



Sports Coaching in an Online Space: What Can We Learn From Endurance Sport Coaches?

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1 **Sports Coaching in an Online Space: What Can We Learn from**
2 **Endurance Sport Coaches?**

3 Submission Date: 21/07/2022

Abstract

4
5 Within endurance sports (ES), a practice exists in which online remote coaching (RC) is a necessary
6 construct. This study aimed to examine the processes of ES coaches to gain insight into the experiences
7 of coaches engaging in RC before COVID-19 enforced others to do the same. To achieve this aim semi-
8 structured interviews were conducted with ES coaches (N = 7; M = 6, F = 1). Transcripts were subject
9 to thematic analysis, with three dimensions (i) Remote coach and endurance sport; (ii) Process of
10 remote coaching and (iii) Delivery of training, online being identified. An additional 17 higher and 79
11 lower order themes were found. Results found that to be effective online, ES coaches utilized
12 technology such as instant messaging and online software to increase presence and decrease the
13 perceived distance from athletes. They aimed to create autonomous athletes both by choice and by
14 necessity. The ease of access through technology had a negative and positive impact on work-life
15 balance. A process was developed whereby only technology that served a purpose to further athlete
16 outcomes was used and balanced with subjective feedback. Further research is needed to garner
17 athlete expectations and experiences of RC.

18 *Keywords:* Endurance Sport, Coaching Process, Coaching Effectiveness, Remote Coaching,
19 Coach-Athlete Relationship Online

Introduction

21 The COVID-19 Pandemic provided the catalyst for research into the online coaching
22 processes used in the RC domain. In this new era, coaches have moved from the “playing field” to an
23 online presence, delivering their sessions virtually to athletes (Bennett, 2021; Evans et al., 2021; Glen
24 et al., 2020; Li, Gao, Liu, & Zhong, 2020; Samuel et al., 2020). This practice of RC came as a necessity
25 for many sports coaches (Bennett, 2021; Glen et al., 2020; Samuel et al., 2020), as they were forced
26 to deliver their daily coaching duties online due to international and local social distancing policies.
27 Yet, for coaches, information on how to move in conjunction with this technologically facilitated
28 change, is and was lacking. While the traditional office environment has seen emerging online
29 technologies enable employees to stay connected to their colleagues from a distance (both pre and

30 during the Pandemic) (Messenger & Gschwind, 2016; Wang et al., 2021), this has typically not been
31 the case for the sports coach. There has been limited research conducted in this area on the
32 importance of how technology can support the learner with reference to pedagogical design (see
33 Cushion and Townsend, 2019). This is further compounded when we observe Gen Z youth (those born
34 after 1997). This group are known to have excellent technological skills (Twenge, 2017), yet for
35 coaches, barriers are present, especially in relation to making connections and communications
36 between the coach and their Gen Z athlete (Gould, Nalepa & Mignano, 2019). Expectations of coaches
37 to operate with a well-developed coaching process in an online space may become the norm in the
38 near future as emerging technologies continue to impact and alter the day-to-day life of people in the
39 21st Century. How this will impact those delivering coaching sessions in the next decade remains
40 unclear.

41 **The Coach Without a Playing Field**

42 The very nature of ES involves a lack of a specific and/or, dedicated training environment.
43 Athletes such as cyclists and triathletes will commonly train outside of a designated training facility,
44 meaning the coach is often not physically present in the everyday training process. Claims by the
45 Strava© site in 2020 that they had 50 million users, increasing to 100 million users in 2022 (Strava,
46 2020; 2022), shows the growth of endurance activity tracking software highlighting that endurance
47 athletes and coaches at some level analyse training and receive feedback. In these circumstances ES
48 athletes actively collect their own data via GPS, heart rate and/or power meters (Malkinson, 2009).
49 This data is then uploaded to online platforms for coach analysis which assists the preparation and
50 planning of training load (Halson, 2014). What is not yet known is what type of athlete might engage
51 in ES coaching and whether the coaching process of a remote coach aligns to pre-existing literature
52 around the (in-person) coaching process and coaching expertise such as Saury and Durand, (1995),
53 MacLean and Chelladurai (1995), d'Arripe-Longueville et al. (1998) and Côté and Gilbert (2009). The
54 context in which ES coaches base their coaching process lends itself to a hybrid/blended model of

55 learning whereby the coach may operate both in-person and via online, remote, or distanced means
56 through the use of technology (Larson & Maxcy 2011; 2013, Wakefield, Neustaedter, & Hillman, 2014;
57 Friel, 2016). Despite this, direct evidence of RC and its apparent co-dependence on online technology
58 is limited, with literature published pre-pandemic focusing mainly on the use of online applications
59 (e.g., Vos et al., 2016; Boratto et al., 2017). The main limitation of published literature in this area (i.e.,
60 Hosseinpour & Terlutter, 2019) relates to how the coach facilitates motivation, relationship building
61 and learning in this space. Currently there is a dearth of research on how remote coaches use and
62 operate online based coaching and communication tools available to them, which may suggest that
63 some coaches are underequipped to fully utilize the array of software(s) in which athletes are already
64 technically proficient. At present, it is unclear what measures are in place to critic coaching
65 effectiveness in this setting therefore we are challenged to consider whether RC expertise can be
66 integrated into pre-existing models of in person coaching.

67 In ES such as cycling, technical elements have shown to be important to performance. Evans et
68 al. (2020) contend that, "In sport, where technique and physical skills are paramount, this (RC) could
69 limit the effectiveness of many kinds of coaching practice" (p. 90). Aspects such as aerodynamics
70 (Lukes, Chin & Haake, 2005; Faulkner & Jobling, 2020), bike handling (Zignoli et al., 2021; De Bock &
71 Verstockt, 2021), teamwork and race tactics (Torgler, 2007; Phillips & Hopkins, 2020) have all been
72 shown to have a measurable effect on performance outcomes and are coachable qualities. Yet, as
73 suggested by Evans et al (2020) in the RC context it is more difficult to coach these particular skills.
74 Research within the ES space has outlined "best-practice" technique, but how to translate this into
75 coaching actions (e.g., specific coaching ques, feedback etc.) respective of the RC context has not yet
76 been clarified. The exception seems to suggest using ES within a physical building or having a training
77 environment readily available, like swimming (Koop & Martin, 1983; Hannula, 2003; Moreno et al.,
78 2006). This specific hurdle has been discussed within RC literature during the COVID-19 pandemic, yet
79 ES coaches have been working with athletes in this way for decades. No information exists to date on
80 how ES coaches translate this technical skill-based knowledge into their RC practice.

