

1 Precipitating or prohibiting factor: Coaches' perceptions of their role and actions in anti-doping

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12 **Abstract**

13 Coaches are frequently cited as potentially precipitating or preventing athletes' engagement in doping.
14 However, little is known about coaches' perspectives. Therefore, the purpose of this study was to
15 examine coaches' perceptions of their role and actions in athletes' anti-doping behaviour. Twenty-three
16 coaches (M=17, F =6) working with performance athletes in Scotland participated in semi-structured
17 interviews where topics related to doping and anti-doping were discussed. Thematic analysis, guided by
18 Schön's [1] role frame and reflective conversation concepts, was used to develop themes. Analysis led to
19 the development of four internal role frame themes: clean sport value, approach to preparation and
20 performance, responsibility to athletes, and knowledge; and five boundary role frame themes:
21 Scottish/British sporting culture, potential for benefit, prevalence of doping and testing, clarity of
22 responsibilities and consequences, and beyond coaches' control. The coaches' role frame supported an
23 anti-doping stance, however, it also presented a risk and was insufficient to ensure action. Analysis of
24 coaches' reflective conversations revealed the issues set by the coaches differed and influenced
25 subsequent actions and evaluations.

26

27 **Keywords**

28 Role frame, performance sport, social influence, performance-enhancing substances, reflective
29 conversation

30

31 **Introduction**

32 Coaches are frequently identified as a potential precipitating factor in athlete doping [2, 3, 4, 5,
33 6, 7, 8]. In their study of the experiences of five elite athletes who had admitted to doping, Kirby [5]
34 found a lack of engagement around doping issues by coaches was a factor that contributed to athletes'
35 decision to dope. Lentillon-Kaestner and Carstair's [7] analysis of the team and sport culture
36 experienced by young elite cyclists also found that significant others such as coaches, more experienced
37 cyclists, family and friends, and the wider world of professional cycling contributed to either a protective
38 or risky social context with regard to doping. The beliefs, knowledge, and engagement with doping
39 issues by coaches, support personnel, managers, and governing bodies play a critical role in defining
40 acceptable behaviour within a sport [8]. Coaches as a group, however, are underrepresented in
41 empirical research [3, 4] and coaches' awareness and role in athletes' anti-doping is not well
42 understood.

43 In addition to being viewed as a precipitating factor, coaches also continue to be identified as
44 important agents in doping prevention [2, 3, 5, 9, 10]. Kirby [5] found that, for one of the athletes in
45 their study who had admitted to doping, a coach had been a positive role model and acted as a
46 deterrent for many years. However, the athlete succumbed to the pressures to dope, when the athlete
47 changed training groups and the positive influence of the coach was no longer present. Research with
48 Scottish elite athletes [2, 11] found that athletes' perceptions of a coach-created mastery motivational
49 climate (i.e., emphasis on effort, learning and personal development) were associated with attitudes
50 more conducive to anti-doping and that they were at 'low-risk' of doping [2]. The reasons for this were
51 not entirely clear, as experience of anti-doping education was quite limited [11]. The Scottish sports
52 community is relatively small, so peer and family expectations were perceived to be deterrence factors.
53 Respondents feared the stigma associated with doping. However, it is also the case that many of the
54 athletes had alternative career options so arguably the obsession with sporting success was not so high

55 that the benefits of doping outweighed the risks and costs. It would also seem that part of the athletes'
56 broader education underpinned positive attitudes to sport, health and fair play. Nonetheless, it was
57 apparent that the role of close personal relationships, including with their coach, was highly influential
58 [11]. Despite the recognition that coaches have the potential to act as a strong deterrent against doping,
59 little is known about coaches' perceptions of doping as an issue in sport, or their roles and actions with
60 regard to anti-doping.

61 A review of research in the area identified only four studies that examined coaches' perspectives
62 [4]. It revealed that coaches were faced with doping related issues in their work, believed doping could
63 lead to improved performance but was likely to have negative health consequences, and agreed that
64 they had a role to play in doping prevention. A survey of the attitudes and knowledge of anti-doping
65 rules of Australian athlete support personnel, which included coaches, found that for this group, at least,
66 there was variation in knowledge, uncertainty around anti-doping practices, and anti-doping was given a
67 relatively low priority [12]. Whilst this study provides some insight, further research is needed to better
68 understand coaches' perspectives on their role and actions as either a precipitating factor or deterrent
69 to doping.

70 Given the lack of research in the area involving coaches, it is useful to turn to general coaching
71 research that has examined coaches' roles, philosophies, and the connection with their coaching
72 behaviours. This research demonstrates that coaches', particularly experienced coaches, perception of
73 their coaching role and coaching philosophy guides their coaching behaviours and the issues they
74 identify and act upon [13, 14, 15, 16]. Furthermore, experts in coaching, teaching, and instructing
75 regularly reflect upon their beliefs and coaching philosophy as a means of monitoring their professional
76 practices [17]. Therefore, examining coaches' awareness and perceptions of their role will provide
77 valuable insight into why coaches do, or do not, act with regards to anti-doping.

