



A demographic analysis of UK Adventure Sports Coaches

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1 Introduction

2 Participation in adventure sports has increased significantly in recent years. In 2018 nearly 2.6
3 million people in the UK regularly participated. In fact, adventure sports were one of the few
4 categories of activity that saw increases in participation between 2017 and 2018; with notable
5 decreases in other activities such as cycling, swimming, team and racket sports (Sport England,
6 2018). British Canoeing, the national governing body for paddlesport, reported that in the decade
7 between 2006 and 2016 participation in canoeing rose by 42%, with 1.5 million people taking part in
8 2016 (British Canoeing, 2016). Additionally, the Association of British Climbing Walls (ABC) state that
9 participation in rock climbing doubled to 1.5 million participants between 2017 and 2019 (ABC,
10 2019). Evidently, at present, there is a healthy appetite for physical activity through adventure sports
11 in the UK.

12 Collins and Collins (2012) state that increased participation in adventure sports has generated a
13 demand for quality coaching. Based within this premise, these authors have pioneered research
14 related to coaching in adventure sports (Collins & Collins, 2013, 2015, 2016, 2017; Collins, Collins &
15 Grecic, 2014). They proposed that adventure sports coaching (ASC) is a compound role of guide (i.e.
16 facilitator of personal experience), teacher (i.e. facilitator of personal development) and coach (i.e.
17 facilitator of performance/skill development). Moreover, the role requires authoritative knowledge
18 of, and competencies in, risk management and safety, as well as a high level of personal technical
19 skill. For example, before a sea kayak coach can decide what technical or tactical skills to develop,
20 they must first make a judgement of tides, wind and sea states, launching and landing sites and
21 logistics to inform where the coaching will take place. In this respect, the decisions that the ASC
22 must make are largely influenced by the highly dynamic adventure environment (Christian, Hodgson,
23 Berry and Kearney, 2019). Christian, Berry and Kearney (2017) propose that the nature of adventure
24 sports coaching places different and additional situational demands on the ASC (i.e. issues around
25 the variety of roles, personal competence and health and safety considerations).

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3 26 Areas of investigation in ASC research include professional judgement and decision making (PJDM),
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5 27 coach-participant interactions, developmental experiences, pedagogic and leadership strategies, and
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7 28 epistemic beliefs. Early research in to ASCs has principally employed interpretive designs on small
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9 29 (between one and eight), selective, homogenous samples of coaches. Furthermore, this research
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11 30 relied heavily on purposive sampling of male British Paddlesport coaches (Collins & Collins, 2015;
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13 31 Collins, Collins & Grecic, 2014; Gray & Collins, 2016). Subsequently, recent research has employed
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15 32 more diverse approaches to sampling and methodology. For example, Christian, Berry & Kearney
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17 33 (2017) deliberately sampled male and female ASCs from a range of sports including: mountain
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19 34 biking, sailing, skiing, climbing and surfing. Collins, Carson, Amos and Collins (2018) expanded ASC
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21 35 research by employing a large sample (331) of ASCs in a mixed method design to investigate PJDM in
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23 36 mountain leaders. In a novel approach, Eastabrook and Collins (2020) focussed on the participants
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25 37 experiences of seeking out and receiving adventure sports coaching. Equally innovate was Mees,
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27 38 Sinfield, Collins & Collins' (2020) study of adaptive expertise between different levels of outdoor
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29 39 instructors. Despite these encouraging advances in the ASC literature, we would contend research
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31 40 in the field is still in its infancy. We propose that one way to advance our understanding of area is to
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33 41 explore and describe the basic demographics of ASCs as a workforce.

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35 42 In contrast to the ASC literature, the coaching workforce in 'traditional' sports has been subject to
36
37 43 extensive, systematic investigation. Over the last 15 years, UK Sport (now UK Coaching) has been
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39 44 routinely reporting trends in the demography of UK coaches. This data provides a useful insight into
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41 45 the change and development in the demographic of the coaching workforce over time. For example,
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43 46 between 2008 and 2017 there was a substantial increase in active coaches in the UK, rising from 1.1
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45 47 million to over 3 million (Sports Coach UK, 2011; Thompson & Mcilroy, 2017). This data also reveals
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47 48 that 42% of the coaching workforce are aged between 18 and 34 years old, reflecting a generally
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49 49 youthful population. A notable finding was a significant increase in female coaches whose numbers
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51 50 rose from 31% of the workforce in 2008 to 46% in 2017. Whilst this is an encouraging statistic, it has
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53 51 been previously documented that women are underrepresented in sports coaching positions. Within

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3 52 the UK, only 17% of qualified coaches are women (Sport England, 2016), and at the global level
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5 53 women account for only 10% of accredited Olympic coaches (Norman, 2014).
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8 54 As opposed to traditional sports, there is a distinct lack of research on gendered trends within
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10 55 adventure sports coaching. Although research has explored the experiences and challenges of
11
12 56 women in outdoor leadership, this is distinct from adventure sports coaching (Collins & Collins, 2012)
13
14 57 in that it is 'the practice of leading individuals and groups into natural settings via a variety of modes
15
16 58 of transportation' (Martin et al., 2017, p. 19). Statistics on gender representation within outdoor
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18 59 leadership in the UK are not widely available. However, a recent survey conducted in the US with a
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20 60 leading outdoor education association found that only 25% of Directors and Assistant Directors on
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22 61 higher education outdoor programmes identified as women (Rogers, Taylor & Rose, In Press, as cited
23
24 62 in Bond Rogers & Rose, 2019). Moreover, where women are course leaders in outdoor leadership,
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26 63 they often lead courses that are less technical, such as hiking as opposed to rock climbing or
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28 64 whitewater kayaking (Bond Rogers and Rose, 2019). Given the disparity between male and female
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30 65 coaches in the traditional sports literature and a complete absence of literature relating to female
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32 66 ASCs, this study will prioritise gender as a key consideration.

