1   Endurance Athletes' Current and Preferred Ways of Getting Psychological Guidance

2

3   Alister McCormick[1], Paul A. Anstiss[2], and David Lavallee[3]

4

5   [1] Faculty of Sport, Health & Wellbeing, Plymouth Marjon University, Derriford Road,

6   Plymouth, PL6 8BH, United Kingdom.

7   [2] Endurance Research Group, School of Sport & Exercise Sciences, University of Kent,

8   Medway Building, Chatham Maritime, Kent, ME4 4AG, United Kingdom.

9   [3] Division of Sport and Exercise Sciences, Abertay University, Bell Street, Dundee, DD1

10   1HG, United Kingdom; Department of Physical Education and Sports Sciences, University of

11   Limerick, Ireland.

12

13   Correspondence concerning this article should be addressed to Alister McCormick, Faculty of

14   Sport, Health, & Wellbeing, Plymouth Marjon University, Derriford Road, Plymouth, PL6

15   8BH, United Kingdom. Email: amccormick@marjon.ac.uk.

16   Telephone: 01752 636700 (extension 5001).

17

18

19

20

21

22

23

24

25

Abstract

This study examined how people who participate in endurance events currently get guidance on psychological aspects of their events and their preferred ways for receiving guidance from researchers and practitioners, so that psychologists can use these ways to disseminate research-derived knowledge. People in the United Kingdom ($N = 574$) who participated competitively or non-competitively in running (5km and greater), road cycling (time trials, road races, or sportives), or triathlon events completed an online survey. The main questions addressed ways they have intentionally used to find psychological guidance, how they have got guidance without intentionally looking for it, and their preferences for receiving guidance. The most common ways of intentionally finding guidance were looking on websites (48.1% of participants), asking other athletes (46.7%), and asking coaches (32.5%). Athletes most commonly tried to find guidance on coping, motivation, and managing nerves. Posts on social media (51.3%), spoken word (48.0%), and magazines (45.9%) were common ways of unintentionally getting guidance, and athletes (68.1%) and coaches (45.9%) were most often the source of unintentionally received guidance. Websites (49.5%) and online videos (41.8%) were the most preferred ways to receive guidance, although researchers and practitioners working with coaches (35.5%) and event organisers (34.8%), and magazines (34.7%) were also preferable. Psychologists are encouraged to disseminate guidance to endurance athletes using websites, online videos, social media, magazines, and by working with coaches and event organisers. The data can also inform the design of intervention efficacy and effectiveness trials that deliver interventions in these ecologically-valid and preferable formats.

Keywords: Cycling; knowledge translation; research dissemination; running; triathlon

50   Endurance Athletes' Current and Preferred Ways of Getting Psychological Guidance

51   Psychology is relevant to, and has the potential to benefit, the general public (Kaslow,

52 2015; Sommer, 2006). In the sport and exercise context, psychology research could be used

53 to achieve a range of important outcomes relating to performance, health, and wellbeing, and

54 could benefit people that include, but are not limited to, athletes, exercisers, coaches, parents,

55 and practitioners in a variety of contexts (e.g., Brown & Fletcher, 2017; Gourlan et al., 2016).

56 Sport and exercise psychologists who want research to benefit the people that it was intended

57 for need to consider ways of disseminating information that lead to people finding and then

58 engaging with it. "Dual dissemination" is an important consideration. It refers to

59 disseminating research-derived knowledge to psychologists and academics, as well as other

60 non-overlapping, general audiences such as those outside of academia (Sommer, 2006).

61 These two forms of dissemination use different media (e.g., journal articles and conferences

62 versus websites and magazine articles) and different styles of communication.

63   One population who could benefit from dual dissemination of psychology research

64 are endurance athletes, who are broadly defined as people who participate in endurance

65 events. A vast, and increasing, number of people recreationally participate in endurance

66 events such as running events (e.g., parkruns, 10km runs, marathons), road cycling events

67 (e.g., time trials, road races, sportives), and triathlons at sub-elite competitive and sub-elite

68 non-competitive levels (e.g., Scheerder, Breedveld, & Borgers, 2015; British Triathlon, 2018;

69 parkrun UK, 2018). Although some people may be motivated by the opportunity to compete,

70 many participate for reasons other than competition, such as to engage in more physical

71 activity, as a personal challenge, to accompany a friend, or to raise money for charity (e.g.,

72 Lane, Murphy, & Bauman, 2008). Independent of their motives, psychological interventions

73 can influence how well people perform in endurance events (McCormick, Meijen, &

74 Marcora, 2015). For competitive athletes, efficacious psychological interventions could

75   determine important competitive outcomes, such as their positions in the standings. For non-

76   competitive participants, efficacious psychological interventions could influence whether

77   they cope with the demands of training for an event, attend and finish an event, and achieve a

78   personal best time, as well as their associated cognitions and emotions. For example,

79   performance improvements may increase feelings of competence after the event, which could

80   predict continued training and participation in events (Ryan, Frederick, Lepes, Rubio, &

81   Sheldon, 1997), as well as associated health benefits (e.g., Chomistek, Cook, Flint, & Rimm,

82   2012).

83   As many endurance athletes are sub-elite, they are unlikely to receive one-to-one

84   psychology support. Alternative ways of disseminating psychology are therefore needed that

85   help to maximise its reach and impact. Recently, literature has documented how "psyching

86   teams" make psychology accessible to people in the context of mass-participation running

87   events (Meijen, Day, & Hays, 2017). These teams use a variety of media such as webpages

88   and webinars, workshops, written handouts, dinner speeches, and brief conversations with

89   athletes to give evidence-based guidance. Research has yet to identify ways of disseminating

90   psychology to endurance athletes that are preferable to them and more likely to be effective.

