love of horses remained for life, mitigated negative relationships and experiences (particularly  
321 with instructors, coaches and of injury) and was expressed by all participants throughout the  
322 interviews.

323 Participants recalled their childhood awareness of the bond they shared with horses. Many  
324 gave examples of horses who had not thrived in environments that did not provide individual care and  
325 attention (for example, big yards) or with people who may not have connected or loved them as Daisy  
326 expresses:

327 He came to me a very sad horse. He [the horse] just wanted someone to love him and someone to  
328 give their all to him. And now he will do anything for me. But I think a lot of it is trust and  
329 partnership.

330 Daisy's interpretation highlights this dyadic relationship between the horse and rider, aligning with  
331 research on horse behaviour (ethology) demonstrating the need for horses to form long-term close  
332 relationships, who can be human or other species, as well as conspecifics (Argent, 2012). Other fields,  
333 such as cognitive ethology increasingly acknowledge animal emotion, empathy and even morality  
334 (Bekoff, 2006). These themes are also supported by previous research suggesting that riders consider  
335 the quality of the human–horse relationship to be central to developing a successful partnership in  
336 equestrian sport (Tufton et al., 2023).

337 In addition to recognising horses' needs for close relationships, even as children, participants  
338 became aware that the relationships were unique and that ponies behaved differently with varying  
339 people.

340 It is, yeah, a special relationship. It's really unique. Like, you know, [x] would say, oh, the pony  
341 doesn't like this, or it likes this, but then I'm like, well it does with me, or it doesn't. Like, you  
342 have a different relationship with any horse than anyone else does. (Adam).

343 Linked to the emotional connection, participants spoke of being acutely aware of, and perceptually  
344 attuned to their horses, highlighting the embodied nature of being with horses as expressed by Fiona

345 "I just enjoyed the whole physical experience. What I remember is the time spent with the horses, the  
346 smell and the texture, and the feel of riding." The importance of being able to read horses (referred to  
347 as 'feel' in equestrianism) was described as encompassing all perceptual modalities.

348 Obviously when you know the horse you have, you just have a feeling you don't really need to  
349 think about it because you just, you feel it, don't you? New ones! You get on a new horse,  
350 another horse, you have to obviously, you pay attention. You try and take in as much as you can,  
351 like, I look at their ears to see if they're happy-with-it-ears. (Izzy).

352 The relationship between a horse and rider was articulated as not only a sporting one, but built around  
353 care, consideration, and attentiveness. The relationships with individual ponies were integral to  
354 learning how to get to know and understand other horses, how to ride them, develop trust and  
355 confidence. Ben stressed the importance of trust, "If the horse doesn't trust the rider, you have  
356 nothing in the end and if the rider doesn't trust the horse, you have nothing in the end." While Daisy  
357 shared how fragile that relationship can be and how important it is to be aware of the nature of horses,  
358 "I always say to people, you know, it takes a lifetime to build a horses' confidence, it takes a second  
359 to shatter it. Horses are flight animals."

360 Like humans, horses are social and gregarious animals with a need to develop and sustain  
361 individual relationships (Torres Borda et al., 2023). Unlike humans, horses are prey animals and that  
362 has a profound influence on their nature and the horse-human relationship. Participants demonstrated  
363 a caring attentiveness that underpinned their ability to communicate, ride and compete successfully.  
364 This childhood attentiveness may have promoted the perceptual attunement to information about  
365 horses that would be vital for success. Researchers in motor development have demonstrated that  
366 children, including at pre-verbal ages, explore their environments in ways that are effective at  
367 developing affordance perception and problem-solving skills (Kretch & Adolph, 2013). Hence,  
368 building and maintaining relationships with horses could be considered a fundamental skill of  
369 equestrianism. In ecological dynamics, this process has been termed *synergy formation* in collective  
370 systems (Ribeiro et al., 2019). This skill could only be gained from having extensive experience of  
371 longer-term relationships with multiple horses.