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38 67 Therefore, the aims of the current study are:

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41 68 1. To extend the scope of sampling beyond the existing research;
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44 69 2. To describe the demographic profile of UK ASCs, with an emphasis on gender;
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47 70 3. To use demographic analysis to speculate on the extent to which ASCs are a distinct subset
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49 71 of coaches

50 51 52 72 **Method**

53 54 55 73 ***Participants***

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58 74 A targeted sample of 524 participants were recruited via word of mouth, professional association
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60 75 databases and social media. Inclusion criteria were that participants: 1) self-identified as an ASC, 2)

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3 76 were active in coaching adventure sports, and 3) were in possession of at least one coaching
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5 77 qualification in an adventure sport. Following inspection of the initial data set, 20 participants who
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7 78 did not meet one of the three inclusion criteria were excluded from the analysis.
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10 79 **Procedures**

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13 80 The present study was part of a larger project that included collecting data about ASCs' demographic
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15 81 information as well as their epistemological beliefs and personality type. Following ethical approval,
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17 82 participants were approached via email and asked to provide online informed consent after reading
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19 83 information about the study. An online survey was developed using a commercially available
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21 84 software package. An internet-based survey was considered appropriate as it allowed data from a
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23 85 large sample to be collected in a relatively short period of time (Tourangau, Conrad & Couper, 2013;
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25 86 Singh, Taneja & Mangalraj, 2009). The survey was piloted on seven ASCs who met the sample
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27 87 criteria. Following completion of the pilot survey, a focus group was convened to discuss the 'feel' of
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29 88 the survey, and how the participants related to the questions. This elicited minor changes in the
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31 89 construction of some of the questions.
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36 90 The final version of the survey consisted of a series of questions that recorded the following
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38 91 demographic variables: gender, age, education (mapped against the Regulated Qualifications
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40 92 Framework [RQF] from GCSE - 1 to doctoral study – 8; Gov.uk, 2019), years coaching, and main sport
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42 93 coached.
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46 94 Two further variables were included that sought to determine 'levelness' of practice. In order to gain
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48 95 a perspective of ASCs' normal coaching practice, i.e. what they do rather than their potential
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50 96 practice, we considered it important to differentiate between what the coach *normally does* versus
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52 97 what their qualifications *allow them to do*. For example, a highly qualified coach and coach educator
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54 98 could spend the majority of their time working with beginners. 'Coaching category' referred to the
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56 99 most frequently coached type of learner (e.g. beginner, developmental or performance). 'Coaching
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58 100 level' referred to the upper remit of the qualification (see table 2). This was a challenging task given

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3 101 the differing terminology used by professional associations to define levelness and remit. Our
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5 102 classification system considered coach educators to be more involved in the development of the
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7 103 sport and engaged at the forefront of the practises of their governing body. Thus, coach educators
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10 104 were assigned a higher coding value, even though we recognise that an individual may be an
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12 105 exceptional coach yet choose not to become a coach educator.
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15 106 **Data analysis**

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18 107 The data were transferred to IBM SPSS statistics 23 and coded appropriately. Descriptive statistics
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20 108 are presented in absolute terms, and as percentages. Chi-square tests were completed to examine
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22 109 the association between gender and previously listed variables. Statistical significance was accepted
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24 110 at $p < .05$. To adhere to the assumptions of the chi squared analyses, the 'years coaching' variable
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26 111 was collapsed into 4 stages, 'Stage 1' (0-4 years), 'Stage 2' (5-10 years), 'Stage 3' (11-20 years), and
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28 112 'Stage 4' (21+ years).
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35 114 **Results**

38 115 **Demographic profile**

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41 116 This section presents the descriptive statistics for the seven variables (n=504). The dataset consisted
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43 117 of 364 males (72.2%) and 140 females (27.8%). The modal age was 35-44 years, with a range of 18-
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45 118 74 years. Figure 1 shows that 370 (73.9%) participants were aged 18-44 years. Figure 2 presents
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47 119 frequency analysis for education and showed that 165 (32.7%) participants held a bachelor's degree.
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49 120 Moreover, 322 (64%) had exposure to higher education, in that they had studied at RQF level 4 or
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51 121 above. At the higher end, 68 (13.5%) held a master's degree and 11 (2.2%) held a doctorate. Analysis
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53 122 of years coaching revealed that 331 (65.7%) had been coaching for less than ten years. Conversely,
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55 123 46 (9.1%) had been coaching for 26 years or more (see figure 3). The frequencies of main sport
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3 124 coached are presented in Table 1; plain text denotes 179 land-based sport coaches (35.5%) and
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5 125 italics denotes 325 water-based sports coaches (64.5%).
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8 126 **[INSERT FIGURE 1 HERE]**
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11 127 **[INSERT FIGURE 2 HERE]**
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14 128 **[INSERT TABLE 1 HERE]**
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17 129 **[INSERT FIGURE 3 HERE]**
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20 130 **[INSERT TABLE 2 HERE]**
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23 131 The variable coaching category was comprised of 388 (77%) participants who coached at beginner
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25 132 level, 77 (15.3%) at developmental level, and 36 (7.1%) at performance level. Table 2 presents
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27 133 frequency analysis for coaching level. Evidently, 38.3% of coaches were qualified to coach beginners
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29 134 and/or intermediate level performers. Whereas 61.7% of coaches were qualified to coach advanced
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31 135 performers and/or were coach educators.
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34 136 ***Analysis by gender***