78 An approach that has been employed successfully to examine coaches' perceptions of their role
79 and actions is Schön's [1] work relating to the reflective practitioner (e.g., [14, 15]). Central to this work
80 is the concept of role frames. According to Schön [1], a role frame acts as a perceptual filter that
81 influences how practitioners define their professional responsibilities. Role frames are considered to be
82 relatively stable over time and influence practitioners' reflection and ultimately actions [1]. The way
83 practitioners frame their role determines what information is most salient to them, which issues are
84 identified as 'problematic', and what strategies are developed to address them. The influence of role
85 frames is thought to be because only those issues that are consistent with role frame components are
86 addressed.

87 In their work examining youth sport coaches' learning through reflection, Gilbert and Trudel [14]
88 found that a coach's role frame influenced why certain coaching situations were considered an issue
89 worthy of reflection and what strategies were developed. For example, they found that a soccer coach's
90 role frame components of equity, personal growth and development and winning led to substitutions
91 being identified as an issue which in turn shaped how much playing time the players received.

92 Gilbert and Trudel [15] described boundary and internal role frame components. Boundary
93 components were 'situational factors that influence an individual's approach to coaching' (p. 29). In
94 contrast, internal role frame components were the personal beliefs about coaching which were
95 influenced by the boundary components. Examining both components of the role frame is useful
96 because it recognises and enables examination of the internal as well as contextual nature of coaching in
97 relation to issues such as doping and anti-doping. The traditions, beliefs, and values within a sport in a
98 given country, what is considered acceptable practice (or not), may be important boundary components
99 that influence how coaches work with athletes and in particular how they engage with anti-doping.
100 Research with Scottish athletes [2, 11] suggests that they perceive British sports to be predominantly
101 anti-doping. A specific factor of Scottish sport culture that contributed to the anti-doping stance was the

102 close-knit nature of the sports community which led to high risks of stigmatisation should an athlete
103 receive a positive test. Therefore, examining how coaches from one country frame their roles in relation
104 to anti-doping will be useful to not only better understand the extent to which doping is considered
105 problematic and how it is addressed, but also to unpack the relative importance of the cultural context
106 in anti-doping.

107 Schön's [1] research with model practitioners in a range of professions (architecture,
108 engineering, management, psychotherapy, town planning) has also demonstrated that, in response to
109 dilemmas they faced in their practice, practitioners engaged in what he termed a 'reflective
110 conversation'. Gilbert & Trudel's [14] research with youth sport coaches demonstrated that coaches'
111 'reflective conversation' involved a repeating spiral of appreciation (issue setting), strategy generation
112 (sources to develop strategy), experimentation (actions implementing the strategy), and evaluation
113 (review of effectiveness).

114 Applying Schön's [1] role frame, it is possible to propose that an anti-doping role frame, where
115 coaches have strong beliefs in favour of drug-free sport (internal role frame component) and work
116 within a strong culture of anti-doping (boundary role frame component) will lead to greater awareness
117 of doping as a potential issue in sport and an appreciation that coaches have a role to play in anti-
118 doping. Furthermore, applying Schön's [1] reflective conversation, it is possible to propose that, coaches
119 with an 'anti-doping role frame' are more likely to identify doping as a problem, view anti-doping action
120 as important, act to intervene and prohibit, and therefore reduce the likelihood of athlete doping
121 behaviour. In contrast, if anti-doping is not part of coaches' role frame, they are less likely to view
122 doping as an issue, may assign anti-doping activities a low priority and may unknowingly precipitate
123 doping behaviour by their 'in-action'.

124 In summary, coaches have been identified as both precipitating and prohibiting athletes' doping
125 behaviour. However, little is known about coaches' perspectives on their role and actions in anti-doping.

126 Exploring coaches' role frame will provide greater understanding of coaches' beliefs and the influence of
127 contextual factors on them. Furthermore, this study will provide valuable insight into coaches'
128 awareness of doping, issue setting, and actions in relation to anti-doping. By developing a better
129 understanding of coaches' perspectives, researchers and practitioners will be better placed to promote
130 and facilitate a prohibiting rather than precipitating role for coaches.

131 **Methods**

132 *Research context*

133 Scotland has a strong sporting tradition having been the birthplace of a number of international
134 sports, such as golf and tennis, as well as a wide range of sports rooted in Scottish culture, such
135 as shinty and curling. Scottish coaches do their work in a small, proud, modern country with a
136 range of local regional, national and international influences. The coaches are an integral part
137 of supporting sporting culture. At the same time, sport in small communities can be subject to
138 intensive scrutiny and surveillance for upholding cultural standards. In terms of performance
139 sport, Scottish athletes and coaches compete on the world stage both as part of the network of
140 countries that make up Great Britain and as a stand-alone nation with independent
141 representation at many events. For example, Scottish athletes represent Great Britain (GB) at
142 the Olympic Games, but represent Scotland at other major events, such as the Commonwealth
143 Games and the Rugby and Football World Cups. Britishness is a part of Scottish identity and,
144 although its precise nature is contested, it also plays an important part in determining the
145 nature and style of sporting and cultural life. In sport this is often because so much of
146 international sport is based on British teams that draw athletes from across England, Wales,
147 Northern Ireland and Scotland. This is likely to bring another layer of influence on the sporting
148 norms of Scottish coaches. It also leads to a number of complexities within performance sport