91   Although research has not examined dissemination of psychology to endurance

92   athletes, research has examined dissemination of psychology and sport science to coaches

93   and National Sport Organisations (NSOs) in various sports. Research on coaches'

94   experiences with sport psychology (Gould, Damarjian, & Medbery, 1999; Pain & Harwood,

95   2004; Pope et al., 2015) and sport science (Martindale & Nash, 2013; Reade, Rodgers, &

96   Hall, 2008; Reade, Rodgers, & Spriggs, 2008; Williams & Kendall, 2007) supports the

97   following ways of disseminating research-derived knowledge: presenting at coaching

98   courses, conferences, or workshops; writing summaries for sport-specific magazines,

99   newsletters, or email lists; incorporating research-derived knowledge into coach accreditation

100   material; and using websites. This research also shows that: guidance should be written in

101   accessible, user-friendly language (e.g., using the language of the sport); content should be

102   simple and concise; guidance should be concrete (e.g., through specific examples, activities,

103   exercises, tools, and materials) and contextualised (e.g., to the sport and distance, competitive

104   level, age, training versus competition); there should be practical examples of how to apply

105   guidance; and it may be beneficial to limit time demands. However, coaches encounter the

106   following barriers to finding and using research-derived knowledge: not knowing where to

107   find information; lack of time; inaccessible language (e.g., too complicated, academic, or

108   specialised); unclear relevance; and content that could not be applied practically. Adding to

109   the research on coaches, Holt et al. (2018) examined use of research in Canadian NSOs and

110   identified barriers (disconnect between research and practice; understanding research and

111   judging its credibility; lack of capacity in organisations) and facilitators (personal

112   connections with a researcher or a sport scientist; formal meetings with stakeholders) to using

113   research, and NSO suggestions for disseminating research (write short summaries with a

114   practical focus; use a range of digital and social media to target specific groups; facilitate

115   face-to-face interactions).

116   In addition to supporting psychologists with dual dissemination, the present study

117   could inform the design of efficacy and effectiveness trials of psychological interventions for

118   endurance athletes. Bishop (2008) proposed a model for sport science research that aims to

119   improve sport performance in real-life sporting settings. This model has eight phases: 1)

120   defining the problem; 2) descriptive research; 3) predictors of performance; 4) experimental

121   testing of predictors; 5) determinants of key performance predictors; 6) intervention studies

122   (efficacy trials); 7) barriers to uptake; and 8) implementation in a sporting setting

123   (effectiveness trials). A substantial number of efficacy studies have examined the effects of

124   psychological interventions (e.g., psychological skills training) on endurance performance in

125   controlled settings (stage 6), and these studies have been systematically reviewed

126   (McCormick et al., 2015). To improve real-life endurance performance, however, these

127   interventions need to be accepted, adopted, and complied with by consumers such as

128   endurance athletes, coaches, and practitioners. It is therefore important that researchers

129   consider, at the inception of research, how their research findings might be adapted to the

130   intended population, in the actual sporting setting, when delivered by people with diverse

131   training and skills, and when using the resources available (Bishop, 2008). Psychology

132   research on endurance sports has yet to address stage 7 of the model, which considers the

133   conditions that impede or facilitate widespread use of research-derived knowledge. By

134   understanding these conditions, researchers could modify efficacious interventions so that

135   they address barriers, use facilitators, satisfy preferences, and are more likely to be used

136   optimally by athletes in real-life settings. The effects of modified interventions on the

137   performance of intended recipients (i.e., particular groups of endurance athletes) could then

138   be examined using additional efficacy studies in controlled settings and effectiveness studies

139   in real-life sporting settings.

140   This study has two main research aims. First, this study aims to determine how

141   endurance athletes currently get guidance on psychological aspects of training for, preparing

142   for, and performing in endurance sports. It will examine how endurance athletes intentionally

143   find guidance, as well as how they get it without intentionally looking for it. Second, it aims

144   to identify endurance athletes' preferences for receiving psychological guidance from

145   researchers and practitioners. By doing so, this study will provide data that psychologists can

146   use to disseminate research-derived knowledge of psychology in endurance sports. It will

147   also provide data that can inform the design of efficacy and effectiveness trials of

148   psychological interventions that are conducted with endurance athletes under the constraints

149   of the sporting setting.

150   **Methods**

151 **Survey Design**

152   The survey was administered using Google Forms. Best-practice principles of survey

153 design were followed throughout (Choi & Pak, 2005; Fowler, Jr, 2014). The survey

154 instructions and questions were spread across 14 pages, so that each page was uncluttered.

155 Similar question forms were used throughout, so that participants mostly performed similar

156 tasks that involved selecting one or more option from a list. Simple, specific wording was

157 used. Fewer words were used where possible, without compromising clarity. Definitions of

158 important terms such as "psychological", "guidance", and "event" were provided at the

159 beginning of the survey, participants were consistently reminded of them, and the brief

160 definition of guidance ("advice or information") was included in the questions. Instructions

161 were incorporated into the questions, to make it likely that they would be read. Most

162 questions were closed questions that provided a selection of options, as well as the

163 opportunity to provide "other" answers or choose not to answer. All questions relating to the

164 main research questions were closed questions. The advantages of closed questions are that

165 they place less demands on respondents, respondents more reliably perform the task of

166 answering, answers are more comparable across respondents, the researcher can more

167 reliably interpret the answers, and there is greater likelihood of enough people giving a

168 particular answer to be analytically interesting (Fowler, Jr, 2014). Two open questions were

169 included, where the possible answers were wide-ranging and we did not want to limit

170 responses to those anticipated. When asking about preferences, the question asked about

171 participants' own preferences, rather than their perceptions of others' preferences. The survey

172 questions most closely related to the research aims were included first, to minimise impact of

173 response fatigue. The closed responses for the main questions were randomised, and the

174 closed responses for other questions were randomised where logical (e.g., competitive levels

175   were in ascending order). The final survey is summarised below (Final Survey section), and

176   can be supplied upon request. Shortened wording of the most commonly selected response

177   options are presented in the Results, with the full wording of all options presented in

178   Appendix A.

179   **Pilot Study**

180   Five researchers with expertise in endurance sports provided comments on the survey

181   and its questions[1]. Following ethical approval by the department ethics committee, six males