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37 137 **[INSERT TABLE 3 HERE]**
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40 138 This section presents the inferential statistics for associations between the demographic variables
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42 139 (age, years qualified and coaching level) and gender. The education and coaching categories were
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44 140 not associated with gender, and thus are not included in Table 3. Chi-squared analysis of main sport
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46 141 coached was significant, however only 3 of 30 standardised residuals were outside expected
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48 142 frequencies ($\chi^2 = 40.89, p < 0.05, V = 0.285$). Women were under-represented in mountaineering (SR
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50 143 -2.7), and over-represented in sailing/yachting (SR 2.5) and windsurfing (SR 2.6).
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53 54 144 ***Age***

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57 145 There was significant association between gender and age ($\chi^2 = 32.54, p < 0.05, V = 0.255$). Females
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59 146 were overrepresented in the 18-24 age bracket (SR 2.9). Moreover, 74.9% of females were younger

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3 147 than 35 years old. Correspondingly, females were underrepresented in both the 45-54 (SR -2.2) and
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5 148 55-64 (-2.1) age brackets (see Table 3 and Figure 1). Although somewhat skewed, male ASCs' age
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7 149 was more evenly distributed, which was indicative of a younger workforce.

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10 150 *Years coaching*

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13 151 Gender was significantly associated with years coaching ($\chi^2 = 21.67, p < 0.05, V = 0.207$). Females
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15 152 were overrepresented as 'early stage' coaches (SR 2.4), with 80.4% as either 'early stage' or
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17 153 'developmental stage' coaches. Correspondingly, females were underrepresented as 'established'
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19 154 coaches (SR -2.2) and 'late stage' coaches (SR -2.2; see Table 3). As with age, males were more
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21 155 appropriately distributed across the categories.

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25 156 *Coaching level*

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28 157 Gender was significantly associated with coaching level ($\chi^2 = 33.58, p < 0.05, V = 0.263$), insofar as
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30 158 females were significantly overrepresented at the level associated with coaching beginners - 'Level 1'
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32 159 (SR 3.1). The standardised residual in this case indicates an extremely large effect. Conversely,
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34 160 females were significantly underrepresented at 'Level 7' (coaching advanced performers & training
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36 161 coach educators). Also noteworthy is that only 10.1% of females were coach educators compared to
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38 162 27.1% of males.

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45 164 ***Summary of key findings***

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48 165 Data from this sample showed that 72.2% of ASCs were male. 73.9% were younger than 44 years
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50 166 old, and two thirds have been coaching for less than ten years. Evidently, ASCs were well educated,
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52 167 with 64% had studied at university level. ASCs were also highly qualified, with 61.7% qualified to
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54 168 coach advanced performers and/or were coach educators. Despite being highly qualified coaches,
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56 169 77% of ASCs coached at beginner level. Regarding gender, female ASCs were statistically younger,
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58 170 less qualified and less experienced than their male counterparts.

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3 171 **Discussion**
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6 172 This study had three aims. First, to continue extending the scope of sampling beyond within ASC

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8 173 research. Second, to describe the demographic profile of UK ASCs with an emphasis on gender.

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10 174 Third, to speculate on the extent to which ASCs are distinct from traditional sports coaches.

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13 175 With respect to the first aim, this study has been successful in recruiting a large and diverse sample

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15 176 of ASCs. This contrasts with the majority of extant research and provides a solid foundation for

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17 177 rigorous empirical analysis in the future. Our findings provide a basis for future research that may

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19 178 adopt a longitudinal approach that is conducive to tracking changes in the ASC workforce over time.

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21 179 Such an approach has already been achieved in research on more traditional sports coaches (Sports

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23 180 Coach UK, 2011; Thompson & Mcilroy, 2017). Notably, this research has clearly demonstrated an

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25 181 increase in female coaches.

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27 182 The large sample in the current study makes a significant contribution to the ASC literature. Our

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29 183 findings continue to move the research away from small-scale, interpretivist analysis of specific

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31 184 individuals and instances, and into large-scale nomothetic research. In addition to significantly

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33 185 increasing the size of the sample, the diversity within the sample is of particular interest. It has

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35 186 captured a broad range of ages, levels of education, coaching experiences and qualifications. It is

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37 187 also the first study to have recruited participants from a wide range of land-based and water-based

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39 188 adventure sports.

