

The psychological responses of amateur riders to their horses' injuries

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The psychological responses of amateur riders to their horses' injuries

Abstract

Rationale: Equestrian sport is considered a high-risk environment for equine injury. Due to the close bond between horse and rider, it could be theorised that riders may be impacted psychologically by their horses' injuries, as seen in athletic pairs and with companion animal ownership. The extensive time commitment and responsibility of care within equestrian sport means that horse riders' day-to-day life is impacted in a way not seen in other sporting or leisure environments, thus providing a unique opportunity to investigate the psychological responses of riders to their horse's injury. *Objective:* The aims of this study were to investigate the psychological responses that amateur riders experienced when their horses were injured. *Methods:* 308 amateur horse riders (16 male and 292 female, median age 25-30 category) completed the Psychological Response to Sport Injury Inventory (19-item) (PRSII) and questions regarding demographics, investment in equestrian sport, the horse's injury and the length of rehabilitation. *Results:* Devastation was significantly affected by the weekly time investment of riders ($H(3) = 8.255, p = .041$) and the length of ownership prior to the injury ($H(2) = 7.690, p = .021$). Devastation, Feeling Cheated, Restlessness and Isolation were all significantly affected by the length of rehabilitation for the horse ($H(7) = 70.825, p = .000$, $H(7) = 37.799, p = .000$, $H(7) = 37.799, p = .004$, and $H(7) = 27.486, p = .000$ respectively). *Conclusions:* These findings suggest that amateur horse riders are at risk of psychological distress when their horse becomes injured. Whilst the industry has developed strategies to support owners following euthanasia which are already in place, psychological support following horse injury may be necessary to buffer psychological Devastation within amateur horse owners.

Key words: horse-owner, injury, Devastation, Isolation, rehabilitation,

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51

52 **Introduction**

53 Equestrianism involves training, dedication and commitment to succeed as a competitive
54 sporting event, and significant time investment, energy and emotion to produce a successful
55 working partnership between horse and rider (Dashper, 2017; Wolframm and Meulenbroek,
56 2012). The extensive time commitment and responsibility of care seen in equestrianism mean
57 that riders' day-to-day life is impacted in a way not seen in other sporting or leisure
58 environments (Dashper, 2017). Unlike other sport or leisure activities, this unique nature of
59 equestrian sports makes participation a 'way of life' rather than 'a part of life' (Dashper, 2017).
60 Horse riders have been reported to experience significant emotional attachments to their horses,
61 similar to that experienced by pet owners for companion animals such as dogs or cats (Field et
62 al. 2010; Mills and McNicholas, 2005; Wipper, 2000). Due to the caring aspect of the
63 relationship, people feel a responsibility and sense of purpose from owning pets which
64 promotes a sense of security, self-worth and joy (Morley and Fook, 2005). When a companion
65 animal dies, owners experience an array of emotional responses, including grief, guilt, anger,
66 helplessness and a sense of failure (Chur-Hansen, 2010). Riders have also been reported to
67 experience grief at the loss of a horse (Brackenridge and Shoemaker, 1996; Endenburg et al.
68 1999) although this partnership has been explored less in research.

69

70 Equine injury is common within general purpose (GP) or low-level competition horses (Murray
71 et al. 2006; Owen et al. 2012). In a review of 652 owners of GP horses, over 40% of horse
72 owners surveyed reported injuries in the last year. Of those horses injured, recovery spanned
73 <1 week to 12 months, with 37% of horses requiring box rest for between 1 day – 50 weeks
74 (median 14 days) and 6% requiring hospitalisation. Murray et al (2010) also reported 33% of
75 dressage horses (80% non-elite, 20% elite) had experienced lameness in their lifetimes and
76 Mellor et al (2001) identified that horses were likely to experience 0.88 vet visits per annum
77 for non-routine treatments, such as lameness assessment. This suggests that low-level or GP
78 horses are at risk of injury as much as elite level performance horses (Murray et al. 2010).