81 **Effectiveness and Expertise in RC**

82 Accounting for the challenges and opportunities the RC environment may evoke, it is not yet
83 known what an effective, or expert coach is within this specific context. For example, Côté and Gilbert
84 (2009) state that effective coaching involves: “The consistent application of integrated professional,
85 interpersonal, and intrapersonal knowledge to improve athletes’ competence, confidence,
86 connection, and character (4 C’s) in specific coaching contexts” (p. 316). Creating competent athletes
87 both in the techniques of their sport and also with the broader scope of life is crucial for effective
88 coaching (Smoll & Smith, 2002) and aligns itself to the holistic understanding of coaching (Potrac et al.
89 2000). This specific form of coaching can be labelled as “athlete-centred” that is, a process in which
90 “athletes gain and take ownership of knowledge, development and decision making that will help
91 them to maximise their performance and their enjoyment” (Kidman & Lombardo, p. 13. 2010). There
92 is limited evidence on the coaching context within ES, or on if the remote or online endurance coach
93 is athlete centred in their approach. While overlap may occur between the professional, inter and
94 intrapersonal knowledge of RC coaches and traditional coaches, the extent to which that overlap may
95 occur is not yet known, and little is understood as to what extent coaches are being prepared for a
96 move to the RC environment. In considering this, we are challenged to reflect on the extent RC can
97 directly influence the 4 Cs in an athlete, and to what degree comparisons can be drawn from pre-
98 existing coaching literature to both inform effective coaching practice and coach development in the
99 RC context.

100 **Parallels with Online Learning**

101 The need to understand best practice within the area of online learning has been discussed
102 extensively within educational literature (Berge, 1999; Eastin & LaRose 2000; Anderson, 2008; Rhim
103 & Han, 2020; Chakraborty et al., 2020). With this in mind, Anderson (2008) has reported learners
104 commence online learning opportunities with pre-conceived ideas from both formal and informal
105 experiences they have had within the virtual environments. Therefore, athletes are now beginning to

106 gain experiences and develop pre-conceptions of the RC environment. These learners will bring their
107 earlier experiences of communication into this online setting; some of which may not be facilitated in
108 this online learning space, a point echoed in the more recent work of Rhim and Han (2020). Moore
109 and Keegan (1993) state that distance education involves a separation between student and educator,
110 a separation that entails a psychological and communications gap that must be crossed. Anderson
111 (2008) notes that mutual presence in time and place may be more fundamental than a simple absence
112 of body language or social presence between learners and educators. Rhim and Han (2020) suggest
113 that in order to be effective online, the educator must decrease the social, relational and psychological
114 distance between themselves and the learner. They must aim to elicit a sense of presence for the
115 learner to decrease the lack of “place lessness” that exists online. Lastly, they must aim to motivate
116 and empower their students in the creation of being an independent learner thus promoting a degree
117 of autonomy.

118 **Under the Watchful Eye**

119 The ES coach does not always interact with the athlete in a physical space. This omission of
120 coaching in a physical space aligns itself to the shift to RC which occurred during the COVID-19
121 Pandemic. Here research by authors such as Bennett et. al (2021) and Glen et al. (2020) has conveyed
122 the challenges and opportunities coaches have faced in the RC environment. These challenges
123 encompass hurdles such as technological constraints (e.g., internet stability for video calling) and a
124 lack of engagement during lengthy RC sessions. Video-coaching was found to be that of a ‘watchful
125 eye’– “one that acted to organise, motivate, and reassure the athletes during an anxious stage of their
126 preparation” (Bennett, p.10, 2021). This offsets renowned marathon coach Patrick Sang’s statement,
127 who claimed that during the COVID-19 pandemic he had lost his ‘coaches’ eye’, believing that his
128 decreased presence meant he could not ‘see’ the full picture of athletic performance (World Athletics,
129 2020). One aspect that emerged from the data, was that of the video coach being thought of as a form
130 of surveillance by some athletes. Bennett et al. (2021) addressed this issue by stating that it could

131 reinforce a coach-athlete relationship with disproportionate distributions of power, in line with
132 Galipeau and Trudel's (2006) work on communities of practice and the role of the coach. This element
133 of surveillance with in-person coaching was also touched on in work by Lang (2010) and Taylor et al.
134 (2017) who highlighted respectively that those feelings of surveillance left young swimmers at higher
135 risk of short and long-term injury and psychological harm and that hockey players undergoing video
136 analysis during every training session felt under pressure to perform and feared failure. Yet, there
137 were also positive aspects associated with this element of surveillance proposed by Bennett et al.
138 (2021) such as that of accountability and motivation, coupled with this an element of ease of access
139 between coach and athlete and coach and parent in an online space. In the context of eastern
140 coaching, Li et al. (2020) found that where these power dynamics were already present in coaching
141 environments, pre COVID-19, were then essentially reversed. Here, the traditional hierarchy of power
142 was removed when RC was present, transforming the relationship between coach and athlete to one
143 of more equal and diversified communication. Opportunities with this element of video coaching were
144 also present in areas such as breaking down language barriers and engaging parents of youth athletes
145 due to the ease of access of communications. This element of surveillance and apparent ease of access
146 with no 'worktime' restriction, for both athlete and coach, warrants further study, to examine whether
147 this concept of surveillance is beneficial or inhibiting to athletic outcomes and coach mental health.