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41 189 The fact that this study was able to gather data from such a large sample of ASCs, in part, addresses

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43 190 the third aim of the study. This was to speculate on the extent to which ASCs exist as a distinct sub-

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45 191 set of coaches, a notion that has been previously forwarded by Christian et al. (2017), Collins and

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47 192 Collins (2012), Collins, Collins and Grecic (2014) and Sinfield, Allen & Collins (2019). It should be

48
49 193 recognised that the ASC literature is in its infancy and, as such, it is of no surprise that a limited

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51 194 range of research paradigms has been employed. Evidently the ASC workforce, as reflected in this

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53 195 study, is an eclectic and heterogenous group. The sample reflects diversity in terms of age,

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3 196 education, experience and sports coached. The size of the sample indicates there is a large number
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5 197 of individuals that identify as ASCs. We propose that the abundance of data collected from over 500
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7 198 participants is clear evidence that this group exists as a workforce that is unique in and of itself.
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10 199 Thus, we contend that ASCs do exist as a distinct sub-set of coaches. However, the relationship and
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12 200 commonalities that traditional and adventure sports coaches share has yet to be established. This
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14 201 would be an interesting and important topic for future ASC research, and would contribute further
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16 202 to understanding the uniqueness, or otherwise, of the ASC.
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23 204 The second and central aim of this study was to describe the demographics of the adventure sports
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25 205 coaching workforce. We collected demographic information regarding gender, age, education, years
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27 206 coaching, and main sport coached; thus, allowing for comparison with previous reports
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29 207 commissioned by Sports Coach UK (2017) regarding traditional sports coaches. Two further variables
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31 208 that captured levelness of practice (coaching level and coaching category) were recorded. The
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33 209 remainder of this discussion will detail general demographic points and then discuss the data by
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35
36 210 gender.

211 **Age**

212 Our data reflect a younger ASC workforce than as reported in the UK Coaching demographic analysis
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214 of 2017. At the younger end, 27% of the ASC workforce were between 18-24 years old compared to
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216 20% of traditional sports coaches. Furthermore, 74% of ASCs were under the age of 44 compared to
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218 65% of traditional coaches. In the older age categories, 26% of ASCs were over the age of 45,
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220 whereas 36% of traditional sports coaches fell into the 45+ age category. Although the explanation
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222 for these findings is beyond the scope of this study, some possible reasons are worthy of
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224 speculation. Christian et al. (2019) proposed that one significant difference between ASCs and
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226 coaches of more traditional sports was that ASCs coach in a more dynamic environment (i.e. a
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228 whitewater river). In this respect, ASCs must 'play the game' alongside the learner whereas a netball

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3 221 or tennis coach, for example, is able to coach from the side-line without being involved in the actual
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5 222 game. It follows that the ASC must be technically and physically capable of performing the activity
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7 223 that they are coaching to at least the same, if not higher standard than their charges. Potentially,
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9 224 this could be problematic for older coaches due to age-related declines in fitness levels, and/or
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11 225 injuries sustained throughout their careers (Kirk, 2012). Equally, the existence of a younger
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13 226 demographic could also be explained by the notion of a 'transient' workforce (Kirby, 2006) and the
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15 227 tendency of younger people to engage in seasonal work as instructors and coaches in the
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17 228 recreational adventure sector before pursuing education or training in other career destinations
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19 229 (Kirk & O'Connell, 2012). Similarly, Thomas (2002) speculated that limited career opportunities and
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21 230 inadequate mentor support contribute to frequent replacement of staff in the outdoor 'field' sector.
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23 231 Thus, the younger work force in our study is likely to be a result of a combination of factors.
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31 **Education**

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34 234 Although there is very little research that has considered levels of education of ASCs or traditional
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36 235 sports coaches, and the potential implications that this might have on coaching practice, we consider
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38 236 level of education to be a key variable in describing the demography of a sample and thus its
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40 237 inclusion was logical. The key finding from our data is that a significant proportion (around two-
41
42 238 thirds) of the sample had undertaken higher education. This finding is in agreement with other
43
44 239 comparable data, for example a study of field instructors in the USA found that 69% of practitioners
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46 240 held a Bachelor's degree (Marchand, Russell & Cross, 2009).

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50 241 In an endeavour to professionalise sports coaching in the UK, many governing body and professional
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52 242 association coaching qualifications are currently mapped against the UK Regulated Qualifications
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54 243 Framework (DCMS, 2007; Taylor & McEwan 2015). This provides a distinct body of knowledge,
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56 244 ongoing training and education that are viewed as integral components of a profession. It was
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58 245 beyond the scope of this study to identify what subjects ASCs held degrees in, thus whether these

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3 246 people are educated in coaching or outdoor related subjects is unknown. However, it seems that the
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5 247 ASC workforce, as identified in this study, are well educated. Whether ASCs are drawn to coaching
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7 248 because of their education (i.e. adventure sports are cerebral activities) or whether they engage
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10 249 with education as a result of the outdoors remains an unanswered but intriguing question, and one
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12 250 worthy of further study.

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15 251 ***Years coaching***

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18 252 The inclusion criteria for this study did not specify that adventure sports coaching was the
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20 253 participants' main or only employment. Therefore, the conclusions drawn about the length of time
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22 254 coaching are relatively speculative; for example, coach A may have coached full time for 10-years,
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24 255 whereas coach B may have also coached for 10-years on a weekly basis at a local club. Thus, the
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26 256 number of years coaching does not equate to the actual time spent coaching. Clearly, in this scenario
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28 257 coach A would have considerably more experience. For this reason, it would be problematic to
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30 258 compare our data to research that has recorded career longevity in other professions, for example
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32 259 teaching or nursing.