182   and five females who met the eligibility criteria piloted the survey (their data are included in

183   the results). They were asked to complete the survey and think aloud while they prepared

184   their responses. After the four main questions, participants were asked to say in their own

185   words what they thought the question was asking and to explain how they chose their

186   answers over others, in order to check participants understood and answered the questions as

187   intended. They were also asked whether it was clear what the question was asking, whether it

188   was clear what they had to do, and whether any answers were missing from the option list

189   (Fowler, Jr, 2014). Following their completion of the survey, they were asked to comment on

190   the clarity of the layout, ease of understanding and answering questions, question spacing,

191   readability, clutter, and anything else they wanted to raise (Fowler, Jr, 2014). Piloting led to

192   the following changes: one question about non-deliberate finding of guidance was divided

193   into two questions relating to who provided the guidance, and how it was provided; keywords

194   were capitalised to emphasise them (e.g., "In the last 12 MONTHS"); additional instructions

195   were given (e.g., to carefully read definitions); and minor wording changes were made for

196   greater clarity. Piloting indicated that the overall layout was clear, the survey was attractively

197   presented, questions were generally easy to understand, and tasks were easy to complete. In

198   relation to the main questions, participants correctly understood the questions and how to

199   prepare answers, and they found the questions and how to answer them clear. They reported

200 that the main questions were lengthy, but appreciated that the length benefited clarity. Two

201 closed-answer options were added based on suggestions.

Final Survey

203 The survey was 14 pages. Pages 1-3 addressed research aims and eligibility criteria.

204 Participants needed to be at least 18 years old and to have taken part competitively or non-

205 competitively in one or more running events (5km upwards), road cycling events (time trials,

206 road races, or mass-participation events) or triathlon events (any distance) within the last 12

207 months. Page 4 defined events ("planned or organised public occasions where many runners,

208 cyclists, or triathletes take part either competitively or non-competitively"), and used

209 examples to clarify the definition (competitions and races, organised public events such

210 parkruns, charity events such as Race for Life, and mass-participation events such as 10km

211 runs). Page 5 collected informed consent, and Page 6 asked participants to read each section's

212 definitions, introductions, and questions carefully. Page 7 defined *guidance* ("advice or

213 information") and *psychological* ("Psychological relates to the MENTAL side of your sport,

214 particularly your thoughts, feelings, motivation, and behaviours"). Twelve examples of what

215 psychological guidance could relate to were provided (e.g., How to set good GOALS for

216 training or events; Ways of coping with PAIN, FATIGUE, and DISCOMFORT). Page 8

217 clarified the difference between deliberately looking for guidance (e.g., by asking people) and

218 being given or becoming aware of guidance without looking for it on purpose (e.g.,

219 happening to read about it). Pages 9-14 included the survey questions, with pages 9-11

220 focusing on the research aims, and 12-14 collecting information about respondents. The four

221 main questions relating to the research aims are presented exactly below (Fowler, Jr, 2014):

222 1. Below is a list of ways that people find guidance (i.e., advice or information). There is

223 also an "I have NOT tried to find guidance" option. In the last 12 MONTHS, what

224 ways have you used to find guidance on PSYCHOLOGICAL parts of training for,

225   preparing for, or performing in running, road cycling, or triathlon events? We are

226   asking about your DELIBERATE attempts to find guidance (i.e., through looking for

227   it on purpose), and not guidance that you have become aware of without looking for

228   it. Please select ALL answers that apply to you.

229   2. Below is a list of ways that you may have been given guidance or become aware of

230   guidance (i.e., advice or information) WITHOUT looking for it on purpose. In the last

231   12 MONTHS, through what ways have you been given guidance or become aware of

232   guidance on PSYCHOLOGICAL parts of training, preparing, or performing, without

233   looking for it on purpose? Please select ALL answers that apply to you.

234   3. Below is a list of people who may have given you guidance or made you aware of

235   guidance (either in person or not in person) WITHOUT you looking for it on purpose.

236   In the last 12 MONTHS, which people have given you or made you aware of

237   guidance on PSYCHOLOGICAL parts of training, preparing, or performing, without

238   you looking for it on purpose? Please select ALL answers that apply to you.

239   4. There are different ways that psychology experts (practitioners or researchers who

240   have knowledge and qualifications that relate to psychology) could provide

241   psychological guidance. They are listed below, and they include ways of finding

242   guidance on purpose and not on purpose. There is also a "NONE of these options are

243   preferable to me" option. Please think about which of these ways would be most

244   preferable TO YOU PERSONALLY (please assume that the guidance will NOT cost

245   money, other than the possible costs of your coaching or a magazine). In other words,

246   if experts wanted to provide YOU with psychological guidance, how would you

247   prefer them to do it? Select UP TO 3 preferred ways.[2]

248 An open-ended follow-up question after Question 1 asked what respondents were trying to

249 find out by looking for psychological guidance. An open-ended follow-up question after

250   Question 4 offered respondents the opportunity to explain other ways that guidance could be

251   provided.

252   The full survey took approximately 10 minutes to complete. It was emailed to clubs,

253   event organisers, and organisations across the United Kingdom, and shared via social media.

254   To encourage completion, the relevance of the research purpose and the potential benefits to

255   participants and their sport communities were outlined, and a reminder email was sent

256   (Fowler, Jr, 2014).

<div align="center">Results and Discussion</div>

258   **Respondents**

259   The survey was completed by 612 people who lived in the United Kingdom. Thirty-

260   seven were excluded because qualitative responses indicated that the guidance they had

261   sought was not psychological, suggesting that they had not read or had misunderstood the

262   instructions. An additional one was excluded because they were not participating in relevant

263   events. Of the 574 people who were included, 533 (93.5%) reported British nationality, 294

264   (51.5%) reported being female, and 277 (48.5%) reported being male. The mean age of

265   participants was 43.8 ($SD = 11.2$, range = 18-79): age 18-29 ($n = 62$, 10.9%), 30-39 ($n = 140$,

266   24.6%), 40-49 ($n = 185$, 32.5%), 50-59 ($n = 135$, 23.7%), 60-69 ($n = 42$, 7.38%), 70-79 ($n =

267   5$, 0.88%). In the previous 12 months, respondents had participated in running events ($n =

268   489$, 85.3%), road cycling events ($n = 213$, 37.2%), and triathlon events ($n = 194$, 33.9%).