148 **The Inability to Switch Off**

149 Feltstead & Henseke (2017) suggest that remote work (RW) caused interruptions in work-life
150 balance created by a greater inability to switch off from one's role outside of working hours. Modern
151 technology, and with it, our constant connectedness to one another elicits pressure while engaging in
152 RW to be constantly accessible and ready to respond (Matusik & Mickel, 2011). On a practical level
153 this has manifested itself in behaviours such as engaging in emails outside of work hours, which has
154 been linked to increased stress and inability to switch off (Chesley, 2010). All coaching populations
155 experience various challenges within their roles such as; overload, work-home interference, social

156 isolation, substance abuse, and mental ill-health (Carson et al., 2019; Norris et al., 2017; Olusoga &
157 Kentta, 2017; Roberts et al., 2019; Thelwell et al., 2010). While a more traditional coach may engage
158 in facets of RW in relation to their role they also have distinct contact points and processes that involve
159 in-person communications which may mean boundaries are easier to establish. A coach engaging
160 solely in RC does not possess these aspects as their work is purely remote based. To date, no research
161 exists on this possible work-life balance connotations of RC.

162 Therefore, the overall aim of this study was to provide a deeper understanding of the ES coach
163 and the remote, online environment in which they operate. We attempt to examine the remote
164 endurance coaching context, the coaching processes involved with RC and finally, attributes
165 associated with work-life balance in order to provide information and a comparative analysis of a
166 group of coaches who have been engaging in RC long before COVID-19 enforced others to do the
167 same. To achieve this aim, literature from the coaching effectiveness and expertise domain (Côté and
168 Gilbert, 2009) is used as a guiding lens by which data was gathered and analysed. The research
169 attempted to inform practice, encourage debate and provide novel insights for coaches operating in
170 this unique coaching context, by choice or necessity. This may aid researchers and practitioners to
171 learn from mistakes made and experiences gained by this subgroup of coaches.

172 **Methods**

173 **Participants**

174 Following institutional ethical approval, data were collected from seven (N=7) endurance
175 coaches (6 = M, 1= F) who self-selected into the interview process via a previous phase of research as
176 part of a wider project examining RC. Participants were afforded the opportunity to self-select if they
177 had previous or current experience of RC in ES. Participants had a range of experience levels, academic
178 qualifications and coached endurance-based sports such as triathlon, cycling and long-distance
179 running. Coaches worked with athletes from beginner to professional level, either solely online or as

180 a hybrid approach, which involved physical “in-person” training sessions or meet ups as well as online
181 training and communications. Table 1 outlines participant information and relevant coaching history.

182

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186 Table 1: Participant information from the semi-structured interview.

Participant No.	Gender	Variable						
		Age Range	Coaching Experience (Years)	Working Practice	NGB Level	3rd Level Education	Primary Sports Coached	Athlete Level
1	M	30 to 39	>5<10	Remote	N/A	MSc	Cycling	Recreational & Competitive
2	M	18 to 29	>3<5	Remote	1	MSc	Triathlon	Recreational, Competitive & Professional
3	M	40 to 49	>20	Remote	3	MSc	Cycling & Triathlon	Recreational, Competitive & Professional
4	M	50 to 59	>10<20	Hybrid	3	PGDip	Cycling & Triathlon	Recreational & Competitive
5	M	40 to 49	>10<20	Remote	1	MSc	Long Distance Running	Recreational & Competitive
6	F	40 to 49	>3<5	Remote	1	N/A	Long Distance Running	Recreational & Competitive
7	M	40 to 49	>3<5	Hybrid	N/A	BSc	Cycling	Competitive

187 *Note.* Athlete level: Recreational defined as, “athletes partaking in sport in the absence of non-organised competition from
188 a relevant governing body”. Competitive defined as, “athletes competing in organised competition provided by/aligned to
189 their relevant governing body”. Professional defined as, “competitive athletes (as above) who are earning a salary, grant,
190 and/or funding for their sporting careers”. Long Distance Running defined as, “distances >3000M”.

191 **Procedures**

192 For the purpose of this research an ontological approach was employed whereby the research
193 team reflected upon their observations of real-world online ES coaches in an attempt to; explain
194 behaviours and outline experiences from within the ES coaching environment. An interpretivist
195 approach was adopted as the researchers accepted their influence (through knowledge, values and
196 theory) could influence what was observed and/or reported. Following two pilot interviews with ES
197 coaches to test and review the interview protocol, the researcher drew on an interview guide to
198 inform the direction of questioning with each participant, this ensured focus and structure were
199 provided for each interview (Sparkes & Smith, 2013). On consent to participate the interviews took
200 place via Zoom, with both video and automatic captioning enabled. Transcripts were auto generated
201 and cross referenced with the audio recording before analysis. The audio and video recording were
202 then removed and deleted with all data anonymised. Mean interview time was 33.5 minutes (Range
203 = 29:05 to 41:20).

204 ***Interview Guide***

205 The design of this question template was threefold; (i) informed by existing research within the
206 area of RC (e.g., Bennett, 2021; Evans et al., 2021; Glen et al., 2020; Li, Gao, Liu, & Zhong, 2020; Samuel
207 et al., 2020) and coaches' welfare (Carson et al., 2019; Norris et al., 2017; Olusoga & Kentta, 2017;
208 Roberts et al., 2019; Thelwell et al., 2010); (ii) drawing from research presented by Côté and Gilbert
209 (2009) in the coaching effectiveness and expertise domain (coaching context, coaches' knowledge and
210 athlete outcomes); (iii) industry informed (due to the experience level of the first author within the ES
211 context, appropriate phrasing and context specific knowledge was altered and/or added to make the
212 questions applicable to the online, remote environment). The interview guide was split into four
213 overlapping, interwoven subsections: (a) context, (b) knowledge, (c) the athlete and (d) the coaches'
214 welfare. Sample questions included, (a) What Sports are you currently coaching, is that remote, in-
215 person, blended?, (b) Do you have any thoughts on the building of relationships in your specific

216 coaching context?, (c) Do you aim to make your athlete actively involved your coaching process?, and
217 (d) Do you feel the demands of your coaching sometimes interfere with family or personal life? Probes
218 were used to facilitate discussion around these subsections in line with methods outlined by Harrell
219 & Bradley (2009).