149 in the country which include approaches to anti-doping. For example, some sports have a
150 Scottish governing body, while others come under the remit of the UK body. Anti-doping is
151 carried out in partnership with UK Anti-Doping, with English sport being a significantly larger
152 sports environment. It is not always clear how funding for education and testing is allocated.
153 However, it would seem that the Glasgow 2014 Commonwealth Games led to more support for
154 anti-doping, whereas the 2016 Rio Olympics has diverted much of UK Anti-Doping's attention
155 on to high profile Olympic sports.

156 *Participants*

157 Performance coaches in Scotland (N=23) participated in the study (male n=17; female n=6)
158 (individual sports n=19; team sports n=4). Sports represented included archery, athletics, canoeing,
159 curling, cycling, figure skating, football, golf, gymnastics, hockey, judo, mountain biking, rowing, rugby
160 union, shooting, squash, swimming, taekwondo, and wrestling. They ranged in age from 30 to 59 years
161 (M=42.9, SD=8.71). Their coaching experience ranged from 5 to 36 years (M=18.85, SD=9.83). To ensure
162 coaches had experience working with athletes subject to anti-doping policy, coaches invited to
163 participate met the following selection criteria: a) currently or recently (last three years) working at the
164 national or international level in Scotland and; b) minimum of three years coaching performance
165 athletes.

166 The focus on Scottish coaches provided valuable insight into anti-doping beliefs and practices
167 within a devolved performance sport system. As set out above, performance coaches in Scotland not
168 only contribute to the Scottish sport system, but are also part of the GB system through the devolved
169 network of home countries. In order for GB to have a holistic approach to anti-doping, all aspects of the
170 network need to be committed to GB policies and thus this focus is important in understanding the
171 approach to anti-doping in a significant part of performance sport within GB.

172 *Procedure*

173 Access to coaches was gained through the investigators' established coaching networks and
174 national governing bodies in Scotland. Following approval to conduct the study from the institution's
175 research ethics committee, initial contact was made via email with potential coaches. The email
176 explained the objectives of the research, that responses would remain confidential and anonymous, and
177 invited coaches to participate in the study. Forty-five coaches were contacted, of which, twenty-three
178 agreed to participate in the study. Interviews were conducted at a time and place convenient for the
179 coach. They lasted between 25 and 90 minutes and were recorded. Interviews were transcribed
180 verbatim and coaches had the opportunity to review the transcriptions for accuracy.

181 *Data Collection*

182 Semi-structured interviews were employed to provide in-depth, rich, thick description of the
183 coaches' perspectives on doping and anti-doping [18, 19]. The interviews were conversational in nature
184 to allow rapport to be developed between the interviewer and coach and support the expression of the
185 coach's point of view [18]. To further encourage coaches to share their views, questions were
186 deliberately open and broad initially, with follow-up probes to elicit more detail about the coaches'
187 responses [18].

188 The interview guide was developed through a review of the doping and anti-doping literature
189 and with a focus on Schön's [1] role frame and reflective conversation concepts. The interview focused
190 discussion on topics such as how coaches' work with athletes (including beliefs and values), awareness
191 of doping prevalence, perceptions of their anti-doping role and actions, and evaluation of anti-doping
192 activities. As little is known about coaches' perspectives and to allow for examination of commonality
193 and uniqueness in coaches' views, all coaches were asked to discuss the same topics.

194 To ensure confidentiality and anonymity each coach was given a code (e.g., C1, C2, C3). When
195 reporting direct quotes, the coaches' sports were not identified. This was important to protect the

196 identity of the coaches because due to their roles (e.g., national coach) they might be otherwise easily
197 identifiable.

198 *Data Analysis*

199 The 280 pages of single-spaced transcribed interviews were coded and thematically organised
200 using the qualitative research software system NVivo 10 [20]. In line with thematic analysis procedures
201 [21] each author read and re-read the interview transcripts multiple times to identify meaningful units.
202 The concepts of role frame and reflective conversation provided a framework for axial coding. However,
203 as coaches' perspectives are relatively unexplored we also sought to remain open to new themes. We
204 discussed the themes, exploring similarities and redundancies and clarifying the meaning of the coaches'
205 responses.

206 Through the initial data coding process 1714 meaningful units were identified. These were then
207 further organised using Schön's [1] concepts relating to role frame: boundary and internal components;
208 and reflective conversation: issue setting, strategy generation, experimentation, and evaluation.
209 Meaningful units were subsequently organised into 47 lower order and nine higher order themes
210 reflecting the coaches' role frame and 22 lower order and four higher order themes representing the
211 reflective conversations of coaches.

212 In the following section the themes associated with the coaches' role frames and reflective
213 conversations are described separately along with illustrative quotations. In addition, through the
214 analysis it became clear that coaches' reflective conversations could be further organised into those
215 coaches who did and those who did not perceive doping as a problem in their sport. In the results
216 section these reflective conversations are described separately.