372

373 **Becoming skilful through active problem solving (I knew I was talented because I could ride the**  
374 **“naughty” ponies)**

375 A theme for all the participants was of starting on one, or a few, quiet ponies before moving on  
376 to multiple and more complex ponies. The early quiet ponies were described as not doing anything  
377 unexpected, not learning with them, and not changing or adapting, as expressed here by Adam:

378 I'd been in the riding school sort of quite a while and it was sort of getting to the stage where I  
379 was like, sort of outgrowing it, and I was getting a bit bored. Like I wasn't really getting enough  
380 out of it. And, it was, well the horses didn't develop either.

381 Experiences on quiet ponies got them started and gave them confidence, however, all riders shared  
382 that their skills did not develop until they began competing multiple ponies or riding less well-  
383 schooled ponies, particularly if there was a need to be autonomous and problem-solve. Adam  
384 continues:

385 And then there was a teacher at my school, and she had a pony that needed riding. And that was  
386 when I first started riding properly like out of (the riding) school and hacking and jumping and  
387 doing cross country and learning how to actually sit on the horse and make it do things for  
388 myself.

389 All participants expressed the importance of the experience of riding multiple ponies, schooling  
390 (teaching) ponies and experiencing multiple disciplines, as Lucy shares here:

391 That's why I did very well at university because the whole point of it is you get on a horse, you  
392 get 15 minutes to get a tune out of it, you go into a test, and then you do the same for the  
393 showjumping section. So, for me, I was like, that's fine, I've done that my whole life. Where a lot  
394 of the girls I was with, they were much more experienced in the way of they competed probably,  
395 like intermediate level eventing, or 130cm showjumping and even advanced dressage. Whereas I  
396 at the time, probably only jumped up to about 120cm and probably only done about elementary  
397 dressage, but I'd ridden so many different types of horses.

398 A common theme was that the ability to ride and control “naughty” ponies and described as a  
399 transition to being considered a talented rider.

400 Well, I used to ride a selection of riding school ponies, and I was quite a brave little girl. So, any  
401 anyone that was struggling with their horse who was a bit too fresh, I'd just get on it and quickly  
402 canter it round. (Gail).

403 There are two potential interpretations for this ability to quickly 'get a tune out of horses' or 'make  
404 them do things themselves'. One is that skilful riders are likely to be able to communicate and build  
405 trust, be more balanced, consistent, and empathetic than less skilful, and, therefore, would not confuse  
406 or frighten the ponies; the other is that they could have been able to force the ponies to do things.

407 Attunement to another individual can be used equally for conflict and control, as well as  
408 collaboration, as seen in prey-predator interactions and dyadic combat activities such as mixed martial  
409 arts (Yearby et al., 2024). More research is needed as we found no studies to date researching the  
410 perceptions and implications of children being considered talented if they could ride ponies labelled  
411 as naughty. This insight from Adam articulates the perceived link between riding skill and being able  
412 to ride naughty horses as something that is normalised and aspired to:

413 I saw this beautiful, big, bay head and I was like, that looks like the sort of horse I want to be on.  
414 And I was like, you know, write that off, he's so naughty I'll never, you know, be good enough  
415 to sort of sit on him

416 There is evidence that bravery is considered a virtue in British equestrian culture, necessitating the  
417 normalisation of horse behaviour that requires rider bravery (McVey, 2021). However, on further  
418 questioning, most of the participants stated that they did not believe horses could be naughty, rather  
419 that the horses were not being obedient for a reason. Jane shares her interpretation of the cause of  
420 unwanted behaviour of one of her horses, "And he's obviously been told off for stopping. Because  
421 when he stops, he rears up." Jane's interpretation was that her horse was afraid of being punished.

422 All participants competed as children, one nationally from four years of age and  
423 internationally by the age of eight. There was a theme that competing and training multiple ponies  
424 was a key feature of their journey toward becoming skilful.