220 **Data Analysis**

221 Data were compiled and analysed using the qualitative data analysis (QDA) software ATLAS.ti
222 Desktop (Version 22.0.11.0). QDA software has been used widely in previous literature, examples
223 including MacNamara and Collins (2015) & Jones, Bezodis, and Thompson (2009). Data were analysed
224 through the six-phase approach to thematic analysis (Braun & Clarke, 2006 & Braun, Clarke & Weate,
225 2016). This style of QDA has been used in numerous pieces of literature within the sports and exercise
226 psychology domain (e.g., Hindley, 2022; Ferguson, Swann, Liddle & Vella, 2017 & Coyle, Gorczynski &
227 Gibson, 2017). First, author one cross checked interview transcripts with recordings to check for
228 accuracy, interview transcripts were read and re-read by the research group to gain familiarity with
229 the data. Secondly, codes were generated and clustered to identify patterns, data were then
230 subsequently grouped under low order themes at a semantic level whereby these themes were
231 generated from the explicit meanings of participants responses (Braun & Clarke, 2006). Higher order
232 themes were constructed in line with the interview guide subsection headers. This was chosen to aid
233 in the presentation of results and organize the data. These higher order themes were inserted under
234 dimensions representing three key points relating to the data collected. Thus a hybrid approach was
235 used whereby an inductive approach assisted in the development of key concepts, lower order themes
236 and codes while a deductive approach based on an existing framework of coaching expertise (Cote &
237 Gilbert, 2009) allowed a frame of reference for discussion. Data from these interviews generated
238 three dimensions (The Remote Coach and Endurance Sport, The Process of Remote Coaching and
239 Delivery of Training Online), 17 higher and 79 lower order themes.

240 **Establishing Rigour**

241 A number of steps were taken to enhance the rigour and trustworthiness of this research.
242 Participants were given copies of transcripts to check for accuracy and misunderstandings in language
243 given the multicultural nature of the sample. After each stage of data analysis interpretations of the
244 data were shared with the research team during a process of peer debriefing and feedback (Creswell
245 & Miller, 2000). The use of a “critical friend” (Smith & Gannon, 2017) was also used during both pilot
246 and analysis phases of this research, with author one drawing on ES coach contacts active in the RC
247 area to pilot and discuss interpretations of data. One example here was that of the critical friend
248 suggesting more appropriate phrasing of questions, in particular around the coaching knowledge
249 subsection. This included segmenting the questions into their three distinct areas and having examples
250 for each aspect of knowledge specific to ES. The significant experience of the interviewer within
251 endurance coaching allowed a good understanding of the overall context, terminology, and cultural
252 norms within this subgroup of coaches.

253 Results

254 The results presented encompass key aspects to inform practice, encourage debate and
255 provide novel insights for coaches operating in this unique coaching context, by choice or necessity.
256 The results aim to enhance a deeper understanding of the ES coach and the remote, online
257 environment in which they operate, providing examples of the coaching context, processes involved
258 with RC and attributes associated with work-life balance. To achieve this, data are presented relative
259 to (i) The Remote Coach in Endurance Sport, (ii) The Process of Remote Coaching and (iii) The Delivery
260 of Training Online. These findings are visually represented in table 2, with rich verbatim quotes
261 integrated into the main section to support understanding.

262

263 Table 2: Representation of key themes.

Dimension	Higher	Lower	
			264
The Remote Coach in Endurance Sport	The Unique Nature of ES	Early Evidence of RC	265
		Demands of ES	266
		The Business of RC	267
		Supplying a Service	
The Process of Remote Coaching	The Coaching Context	Efficiency	268
		Athlete Type	
	Acquiring Knowledge	A Scientific Process	269
		Education	270
		Informal Sources	
		Athlete Outcomes	Communication
	Prescriptive Training	272	
	Promoting Autonomy		
Delivery of Training Online	Experience	Recognizing Constraints	273
		Work-Life Balance	
	Software & Hardware to Facilitate RC	Using Data	274
		Technological Aids	275

276 Note. ES = Endurance Sport, RC = Remote Coaching.

277

278 **The Remote Coach in Endurance Sport**

279 ***The Unique Nature of Endurance Sport***

280 Both before and during the COVID-19 Pandemic, and outside of certain sports (such as
281 swimming), ES athletes would generally train within a flexible environment; on open roads, tracks,
282 and trails and because there is often no physical venue ES coaching can be conducted from afar.
283 Endurance coaches who worked with athletes competing and actively participating in endurance-
284 based sports such as cycling, triathlon and running. An array of age categories were enlisted by these
285 coaches, such as masters' athletes, youth athletes and age-group athletes. The coaches sampled in
286 the interview process outlined early evidence of RC pre-covid-19 with participant three highlighting
287 that they "started remote coaching in 1999", suggesting that the "internet had progressed enough"
288 for this to be a reliable option to coach. Likewise participant six stated that "even prior to Covid-19
289 we've always been remote". Some coaches used Covid-19 as a catalyst to further their involvement
290 with RC, such as participant five who worked in a hybrid fashion before the pandemic until "everybody
291 disappeared [from their existing training venue], so what I did then was move everything we did
292 online". The demands of ES were outlined by these coaches, suggesting that ES encompasses a unique
293 milieu of coaches, athletes and broader support networks all working in tandem, from a distance. Due
294 to online communications availability and the ease of monitoring in ES, the access to technology and
295 ability to measure training with a high perceived degree of accuracy. "It's pretty interesting [The
296 Context of ES] because I would say that cycling is very suited to or maybe even just endurance sports
297 is very suited to this online coaching" (Participant Seven). The athletes who utilized RC were both
298 proximal and distanced from their coach. For those proximal to their coach, coaches tended to favour
299 opportunistic in-person meet ups such as that described by participant seven: "the athletes I have...
300 they live all over the country so the majority of the time it is distance coaching and then we'll meet
301 for a training camp or at a race." For athletes distanced from their coach, an array of hurdles needed
302 to be overcome in order to facilitate the coaching process. Participant three discusses hurdles such as
303 time zones, while participant six highlights a need for communication with the athlete to ensure the

304 coach knows the terrain that may be available for training and addresses specific skill deficits. Overall,
305 within ES, there existed an environment in which RC was a necessary technique for the vast majority
306 of endurance athletes to receive coaching due to their physical distance from experts in the area.