79

80 Athletes are known to experience complex psychological responses to injury, including
81 changes in cognitive appraisal, emotional responses and behavioural changes post-injury
82 (Wiese-Bjornstal et al. 1998). Cognitive appraisal and subsequent emotional and behavioural
83 responses of athletes have been extensively researched in a range of sports, and studies have
84 utilised the Psychological Response to Injury Inventory (PRSI) to measure the emotional and
85 behavioural responses of athletes to injury (Evans et al. 2008; Mitchell et al. 2014; Rees et al.
86 2010). The appraisal process suggests that injury triggers a cognitive re-evaluation, where
87 athletes assess their coping resources, the injury severity, prognosis for recovery, the re-
88 adjustment of goals and subsequent sense of relief or loss, dependent on whether goals are met
89 (Wiese-Bjornstal et al. 1998). Cognitive appraisal influences the emotional responses of the
90 athlete: a positive appraisal of coping ability may lead to a positive emotional response in the
91 athlete, whereas a sense of loss resulting from injury may lead to emotions such as grief, fear,
92 frustration or anger (Thatcher et al. 2007; Tracey, 2003; Walker et al. 2007). Initial grief
93 responses, similar to those reported in Kubler Ross's Grief Theory (1969), mimic loss, shock
94 and emptiness, classified as Devastation in sporting literature (Rees et al. 2010). The loss of
95 sport participation, or unfavourable progression with rehabilitation, leads athletes to experience
96 restless behaviour, frustration or anxiety about their return to sport, and a sense of feeling
97 cheated has been reported in many athletes, particularly when injury has resulted in the
98 adjustment of goals set (Mitchell et al. 2014). In paired sports, research into the psychological
99 consequences of another person's injury on a teammate has been undertaken (Day et al. 2013;
100 Kerr, 2007; O'Neil, 2008). Defined as vicarious trauma, it can have a profound impact on those

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101 experiencing it with athletes reporting emotional reactions such as horror, fear, helplessness
102 and depression as a result of observing their team-mate being injured (Day et al. 2013; O'Neil,
103 2008). This was seen by Davies et al (2017), who interviewed five elite young riders on their
104 experiences when their horse became injured during a competitive season and identified a sense
105 of loss, denial and guilt as strong emotional responses to their horses' injuries suggesting riders
106 could experience vicarious trauma in response to their horses' injuries.

107
108 Following emotional responses, athletes will likely experience behavioural changes in response
109 to the injury (Wiese-Bjornstal et al. 1998) which can positively or negatively impact
110 rehabilitation success depending on an athlete's cognitive appraisal. Athletes who refocus goals
111 to make effective use of their rehabilitation, working on additional constructs like strength,
112 endurance or confidence, are more mentally prepared to return to sport. This is measured
113 through the PRSII as Reorganisation (Evans et al. 2008). Behavioural responses can also
114 include adherence to rehabilitation activities, use of psychological skills strategies, use or
115 disengagement from social support structures, risk-taking behaviours and behavioural coping
116 techniques (Wiese-Bjornstal et al. 1998). These responses will influence the athlete's ability to
117 return to play successfully, and the quality and efficacy of their rehabilitation (Santi and
118 Pietrantonio, 2013) whilst research into pet ownership has reported sleep disturbances, obsessive
119 thoughts over the events leading to the death of a pet, or reluctance to discuss the event due to
120 fear of condescension and societal tendencies to trivialise grief (Morley and Fook, 2005;
121 Quackenbush, 1985; Stewart et al. 1985). In both populations, disengagement from a
122 community after injury can lead to increased feelings of isolation, which is negatively
123 associated with adherence to rehabilitation in the athlete population (Harris, 2003; Rees et al.
124 2010). Elite young riders reported that whilst they experienced societal judgement about the
125 injury or death of a horse, the equine community were more understanding of the significance
126 of this loss (Davies et al, 2017), which may create a unique protective environment for risk of
127 isolation in riders with injured horses.