425 And so, the lady who ran it, it was her and her mum, and they just trained me, coached me, let  
426 me ride the horses on my own and would occasionally come out and tell me little things to do.  
427 And then I'd have actual lessons every week riding the different horses. A little bit of naivety for

428 me as a kid because a lot of times I was getting on horses that if I think about it, now I'm like, I  
429 was 14 getting on a just broken 16.2, but at the time, she was the knowledgeable one and she felt  
430 that it was appropriate. So, I think pushing me out of the boundaries a little bit was a good thing.  
431 (Lucy).

432 In this quote "16.2" refers to the size of the horse and is an average size for an adult sport horse.  
433 Lucy's recollection of being left on her own to ride untrained athletic horses reflects the other  
434 participants' stories of spending time unsupervised and training ponies or horses. Lucy's role of  
435 training ponies is tightly linked to the nature of equestrian sports where the rider is schooling  
436 (training) the horse whether intentionally or not, as they perform as a co-adaptive dyad (Zetterqvist  
437 Blokhuis & Lundgren, 2017). Equestrian sports thus necessitate that riders are always both learning  
438 and teaching (the horses) from the start which is unique in sports. It is worth noting that most novice  
439 riders pay trainers to continually re-school their horses for them.

440 The increases in complexity for the riders encompassed not only increased competition  
441 standards and more athletic ponies, but also increased numbers of ponies, multiple disciplines, and  
442 more challenging ponies due to more variable and unwanted (naughty) behaviour. Riding multiple  
443 ponies, competing, and training could have supported skill adaptability and be *representative practice*  
444 for successfully competing and producing horses as adults. Having optimal levels of movement  
445 variability and high representativeness in practice contexts are proposed to enhance skill adaptation in  
446 competitive sports (Otte et al., 2019; Renshaw et al., 2022). In summary, although the participants  
447 talked about their ability to ride 'naughty ponies' as a key part of their journey to considering  
448 themselves as talented, on deeper exploration it was their ability to 'problem solve' and work out how  
449 to adapt to individual ponies that was essential.

450

451 **Pervasive socio-cultural narratives influencing affordance salience (you need to be tough**  
452 **to make it in this industry)**

453 Despite a few of the participants not coming from what they termed 'horsey backgrounds,'  
454 they all described being around horses as something that was part of the fabric of their family and  
455 social life. Most of the participants rode with their parents and siblings and were supported by them,

456 “I guess I started riding before, well, as soon as I could walk, I guess. My mum just plonked me on  
457 the ponies. I was very brave, I think. I just liked galloping around everywhere.” (Eve). This finding  
458 aligns with previous research findings (e.g., Lamperd et al., 2016), in favour of participants having  
459 opportunities to ride, contact with talented ponies and the support of family or other people. There  
460 was, however, an unexpected theme of producing (training to sell) ponies for adults in return for  
461 riding and competing opportunities that were considered very positively by the participants both at the  
462 time and in retrospect. Hattie shares her memories of riding for a horse dealer and how positively she  
463 perceived the experience.

464 She always said, ‘you know I’m doing this for you now’, and you believed it. She said, ‘you  
465 know I know you can go far in this sport. You know, you’re riding my ponies. Yeah, you  
466 wouldn’t be riding my ponies unless I thought you were something’. And she used to put up with  
467 everything, used to get up at five o’clock in the morning and take me to shows. It was just me  
468 and her and yeah, she was like almost like a mum to me.

469 The experiences of riding for a horse dealer/owner at a young age were viewed as being valuable in  
470 preparing them for making a career in equestrian sports.

471 The person who I used to ride for was very strict very hard, which I think really helps in the long  
472 run. Sure showed us how tough the industry was from a very early age. (Gail).

