

TITLE

“I still wake up with nightmares” . . . The long-term psychological impacts from gymnasts’ maltreatment experiences

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28 Abstract

29 Within the elite environment, female gymnasts have been exposed to various forms of
30 maltreatment. While the effects of child maltreatment have documented physical and
31 psychological consequences stemming into and throughout adulthood, no researchers in the
32 sporting context have included neglect within their focus of athlete experiences. This study
33 sought to provide an understanding of retired gymnasts' maltreatment experiences, including
34 both acts of commission (physical and emotional abuse) and omission (neglect), and the
35 subsequent long-term psychological impacts from being part of the elite gymnastics culture.
36 One semi-structured interview ($M = 96$ min, $SD = 46.62$) was conducted with 12 retired
37 International and National level women's artistic gymnasts (M age = 29 years, $SD = 4.76$).
38 Participants reported being retired from the sport between seven and 20-years ($M = 12$; $SD =$
39 4 years), with career lengths between eight and 15-years ($M = 11$; $SD = 2.1$ years). Through
40 reflexive thematic analysis three themes were constructed: what we went through; how it's
41 affecting us now; and will things ever change? Findings highlighted the multiple forms of
42 maltreatment endured by gymnasts, had a prolonged psychological impact, including
43 clinically diagnosed disorders, on their lives up to 20-years post-retirement, lending initial
44 support to attachment theory. We hope this understanding demonstrates the need to change
45 the beliefs surrounding the culture and the relational coaching practices. Further, that
46 effective provisions are implemented to both prevent the abuse from happening and support
47 those gymnasts who have been affected both during and after their retirement from the sport.

48

49 *Keywords: Gymnastics, Culture, Abusive Practices, Neglect, Qualitative*

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52 “I still wake up with nightmares”...The long-term psychological impacts from
53 gymnasts’ maltreatment experiences

54 Over the last decade, maltreatment in sport has received a great deal of attention (e.g.,
55 Kavanagh et al., 2017; Kerr & Stirling, 2019; Kerr et al., 2020; McMahon & McGannon,
56 2021). Crooks and Wolfe (2007) defined maltreatment as: “volitional acts that result in or
57 have the potential to result in physical injuries and/or psychological harm” (p.640).
58 Stemming from the child development literature, maltreatment has been conceptualized as an
59 umbrella term, encompassing a range of specific types of abuse (physical, sexual, and
60 emotional) and neglect (Fortier et al., 2020). Neglect refers to a lack of reasonable care and
61 an all-round deprivation of attention, resulting in significant harm or risk of significant harm
62 (Matthews, 2004). However, while neglect has been investigated within the child
63 maltreatment literature (e.g., Norman et al., 2012), it has not tended to be the focus of athlete
64 experiences within the sporting context (Stirling, 2009).

65 The three different forms of abuse, namely: physical, sexual, and emotional, have
66 been reported by athletes from a variety of sports (Wilinsky & McCabe, 2020). In their
67 systematic review of child abuse in the context of sport, Alexander et al. (2011) found
68 physical abuse to occur in three ways, including: acts of physical assault inflicted on the child
69 athlete; forced overtraining leading to risk of injury; and being forced or encouraged to train
70 while injured or exhausted. Sexual abuse referred to interactions perpetrated against the
71 athletes’ will and included touching and/or non-touching sexual offenses (Matthews, 2004).
72 While emotional abuse (used synonymously in the literature as psychological abuse), was
73 defined as a pattern of deliberate non-contact behaviors by a person within a critical
74 relationship role, that has the potential to be harmful (Stirling & Kerr, 2010). Within the
75 sporting context, the most common forms of emotional abuse were found to be shouting,
76 belittling, threats, and acts of humiliation (Gervis & Dunn, 2004).

77 Fundamental to understanding maltreatment in sport, is the misuse of power to engage
78 in inappropriate behaviors (Kerr et al., 2019), including both acts of commission (abuse) and
79 omission (neglect). Within women’s artistic gymnastics, authoritarian coaching - one that is
80 based on a power differential between the coach and athlete - is notably prominent (Kerr,
81 2014). The coach-athlete interaction has been conceptualized as a critical relationship, in
82 which one individual should be dependent on another for their sense of safety, trust, and
83 fulfilment of needs (Crooks & Wolfe, 2007). This is particularly important in gymnastics,
84 given the young age of elite gymnasts and considerable time spent with their coaches, often
85 training between 20-30 hours per week (Jacobs et al., 2017). Conversely, authoritarian
86 coaching patterns of emotionally and physically abusive or neglectful behaviors, can result in
87 physical and/or psychological harm within a critical relationship (Stirling & Kerr, 2010). For
88 example, coaches through this power differential have been known to create uncompromising
89 environments that caused short- and long-term injuries, emotional disorders, and abusive
90 coach-gymnast relationships (Jacobs et al., 2017; Stirling & Kerr, 2014).