307 For me if I have 10 athletes that I'm working with I can't be training with all of them every day,
308 it's impossible. One guy's doing a four-hour ride in (Another Country) one guy's doing a two-
309 hour ride across the country in (Coaches Home Country), I can't be there. (Participant seven).

310 For RC to work in this case endurance coaches tended to have a preference of athlete type as discussed
311 by participant three.

312 I need them to be an active participant [the athlete] because all the modifications, tweaks,
313 and adjustments. They need to be on board with that, they need to help direct that not only
314 because it ensures that they're going to feel the most comfortable getting it done but they
315 have the most ownership in the process.... the most buy-in because they end up the most
316 well-rounded at the end of the day and able to perform as well as possible.

317 RC is also a *business*, and for many, their main form of employment. There were forty-seven coded
318 references to the business of coaching across the sample of coaches. Coaches used terminology such
319 as "supplying a service", "value for money" and "marketing strategies". Each athlete paid the coach
320 directly for their services, so more athletes equated to greater income. Coaches also sold training
321 plans and operated tiered models of coaching whereby athletes could avail of differing services and
322 levels of communication. Participant seven stated that "when I'm doing the coaching, usually there's
323 these... kind of like... I don't want to call them packages or whatever, but they know what they're
324 buying, and they know what they're paying for". They stated that they "just try to stick to that (the
325 tiered model) and do the best I can do". In contrast participant six highlighted that "the bronze plan
326 we offer doesn't really do any face-to-face [Online Video Teleconferencing], but I do sometimes break
327 that rule". Coaches expressed that there is a balance required to provide their services efficiently in
328 order to earn sufficient income while also being confident in the coaching they are delivering.

329 Participant one summarizes this balance point, “I know people who also have hundreds of athletes,
330 there's a guy who has four-hundred athletes I can't imagine how that is, you know.... I have forty and
331 I think it's a lot, it's double amount of people that I would like to work with”. Elaborating on this point
332 participant one notes that when they have too many athletes it is more difficult to keep a mental
333 record of each athletes individual needs, requests and training. In order to conform and adapt to the
334 constraints and opportunities in their context remote coaches working in ES developed and honed a
335 unique coaching process in an aim to be effective in this environment.

336 **The Process of Remote Coaching**

337 *The Coaching Context*

338 To be effective in their context ES coaches explained how efficiency in their process was
339 important. ES coaches engaging in RC worked with athletes in different countries, time zones and thus
340 experienced delays in communication channels. When combined, this presented a logistical challenge
341 that coaches solved with processes that were heavily reliant on information flow in an online space.
342 Participant two states that they are working on ways to improve their efficiency by finding “ways that
343 I don't have to call the athlete every week because it gets tiring”, examples here included use of online
344 feedback forms and instant messaging within training software. In contrast, participant five explains
345 how they believe “one of the key success indicators is the speed in which your athletes get an accurate
346 answer” so they aim to be as efficient as possible in order to be responsive. Participant seven describes
347 the type of athletes a RC coach may work with. While actively working with athletes in different
348 countries there is a need to give them “stricter training, like, you need to do this today”. Other coaches
349 referred to the type of ES athlete they work with and how a common request is to write the training
350 plan, do the training plan and give feedback with participant two summarizing “some don't care [about
351 feedback and relationships], some just say give me the plan and I'll be fine”. Participant five talked
352 about the beginner athlete needing more prescriptive type training online than the more advanced
353 athlete. Yet, when probed in other areas coaches appeared to also favour an athlete-centred approach

354 promoting autonomy and mutual decision making as a necessity for successful relationships and
355 positive outcomes in RC. Participant six emphasizes the importance of communication within their
356 relationship, with an athlete in another country. Stating that in order to enhance the planned sessions
357 the athlete will suggest local training routes and roads in order to best their needs.

358 ***Acquiring Knowledge***

359 Coaches also respected the need for a “scientific process” toward their coaching. Participant
360 one alludes to the fact that they are “always looking at science.... always trying to be updated”.
361 Participant two highlighting the need for a “good sound knowledge on basic physiology, nutrition and
362 strength and conditioning”. Participant three, the most experienced of the sample, refers to the fact
363 that they need a basis in the scientific process, but it cannot be the focal point:

364 Certainly, it's an area [sport science] that I spend a lot of time every day just because of what
365 I do, endurance sports coaching, it's very heavy in the physiology but I try to make what I do
366 from a coaching perspective focused on who they are as athletes and what they're trying to
367 do.

368 A common value which interlinked and informed these coaches was that of education. Education was
369 heavily valued as shown by participant four's journey through the certification and third level
370 education space.

371 I was focused on my five-year plan, it involved me in 2020 completing my level three, [World
372 Triathlon] then I was going to start my master's in sport performance coaching. Also, there
373 was my level two diploma. Getting that done in 2019 was the first one, then the level three
374 [diploma] then the masters and then sort of go from there.

375 Yet, obtaining this knowledge also came from informal sources too such as those described by
376 participant two, who was also completing a PhD at the time; “I follow the researchers and coaches
377 [On Twitter] and read what they are saying.... that is where I get the most knowledge.” Participant

378 three refers to Twitter conversations with coaches-based thousands of miles away in reference to
379 networking and learning opportunities, while participant seven notes that “Twitter is one thing that I
380 use to informally build the knowledge because there are a lot of coaches and sports science people
381 sharing their opinions on there”.

382 ***Athlete Outcomes***

383 Athletes were only a technological aid away from contact with their coach. For ES coaches
384 monitoring, control, communication and feedback were valuable tools in the absence of physical
385 presence. The ability to monitor each individual aspect of athlete performance and training data
386 allowed coaches to be heavily prescriptive in their planning. Communication and the value coaches
387 placed on it was due to the RC environment. Nuance and inferences which could be made from casual
388 conversation and presence in “normal coaching” are not possible, so coaches appeared to account for
389 this via emphasised communication. Communication was facilitated online through technological aids.
390 Participant one vouched for “free contact” with “no limitation, we can talk at any time”. Participant
391 five talks about learning new communication skills to move solely online, “I’ve had to learn a couple
392 of different skills to be effective in my coaching moving from offline to online, when you're working
393 one-on-one with somebody [in-person] you can quickly judge whether or not the words that you use
394 are landing or are being received in the way that you have intended”. While technology and online
395 aids allowed coaches to be prescriptive in their training outline, coaches appeared to also heavily value
396 promoting autonomy with their athletes. Participant three explains how their philosophy revolves
397 around “generating autonomous athletes”, by letting them “guide themselves” and have experiences
398 on their own. Participant four explains how they are in “observation mode” with one of their athletes
399 where the athlete sets the training, and the coach gives feedback and guidance. Participant four
400 explains how their cultural context bleeds into their RC process and outcomes for athletes, “In these
401 Nordic countries it's really taught through the coaching education that these athletes should be
402 involved in their own training”.