269   The most commonly entered events were 5km ($n = 376$, 65.6%), 10km ($n = 331$, 57.8%), and

270   half-marathon ($n = 289$, 50.4%) running events. Other commonly entered events were cross-

271   country running events ($n = 153$, 26.7%), marathons ($n = 143$, 25.0%), sprint triathlons ($n =

272   134$, 23.4%), single-day mass-participation cycling events of up to 100km ($n = 102$, 17.8%)

273   or above 100km ($n = 98$, 17.1%), 10 mile or 25 mile individual cycling time trials ($n = 96$,

274   16.8%), Olympic triathlons ($n = 79$, 13.8%) and half-iron distance triathlons ($n = 76$, 13.3%).

275   With consideration to involvement in multiple sports, 350 (61.1%) had participated in one of

276   running, cycling, or triathlon events in the previous 12 months, 122 (21.3%) had participated

277   in two of them, and 101 (17.6%) had participated in all three of them. The mean number of

278   selected event categories—representing combinations of overall sport (e.g., cycling), event

279   type (e.g., individual time trials) and distance (e.g., 10 mile or 25 mile)—was 4.00 (SD =

280   2.20).

281   The mean combined amount of time that participants reported running, cycling, or

282   swimming during a typical week was 8.26 hours (SD = 4.79) when the survey was completed

283   (between May and September 2017). Highest current competitive levels (including age

284   group) were non-competitive (n = 193, 33.7%), club (n = 273, 47.6%), university (n = 3,

285   0.52%), county (n = 22, 3.84%), national (n = 35, 6.11%), and international (n = 47, 8.20%).

286   None were professional. Approximately half (n = 296, 51.7%) considered themselves to have

287   a coach who they can get instruction from, and 101 (17.6%) considered themselves to be (or

288   have been) a coach. Their main motives for participating in events were as a challenge (n =

289   440, 76.7%), to become fitter or remain fit (n = 421, 73.3%), to benefit their health (n = 328,

290   57.1%), to socialise as part of a community (n = 275, 47.9%), the exercise feels pleasurable

291   or satisfying (n = 236, 41.1%), to benefit their weight (n = 203, 35.4%), to benefit their self-

292   esteem or self-worth (n = 191, 33.3%), and to compete or compare themselves against others

293   (n = 175, 30.5%). Respondents saw improving their performance as very important (n = 234,

294   40.8%). moderately important (n = 298, 51.9%), or not important (n = 42, 7.32%).

295   These findings highlight that many people who could value guidance based on

296   research-derived knowledge, and the benefits to their performance, are recreational and sub-

297   elite and are therefore unlikely to receive one-to-one psychology support. They also suggest

298   that the distinctions between runners, cyclists, and triathletes may over-simplify participation

299   in endurance sports at sub-elite levels, as many people participate in numerous events, and

300   researchers of these sports should consider the wider applications of the research to athletes'

301   other endurance events. Previous research has typically encouraged disseminating research

302   through sport-specific information (e.g., Martindale & Nash, 2013). For endurance athletes at

303   sub-elite levels (e.g., non-competitive or club level), providing general guidance that can be

304   adapted by the athlete to their numerous events could be preferable.

Main Findings

306   Most participants ($n = 403$, 71.1%) reported intentionally looking for guidance. The

307   most common ways of finding guidance were looking on websites or blogs ($n = 273$, 48.1%),

308   asking other athletes ($n = 265$, 46.7%), asking coaches ($n = 184$, 32.5%), looking in

309   magazines ($n = 165$, 29.1%), looking in books ($n = 149$, 26.3%), and watching online videos

310   ($n = 146$, 25.7%). Content analysis of qualitative responses suggested that there were three

311   particularly common areas that people had sought psychological guidance on in the previous

312   12 months. The most commonly cited area of guidance was coping ($n = 149$), which most

313   notably included coping with the physical demands of the exercise (e.g., pain, exertion,

314   fatigue, discomfort), unwanted thoughts and emotions (e.g., thoughts of quitting, frustration),

315   setbacks (e.g., change in weather conditions, a series of poor performances), and injuries

316   (e.g., managing and dealing with a chronic long-term injury). The second most commonly

317   cited area was motivation ($n = 93$), which related to ways of increasing and maintaining

318   training and event motivation. The third most cited area was dealing with nerves ($n = 66$),

319   particularly before an event. These findings are consistent with research on the demands

320   experienced by recreational endurance athletes across various events (McCormick, Meijen, &

321   Marcora, 2016), and they are consistent with potential barriers to effective self-regulation in

322   endurance athletes (McCormick, Meijen, Anstiss, & Jones, 2018). They also reflect areas that

323   sport psychologists are capable of providing evidence-based guidance on (e.g., McCormick et

324   al., 2015). That is, sport psychologists could prioritise disseminating evidence-based

325   information to endurance athletes on these areas, such as part of psyching team activities.

326   Other areas were focus/concentration ($n = 27$), confidence ($n = 22$), setting goals ($n = 14$),

327   and boredom ($n = 8$).

328   With consideration to unintentionally finding guidance, posts on social media or

329   internet groups ($n = 294$, 51.3%), spoken word ($n = 275$, 48.0%), magazines ($n = 263$,

330   45.9%), websites or blogs ($n = 219$, 38.2%), and books ($n = 193$, 33.7%) were common ways.