217 **Results: Coaches' role frames**

218 The coaches' role frames included both personal values and beliefs (internal components) and
219 situational factors (boundary components) that influenced the coaches' perceptions of their role in anti-
220 doping. The components and the constituent themes are described and illustrative quotes provided.

221 *Internal components*

222 There were four internal role frame components that influenced coaches' engagement with
223 doping and anti-doping issues. These were: 'clean' sport value; approach to preparation and
224 performance; responsibility to athletes; and knowledge. The coaches recognised the potential they had
225 to influence athletes and therefore the importance of their own values and beliefs (internal role frame).

226 C1 commented,

227 ...it's the coach's point of view – if they're orientated to try and get success through their athletes
228 and if they're willing to do it at any cost then they're in that position where they can either exploit
229 them or influence them because they're seen as... an influential person within their life.

230 '*Clean' Sport Value.* The coaches expressed a clear belief in drug-free sport, 'I think there are
231 many things that you should portray as a coach and a stance against doping should be one of them' (C6).
232 C3 commented, 'it's [doping] not got a place within our belief system.' This stance was part of a wider set
233 of values connected to how they approached preparation and performance with their athletes.

234 *Approach to Preparation and Performance.* An anti-doping stance was evident in the values
235 coaches' conveyed and the culture they worked to create. They emphasised a focus on process rather
236 than outcome, hard work, that there were no short cuts to success, staying within the rules, supporting
237 athletes rather than placing pressure on them, and prioritising athletes' well-being. The following
238 comments illustrate the coaches' approach:

239 ...what I say with my guys will be stay within the rules ...it's about the quality of the work they
240 put in at training for me ... if you work hard and you put the quality in and you look after
241 yourself, sleep well, hydrate well... then...you get what you get. (C7).

242 ...you got a medal, if you cheated, really you cheated yourself. So you either do it with what
243 you can, your God's given talent and your hard work and skills, or you don't do it at all. (C15)

244 *Responsibility to Athletes.* The coaches' approach to working with athletes also led to a sense of
245 responsibility to the athletes. For example, C20 commented, 'I absolutely see it as part of my role... it's
246 certainly not my role to absolve myself of responsibility.' In some cases, the coaches recognised that
247 they would be the first person the athlete would look to for advice and they should be able to provide
248 that advice. C4 commented, '...how will an athlete know if we do not give this information... I think we are
249 the first people because we are close to the athlete.' However, this responsibility did not sit as comfortably
250 with other coaches who questioned their own knowledge, 'whether I'm the expert that they come to for
251 advice on what to take or not... it probably should be someone else' (C17).

252 *Knowledge.* Most coaches had a strong understanding of the drug testing and control
253 procedures, and were aware of the risks of inadvertent doping associated with medications. Staying up
254 to date with regulations and procedures, however, was challenging and time consuming. Some were
255 concerned about their lack of knowledge, particularly in relation to supplements, 'I don't have the
256 knowledge, background to understand half the things they're talking about anyway. It's not my area of
257 expertise' (C19). Others openly expressed a lack of knowledge relating to doping and were less
258 concerned. For example C22 identified limited knowledge about recognising doping in athletes
259 commenting 'to be fair I wouldn't know how to recognise it' (C22).

260 The clean sport value, approach to preparation and performance, and responsibility to athletes
261 themes indicated a strong anti-doping coaching role frame was established. Gaps in coaches'
262 knowledge, and in some cases limited concern, however, presented a potential challenge to the
263 effectiveness of this role frame for guiding identification and action in relation to doping and anti-
264 doping.

265 *Boundary components*

266 There were five situational factors relating to the wider sporting context that influenced the
267 coaches' role in relation to doping prevention. These were: Scottish and British sporting culture;
268 potential for benefit; prevalence of doping and testing; clarity of responsibilities and consequences; and
269 beyond coaches' control.

270 *Scottish & British Sporting Culture.* A strong anti-doping culture within Scottish national
271 programmes and British sport supported coaches' efforts to foster an anti-doping environment:

272 What Britain does is quite strong on this. The rest of the world is not quite at the same level...
273 the regular checks... I think Britain is much stricter... So I think it's more of a cultural thing
274 more than anything else (C15)

275 Features of the Scottish sporting culture that served as a doping deterrent included a belief that
276 doping was cheating, funding structures, zero tolerance policy, and social stigma associated with
277 cheating. C16 summarised his sport's culture:

278 ...the fact that money doesn't drive the sport is probably the biggest reason why drugs are not
279 a problem... [my sport] world is small enough that if an athlete was known to be doping they
280 would be hounded out by their peers... if you're going to get caught you're going to be
281 ostracised from the sport then that's maybe too high a price for people to pay... the culture that
282 surrounds the sport is very much a community... the strength of that community would be a
283 powerful disincentive.