128
129 The aims of this study were to investigate the psychological responses that amateur riders
130 experience when their horses are injured. It was expected that as time investment in the horse
131 increased, weekly and through the length of ownership prior to an injury, there would be
132 increasingly negative psychological responses from riders and decreased coping strategies
133 utilised to support recover. It is also expected that as rehabilitation length increases, riders will
134 experience increased negative psychological responses and decreased coping.

135

136 **Methodology**

137 *Participants*

138 A total of 333 participants volunteered for this study, recruited from advertisements placed on
139 social media, such as Twitter or Facebook, and equestrian forums such as Horse and Hound.
140 To be eligible to participate in the study, respondents were required to be horse riders, over the
141 age of 18 years, who had owned/loaned a horse that had undergone an injury, and classified
142 themselves as amateur riders. Ethical consideration was granted by the institutional ethics
143 committee prior to data collection.

144

145 *Measures*

146 The Psychological Response to Sport Injury Inventory (PRSII) was used to measure riders'
147 post-equine injury emotional and behavioural responses (Evans et al. 2008). The scale consists
148 of five subscales: Devastation, Feeling Cheated, Restlessness and Isolation with four items
149 each and Reorganisation that consists of three items. Devastation reflects feelings of shock and
150 emptiness, which have been reported to characterise athletes' responses to injury (Brewer et al.

1994; Rees et al. 2010). Reorganisation suggests constructs such as confidence (Evans et al. 2008) whilst Feeling Cheated displays bitterness and attempts to rationalise, and stems from time lost from sport participation (Mitchell et al. 2014). Restlessness also occurs from time lost from sport participation, and can reflect the feelings of anxiety and frustration because of an inability to participate (Mitchell et al. 2014). Finally, Isolation is widely reported in an injury context, and can have detrimental impact on rehabilitation through lack of social support during recovery (Wadey et al. 2012). The tool consists of 19 self-declarative statements that allow responses on a 5-point, strongly agree (1) to strongly disagree (5) scale (Evans et al. 2008). Mitchell et al (2014) report internal consistency values ranging between $\alpha = .65 - .80$ for PRSII subscales, with some subscales below Nunally's (1978) standard of $\alpha = .70$. Participants were also asked questions relating to their participation in equestrian sport including their years of riding experience and time investment per week, and their horse's injury, such as length of rest prescribed for rehabilitation and type of injury.

165 **Procedure**

166 The PRSII (Evans et al. 2008), participation and equine injury questions were transferred to an
167 online survey produced by www.qwiksurveys.com and distributed through social media and
168 equestrian forums. The use of online surveys allows interactions with a more diverse
169 respondent group whilst obtaining a large sample at the convenience of the researcher and
170 participant (Evans and Mathur, 2005). Online recruitment required consent prior to starting the
171 questionnaire. Following consent, participants answered 32 questions, taking approximately 10
172 minutes to complete, dependent on computer literacy. The sample was opportunistic and
173 therefore not representative of the wider equestrian population, however potential respondent
174 bias was minimised by utilising a wide range of online sites to recruit participants (Evans and
175 Mathur, 2005).

177 *Data Analysis*

178 Questionnaire responses were analysed to produce PRSII subscale scores. Each subscale was
179 calculated by adding the 1-5 scores from categorised questions to create a subscale score
180 measured out of 20 (with Reorganisation score out of 15) (Evans et al. 2008). A total of 333
181 questionnaires were submitted, however 25 questionnaires were incomplete and therefore 308
182 were analysed. Spearman's Correlation Coefficient test ($P < 0.05$) was used to examine the
183 relationship between each of the subscales of the PRSII to confirm the validity of the PRSII to
184 assess psychological response to injury. Following assumption testing, the differences in PRSII
185 subscales between the rider's time investment (days per week, and ownership prior to injury)
186 and rehabilitation length, were analysed using Kruskal-Wallis tests ($P < 0.05$) with subsequent
187 pairwise comparisons, with adjusted P values.