403 **Delivery of Training Online**

404 ***Experience***

405 Participant five highlights that to be effective online with a feedback loop that is “interrupted”
406 (i.e., delayed feedback, coaches’ response times and lack of physical contact due to distance) one
407 needed “to be very specific” in the language used to ensure a coaching cue is actioned. Participant
408 three also references this delayed feedback and communication process when working on technical
409 skills, stating that they “farm out some of the skill stuff” to coaches proximal to the athletes.
410 Participant five who keeps skills coaching “in-house” highlights that one such positive of this RC
411 process is that of creating a “safe space” for athletes to digest your coaching and practice without fear
412 of failure, in an instance where the learner does not feel the pressure of group norms. When probed
413 to reflect on whether this form of communication could be a downfall, participant three describes that
414 for them as a remote coach it has not been “a limiter over the last whatever 20, 25 years”. They go on
415 to further emphasise the tone shift in how modern-day athletes communicate, “It’s funny, I’m about
416 to say this out loud and I’m almost disturbed by it, but I feel people are getting so good at
417 communicating like this (online) that they can get stuff across pretty well”.

418 ***Technology’s Impact on Work-Life Balance***

419 The apparent ease of access which online technology such as instant messaging allowed for
420 “no limitation [to communication]” whereby one “can talk at any time” (participant one). On one side
421 this was viewed as positive by the coaches as it allowed for quick and efficient feedback and
422 communication with their athletes. On the other side, this ease of access via online means also
423 became a hindrance in the area of work-life balance for the coaches with numerous coaches alluding
424 to little to no free time and the feeling of being constantly available, this is discussed by participant
425 two who contrasts RC to that of their more traditional coaching; “they [the in-person athletes] don’t
426 expect you to get back to them as quickly... whereas if I’m working remotely with people and they’re
427 paying for a service they expect a quick response”. This expected response time was common across
428 a multitude of coaches some of whom attributed their value to how quick they could respond. This

429 ease of access sped up communication channels but also inhibited coaches' boundaries. Work-life
430 balance appeared to be an issue which caused much internal conflict. Coaches discussed how the
431 flexible lifestyle afforded by RC allowed them to work, via online means "anywhere in the world,
432 anytime" (Participant two) and set a routine dictated by themselves yet participant two makes
433 numerous references to "it [RC] impacting your life" by "having no days off". More experienced
434 coaches noted the importance of balance or prioritization with participant three reflecting that a lot
435 of their colleagues in the field coaching "are one or two days away from burning themselves out" and
436 that everyone "works a little too hard in this field". Overall technology both helped and hindered work-
437 life balance for these coaches, it allowed efficiency in the coaching process but also created an
438 environment whereby the coach was always available and "always on", in service to their athletes.

439 ***Software and Hardware to Facilitate RC***

440 Endurance coaches availed of a host of technological aids and used data to facilitate
441 communication and training provision to the athlete, the two most common aids being instant
442 messaging services and specific training software. Surveys, phone calls, social media, training
443 hardware, video-based communication and voice notes were also mentioned by coaches. A
444 breakdown of technological usage noted in phase two by these coaches can be seen in table 3.
445 Participant five makes reference to this ease of technological availability in ES; "Yes I get all your data
446 from the watch that gets uploaded to [Training Software], it's easy for me to assess the sessions and
447 to analyse those metrics but I always emphasize that I really like the [online] comments and the quality
448 feedback that they give". An interplay of hardware, software, and subjective athlete feedback forms
449 a complex feedback loop that permits the coach to review, analyse and communicate with the athlete.

450 However, RC was not always the preferred option for these coaches. ES coaches
451 acknowledged instances where technology and data could not form an adequate replacement for in-
452 person coaching. Participant three suggested that he "often farms out skills (to an external in-person

453 coach) if the athlete needs to develop a specific skill". Participant four suggested a similar approach
454 of "training with a club" to avail of "social learning".

455 In order to facilitate training, endurance coaches used technology and the data it generates
456 to monitor and mark progression in athletes. Coaches used a combination of surveys and scales to
457 collect data coupled with training hardware and software and online communications. Therefore, data
458 was used to observe and monitor training to ensure adaptation and completion. Coaches stated that
459 there could be a lack of accountability in the RC context due to the decreased presence of the coach
460 and that data helped to account for this. While not always adequate to hold athletes accountable, as
461 participant four reflected on a recent encounter with an athlete where the nuance of technology and
462 being a step removed distanced from the athlete meant he sometimes "let them off" with poor
463 training sessions. He references that "one of the biggest things he (the athlete) said to me is you don't
464 hold me to account enough, if I don't manage to make it, you just accept it and just you know move
465 on rather than really questioning and grilling down on me".

466 Table 3 Technology usage by ES Sport Coaches to facilitate training remotely.

Technology Type	Grounded	Predominant Usage
Instant Messaging	14	Quick Communication
Online Survey	3	Initial Data Capture
Phone Call	3	In-Depth Discussion
Social Media	6	Networking
Training Hardware	4	Data Capture from Session
Training Software	18	Data Analysis & Feedback
Video Based Technical	10	Demonstration of Skill
Video Call	8	In-Depth Discussion with Body Language
Voice Notes	3	Communication at "Any Time" & A Recorded Note
Webinar	5	Education

467 *Note.* Grounded refers to frequency in which these technology types were coded in the interview data.