473 It was clear that adults and owners had power over the children as they had control over the children’s  
474 access to the ponies and horses. We found no research examining how producing ponies to sell might  
475 influence future perceptions of horses as objects, or the implications of children’s labour and the  
476 power relationship between children and adults who control access to the ponies children ride. More  
477 research is needed in these areas.

478 Whilst many of the coaches experienced by children were described positively, strong words  
479 like, ‘hard’, ‘scary’, ‘horrible’, and ‘evil’ were also used. All the participants interpreted their coach’s  
480 behaviours as being necessary for them to become talented, leading them to retrospectively justify the  
481 treatment and make sense of it in a positive light; despite admitting how damaging it was to them as a  
482 child. Childhood experiences shaped interpretations of how the horse industry operated, especially the  
483 need to be tough. Participants also perceived that the adults around them believed in them, in their

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484 abilities and talent. Further research is needed to unpick the impact of attitudes and beliefs toward risk  
485 and the need to be tough and brave picked up in childhood that is likely to shape affordance  
486 perception as well as future attitudes, beliefs, and behaviour. The messages about being tough were  
487 not only directed toward the children, but also at how they were encouraged to treat their ponies. Jane  
488 shares a particularly upsetting memory about a childhood pony.

489       Because they said to me, they said, you've got to be mean to her [the horse], or they said she  
490       won't jump. (Jane).

491 There is growing research suggesting that children can learn to be hard on horses, for example, by  
492 being bought whips as gifts, learning negative reinforcement training techniques from adults, and to  
493 label behaviour negatively, i.e. as naughty, or lazy (Dyson & Pollard, 2022). However, there is  
494 growing evidence that unwanted behaviour in horses may also be may also be associated with poor  
495 welfare, housing, diet, and pain due to outdated traditional horse-keeping practices and stress, or pain  
496 due to poor training and riding practices (Luke et al., 2022). Luke et al., (2023), and Rogers and Bell  
497 (2022) found that many equestrians misinterpreted conflict related behaviours as a characteristic of  
498 the horse's personality (thus naughty), rather than of having any roots in pain or stress. Research into  
499 horse behaviour has suggested that many horses exhibit signs of learned helplessness and the bomb  
500 proof, perfect, well-behaved horses used for teaching beginners may just have different welfare issues  
501 (Hall et al., 2008, 2018; Luke, et al., 2022).

502       These findings suggest that many outdated social-cultural narratives shape the affordance  
503 salience and perception of riders. For example, if described as 'naughty and lazy', a horse that is  
504 reluctant to move forward when given a cue (aid) to speed up, would illicit the affordance  
505 (opportunity for action) of either punishing the behaviour or reinforcing the cue, rather than of  
506 seeking understanding, connection or curiosity about the reason for the horses behaviour. Affordance  
507 perception is not only influenced by physical characteristics of an environment, but through a  
508 complex interplay of cultural, social, and individual factors. Believing that horses need to be obedient  
509 and that success is predicated on the ability to be tough, and ride difficult horses influences how  
510 people understand and interact with the world around them.

511

512 **Current trends in coaching (the problem with riders today)**

513 There was a shared concern about changes in expectations, with riders wanting to learn without  
514 putting in time to become skilled and knowledgeable or build relationships with horses. Kate sums up  
515 the trends and complexity most succinctly.

516 Within sessions there is an expectation that you just turn up, get on and compete. Hand over to  
517 your groom and maybe some implications in how that would influence coaching. That, you  
518 know, for someone like that they would need much more micro-managing. I think a lot of those  
519 riders if you said your coach has got a migraine, they can't be here today, probably wouldn't be  
520 able to jump themselves that day. I actually think that being a coach like that, you know, its big  
521 business, you're paid a lot of money to look after those riders. There's almost a move towards  
522 horses being even more of a product, I guess.

523 Most of the participants shared thoughts about the emerging changes in horse ownership which could  
524 both limit the opportunity for growth in the horse-rider relationship and be a product of the lack of a  
525 relationship, for example of people buying horses with little knowledge or experience and then selling  
526 them on if the relationship does not flourish.