284 *Potential for Benefit.* Only a small number of coaches demonstrated a clear understanding of
285 the potential benefits of doping to performance. In contrast, most coaches believed that, in their sport,
286 the potential performance gains from doping were limited. For some this was related to limited
287 knowledge and perhaps stereotypical views about doping such as, 'you don't really need to be big bulky
288 muscle-bound' (C5). Coaches, however, also suggested that the demands of their sport were such that

289 the potential benefits were limited, 'EPO and blood transfusions, they have such a small impact on an
290 action sport... the potential gains... would be so minor' (C6).

291 *Prevalence of Doping and Testing.* Many coaches were able to provide examples of doping by
292 athletes from other countries and other sports. They, however, identified relatively few cases in the UK
293 and especially in Scotland, '...we reckon it must go on, but not in Scotland 'I've been involved with [my
294 sport] for twenty years and I've not seen it' (C19). Coaches' awareness of doping was influenced by the
295 international culture, history, and publicised incidences within their sport. In addition, a lack of regular
296 doping control measures in their sport except at major events further reinforced the coaches' view that
297 doping was not a prominent issue for them, 'they [athletes] were amazed at how few out of competition
298 test there are' (C6).

299 *Clarity of Responsibilities and Consequences.* For a number of coaches, the role of overseeing
300 doping and anti-doping was assigned to medical staff or managers. However, this arrangement was
301 often by default rather than a formalised arrangement and there was a lack of clarity around where
302 responsibility lay, 'I think there are a lot of grey areas still – who was responsible for what' (C8). Only two
303 coaches were quite clear that there were consequences for coaches if athletes were caught doping,
304 '...the buck stops here. If someone fails their test it's going to be my neck on the line' (C3). Many of the
305 coaches were unsure of the consequences for them which identifies a further gap in coaches'
306 knowledge, 'I don't remember reading anything like that in my contract' (C19).

307 *Beyond Coaches' Control.* Some coaches recognised the limitation of their influence. Identifying
308 that athletes can spend a significant amount of time outside the national programme environment
309 where coaches have much less influence and others might influence athletes. Furthermore, the choices
310 and responsibility ultimately belonged with the athletes, '...we are actually very, very dependent on the
311 athletes making the right choices because we don't have that much direct control... over what they're
312 doing' (C11).

313 The national sporting culture boundary component supports the coaches' internal role frame
314 components which provide for a strong anti-doping stance. The remaining boundary components also
315 generally provided support for the coaches' role as one of prohibiting doping. However, perceptions of
316 limited potential for benefit and low prevalence of doping and testing contributed to a perception that
317 athletes were 'safe' from doping. Furthermore, limited knowledge of consequences for coaches and lack of
318 clarity over responsibility for anti-doping measures also present a risk for, perhaps not systematic, but
319 possibly inadvertent rule violation.

320 **Results: Reflective conversations**

321 It was clear from the role frame analysis that there was a general awareness of a wider issue of
322 doping in sport. Analysis of the reflective conversations, however, revealed that awareness was not the
323 same as problem setting. Although not exclusive, two relatively clear groups of coaches were identified
324 (doping is a problem in their sport and doping is not a problem). Their anti-doping reflective
325 conversations are described separately. The four themes of issue appreciation, strategy generation,
326 action, evaluation are used along with illustrative quotations to analyse the reflective conversations.

327 Doping is recognised as a problem in their sport

328 Six coaches clearly identified doping as a problem in their sport internationally. Sports included
329 athletics, cycling, squash, and swimming.

330 *Issue Appreciation.* Although none of the coaches suggested doping was a problem in their sport
331 in Scotland, they identified that internationally their sports had a history of doping. C11 stated that '[my
332 sport] and doping go together hand in hand, we've got a pretty bad reputation.' In most cases these
333 coaches expressed a belief that doping was more of a problem in the past than in the present. C7
334 commented that he 'was criticised quite a lot in the Olympics about how poor the [athletes'] performance
335 was... they were saying that... the coaches aren't doing a very good job [because of the poor
336 performances] but for me, I think that, the event is a lot cleaner now.' A second related issue, inadvertent

337 doping, was also clearly identified. Coaches recognised that inadvertent (unintentional, non-systematic)
338 doping, through medication and supplements containing banned substances by design or
339 contamination, was a potential problem they needed to deal with. C21 commented, 'it's quite a
340 dangerous area in terms of when it's a supplement and whether it's a banned substance...' and '...if the
341 doctor says, 'Take this,' and they forget to look at it. Then it's... quite easy really to take the wrong thing.'
342 The clear identification of doping as an issue and inadvertent doping as a secondary issue was an
343 important first step in the reflective conversation because it triggered subsequent strategy generation,
344 action, and to a lesser extent evaluation.

345 *Strategy Generation.* Seeking ways to address the identified issues was consistent with
346 the coaches' anti-doping role frame in that anti-doping was an integrated part of their
347 programmes and approach to working with athletes. C10 commented, 'It's an integral part of
348 things as opposed to being something that's just serviced.' A common strategy these coaches
349 reported was to utilise the support available from experts such as medical staff, sport scientists,
350 and anti-doping officials to assist with education and efforts to 'monitor and control' what
351 athletes were doing. C2 commented 'we take advice on supplements... the people at the institute
352 [National Institute for Sport] won't let anyone take anything... that hasn't gone through the
353 rigorous tests.' Other strategies came from experiences of anti-doping activities as an athlete or
354 coach and evaluation of their effectiveness. Coaches' formal education was not identified as a
355 source of strategy generation.