468

469 **Discussion**

470 The aim of this study was to provide a deeper understanding of the ES coach and the remote
471 environment in which they operate. This developed in a bid to examine a subgroup of coaches who
472 have been operating in a remote sense long before COVID-19 forced the rest of the coaching world to
473 do the same. Results are discussed in relation to the unique coaching context of RC particularly in
474 endurance sports; the effectiveness of coaches utilizing RC (through exploration of coaching process,
475 coaching knowledge, and athlete outcomes) and the work-life balance implications of RC.

476 **The RC Context and Coaches Knowledge**

477 RC presents a simple way for athletes to avail of coaching in the ES space. Endurance sport
478 athletes regularly seek out coaches who suit their needs, as opposed to a traditional club environment
479 where athletes have access to coaches that may not fit their individual criteria. This allows the athlete
480 within the RC environment free choice to select a coach that will support their perceived coaching
481 needs. A common aspect of this is that the spatial aspect of coaching moves from a physical to a
482 digital space, placing distance of hundreds of miles or different continents between them. Findings
483 presented here suggest both typical and atypical coach-athlete interactions. This may require a more
484 unique view of the coach-athlete partnership whereby the athlete pays for the service and may at any
485 time leave the coach if the relationship is not working. In their work into coach athlete relationship
486 appraisal in remote contexts, Li et al. (2020) suggests the lack of coaching presence positively affected
487 the athletes by removing the traditional hierarchy of power and transforming the relationship
488 between coach and athlete to one of more equal and diversified communication. While it must be
489 noted that Li et al. (2020) was contextualized in a Chinese Boarding School Environment and not
490 interlinked with the more Western Cultural context of this research, it seems a similar construct of
491 “equality” between coach and athlete exists within RC where one is dependent on the other. To
492 date limited evidence exists if, in fact, the remote or online endurance coach is athlete-centred in their
493 approach or does the distance between athlete and coach coupled with the theme of a “coaching
494 businesses” turn this relationship into a more directive and/or transactional experience for both

495 parties. In the transactional instance the follower (athlete) is given something (training/coaching) by
496 the leader (coach) in exchange for something the leader (coach) wants (Kuhnert & Lewis, 1987). In this
497 case the want may be a successful coaching business and successful coaching outcomes for the
498 athlete. The coach's views presented here from interviews, would suggest the former, i.e., athlete-
499 centred, yet the complex interplay between running a business, security in one's profession and
500 guiding an athlete warrants further study. This specific facet of the RC context highlights levels of
501 intrapersonal knowledge and reflection within the cohort studied, with coaches questioning; "is it
502 really coaching? Well yes of course it is you know, just because you're not stood there with a
503 stopwatch and a clipboard doesn't mean you're not coaching. I'm still interacting a hell of a lot with
504 the guys I coach". Participant three pondered the interpersonal relationships with their athletes and
505 if blind spots existed within RC stating that "sometimes I ponder like well could you do a better job of
506 creating good relationships with people, for example if you were right there with them, but honestly
507 with the number of years I've been doing this I mean I've been with people through births of children
508 and divorces and marriages and so I actually feel like I've developed pretty, surprisingly, good
509 relationships with people even though in many of those cases I've never met the person in person".

510 New emerging technologies continue to force coaches to adapt and alter their processes to
511 increase this unique facet of professional knowledge needed for their role. Endurance coaches used
512 technology to best suit their needs, possessing well-formed opinions about the technological aids they
513 do and do not use. This viewpoint is unique given that the majority of RC research to date exists mainly
514 on the video coaching domain (i.e., coaching via video link) (Bennett, 2020; Glen et al., 2020). ES
515 coaches instead, opted for a blend of data to monitor athlete progression coupled with subjective
516 feedback in order to ensure they were not missing any nuance in the athletes' experiences. They
517 achieved this using various software such as specific endurance coaching platforms, instant messaging
518 and online video conferencing as well as utilizing training hardware to monitor training outcomes
519 while not in the physical or virtual presence of the athlete. This element of being under surveillance
520 for every session or performance related outcome has been shown to be detrimental (Lang, 2010).

521 Positives of this element of surveillance within Bennett et al.'s (2021) work included increased
522 motivation and accountability, yet within the dataset presented here accountability still appeared to
523 be a hurdle. This is perhaps explained by the fact that training is and was always conducted online
524 meaning the change in environment by COVID-19 did not alter these athletes' motivational relations
525 with training.

526 Technology usage was not always easy, ES coaches routinely encountered hurdles in the
527 technology space, such as lack of quality actionable information and reductionist approaches.
528 However, through experience many of the coaches interviewed combined a multitude of technologies
529 in order to gain their desired outcome. When technology did not permit adequate athlete outcomes
530 coaches tended to "farm out" aspects such as technique-based work to a coach who could work in-
531 person with the athlete. Coaches were aware of the limitation's technology can and do have when it
532 comes to physical presence and technique-based coaching and were not against leaning on the
533 expertise of other coaches to facilitate and remove this hurdle.

534 **Athlete Outcomes**

535 The 4 C's (competence, confidence, connection, character/caring) outlined by Côté et al.
536 (2010) were all facets touched on either directly, or indirectly from the coaches who engaged with this
537 study. Through the discussion of their coaching context and knowledge, these coaches provided
538 evidence that would suggest the RC environment necessitates an athlete-centred approach i.e., one
539 in which gain and take ownership of knowledge, development and decision making (Kidman &
540 Lombardo, 2010). This point was also echoed in more recent work by Szedlak, Smith & Callary (2022)
541 where coaches operating in an online environment promoted and supported an athlete-centred
542 approach. However, some of the responses were conflicted by these sentiments, and a philosophical
543 juxtaposition between coaching as a business and effective coaching process emerged. The overall
544 sentiment to increase an athlete's competence in the RC context was to provide support from an
545 athlete-centred perspective similar to traditional coaching environments. There are obvious

546 constraints to developing athlete competence in particular, the technical delivery of specific skills.
547 Given the sample size of this study, it is important to note that this is solely the view of the coach,
548 further study would lend itself to that of the athletes who use RC.