331   Athletes ($n = 390$, 68.1%) and coaches ($n = 263$, 45.9%) were most often the source of this

332   guidance. Researchers and practitioners ($n = 66$, 11.5%), personal trainers ($n = 64$, 11.2%),

333   and event organisers ($n = 62$, 10.8%) were less common sources of guidance. Websites and

334   online blogs ($n = 284$, 49.5%) and online videos ($n = 240$, 41.8%) were the most preferred

335   ways for researchers and practitioners to provide guidance. The other options, in order of

336   preference, were researchers and practitioners working with coaches ($n = 204$, 35.5%) and

337   event organisers ($n = 200$, 34.8%), magazines ($n = 199$, 34.7%), in-person presentations or

338   workshops ($n = 168$, 29.3%), mobile phone applications ($n = 132$, 23.0%), podcasts ($n = 129$,

339   22.5%), interactive online presentations or workshops ($n = 121$, 21.1%), and no preferred

340   options ($n = 16$, 2.8%). Participants qualitatively suggested social media ($n = 16$). We took

341   social media for granted as a means of promoting other forms of guidance, but social media

342   could also be used to provide brief guidance (e.g., a Twitter post about goals leading up to a

343   mass-participation event). Results by gender, competitive level, and age are presented in

344   Appendix B for the interested reader. The study did not aim to compare sub-groups, and

345   specific differences between sub-groups, whilst likely, were not hypothesised.

346   Websites and blogs, online videos (e.g., YouTube), magazine articles, and interactions

347   with athletes, coaches, and event organisers were common and preferable ways of athletes

348   getting guidance. In the endurance research literature, verbal or written instructions,

349   workbooks, and one-to-one work with a practitioner are common intervention methods (see

350   McCormick et al., 2015). Ecologically-valid and preferable methods such as websites,

351   magazine articles, online videos, and coach-delivered educational workshops have not been

352   used in research. As highlighted in the current study, many endurance athletes who value

353   performance enhancement perform recreationally, particularly at non-competitive and club

354   levels. Many of these populations are unlikely to receive one-to-one psychology support.

355   Websites and blogs, online videos, magazine articles, and working with coaches and event

356   organisers are dissemination methods that could make psychology accessible to the masses,

357   including athletes who are remotely located away from a university. They also offer athletes

358   the opportunity to access psychology guidance in times and locations of their choosing,

359   which is particularly important because endurance athletes often have little free time

360   (McCormick et al., 2016). Similar approaches (e.g., magazine articles, online sources, coach

361   education workshops) are also likely to be favourable methods for sharing guidance with the

362   coaching community (Pope et al., 2015; Reade, Rodgers, & Hall, 2008; Reade, Rodgers, &

363   Spriggs, 2008; Williams & Kendall, 2007), and could be valuable for getting evidence-based

364   guidance "into circulation" for coaches and athletes to share.

365   Endurance researchers interested in recreational populations (e.g., as a form of

366   physical activity) are encouraged to test the efficacy of psychological interventions delivered

367   in these formats. First, however, future research could explore the barriers, facilitators, and

368   consumer preferences (e.g., specific features) that will influence whether these types of

369   interventions are optimally effective. Athletes and coaches could be involved throughout the

370   design and modification of an intervention, by providing input during the design of the

371   intervention and feedback on prototypes (e.g., Bock, Heron, Jennings, Magee, & Morrow,

372   2013).

373   Researchers who complete projects relevant to endurance athletes, as well as athletes

374   in other sports, are encouraged to provide evidence-based guidance through the ways

375 highlighted by the current findings, namely using websites and blogs, social media,

376 magazines, and by working with coaches and event organisers. Although endurance athletes

377 do receive guidance through these ways already, the guidance may not be evidence-based.

378 The results of the present study also highlight the value of providing guidance in multiple

379 ways (e.g., webpages with embedded online videos and downloadable content), as there were

380 many preferable delivery formats (see also Gould et al., 1999). Sport science research

381 demonstrates that: the language used should be accessible and user-friendly; content should

382 be kept concise and simple; guidance should be made concrete through specific examples,

383 activities, exercises, tools, and materials (rather than just informational content); and

384 downloadable resources such as workbooks and activities are likely to be helpful (e.g.,

385 Martindale & Nash, 2013). Researchers may find it helpful to work with endurance athletes

386 and coaches (e.g., using focus groups) so that guidance is accessible to its users (e.g., using

387 the language of the sport). As explained above (Respondents section), providing general

388 guidance that can be adapted by the athlete to their numerous events could be preferable for

389 sub-elite athletes.

390   There are barriers to disseminating research-derived knowledge in these ways (see

391 Kaslow, 2015). In particular, psychologists may need to learn "public speak", which requires

392 different skills to "journal speak" (Sommer, 2006). To disseminate to the public, a

393 psychologist would need to explain information in a way that is scientifically-informed,

394 succinct but accurate, clear and understandable, creative and engaging, memorable, relevant,

395 and conveys the "so what" of psychological research (see Kaslow, 2015). In addition,

396 psychologists may need training for some dissemination methods, such as using online

397 videos. For support, psychologists who work in universities could collaborate with colleagues

398 in departments such as marketing, media, or communications, who may be more experienced

399 in these forms of dissemination. Psychologists could also collaborate with people who run

400 endurance websites, podcasts, and other media. When disseminating by collaborating with

401 non-psychologists or speaking with journalists, there are important ethical considerations to

402 consider (see McGarrah, Alvord, Martin, & Haldeman, 2009). For example, it is important

403 that psychologists have an opportunity to review information (e.g., edited interviews or

404 resources) to ensure that it is accurate before it is published. Finally, Twitter and online blogs

405 are accessible and either free or relatively inexpensive ways of reaching the general public.

406 They allow psychologists to ensure that research is represented accurately, whilst also

407 facilitating bi-directional communication that addresses misunderstandings and allows

408 nuanced discussions (Weinstein & Sumeracki, 2017).

409   With consideration to research limitations, the data presented reflects the ways that

410 respondents get, and would prefer to get, guidance. Respondents are likely to differ from non-

411 respondents in qualities such as availability of time, interests in the research area and getting

412 psychological guidance, and attitudes towards sport psychology (McCormick, Meijen, &

413 Marcora, 2018). Although it is not possible to accurately quantify the percentages of

414 endurance athletes who get, or would prefer to get, guidance in particular ways at the

415 population level, the data will nevertheless be useful for helping researchers and practitioners

416 to disseminate psychology in ways that are more likely to benefit endurance athletes.