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36 260 Given the limitations outlined above it would be fair to assume that there would be a relationship
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38 261 between age and experience in any workforce. Our data are consistent with this, as two-thirds of the
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40 262 sample have been coaching for ten-years or less. We contend that this is partially an artefact of the
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42 263 young workforce and not entirely surprising. Fifty percent of the workforce have between six
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44 264 months and six years coaching experience: thus, a large percentage of the workforce is therefore
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46 265 relatively inexperienced. Given that this research is an exploration into ASC demographics, further
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48 266 analysis, explanation and comparison is problematic. That said, future research would do well to
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50 267 investigate the longevity of a career as a full time ASC. Specifically, it would be interesting to
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52 268 investigate whether the relatively young and inexperienced workforce is a function of: 1) lack of
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54 269 career progression and/or opportunity, 2) the job requirements are conducive to a younger
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3 270 workforce, or 3) adventure sports coaching is, by nature, an early stage work opportunity that
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5 271 provides a stepping stone to other career destinations.
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8 272 ***Main sport coached***
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11 273 This variable was included to gain an understanding of the range of sports that ASCs classed as their
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13 274 main discipline. Previous literature has focused almost exclusively on paddlesports coaches, more
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15 275 specifically BCU level five coaches. Such sampling has a narrow scope and represents only the upper
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17 276 echelon of coaching qualification (Collins & Collins, 2015; Collins & Collins 2016; Collins & Collins
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19 277 2017; Collins, Collins & Grecic 2015, Grey & Collins 2016). The current study sampled ASCs from 15
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21 278 different adventure sports, and thus has significantly expanded our understanding of the type of
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23 279 activities that ASCs are engaged in. Moreover, the participants were sampled based on holding any
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25 280 qualification, rather than a high-level award. This reflects that participants who hold an introductory
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27 281 level award self-identify as an ASC and we contend that this contributes to a broader understanding
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29 282 of the identity of the ASC workforce. Results showed that land-based sports accounted for 35.5% of
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31 283 the sample, with the remaining 64.5% coming from water-based sports. Clearly there is an
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33 284 asymmetry here that may not reflect the true demographic. However, we contend that the current
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35 285 study is primarily focused on who ASCs are, rather than what they do. Future research may look to
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37 286 address this issue by obtaining a balanced sample.
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46 288 ***Coaching category and Coaching level***
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49 289 Although not demographic variables per se, coaching category and coaching level were included in
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51 290 order to explore the 'levelness' of practice. These variables allowed for differentiation between the
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53 291 coach's normal practice and their potential practice given the upper remit of their qualification.
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55 292 Thus, the variables were interactive.
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3 293 A key finding related to coaching category was that 77% of the sample coached beginners, 15.3%
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5 294 developmental and 7.1% performance. Clearly the demand for adventure sports coaching is at the
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7 295 beginner level. Participants who were qualified to coach beginners and intermediates accounted for
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9 296 38.3% of the sample, whereas the remaining 61.7% were qualified to coach advanced, and/or were
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11 297 coach educators. These findings appear incongruent, as intuition suggests there would be a
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13 298 metaphorical 'qualification pyramid', whereby there would be a greater number of coaches qualified
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15 299 at foundation level (e.g. level 1 & 2) and a decreasing number of coaches with higher level
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17 300 qualifications. It should be noted here that coaches with higher level qualifications also hold
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19 301 qualifications at the lower end, as most qualifications structures are cumulative. For example, a level
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21 302 three coach is also a level one and two coach. Thus, notwithstanding participants who may have
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23 303 gone through an APL process, or direct entry to a higher-level qualification, all participants in the
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25 304 sample are qualified to coach beginners (i.e. are level one coaches).

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30 305 There is an interesting interaction between coaching category and coaching level. The majority of
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32 306 coaching is being delivered to beginners despite the sample holding high level qualifications. There
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34 307 are several potential explanations for this interaction, but these are made with caution as we
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36 308 recognise that each governing body or professional association pathway has its own nuanced
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38 309 structure. We also recognise that some governing bodies and associations have moved away from
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40 310 hierarchical 'levels' of qualification (that to an extent are based on increasing personal
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42 311 performance), thus making generalisations is a tentative endeavour. Nonetheless, we feel there are
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44 312 some interesting points for discussion that emerge from the data.

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49 313 First, it may be that a coach wishes to continue their professional development by means of gaining
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51 314 further qualifications. However, this may entail progressing to the next level of qualification (e.g. a
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53 315 level 2 coach may wish to become a level 3 coach). In some cases, such a progression might mean
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55 316 that the coach must work with a higher-level performer in a more advanced, dynamic environment
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57 317 even though this is not what the coach habitually does. This would also require the coach to extend
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3 318 their personal skill set to match the demand of the new coaching environment. In this instance, the
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5 319 coach may pursue a 'level' of qualification that does not represent their normal coaching practice.
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7 320 Again, as previously stated, we recognise that some UK governing bodies and professional
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9 321 associations have moved away from hierarchical structures. There is also a possible connection
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11 322 between coaches pursuing higher level qualifications, and the generally high level of education
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13 323 reflected in the sample, but this would require further investigation.
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17 324 A second explanation for the interaction between coaching category and coaching level could be the
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19 325 nature of 'performance' coaching in an adventure sports context. In competitive sport, performance
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21 326 is normally referenced against the relative success of competitors (e.g. win or lose). On the other
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23 327 hand, we propose that coaching advanced performers in adventure sports is more likely to take the
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25 328 form of shorter-term episodes associated with breaking performance plateaus, coaching to achieve
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27 329 an adventure challenge (such as climbing a classic route), or coaching for independence (e.g. to be
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29 330 able to ski off-piste with peers). The episodic, as opposed to sustained, nature of adventure sports
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31 331 coaching means that ASCs are likely to spend less time working with advanced performers, and more
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33 332 with beginner and developmental learners. We recognise our assertion is speculative, mainly as the
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35 333 data does not allow that level of interpretation, but it is a logical assertion that warrants further
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37 334 investigation.
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42 335 Third, from a pragmatic perspective, the reason the ASC workforce is coaching participants below
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44 336 the remit of their coaching qualifications may be a function of increased demand at the beginner
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46 337 level. Evidently, adventure sports coaching is a market-driven enterprise that is characterised by a
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48 338 large volume of beginners and developmental learners. There is some evidence for the increased
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50 339 demand, as highlighted in the introduction (Sport England, 2018).
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54 340 The exploratory nature of this research has engendered some interesting questions outside of the
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56 341 original research aims. The interaction between coaching category and coaching level was an
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58 342 unforeseen dynamic that requires further research to examine our assertions.
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344 ***Analysis by gender***