549 **Work Life Balance**

550 The area of work life balance contained inferences to both the positives and negatives that RC
551 produce in this area. As a whole ES coaches could see both the positive and negative aspects of the
552 RC that they engaged in. RC produced a positive effect on work life balance for the ES coach mainly
553 through its flexible working practices. Coaches could live and work from the comfort of their own
554 chosen environment, engage in family duties during typical nine-to-five hours providing them with a
555 sense of freedom and they got to choose and determine their own hours. In the field of remote work
556 this autonomy over your own schedule has been discussed at length (Montreuil & Lippel, 2003; Ter
557 Hoeven & Van Zoonen, 2015). On the opposing end of the work-life balance spectrum the ease of
558 access via technology left these coaches feeling “always on” with no distinct boundaries. Participant
559 two summarised the general consensus of the research cohort stating, “your always on, there’s no
560 time off”. Although these coaches outwardly discussed feelings of pressure and being constantly in
561 service of their athletes the positive aspects of RC, alongside some coaches communicating certain
562 boundaries with athletes allowed them to keep this working practice going. To advance the discussion
563 of burnout and the occurrence of mental ill-health in coaches as a sub-group, further research could
564 be completed (Carson et al., 2019; Norris et al., 2017; Olusoga & Kentta, 2017; Roberts et al., 2019;
565 Thelwell et al., 2010) as it would appear that RC and role overload are closely interlinked within this
566 sample. In the field of remote working this issue has been highlighted extensively with research
567 showing that remote workers experience pressure while engaging in RW to be constantly accessible
568 and ready to respond (Matusik & Mickel, 2011) and find it extremely difficult to switch off (Feltstead
569 & Henseke, 2017). Both themes which appeared common across this sample of remote coaches.

570 Longitudinal studies on coaches working within RC environments may provide further insight into the
571 hurdles faced by RC.

572 **Limitations**

573 This research attempted to capture views of RC coaches who had been working in this
574 environment previous to the outbreak of Covid 19. Coaches in this study were asked about athlete
575 expectations and their experiences of them in their RC role. While due credit must be given to the
576 coaches' interviews, and their experience level, it cannot be taken for granted that their view of
577 athlete expectations aligns with the actual expectations of athletes availing of RC. Therefore, further
578 research would be well served to look at the coach and athlete relationship as a pairing by gaining
579 viewpoints from both parties, in the case of the youth athlete parents and guardians should also be
580 included. From this a clear picture into RC processes and athlete wants and needs in this environment
581 can be drawn. This study would also have benefitted from a higher sample size and a better gender
582 balance to give a more accurate idea of the phenomena highlighted here.

583 **Applied Recommendations**

584 Coaches engaging in RC may be well served to take onboard the viewpoints and practices of
585 coaches who have had experience within the area. There exists a new, ever-changing environment in
586 which online technology both helps and hinders progress. With the myriad of technology available it
587 is easy to become overwhelmed. Effective ES coaches working remotely developed a process whereby
588 only technology that serves a purpose to further athlete outcomes is used, all the while this technology
589 is balanced with quality subjective feedback from the athlete. Establishing boundaries and garnering
590 an expectation of what athletes in RC settings require from you as a coach is also a worthwhile exercise
591 in preserving a positive work-life balance, and better serving positive athlete outcomes. A practical
592 recommendation would be that future coach education modules should aim to ensure they are
593 addressing the gap in knowledge and proficiency for coaches newly utilizing RC.

594 **Conclusion**

595 In summary, ES encompasses a unique milieu of coaches, athletes and broader support
596 networks all working in tandem, from a distance. The unique nature of ES with its venue-less training
597 environment has meant that RC has been commonplace for decades, before COVID-19 forced other
598 coaches to do the same. In this vein ES coaches working remotely may provide the experience and
599 knowledge to help inform and guide practice for those coaches partaking in RC as new emerging
600 technologies and more technologically engaged athletes force us further into this practice of working.
601 The RC coaching process and the relationship that exists between coach and athlete in the RC
602 environment could be seen as simply transactional with training advice as the currency, whether it
603 goes deeper is yet to be ascertained. To be effective in online education Rhim and Han (2020) suggest
604 that decreasing one's distance from the learner, increasing their sense of presence and creating
605 independent learners is crucial to enrich learning experiences. Therefore, RC requires the coach to
606 decrease their physical distance, by finding innovative ways to increase their presence and create
607 independence of the athlete by establishing athlete-centred contexts within the technological space.
608 Technology played an integral role in delivering coaching online, some coaches going so far as to say
609 it could not be done without certain software(s), yet open and transparent subjective feedback
610 seemed to be the one integral part of making the online coaching process work in this sample. Coaches
611 used technology to serve their needs and stimulate a sense of presence for the athlete. This sense of
612 presence and with it an increased ease of access opened communication and dialogue channels.
613 However, there were also negative impacts on the work-life balance of the coach that needed to be
614 managed. Coach development practices are vital for coaches to gain a better understanding of how
615 the needs of an athlete can be met in this space. If the coach engaging in RC is to be effective, then, it
616 is imperative that they understand the context that they are coaching in, use technology to their
617 benefit and finally, aim to set boundaries in respect of the ease of access the RC environment affords
618 between athlete and coach.

619

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793 **Appendix Interview Protocol**

794 **Context**

- 795 1. How long you have been working in endurance sport?
796 2. What Sports are you currently coaching, is that remote, in-person, blended?
797 3. Where does the majority of your coaching take place?

798

799 **Knowledge**

- 800 1. How important are things like knowledge of training methods, rules/regulations etc. to you?
801 2. Do you have any thoughts on the building of relationships in your specific coaching context?
802 3. Do you regularly take part in things such as reflective practice?

803

804 **The Athlete**

- 805 1. Do you aim to make your athlete actively involved your coaching process?
806 a. Can you provide me with an example of when this was the case?
807 b. Is this an active choice (athlete involvement), are there barriers to this?
808 c. Can you expand on your thoughts about the coach-athlete relationship in this area?

809

810 **Coaches Welfare**

- 811 1. Within our initial survey coaches indicated they wished to have more contact with fellow
812 professionals in their domain, what are your thoughts on this?
813 2. Do you feel the demands of your coaching sometimes interfere with family or personal life?