417   In conclusion, psychology researchers and practitioners are encouraged to engage in

418 dual dissemination (Sommer, 2006) and share guidance with endurance athletes using

419 websites, social media, magazines, and by working with coaches and event organisers. The

420 data can inform the design of intervention efficacy and effectiveness trials that are conducted

421 with athletes under the constraints of the sporting setting.

422 **Notes**

425   [2] Selecting three was intended to encourage discrimination in the selection of responses. If

426   participants selected more than three, all selected options were included in the data analysis.

427

428   **References**

429   Bishop, D. (2008). An applied research model for the sport sciences. *Sports Medicine*, *38*,

430   253–263. https://doi.org/10.2165/00007256-200838030-00005

431   Bock, B. C., Heron, K. E., Jennings, E. G., Magee, J. C., & Morrow, K. M. (2013). User

432   preferences for a text message-based smoking cessation intervention. *Health Education*

433   *& Behavior*, *40*, 152–159. https://doi.org/10.1177/1090198112463020

434   British Triathlon. (2018). Triathlon Growth Statistics. Retrieved May 27, 2018, from

435   https://www.britishtriathlon.org/media/statistics

436   Brown, D. J., & Fletcher, D. (2017). Effects of psychological and psychosocial interventions

437   on sport performance: A meta-analysis. *Sports Medicine*, *47*, 77–99.

438   https://doi.org/10.1007/s40279-016-0552-7

439   Choi, B. C. K., & Pak, A. W. P. (2005). A catalog of biases in questionnaires. *Preventing*

440   *Chronic Disease*, *2*(1), A13. Retrieved from

441   https://www.cdc.gov/pcd/issues/2005/jan/04_0050.htm

442   Chomistek, A. K., Cook, N. R., Flint, A. J., & Rimm, E. B. (2012). Vigorous-intensity

443   leisure-time physical activity and risk of major chronic disease in men. *Medicine &*

444   *Science in Sports & Exercise*, *44*, 1898–1905.

445   https://doi.org/10.1249/MSS.0b013e31825a68f

446   Fowler, Jr, F. J. (2014). *Survey research methods* (5th ed.). Thousand Oaks, CA: Sage.

447   Gould, D., Damarjian, N., & Medbery, R. (1999). An examination of mental skills training in

448   junior tennis coaches. *The Sport Psychologist*, *13*, 127–143.

449   https://doi.org/10.1123/tsp.13.2.127

450   Gourlan, M., Bernard, P., Bortolon, C., Romain, A. J., Lareyre, O., Carayol, M., … Boiché, J.

451   (2016). Efficacy of theory-based interventions to promote physical activity. A meta-

452   analysis of randomised controlled trials. *Health Psychology Review*, *10*, 50–66.

453   https://doi.org/10.1080/17437199.2014.981777

454   Holt, N. L., Pankow, K., Camiré, M., Côté, J., Fraser-Thomas, J., MacDonald, D. J., …

455   Tamminen, K. A. (2018). Factors associated with using research evidence in national

456   sport organisations. *Journal of Sports Sciences*, *36*, 1111–1117.

457   https://doi.org/10.1080/02640414.2017.1357830

458   Kaslow, N. J. (2015). Translating psychological science to the public. *American*

459   *Psychologist*, *70*, 361–371. https://doi.org/10.1037/a0039448

460   Lane, A., Murphy, N. M., & Bauman, A. (2008). *The impact of participation in the Flora*

461   *Women's Mini Marathon on physical activity behaviour in women. Research Report 1*.

462   Ireland: Centre for Health Behaviour Research, Department of Health Sport and

463   Exercise Sciences, Waterford Institute of Technology and Irish Sports Council.

464   Martindale, R., & Nash, C. (2013). Sport science relevance and application: Perceptions of

465   UK coaches. *Journal of Sports Sciences*, *31*, 807–819.

466   https://doi.org/10.1080/02640414.2012.754924

467   McCormick, A., Meijen, C., Anstiss, P. A., & Jones, H. S. (2018). Self-regulation in

468   endurance sports: theory, research, and practice. *International Review of Sport and*

469   *Exercise Psychology*. https://doi.org/10.1080/1750984X.2018.1469161

470   McCormick, A., Meijen, C., & Marcora, S. (2015). Psychological determinants of whole-

471   body endurance performance. *Sports Medicine*, *45*, 997–1015.

472   https://doi.org/10.1007/s40279-015-0319-6

473   McCormick, A., Meijen, C., & Marcora, S. (2016). Psychological demands experienced by

474   recreational endurance athletes. *International Journal of Sport and Exercise Psychology*.

475   https://doi.org/10.1080/1612197X.2016.1256341

476 McCormick, A., Meijen, C., & Marcora, S. (2018). Effects of a motivational self-talk

477   intervention for endurance athletes completing an ultramarathon. *The Sport*

478   *Psychologist*, *32*, 42–50. https://doi.org/10.1123/tsp.2017-0018

479 McGarrah, N. A., Alvord, M. K., Martin, J. N., & Haldeman, D. C. (2009). In the public eye:

480   The ethical practice of media psychology. *Professional Psychology: Research and*

481   *Practice*, *40*, 172–180. https://doi.org/10.1037/a0015520

482 Meijen, C., Day, C., & Hays, K. F. (2017). Running a psyching team: Providing mental

483   support at long-distance running events. *Journal of Sport Psychology in Action*, *8*, 12–

484   22. https://doi.org/10.1080/21520704.2016.1205697

485 Pain, M. A., & Harwood, C. G. (2004). Knowledge and perceptions of sport psychology

486   within English soccer. *Journal of Sports Sciences*, *22*, 813–826.