345 Aim three of the current study was to describe the demographics of ASCs by gender. We hope that
346 this would allow us to comment on the 'state of play' of gender representation in the workforce. As
347 previous research has highlighted, women are underrepresented in adventure sport coaching (Allin
348 & Humberstone, 2006; Bond Rogers & Rose, 2019; Humberstone, 2000; Warren, 2016). This is in
349 marked contrast to coaches of more traditional sports, where 46% of the workforce are female
350 (Thompson & Mcilroy, 2017).

351 A key finding of this study was the significant asymmetry between males (72.2%) and females
352 (27.8%). Additionally, the data from the current study indicates that female ASCs are predominantly
353 younger, less qualified and coach beginners. Moreover, as well as being underrepresented generally,
354 women had very little representation at the upper end of the coaching qualifications (e.g. coach
355 educators). If all things were equal, we would expect to see a similar percentage of women
356 represented at each level of qualification, but this is not the case. There were, in fact, 27.1% of
357 males qualified in the top four brackets of coaching level compared to 10.1% of women. This data
358 represented something of a 'double whammy' whereby women are underrepresented twice: within
359 the sample as a whole and at the more qualified end of the spectrum. These findings align with
360 research in 'traditional' sports coaching that has found that women face a glass ceiling when it
361 comes to accessing senior coaching positions (e.g. Wicker, Cunningham and Fields, 2019).

362 Researchers have reported a range of reasons for the lack of women in mainstream coaching
363 positions. These include gender-role stereotypes synonymising leadership with men and masculinity
364 (Kane, 2016), ineffective coach education adopting a blanket approach for male and female coaches
365 (Norman, 2008) and poor working conditions and sexism (Norman and Rankin-Wright, 2018).

366 Furthermore, within the outdoor industry, research has found that gender stereotypes continue to
367 perceive women as less adept at technical skills in the outdoor industry than men (Saunders and

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3 368 Sharp, 2002), and women lack confidence in technical skills as outdoor leaders (Bond Rogers and
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5 369 Rose, 2019). More research is required to examine the reasons for an underrepresentation of
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7 370 women ASC coaches, and particularly within the most senior coaching positions. An interesting
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9 371 dimension in the data is the interaction between gender, age and the experience (years qualified) of
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11 372 the sample. As previously mentioned, there is clearly a linear relationship between age and
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13 373 experience: as coaches get older, they gain experience. In respect to this interaction the data shows
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15 374 that women are significantly over-represented at the younger, less experienced end of the
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17 375 spectrum. For example, 22.1% of males fell into the 18-24 age bracket compared to 39.6% of
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19 376 females. At the other end of the age spectrum (45-64 years), males accounted for 29.6% of the
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21 377 sample compared to 12.2% of females. A similar trend can be observed in the experience data (years
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23 378 qualified). The relatively large number of young female coaches may be explained by one of two
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25 379 possible scenarios.

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30 380 First, the evidence suggests that women's time as an ASC is short-lived and they exit the role
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32 381 relatively early. Drawing on evidence from mainstream coaching literature, one reason for this trend
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34 382 could be the drop-out of women who have children or take on other significant domestic
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36 383 responsibilities (e.g. caring for elderly parents). Domestic responsibilities have been found to
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38 384 disproportionately limit the time available for women to engage in coaching compared to their male
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40 385 counterparts (Sports Coach UK, 2010).

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44 386 A second scenario could be that more women are now entering the ASC workforce, resulting in an
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46 387 increase in younger, less experienced female ASCs who have not yet gained higher level coaching
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48 388 qualifications. Despite the continued barriers reported by female coaches relating to a gendered
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50 389 coaching system (LaVoi & McGarry, 2019), it has also been found that female leaders in the outdoor
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52 390 industry positively aspire to break gender roles, encourage gender incongruity in their practices
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54 391 and feel that outdoor-related organisations are actively seeking to employ a gender-balanced
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56 392 workforce and are moving slowly towards gender equity (Davies, Potter & Gray, 2019). It is our hope
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3 393 that similar change toward gender balance and gender equity is being adopted within the ASC
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5 394 industry, and the overrepresentation of women at the lower levels of ASC will result in increased
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7 395 female representation at all levels of ASC moving forward.
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10 396 **Conclusion**

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13 397 We feel that we have addressed the three central aims of this study. With reference to aim one,
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15 398 there is no doubt that the study has extended the scope of sampling beyond existing research.