356 *Action.* The coaches were proactive in their anti-doping actions which were integrated into their
357 everyday activities of facilitating and monitoring athletes' programmes. Activities typical of these
358 coaches included a detailed education programme for athletes with presentations, scenarios, mock
359 testing using an official UK doping control officer, also researching the benefits and weaknesses of
360 supplements, using the official anti-doping website, checking what athletes are putting into their bodies,

361 instilling values of quality work and staying within the rules. For example, C21 commented, '[Sport
362 Governing Body] is quite good at educating their athletes.' Furthermore, C7 commented:

363 we've discussed creatine and things like that and we go through the same process – checking the
364 samples and the batch and all that kind of stuff and looking at the results of it... it could be
365 placebo... I raise their awareness, educate them... I'm pretty strict with the guys that there is no
366 tolerance... you need to know what you are putting into your body.

367 *Evaluation.* Although not formally evaluating their anti-doping actions, the coaches believed that
368 the actions relating to anti-doping were effective. Having experts delivering workshops and including
369 practical experiences as part of anti-doping education were valued. C12 commented, 'I think the more
370 practical you can make it, the better... the run-throughs with the anti-doping staff were pretty good.
371 They gave the athletes and coaches a real picture of the process.' Coaches' evaluations, albeit subjective,
372 influenced future anti-doping activities. For example C7 explained that 'in the preparation camp, we've
373 had... a mock testing going on... that's really effective and so we've done something similar.' Only one
374 coach took a more critical stance on the issue commenting that 'it's just education about testing and
375 what to expect. It's not really education on why not to take drugs or anything like that' (C21).

376 Doping is not a problem in their sport and anti-doping has a low priority

377 *Issue Appreciation and Strategy Generation.* For the majority of the coaches (N=17) doping was
378 not considered to be a problem in their sport internationally and as a result anti-doping had a low
379 priority. The comment of C19 was typical for these coaches 'it's not an issue... it's well down the list... if
380 it became an issue then it becomes a priority.' The limited appreciation of doping as an issue also
381 influenced the detail in the coaches' strategy generation, actions, and evaluation. C22 commented, 'we
382 don't speak about it a lot... just expect that they don't take anything.' A common strategy was to leave
383 actions to the experts such as an anti-doping officer (if one existed in the sport) or a doctor. C14
384 commented, 'we have a doctor that is actually one of the athletes... she takes ownership... one less thing

385 for me to worry about.’ Education of coaches could be used to assist coaches with strategy generation,
386 however, many coaches commented that they had not received any formal anti-doping education and
387 their own education was not a priority. C6 commented, ‘me, as a coach, I’ve never really had any
388 education... but I don’t think it’s an urgent thing.’

389 All these coaches, however, did identify other doping-related issues, particularly inadvertent
390 doping through medication, supplements, and recreational drugs use. Related to this concern was the
391 recognition by some coaches (N=9) that anti-doping control procedures were now part of high
392 performance sport and therefore an issue that had to be dealt with. C1 commented ‘it’s been
393 established now as the way of life for a professional [sports person] because you get drugs tested and
394 that can happen at any time or any place so we deal with it.’ Generally, there was little concern over
395 systematic doping, rather the coaches were concerned that athletes might ‘get caught’ as a result of
396 having done something that unintentionally led to banned substances being present in their bodies.

397 The coaches’ appreciation of these doping-related issues (control procedures and inadvertent
398 doping) lead to generation of strategies connected to dealing with these issues rather doping per se.
399 Several coaches admitted their approach was not particularly systematic and more reactive to situations
400 where the likelihood of testing increased (e.g., proximity of a significant competition), or if inadvertent
401 doping became prominent (e.g., travelling, taking medication for illness). C9 commented that he was ‘...a
402 bit more of reacting to [it] a little bit rather than being proactive.’ C13 described the approach as ‘a bit
403 ad hoc.’ Two coaches, did however, describe more systematic approaches to address the issue including
404 discussions with other coaches or staff about ‘the reasonable checks and balances that we should be
405 putting in place [and] how we could fit that into the programme’ (C3). For one coach this was a result of
406 awareness that there were consequences for coaches if an athlete failed a test.

407 *Action.* Consistent with the issues identified, most of the coaches’ actions focused on raising
408 athletes’ awareness of doping control procedures and the risks of inadvertent use through medications.

409 C9 explained that ‘we do some stuff, more on the procedures on what would happen, more on just
410 awareness of, you know, you can’t just go and take something without actually checking that it’s ok.’
411 Informal conversations were commonly used, with coaches preferring to keep the topic ‘low key’. C5
412 didn’t ‘want folk to think that there’s an oppressive regime, you know, you mustn’t take this, you mustn’t
413 take that, but we generally try and hint.’