487   https://doi.org/10.1080/02640410410001716670

488 parkrun UK. (2018). Historical Chart of Number of parkrun Event, parkrunners and

489   Volunteers. Retrieved May 27, 2018, from

490   http://www.parkrun.org.uk/results/historicalchart/

491 Pope, J. P., Stewart, N. W., Law, B., Hall, C. R., Gregg, M. J., & Robertson, R. (2015).

492   Knowledge translation of sport psychology to coaches: Coaches' use of online

493   resources. *International Journal of Sports Science & Coaching*, *10*, 1055–1071.

494   https://doi.org/10.1260/1747-9541.10.6.1055

495 Reade, I., Rodgers, W., & Hall, N. (2008). Knowledge transfer: How do high performance

496   coaches access the knowledge of sport scientists? *International Journal of Sports*

497   *Science & Coaching*, *3*, 319–334. https://doi.org/10.1260/174795408786238470

498 Reade, I., Rodgers, W., & Spriggs, K. (2008). New ideas for high performance coaches: A

499   case study of knowledge transfer in sport science. *International Journal of Sports*

500   *Science and Coaching*, *3*, 335–354. https://doi.org/10.1260/174795408786238533

501   Ryan, R. M., Frederick, C. M., Lepes, D., Rubio, N., & Sheldon, K. M. (1997). Intrinsic

502   motivation and exercise adherence. *International Journal of Sport Psychology*, *28*, 335–

503   354.

504   Scheerder, J., Breedveld, K., & Borgers, J. (2015). Who is doing a run with the running

505   boom? The growth and governance of one of Europe's most popular sport activities. In

506   J. Scheerder, K. Breedveld, & J. Borgers (Eds.), *In Running across Europe* (pp. 1–27).

507   London, England: Palgrave Macmillan.

508   Sommer, R. (2006). Dual dissemination: Writing for colleagues and the public. *American*

509   *Psychologist*, *61*, 955–958. https://doi.org/10.1037/0003-066X.61.9.955

510   Weinstein, Y., & Sumeracki, M. A. (2017). Are Twitter and blogs important tools for the

511   modern psychological scientist? *Perspectives on Psychological Science*, *12*, 1171–1175.

512   https://doi.org/10.1177/1745691617712266

513   Williams, S. J., & Kendall, L. (2007). Perceptions of elite coaches and sports scientists of the

514   research needs for elite coaching practice. *Journal of Sport Sciences*, *25*, 1577–1586.

515   https://doi.org/10.1080/02640410701245550

516

517   Appendix A

518   Full Wording of Response Options

519   Question 1
520
521   Below is a list of ways that people find guidance (i.e., advice or information). There is also an
522   "I have NOT tried to find guidance" option. In the last 12 MONTHS, what ways have you
523   used to find guidance on PSYCHOLOGICAL parts of training for, preparing for, or
524   performing in running, road cycling, or triathlon events? We are asking about your
525   DELIBERATE attempts to find guidance (i.e., through looking for it on purpose), and not
526   guidance that you have become aware of without looking for it. Please select ALL answers
527   that apply to you.
528

Exact wording on the survey	Abbreviation in the manuscript (if applicable)	Abbreviation in Appendix B (if applicable)
Asking a coach in a relevant sport (e.g., asking in-person, asking through social media)	Asking coaches	Coaches
Asking people (e.g., training partner, people on Facebook pages, other social media, or forums) who take part or compete in a relevant sport, but who are NOT a coach	Asking other athletes	Athletes
Asking a practitioner or researcher who has knowledge and qualifications that relate to psychology (e.g., a sport and exercise scientist or a psychologist)		
Looking in magazines deliberately to find guidance	Looking in magazines	Magazines
Looking in books deliberately to find guidance	Looking in books	Books
Reading academic articles such as research reports or journal articles		
Looking on websites or online blogs	Looking on websites or blogs	Websites
Watching online videos (e.g., videos on YouTube) deliberately to find guidance	Watching online videos	Online video
Listening to a podcast deliberately to find guidance		
Attending a workshop or presentation delivered by a practitioner or researcher who has knowledge and qualifications that relate to psychology (e.g., a sport and exercise scientist or a psychologist)		
Attending a workshop or presentation delivered by a coach, an event organiser, or a sport participant		
Using a mobile phone application to find guidance		
I have NOT deliberately tried to find guidance	Have not tried to find guidance	None

529

530 Question 2

531

532 Below is a list of ways that you may have been given guidance or become aware of guidance
533 (i.e., advice or information) WITHOUT looking for it on purpose. In the last 12 MONTHS,
534 through what ways have you been given guidance or become aware of guidance on
535 PSYCHOLOGICAL parts of training, preparing, or performing, without looking for it on
536 purpose? Please select ALL answers that apply to you.

537

Exact wording on the survey	Abbreviation in the manuscript (if applicable)	Abbreviation in Appendix B (if applicable)
A person (e.g., coach, sport participant) spoke to you about it in person, either one-to-one or as part of a group (excluding presentations and workshops), or by telephone	Spoken word	Spoken word
A post on social media (e.g., Twitter, Facebook, Instagram, LinkedIn) or in an internet group (e.g., Google Groups) or forum	Posts on social media or internet group	Internet post
When on a website (other than social media) or online blog relevant to running, cycling, or triathlon	Websites or blogs	Websites
A person (e.g., coach, sport participant) sent you an email about it (e.g., a mailing list)		
A presentation or workshop relevant to running, cycling, or triathlon		
When listening to a podcast relevant to running, cycling, or triathlon		
When reading a magazine relevant to running, cycling, or triathlon	Magazines	Magazines
When reading a book relevant to running, cycling, or triathlon	Books	Books
When using a mobile phone application relevant to running, cycling, or triathlon		
I have NOT been given or become aware of guidance		

538
539
540
541
542
543
544
545
546
547
548
549
550
551

552   <u>Question 3</u>

553

554   Below is a list of people who may have given you guidance or made you aware of guidance
555   (either in person or not in person) WITHOUT you looking for it on purpose. In the last 12
556   MONTHS, which people have given you or made you aware of guidance on
557   PSYCHOLOGICAL parts of training, preparing, or performing, without you looking for it on
558   purpose? Please select ALL answers that apply to you.