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18 399 Regarding aim two, this study has shown that in general, the demographic profile of UK ASCs is
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21 400 characterised by young, well-educated and well-qualified coaches, who are coaching primarily at
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23 401 beginner level and for recreational purposes. That said, the data in this study shows a marked
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25 402 asymmetry between male and female ASCs in that there was significantly less females who were less
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27 403 qualified, had been coaching for less time and were predominantly coaching at beginner level. We
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29 404 advocate further research that explores this gender asymmetry and shines a light on the gender
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31 405 issues evident in our data. Such research, that seeks to understand the 'why' of the current state of
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33 406 female ASCs, could act as a precursor to interventions aimed at redressing the balance, as has been
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35 407 the case in other sports, for example the BAME and Female Coach Initiative from the English Premier
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37 408 League (The FA, 2017).
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41 409 We feel that aim three has been partially addressed. The fact that this study was able to garner data
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43 410 from over 500 participants that self-identified as ASCs is clear evidence that this group of coaches
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45 411 exist in and of themselves. On the other hand, it is not clear whether they are 'distinct' from other
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47 412 sports coaches in terms of their self-identity and working practices. Although some authors have
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49 413 speculated on the differences in working practices between ASCs and more traditional sports
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51 414 coaches (Christian et al., 2017; Collins & Collins, 2012), to this point there is no evidence to support
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53 415 this assertion. We would welcome such investigation in the continuation of ASC research.
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3 416 We feel that the current study has made a significant contribution to the research insofar that it has
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5 417 described the ASC workforce in some detail. However, key demographic variables were overlooked
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7 418 for example ethnicity. Additionally, in order to have developed a deeper understanding of the ASC
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9 419 workforce; data pertaining to geographic location, employment status (full time, part time,
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11 420 volunteer) and financial reward would have been beneficial. Future ASC research would benefit from
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14 421 an understanding of these aspects.
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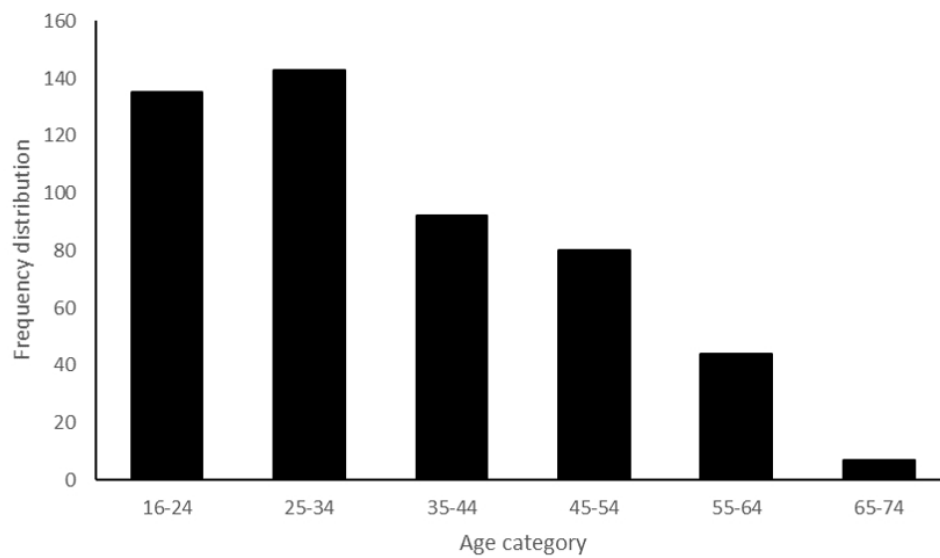


Figure 1. Frequency distribution of age.

146x87mm (149 x 149 DPI)

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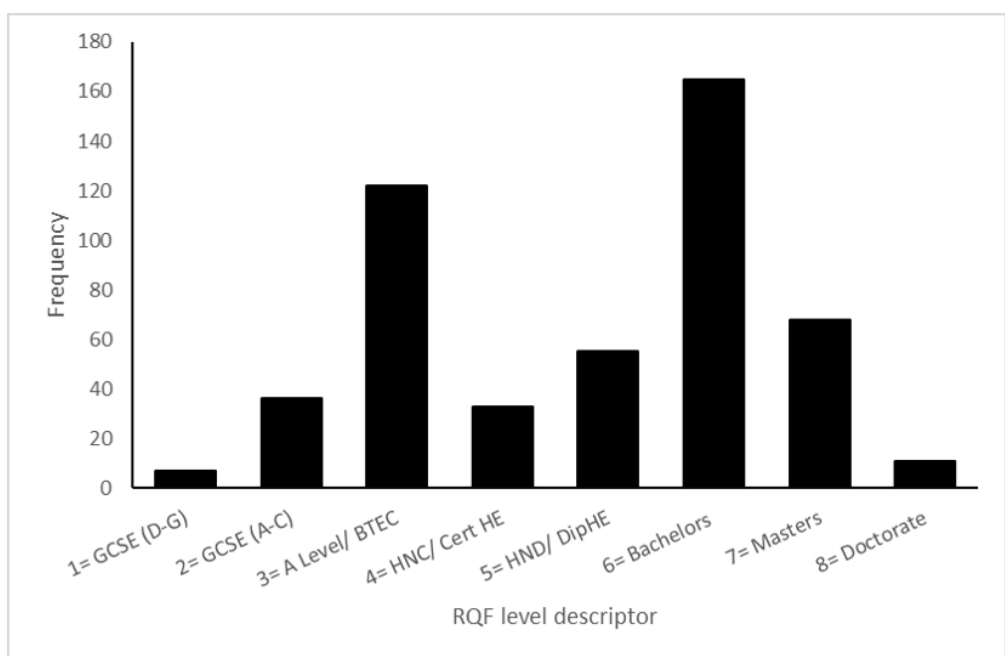


Figure 2. Frequency distribution of education.