527 Quite often those horses are only with a rider for a short length of time before, you know, the  
528 partnership stays okay for a short period of time, and then it doesn't stay okay. And that horse  
529 will find itself with another rider. I think that happens a lot. (Kate).

530 These findings contrast with those reported by Rosén et al. (2022) who found that there is increasing  
531 awareness and consideration of horses in ownership, riding and coaching. Our study found that there  
532 was a perception of horses being increasingly considered as 'equipment' and coaches being expected  
533 to help riders shortcut learning by micromanaging them (one mentioned the term 'joystick coaching').  
534 There was a consistent narrative around the increasing pressure put on children and ponies to perform,  
535 leading to a compromise of welfare for both children and ponies.

536 Because all the participants coached, they would often switch between talking about their  
537 own learning experiences and how they coached. Most of the participants shared that they mainly  
538 coached novice riders who lacked confidence, and co-coached or self-coached as experienced riders.  
539 The tendency for experienced riders to self or co-coach is supported by previous studies (Williams &

540 Tabor, 2017) and may reflect more autonomous and problem-solving early learning experiences. The  
541 perceived changes were not all contained to novice riders. Fiona coached young pathway athletes and  
542 described them as also being different from a few decades ago, particularly in their need for structure,  
543 not wanting to experiment, make their own decisions, or take responsibility. She described the  
544 pathway athletes as being uncomfortable with freedom and autonomy and wanting to be told exactly  
545 what to do. This would suggest that some of the trends are due to wider societal changes in the  
546 freedoms and autonomy that children and young people have as Fiona suggests here:

547 When I was growing up, you know, I think I could go off for the afternoon and my mum would  
548 be like, you know, go away and don't come back for like, three hours. You know, and I'd be off  
549 paddling down the creek and looking for little animals or looking at plants or going to sleep for  
550 two hours in the middle of the field. You know, so we, you know, and I don't think they get to  
551 have that so much anymore.

552 These reflections about the trends in horse ownership and coaching would suggest a move away from  
553 the more autonomous, less structured time spent with horses that the participants described in their  
554 childhood experiences. Instead of building relationships with horses and engaging in problem solving,  
555 the perception was of a negative trend toward buying horses with a 'specification' and being  
556 dependent on coaches.

557

### 558 **Implications for applied practice**

559 Applying a nonlinear pedagogy to equestrian sports requires an awareness of the organismic,  
560 task and environmental constraints that impact skill acquisition to support the design of effective  
561 practice activities, instruction, and feedback (Chow et al., 2016). In equestrian sports the horse-rider  
562 dyad can be conceptualised as the integrated organism (a complex adaptive system). The results of  
563 this study support the importance of developing a close relationship with, and attunement to, horses to  
564 develop a collaborative partnership. Strong relationships and attunement to the horses movement and  
565 emotional state, may be what underpins the ability of highly skilled riders and their horses to behave  
566 as a single informationally coupled organism (Lagarde et al., 1996; Viry et al., 2013). This  
567 observation suggests the importance of developing deeper knowledge and understanding of horses,

568 not only from an ethical perspective, but also to support the process of skill acquisition in equestrian  
569 sports. It is worth considering that these abilities could be used to control horses as well as co-adapt.  
570 Practice activities should be designed to support building relationships, focussing on embodied and  
571 embedded experiences, fostering care, and developing an attunement to information from horses.

572 The participants' experiences of coaching would indicate a move away from higher levels of  
573 autonomy and problem solving toward a focus on micromanaging both horses and riders. While there  
574 are undoubtedly problems with some traditional practices and narratives, especially those with  
575 potential to harm both horses and children, these themes imply a shift away from more ecologically  
576 aligned practice. Whilst there is a growing body of evidence of the negative welfare experiences of  
577 many horses (e.g., Dyson & Pollard, 2022; Luke et al., 2023; O'Connell et al., 2025), we could find  
578 no research into the experiences of children in equestrian sports. The results of this study would  
579 suggest that there may be many children experiencing less than optimal physical and emotional  
580 climates within equestrian sport environments. There is a need for further research to elucidate the  
581 welfare experiences of children.