559

Exact wording on the survey	Abbreviation in the manuscript (if applicable)	Abbreviation in Appendix B (if applicable)
A coach in a relevant sport (e.g., running, cycling, swimming, triathlon)	Coaches	Coaches
A person who takes part or competes in a relevant sport, but who is NOT a coach (e.g., a training partner, a person on Facebook or in an internet forum or group)	Athletes	Athletes
A practitioner or researcher who has knowledge and qualifications that relate to psychology (e.g., a sport and exercise scientist or a psychologist)	Researchers and practitioners	
A running, road cycling, or triathlon event organiser	Event organisers	
A personal trainer	Personal trainers	
I am unsure of who gave or made me aware of guidance		
I have NOT been given or become aware of guidance		

560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579

580   <u>Question 4</u>

581

582   There are different ways that psychology experts (practitioners or researchers who have
583   knowledge and qualifications that relate to psychology) could provide psychological
584   guidance. They are listed below, and they include ways of finding guidance on purpose and
585   not on purpose. There is also a "NONE of these options are preferable to me" option. Please
586   think about which of these ways would be most preferable TO YOU PERSONALLY (please
587   assume that the guidance will NOT cost money, other than the possible costs of your
588   coaching or a magazine). In other words, if experts wanted to provide YOU with
589   psychological guidance, how would you prefer them to do it?   Select UP TO 3 preferred
590   ways.

591

Exact wording on the survey	Abbreviation in the manuscript (if applicable)	Abbreviation in Appendix B (if applicable)
Presentations or workshops by experts that runners, cyclists, or triathletes attend	In-person presentations or workshops	
Online presentations or online workshops (e.g., webinars) by experts that are interactive (e.g., you can ask questions and discuss points)	Interactive online presentations or workshops	
Experts passing on guidance using online videos to watch (e.g., videos on YouTube)	Online videos	Online video
Experts passing on guidance using magazines for runners, cyclists, or triathletes	Magazines	Magazines
Experts passing on guidance using podcasts for runners, cyclists, or triathletes to listen to	Podcasts	
Experts working with coaches so that coaches can pass on the psychological guidance	Researchers and practitioners working with coaches	Coaches
Experts working with event organisers so that guidance is given as part of the event (e.g., guidance given in event emails and registration packs, experts present at events)	Researchers and practitioners working with event organisers	Events
Websites or online blogs that are for runners, cyclists, or triathletes	Websites and online blogs	Websites
Mobile phone applications that are for runners, cyclists, or triathletes	Mobile phone applications	
NONE of these options are preferable to me	None	

592

Appendix B

Results by Gender, Competitive Level, and Age

Table 1
Ways of Receiving Guidance in Respondent Sub-Groups

Question		Sub-group										Overall
		Gender		Competitive level			Age group					
		Males	Females	None	Club	County +	18-29	30-39	40-49	50-59	60-69	
Intentional	Websites	46.5%	49.1%	45.5%	51.7%	42.7%	69.1%	46.8%	47.0%	50.0%	31.0%	48.1%
	Athletes	42.5%	50.5%	42.9%	52.8%	35.9%	60.0%	54.0%	48.1%	40.2%	31.0%	46.7%
	Coaches	31.9%	33.0%	23.6%	35.3%	40.8%	30.9%	34.5%	36.6%	31.1%	21.4%	32.5%
	Magazines	30.8%	27.8%	28.3%	29.7%	29.1%	29.1%	29.5%	29.5%	31.8%	19.0%	29.1%
	None	29.7%	28.5%	35.6%	24.5%	29.1%	20.0%	28.1%	29.5%	26.5%	52.4%	28.9%
	Books	33.0%	19.6%	21.5%	29.0%	29.1%	25.5%	20.9%	27.3%	33.3%	21.4%	26.3%
	Online video	31.5%	19.9%	25.7%	27.5%	21.4%	38.2%	26.6%	24.6%	27.3%	14.3%	25.7%
Unintentional – Methods	Internet post	46.2%	56.0%	49.5%	54.2%	46.2%	66.1%	53.6%	53.5%	48.9%	26.8%	51.3%
	Spoken word	41.5%	54.3%	43.2%	50.9%	48.1%	51.6%	56.4%	43.2%	47.4%	39.0%	48.0%
	Magazines	46.9%	45.1%	38.5%	50.9%	46.2%	43.5%	40.7%	49.2%	46.7%	48.8%	45.9%
	Websites	39.4%	36.9%	39.1%	37.4%	38.5%	46.8%	39.3%	35.7%	37.8%	39.0%	38.2%
	Books	40.8%	26.3%	26.0%	35.9%	42.3%	29.0%	27.9%	31.4%	40.7%	43.9%	33.7%
Unintentional – People	Athletes	61.7%	74.1%	65.3%	72.4%	61.5%	80.6%	68.6%	68.6%	59.7%	71.4%	68.1%
	Coaches	44.0%	47.8%	35.2%	47.1%	61.5%	48.4%	48.6%	44.9%	45.5%	40.5%	45.9%
Preferences	Websites	48.0%	50.7%	49.7%	49.8%	48.1%	53.2%	57.1%	49.7%	47.4%	31.0%	49.5%
	Online video	51.6%	33.0%	36.8%	41.4%	52.9%	40.3%	46.4%	45.4%	36.3%	35.7%	41.8%
	Coaches	37.2%	34.0%	30.6%	36.6%	41.3%	40.3%	37.1%	31.9%	34.8%	42.9%	35.5%
	Events	26.0%	43.2%	44.6%	33.7%	19.2%	46.8%	34.3%	35.1%	35.6%	23.8%	34.8%
	Magazines	33.6%	35.7%	32.1%	38.1%	30.8%	25.8%	32.9%	36.2%	37.0%	33.3%	34.7%

Note. The most commonly selected responses are presented. Full data is available on request. See Appendix A for the full wording of the selected responses.