140x91mm (149 x 149 DPI)

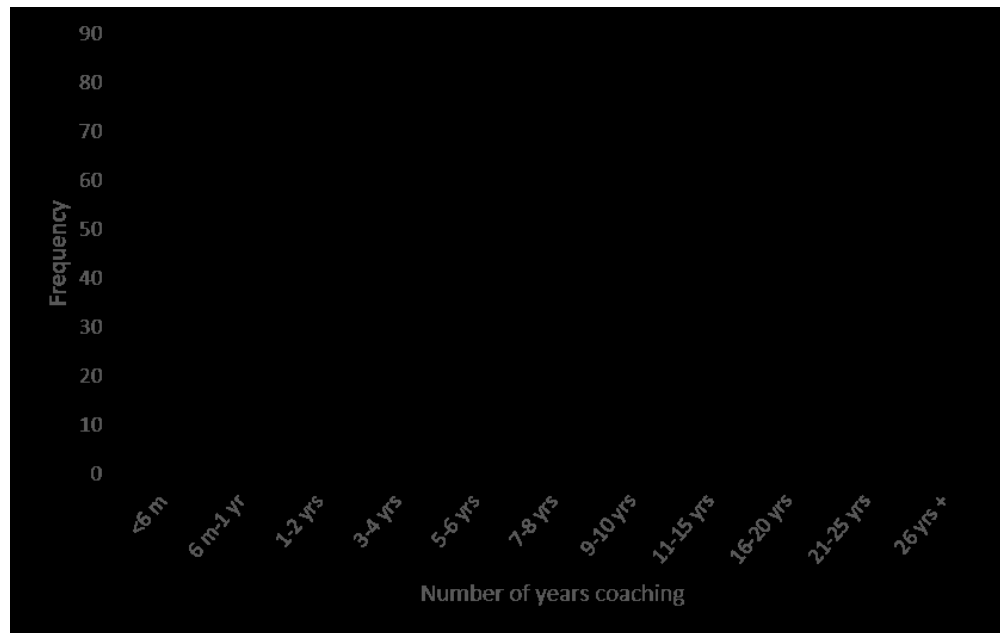


Figure 3. Frequency distribution of years coaching.

141x89mm (150 x 150 DPI)

Sport coached	Frequency	Percentage
BMX	6	1.2
Climbing	42	8.3
Mountain biking	47	9.3
Mountaineering	46	9.1
Skiing	30	6.0
Snowboarding	7	1.4
<i>Kite surfing</i>	12	2.4
<i>Paddlesport</i>	45	8.9
<i>Sailing & Yachting</i>	86	17.1
<i>Surfing</i>	16	3.2
<i>Wakeboarding</i>	6	1.2
<i>Water-skiing</i>	6	1.2
<i>Windsurfing</i>	151	30
SCUBA	3	0.6
Other	1	0.2
Total	504	100

Coaching level	Qualified to coach	Freq	%
1	Beginners	55	10.9
2	Intermediates	138	27.4
3	Advanced performers	184	36.5
4	Up to advanced, and can train coaches to coach beginners	30	6
5	Up to advanced, and can train coaches to coach intermediates	27	5.4
6	Up to advanced, and can train coaches to coach advanced	26	5.2
7	Up to advanced, and can train coach educators	24	4.8

For Peer Review Only

Variable	Male	Female	χ_2	df	Sig.	Cramer's V	SR (m)	SR (f)
Age	-	-	32.54	5	<0.05	.255	-	-
18-24	80 (22.1%)	55 (39.6%)	-	-	-	-	-1.8	2.9
25-34	94 (26.0%)	49 (35.3%)	-	-	-	-	-0.9	1.5
35-44	74 (20.4%)	18 (12.9%)	-	-	-	-	0.9	-1.5
45-54	68 (18.8%)	12 (8.6%)	-	-	-	-	1.3	-2.2
55-64	39 (10.8%)	5 (3.6%)	-	-	-	-	1.3	-2.1
65- 74	7 (1.9%)	0 (0.0%)	-	-	-	-	1.9	-1.4
Years qualified	-	-	21.67	3	<0.05	.207	-	-
Stage 1 (0 – 4 years)	95 (26.1%)	58 (41.4%)	-	-	-	-	-1.5	2.4
Stage 2 (5-10 years)	123 (33.8%)	55 (39.3%)	-	-	-	-	-0.5	0.8
Stage 3 (11-20 years)	89 (24.5%)	18 (12.9%)	-	-	-	-	1.3	-2.2
Stage 4 (20+ years)	57 (15.7%)	9 (6.4%)	-	-	-	-	1.4	-2.2
Coaching level	-	-	33.58	6	<0.05	.263	-	-
Coach beginners	27 (7.8%)	28 (20.1%)	-	-	-	-	-1.9	3.1
Coach intermediate performers	87 (25.2%)	51 (36.7%)	-	-	-	-	-1.1	1.8
Coach advanced performers	138 (40.0%)	46 (33.1%)	-	-	-	-	0.6	-0.9
Coach up to advanced & train coaches to coach beginners	24 (7.0%)	6 (4.3%)	-	-	-	-	0.6	-0.9
Coach up to advanced & train coaches to coach advanced	24 (7.0%)	3 (2.2%)	-	-	-	-	1.1	-1.7
Coach up to advanced & train coaches to coach advanced	22 (6.4%)	4 (2.9%)	-	-	-	-	0.8	-1.3
Coach up to advanced & train coach educators	23 (6.7%)	1 (0.7%)	-	-	-	-	1.4	-2.2