189 **Results**

190 *Descriptive statistics*

191 The questionnaire was fully completed by 308 participants (16 male and 292 female, median
192 age 25-30 category). 67.9% of riders in this study reported over 15 years riding experience,
193 with the remaining participants having ridden for 7 – 14 years (25.6%), 4 – 6 years (4.2%) and
194 1 – 3 years (2.3%). All riders in this study had at least one year's riding experience and the
195 majority of riders visited the yard daily ($n = 263, 85.4\%$). All riders owned (95.5%) or loaned
196 (0.5%) the horse when it became injured and the injuries are outlined in Table 1.

197
198
199
200

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201 Table 1: Descriptive statistics for reported equine injuries from the sample of 308 owners,
202 including N and total %
203

Reported Equine Injuries	N	% Total
Tendon/Ligament	134	43.5%
Back/Neck	45	14.6%
Muscular Injuries	8	2.5%
Colic	17	5.4%
Head Trauma	8	2.5%
Body Trauma	24	7.7%
Foot or Abscess	66	21.3%
Extreme behavioural problems	8	2.5%

204

205

206 Equine rehabilitation time ranged from less than one week to resultant euthanasia of the animal,
207 with 19.2% requiring less than 1 month, 37.3% requiring 1 – 6 months, 27.6% requiring greater
208 than 6 months and 15.9% retiring from career (n= 23) or being euthanized (n= 26). All mean
209 and standard deviation values for the PRSII subscales are reported in Table 2. Only results
210 found to be statistically significant ($P \leq 0.05$) are included within the results.

211

212 Table 2: Means and standard deviations of the five PRSII subscales scored from 4 – 20 (4 –
213 15 for Reorganisation), with a higher score indicating a greater psychological response
214

PRSII Subscale	Mean	Standard Deviation	Range
Devastation	11.31	4.78	4 - 20
Reorganisation	6.76	3.11	3 - 15
Feeling Cheated	9.08	4.07	4 - 20
Restlessness	10.80	4.64	4 - 20
Isolation	7.69	4.19	4 - 20

215

216 *Validity of using PRSII for this sample*

217 Subscales of Devastation, Reorganisation, Restlessness and Isolation of the PRSII in this study
218 all had high internal reliabilities, ($\alpha = .73 - .83$). The subscale of Feeling Cheated had lower
219 internal reliabilities, ($\alpha = .67$). Four of the five subscales (Devastation, Feeling Cheated,
220 Restlessness and Isolation) showed strong positive correlations between subscales in this
221 population ($r_s = .564 - .706$, $p < .001$). Reorganisation showed a weak negative correlation to
222 Restlessness ($r_s = -.133$, $p < .05$) but no significant correlations were identified with other
223 subscales. As Reorganisation is a positive construct, whilst the other four subscales are negative
224 constructs, no relationship was expected.

225

226 *Time Investment*

227 Weekly time investment (days)

228 Devastation was significantly affected by weekly time investment of the rider (days), $H(3) =$
229 8.255 , $p = .041$. Devastation was reduced for riders who attended the yard 1-3 days per week
230 (7.92 ± 4.89) compared to those who were there every day (11.51 ± 4.74) ($p = .029$, $r = -.170$).
231 All other pairwise comparisons were non-significant, $p > 0.05$.

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232

233 How long owned horse for before injury

234 Devastation was significantly affected by how long the participant had owned the horse, $H(2)$
235 $= 7.690$, $p = .021$. Devastation was higher for riders who had owned the horse 3 – 4 years
236 (12.55 ± 4.48) compared to those who had owned the horse 1 – 2 years (10.93 ± 4.63) ($p =$
237 $.041$, $r = -.165$) or longer than 5 years prior to the injury (10.82 ± 5.14) ($p = .040$, $r = .194$). All
238 other pairwise comparisons were non-significant, $p > 0.05$.

239

240 *Rehabilitation Length*

241 Devastation was significantly affected by the length of the horses rehabilitation, $H(7) = 70.825$,
242 $p = .0001$. Due to the number of significant pairwise comparisons, all pairwise comparisons
243 and means \pm standard deviations for each category of rehabilitation length are reported in Table
244 S3. Devastation appears to increase as their horses rehabilitation gets longer, up to a
245 rehabilitation length of 1 – 2 years (12.14 ± 3.73) . Peak Devastation was seen for owners whose
246 horses were euthanized (17.27 ± 3.26) or suffered career ending injuries (14.17 ± 4.11) .