414 *Evaluation.* As a result of the more reactive, less systematic approach adopted, there was only
415 limited evaluation of the efficacy of actions and little evidence that evaluation fed into future anti-
416 doping plans. C17 commented, ‘I might hear, ‘Oh, it was good,’ or, ‘that was a waste of time.’ But that’s
417 probably about it to be honest.’ Those with experience of athletes’ formal anti-doping activities felt they
418 were effective, particularly the interactive workshops, national initiatives (e.g., 100% Me), anti-doping
419 websites, and the use of up to date real life stories and examples. Several coaches also identified
420 challenges such as keeping athletes engaged, especially when repeating workshops during an athlete’s
421 career. C5 commented, ‘you can see them, they’re bored because they’ve heard it all before.’ Questions
422 were raised about the value of written forms of information, ‘it’s in the handbook but I would think that
423 most people don’t actually read it’ (C23). Despite some concerns over effectiveness there was little
424 evidence of changes in the strategies or actions of coaches.

425 **Discussion**

426 The purpose of this study was to examine coaches’ perceptions of their role and actions in
427 athletes’ anti-doping. Research examining coaches’ perspectives on doping and anti-doping is scarce [4],
428 therefore this research provides a significant contribution to doping and anti-doping research. By
429 employing Schön’s [1] concept of role frame new insight into coaches’ awareness of doping, beliefs
430 about their role in anti-doping, and their perspectives on the situational factors that influence the
431 coaches’ role in anti-doping has been provided. The use of the reflective conversation [1] has revealed
432 the issues coaches identify in relation to doping and anti-doping, specifically the extent to which doping

433 is considered a problem and also the issues of doping control procedures and inadvertent doping. The
434 subsequent reflective conversations revealed the extent to which coaches are proactive in planning,
435 acting and evaluating anti-doping activities.

436 Based on the findings it is clear that the beliefs of coaches in this study (internal role frame)
437 about clean sport are an important foundation for anti-doping. The findings are consistent with the
438 limited research available on coaches [4, 12]. For most of the coaches' a belief in 'clean' sport was part
439 of a broader coaching and programme philosophy. Anti-doping was an implicit part of the immediate
440 social environment they worked to create with their athletes. They emphasised that the way for
441 athletes' to achieve success was through hard work and challenging oneself rather than taking shortcuts
442 (i.e., doping).

443 The coaches' beliefs about how sport should be prepared for and 'played' have much in
444 common with the humanistic model of coaching [22, 23]. This approach to coaching is athlete-centred. It
445 focuses on fostering athletes' self-awareness, growth and development. The coach is a facilitator who
446 encourages and supports athletes rather than controlling them. The humanistic approach to coaching is
447 also reinforced by the perceptions of Scottish athletes who reported that their coaches' created a
448 mastery motivational climate, which was, in turn, associated with stronger anti-doping attitudes [2, 11].
449 Furthermore, this research also indicated a low prevalence of a 'win at all costs' mentality towards
450 performance. This is perhaps as a result of athletes having alternative career options and the influence
451 of their coaches' approach to preparation and performance [2, 11].

452 Recognising the complex, dynamic, and contextualised nature of coaching [23], it was important
453 to consider not only the internal role frame components but also the situational factors (boundary role
454 frame components) that influence coaches [15]. The boundary role frame components generally
455 provided a strong anti-doping foundation but they also presented risk. For example, consistent with
456 previous research with Scottish athletes [11], coaches' reported an anti-doping culture within Scottish

457 and British sport. Dimeo [11] noted that ‘Scotland appears to pride itself in its anti-doping ethos’ (p. 23).
458 This culture appears to also influence coaches.

459 In contrast, however, perceptions of athletes being ‘safe’ from doping may place coaches and
460 athletes at risk through inattention and gaps in knowledge. Potentially negative consequences for
461 coaches, such as sanctions, as a result of athletes being caught doping were not widely identified nor did
462 they appear to act as a significant deterrent. This finding is consistent with Mazanov’s [12] finding with
463 Australian athlete support personnel. Together, this research suggests that coaches are at risk of
464 inadvertent rule violation and a lack of compliance with obligations.

465 Coaches recognised that they are just one of the myriad of contextual factors that may influence
466 athletes’ attitudes and behaviours and that their influence on athletes is limited to the local ‘culture’
467 they are able to create. Research examining athletes’ perspective has identified the significance of both
468 the immediate and wider social environment in relation to doping attitudes and behaviours [7, 8, 11,
469 25]. Although the coach continues to be an influential figure in the immediate sport environment, the
470 influence of the wider global sport environment on coaches and athletes should be examined further.