582 Socio-cultural constraints in the form of practices, beliefs, and values instilled in riders during  
583 their formative years appear to play a substantial role in shaping their affordance perception, future  
584 intentions, observations, decisions, and behaviours. It seems evident that much could be achieved  
585 through a systematic overhaul of the language used within all areas of equestrianism, for example, by  
586 coaches, in manuals, TV, radio, social media, rule books, qualifications, and other educational  
587 materials.

588

### 589 **Study limitations and future direction**

590 This study sought to explore the constraints on the development of skills that influence how  
591 showjumping athletes learn, highlighting common themes in their early learning experience and  
592 perceptions of changing trends in coaching. The study was conducted with a small group ( $n = 11$ );  
593 however, this sample size is aligned with samples in other published studies (Strafford et al., 2020).  
594 The sample size was mitigated in part by having a group of 15 coaches, recruited as part of a follow-  
595 up study provide external reflections on the themes, as used in previous studies to provide additional

596 rigor (Wadey & Day, 2018). The group of coaches recognised and identified with the themes and  
597 added to the richness and depth of the analysis rather than any additional themes, supporting the  
598 findings of Hennink and Kaiser's (2022) review on sample sizes and thematic saturation.

599 A further limitation was that although some of the participants still competed across  
600 disciplines, only one discipline was investigated at a level below performance or podium, and it may  
601 be that many of the themes are not representative of other disciplines, higher levels of performance,  
602 those who may have dropped out of the sport, or experiences in other countries. In addition, because  
603 both the participants and coaches self-selected for the study, they may not be representative of the  
604 wider equestrian community. The ratio of men and women in this study is likely to be representative  
605 of the level of participant skill investigated, although at the performance and podium levels there is a  
606 higher ratio of men.

607 Finally, a limitation and important consideration for future research was the single interview  
608 methodology used. This was considered appropriate for this initial research to provide much needed  
609 information about the scope of the early learning experiences of showjumping athletes. Future  
610 research, that is more longitudinal and embedded within the learning environments, will likely  
611 provide richer and more rigorous insight.

612

### 613 Conclusion

614 Traditional linear pedagogy is typically defined by a systematic, step-by-step method of  
615 coaching, emphasising specific objectives and the sequential presentation of material. It is  
616 fundamentally behaviourist, focusing on direct instruction and the concept that learners acquire  
617 knowledge in a gradual, predictable way. In contrast, nonlinear pedagogy recognises that learning is  
618 shaped by interactions within a dynamic environment, highlighting the uniqueness and context-  
619 dependence of each learner's experience. This approach promotes exploration and self-directed  
620 learning. It emphasises that 'knowledge of' the performance environment is constructed through  
621 active engagement rather than following a fixed path. A nonlinear pedagogy is not top-down but  
622 recognises the complexity and context of the coaching ecological system including the co-adaptive  
623 and embodied nature of learning and performance (Ziv, 2023). A potential polarisation of pedagogy in

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624 the future may arise due to the perceived changes in horse ownership, expectations of the role of a  
625 coach, and pressure due to threats of the loss of the social licence to operate in equestrian sports. This  
626 study suggests that those who are skilled have learned through attentive inhabitant dwelling in  
627 equestrian forms of life and a deep connection to horses and that an equestrian pedagogy needs to  
628 embrace the relational and co-adaptive nature of riding and the unique aspect of being both a learner  
629 and teacher of the horse. The results also suggest that pervasive socio-cultural narratives impact the  
630 affordance perception of riders, particularly in respect to how riders interpret horse behaviour and the  
631 treatment that they received as children from the adults around them.

632

633

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