247

248 Feeling Cheated was significantly affected by the length of the horses rehabilitation, $H(7) =$
249 37.799 , $p = .000$. The sense of Feeling Cheated increased for riders whose horses were
250 euthanized (13.04 ± 4.48) compared to those whose horse's recovery was less than 1 week
251 (5.86 ± 2.79) ($p = .001$, $r = -.715$), 1 – 4 weeks (7.94 ± 3.99) ($p = .000$, $r = -.557$), 1 – 6 months
252 (8.85 ± 4.01) ($p = .001$, $r = -.353$) or 6 – 12 months (8.59 ± 3.51) ($p = .002$, $r = -.428$). Riders
253 also felt more cheated when their horse suffered a career ending injury (11.04 ± 3.86) compared
254 to those with less than 1 week recovery (5.86 ± 2.79) ($p = .026$, $r = -.604$) or 1 – 4 weeks
255 recovery post-injury (7.94 ± 3.99) ($p = .016$, $r = -.397$). All other pairwise comparisons were
256 non-significant, $p > 0.05$.

257

258 Restlessness was significantly affected by the length of the horses rehabilitation, $H(7) =$
259 37.799 , $p = .004$. Restlessness increased for riders whose horses were euthanized (13.96 ± 4.42)
260 compared to those whose horse's recovery was 1 – 4 weeks (9.87 ± 4.80) ($p = .007$, $r = -.415$)
261 or 1 – 2 years (9.38 ± 3.47) ($p = .040$, $r = -.465$). All other pairwise comparisons were non-
262 significant, $p > 0.05$.

263

264 Isolation was significantly affected by the length of the horses rehabilitation, $H(7) = 27.486$,
265 $p = .000$. Isolation was higher for riders whose horses were euthanized (10.00 ± 4.39) compared
266 to those whose horse's recovery was less than 1 week (4.86 ± 2.27) ($p = .019$, $r = -.590$), 1 – 4
267 weeks (7.19 ± 4.77) ($p = .023$, $r = -.379$), or 6 – 12 months (6.81 ± 3.46) ($p = .032$, $r = -.353$).
268 Isolation was also higher for riders whose horses suffered a career ending injury (9.57 ± 4.32)
269 compared to those whose recovery was less than 1 week (4.86 ± 2.27) ($p = .046$, $r = -.575$). All
270 other pairwise comparisons were non-significant, $p > 0.05$.

271

272 **Discussion**

273 The aims of this study were to investigate the psychological responses that amateur riders
274 experienced when their horses were injured. Increased time investment in the horse led to
275 higher levels of rider Devastation after injury whilst injuries requiring longer rehabilitation
276 time led to riders experiencing higher levels of Devastation and a sense of Feeling Cheated.
277 Riders became restless and isolated as rehabilitation length progressed towards 12 months.
278 Finally, riders whose horses were required to be euthanized or suffered career ending injuries
279 suffered the most devastation, frustration, restlessness and isolation as a result of their horses'
280 injury.

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281 Riders who spent every day at the yard were more devastated at the onset of their horse's injury
282 than riders who frequented the yard less often. Horse riding has been reported as a 'way of
283 life', and a duty of care to the horse means it is not usual practice for an owner to visit the barn
284 daily (Anderson, 2011; Ojanen, 2012). A significant motivator for equestrian involvement is
285 the development of the human-horse bond (Buchanan and Dann, 2006) and research into other
286 domestic animals suggests that the way the owner 'views' their animal, in respect of the
287 emotional bond and relationship formed, affects their management practices (Hausberger et al.
288 2008; Lensink et al. 2001). Daily care and management supports the accepted notion that
289 equestrians consider their horses as part of the family (Mills and McNicholas, 2005) suggesting
290 the 'views' of riders towards the horse is that of a partner or friend, requiring significant care.
291 Strength of attachment is considered a predictor of grief when an animal is lost (Field et al.
292 2009) and the daily commitment of riders towards caring for their horses suggests strong
293 attachments which may explain higher devastation levels for those riders who spent more time
294 at the yard.