471 The anti-doping role frame of the coaches in the current study, whilst important, was not
472 sufficient to ensure action. This may have been because the boundary components also contributed, in
473 some cases, to complacency and anti-doping being assigned a low priority. It may also be due to issue
474 setting, an important first step in the reflective conversation [14]. Issues identified as problematic
475 depend on the information deemed salient and the way coaches’ frame their role [1]. When the
476 coaches’ strong anti-doping role frame included awareness of doping as a problem in their sport
477 internationally, doping was identified as a clear problem and the reflective conversation components of
478 strategies, actions, and, to some extent, evaluation were evident. This finding is consistent with research
479 examining the practices of model practitioners in a range of disciplines [1] and youth sport coaches [14].
480 The coaches’ proactive engagement and specific examples of coaches’ actions has not been

481 documented previously. It provides insights into 'good anti-doping practice' that could be useful for
482 practitioners. It also identifies areas where further support may be beneficial such as how to evaluate
483 the effectiveness of anti-doping actions.

484 All coaches also identified and acted on issues, not related to systematic doping, but rather
485 focused on dealing with doping control procedures and avoiding inadvertent doping. Therefore, doping-
486 related issues were 'set' but they generated different reflective conversations. Identifying and acting on
487 these related issues may be explained only in part by the coaches' anti-doping role frame. Perhaps more
488 salient were the role frame components that reflected a sense of responsibility to the athletes and
489 awareness of a wider international sporting landscape where doping control measures are considered
490 normal. For these issues, the coaches' reflective conversations were more instrumental, focused on
491 negotiating this sporting landscape rather than combatting systematic doping per se. The limited
492 engagement of these coaches compares with others' findings [5, 26]. Furthermore, only one coach
493 sought to query the situation of the international sport landscape by questioning why athlete education
494 did not address the 'why athletes should not use performance enhancing substances' question. The
495 uncritical acceptance of the nature of international sport could be attributed to the belief that, for many
496 coaches and sports, systematic doping is not a problem and therefore little time is given to considering
497 and acting on the problem. In comparison, however, control procedures generate associated issues that
498 must be dealt with.

499 *Limitations and Future directions*

500 Whilst no research is without limitations, it is important to recognise that the coaches who
501 participated in this study volunteered. When dealing with value-laden topics of a sensitive nature such
502 as doping it is reasonable to consider that those who volunteer either hold or will convey a view that
503 reflects the socially desirable answer. In this case an anti-doping stance. The fact that coaches were

504 willing to discuss the topic and happy to disclose, in some cases, limited knowledge and/or involvement
505 in doping prevention suggests the coaches were providing a 'true' account of their beliefs and actions.

506 Consistent with research examining experienced coaches' perceptions of their role and coaching
507 philosophy [13, 14, 15, 16], the coaches in the current study were able to provide detailed accounts of
508 their approaches to working with performance athletes and influential situational factors. This provided
509 a valuable authentic account of how the coaches framed their role and their perceptual filters relevant
510 to doping and anti-doping. For those coaches who acknowledged doping as a problem internationally in
511 their sport, this depth of account was also evident in their reflective conversations, particularly their
512 description of anti-doping actions. In contrast, however, detailed strategy generation and evaluation of
513 effectiveness were less well articulated by most coaches. This appeared to be largely due to a reality of
514 limited engagement with these components of the reflective conversation rather than an inability to
515 articulate what they did. Although a relatively large sample for a qualitative study, only 23 coaches were
516 interviewed. Therefore, our findings are representative of this group and it would be inappropriate to
517 extrapolate our findings to all performance coaches. Future research should seek to understand how
518 coaches in other countries and coaches who support doping activity frame their role and engage in
519 problem setting and actions in relation to anti-doping.

520 The coaches in this study were to a greater and lesser extent actively involved in anti-doping
521 activities with their athletes. However, their interest in anti-doping education specifically for coaches
522 was limited. Role frames, like belief systems, are tacit and therefore coaches' may not always be
523 conscious of them [1]. Therefore, exercises that raise coaches' awareness and enable them to review
524 and analyse their role frames may be beneficial in critically examining the underlying components that
525 shape their anti-doping behaviours. Recent developments in coach education include WADA's Coaching
526 Toolkit and Coach True online learning tool. None of the coaches in this study had knowledge of these
527 resources. Therefore, future research should seek to understand the most effective means by which to

528 engage coaches in anti-doping education and examine the impact of coach-focused tools such as these
529 to ensure they are a prohibiting factor in athlete doping.

530 **Conclusion**

531 Research examining athletes' perspectives in relation to doping and anti-doping identifies
532 coaches as a potentially precipitating and prohibiting factor [2, 3, 5, 6, 9, 10, 11]. Research examining
533 coaches' perspectives on doping and anti-doping is, however, scarce and little is known about the nature
534 of coaches' role in doping prevention [4]. Our findings begin to fill this gap. There were strong anti-
535 doping foundations evident in the coaches' role frame which were partly cultural and contributed to
536 anti-doping reflective conversations. The actions of some coaches, at least, suggested proactive efforts
537 to foster 'clean' sport. For others, however, an anti-doping role frame was insufficient to ensure action.
538 Role frame boundary components, although largely supportive of an anti-doping stance also contributed
539 to perceptions that athletes are 'safe' from systematic doping. Instead athletes' 'being caught' as a
540 result of actions that unintentionally led to banned substances being present in their bodies was a
541 greater concern and triggered instrumental efforts to deal with inadvertent doping and control
542 procedures.

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