295
296 In companion animal research, it is suggested that the longer someone owns a pet, the better
297 the bond formed between owner and animal (Morley and Fook, 2005). Stallones (1994)
298 suggests that people who owned their pets longer experienced increased devastation when the
299 animal died, due to forming more established relationships. This study identified that riders
300 who had owned their horse for between 3 – 4 years were the most devastated by the injury,
301 compared to those who had owned the animal less than 2 years, or more than 5 years. Riders
302 who had owned horses for longer than 5 years would perhaps be more likely to expect injury
303 due to the horse being older; significantly more injuries are reported in older horses than
304 younger (Egenvall et al. 2009). Unlike companion animals, horses are also more likely to suffer
305 from injuries associated with exercise, such as tendinopathy or musculoskeletal damage, rather
306 than simply those associated with old age, further increasing the risk of injury. This establishes
307 an assumption of risk for all horse owners, knowing that it is not 'if' the horse gets injured, but
308 'when' (Dasher, 2013; Frey et al. 2004). This assumption may explain why those riders who
309 owned their horses longer than 5 years were less devastated than owners of 3-4 years, as there
310 was an increased cultural expectation of risk, based on the horses' age and training, which
311 reduced the shock, and thus devastation experienced.

312
313 Length of Rehabilitation impacted almost all subscales on the questionnaire. The longer the
314 horses' rehabilitation, the more riders experienced Devastation, Restlessness and Feeling
315 Cheated. Horse riders have been reported to experience high levels of neuroticism (Wolframm
316 et al. 2015) which Canli (2006) suggests exposes them to difficulties in dealing with stressful
317 situations, and heightens emotional reactions to negative events, such as loss of their horse,
318 which may help to explain the heightened emotional responses to injury seen in this study.

319
320 Injuries that require lengthy recovery periods may induce high levels of Devastation in riders
321 due to the severity of the injury, and associated pain that riders perceive that horse to be in as
322 a result. This could be described as empathy, a 'vicariously induced emotional reaction ... that
323 is similar to the other's emotional state or consistent with the other's situation' (Eisenberg,
324 1988). Empathy has been shown to increase when viewing others in pain or distress,
325 particularly when they have an emotional attachment with that person (Decety and Cowell,
326 2014), seen in paired sports where a partner experiences fear, depression and helplessness when
327 their team mate is injured (Day et al. 2013; Kerr, 2007; O'Neil, 2008). In recent literature, the
328 concept has been extended to human-animal bonds with research suggesting that empathy is a
329 factor in recognising pain in animals (Ellingsen et al. 2010; Furnham, et al. 2003). If empathy
330 is experienced by a partner within team sports, and research suggests that increased empathy

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331 leads to further recognition of animal pain, it could be theorised that high levels of devastation
332 in amateur riders is the result of empathy to their horse's situation.

333
334 Increased severity of injury, and subsequent rehabilitation time, also has negative implications
335 to the prognosis of the horse's recovery leading to riders feeling uncertain about the future.
336 Uncertainty about return to sport, alongside being emotionally unprepared for the significant
337 changes resulting from injury, could lead to riders feeling anxiety, bitterness and frustration,
338 reported in this study as higher levels of Restlessness and Feeling Cheated (Bailie and Danish,
339 1992; Bianco et al. 1999). During injury, most amateurs lose the ability to ride, and whilst care
340 of the horse is an important characteristic of equestrian sport, the disengagement in riding
341 activities, possible loss of exercise and changes in structure and routine that influenced the
342 riders pre-injury normality (Dashper, 2017), could increase feelings of Restlessness and
343 Feeling Cheated. The ridden component of riders' engagement within equestrianism is also
344 considered central to the social environment, with riders feeling 'out of the loop' when unable
345 to engage in riding activities with peers (Dashper, 2017). More than just the social activity or
346 physical exercise, riding is linked to feelings of kinaesthesia and 'embodied mindfulness',
347 engaging multiple and complex sensory and motor fields which may lead to feelings of
348 frustration if lost (Dashper, 2017). Alongside the reduction in ridden activity for riders, injured
349 horses pose significant financial burdens to owners, due to high maintenance costs and
350 veterinary bills. This can add further psychological distress to the rider, who may be required
351 to make a decision about whether they can afford to keep the horse.

352
353 Riders who 'lost' their horse experienced the highest isolation scores, although in comparison
354 to other sports the values reported only demonstrated moderate feelings of isolation. This
355 suggests that whilst loss of a horse impacts a rider's social behaviour, the equestrian
356 environment may still offer some community to reduce the impact of isolation after injury in
357 amateur horse-riders. Within a sporting context socialising with those who have had similar
358 experiences is healthy for psychological recovery in injured athletes (Hogan et al. 2002) and
359 this is echoed in the equestrian community; 'horsey' friends, coaches and other riders were
360 considered the best support network when horses suffered career-ending injuries (Davies et al.
361 2017). Dashper (2017) suggests that being 'horsey' is a universally accepted construct, and has
362 shared norms, values and behaviours regardless of professional or amateur status. It could be
363 suggested that the subculture of equestrian sport has its own societal expectations for the loss
364 of a horse that has allowed the industry to create available support networks for all riders
365 affected by euthanasia, decreasing possible risk of isolation after injury in this population.
366 Within the equine industry, various support schemes and initiatives exist to support horse
367 owners affected by the decision or aftermath of euthanasia, but not specifically for equine
368 injury (BHS, 2017). The British Horse Society offer 'Friends at the End', a national network
369 of over 50 Welfare Officers who have received bereavement counselling to support owners
370 affected by euthanasia. Similarly the Blue Cross offer a bereavement services phone line and
371 World Horse Welfare offer support services for those owners making a plan for euthanasia but
372 none of these services support owners whose horses are injured for extended periods or
373 impacted by forced early retirement (BHS, 2017).

374
375 There are limitations to consider within the study. The online sample, although a quick way to
376 obtain greater access to a wider population of amateur riders, may have been subject to self-
377 selection bias whereby only a specific type of person fills in the questionnaire or utilises the
378 online forum or social media site (Wright, 2005). This may have skewed the participants to
379 include only those riders who were significantly impacted by the injury or loss of their horse.
380 Furthermore the reliability of self-report measures are affected by an individual's self-

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381 awareness (Hanin, 2000). Lack of awareness from riders about their emotional responses to
382 their horses' injuries may have influenced their ability to answer the questionnaire.

383
384 Future research in this area should explore amateur riders' responses to their own injuries
385 obtained within equestrian sport and how this impacts motivation to return to riding. Horse
386 riding is considered a high risk sport, with risk of rider injury 3.5 times more likely to occur
387 compared to motorcycle riding (Ball et al. 2007; Fleming et al. 2001). As with many high risk
388 sporting activities, injury can lead to attrition from the sport or failure to return to the same
389 level of participation. With approximately 0.7 million riders dropping out of the sport between
390 2012 and 2015 (BETA, 2015), ensuring continued participation in the sport is paramount to its
391 continued survival as a serious leisure and sporting activity.

392

393 **Conclusion**

394 The study found that amateur riders experience negative psychological responses to the injury
395 of their horses. Increased time investment in the horse led to higher levels of rider Devastation
396 after injury whilst injuries requiring longer rehabilitation time led to riders experiencing higher
397 levels of Devastation and a sense of Feeling Cheated. Riders became restless and isolated as
398 rehabilitation length progressed towards 12 months. Amateur horse riders are at risk of
399 psychological distress when their horse becomes injured, and this is particularly prominent in
400 owners of horses requiring euthanasia. The Equine Industry has already implemented
401 successful bereavement support programmes for horse owners following euthanasia, but as
402 demonstrated by this study, riders experience high levels of Devastation from forced early
403 retirement as well as extended periods of injury and therefore further psychological support
404 may be necessary to address the Devastation within these populations.

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