91 Authoritarian coaching has been viewed as normative within the performance culture
92 and ‘win at all costs’ narrative, producing gymnasts who are compliant and do not question
93 their training intensity, content, or potential risks (Barker-Ruchti & Schubring, 2016;
94 Cavallerio et al., 2016; Pinheiro et al., 2014; Smits et al., 2017). Cruickshank and Collins
95 (2012) defined culture as: “the shared values, beliefs, expectations, and practices across the
96 members and generations of a defined group” (p.340). While the coach is often seen as the
97 main perpetrator of maltreatment, it is important to recognize that organizational systems and
98 wider sporting personnel also play a role in this culture. Indeed, in the Jacobs et al. (2017)
99 study, high-performance directors highlighted that winning is what constitutes elite sport and
100 although acknowledged that some of their coaches’ actions could be seen as inappropriate,
101 they rarely intervened and accepted these behaviors as part of the gymnastics culture.

102 In addition to empirical evidence, the sport of gymnastics has been in the spotlight
103 following the conviction of USA team doctor Larry Nassar, who was found guilty of sexually
104 abusing 256 gymnasts between 1998 and 2015 (Mountjoy, 2018). Since then, gymnasts from
105 Australia, New Zealand, and the United Kingdom (UK) have started to speak out about the
106 physical and emotional abuse they endured throughout their careers. This has resulted in
107 enquiries, such as the Whyte Review commissioned by Sport England and UK Sport, and the
108 Australian Human Rights Commission to independently examine the allegations and review
109 the policies currently in place for safeguarding children in gymnastics. Kerr and Stirling
110 (2019) note the term safeguarding refers to measures to assure athletes' safety and human
111 rights. They critiqued safeguarding research within sport as still being in its infancy, with
112 many important questions in need of exploration. For example, while the emergence of
113 interest into the occurrence of maltreatment within sport and specifically abuse in gymnastics
114 is clear, little is known about the possible lasting consequences, where safeguarding measures
115 have arguably fallen short.

116 Attachment theory offers a framework for understanding maltreatment and focuses on
117 the child's responses as opposed to the maltreater's behavior. Originally proposed by Bowlby
118 (1982) attachment theory describes the origins of interpersonal bonds (secure, avoidant,
119 ambivalent, and disorganized attachments) with significant others, particularly those who
120 should offer the promise of security. A secure attachment is considered important for the
121 development of positive social-emotional competence, cognitive functioning, mental health,
122 and well-being (Mónaco et al., 2019). Whereas avoidant, ambivalent, and disorganized-
123 insecure attachment styles are negatively linked to relationship and sport satisfaction (i.e.,
124 dissatisfaction with training and instruction, personal treatment, and performance) and athlete
125 affective well-being (Davis & Jowett, 2014). Fundamental to each attachment style is the
126 underlying construct of internal working models of self-worth, that are cumulative

127 representations of the self and of significant others. In line with our study, it takes the
128 gymnast's perspective with respect to the long-term impacts of their childhood maltreatment
129 experiences on self-worth, perception, and functioning (Bacon & Richardson, 2001).

130 Drawing upon literature outside of the sporting context, the long-term effects of child
131 maltreatment have been investigated, with documented physical and psychological
132 consequences stemming into and throughout adulthood (Norman et al., 2012). For example,
133 child maltreatment has been associated with greater internalizing symptoms (e.g., depression,
134 self-esteem), externalizing behaviors (e.g., aggression, substance abuse), as well as clinical
135 diagnoses including anxiety disorders, eating disorders, and post-traumatic stress disorder
136 (Arata et al., 2005; Higgins & McCabe, 2001; Springer et al., 2007). Within the sporting
137 domain, contemporary researchers have started to explore the impacts of abuse post-sport
138 (Kerr et al., 2020; McMahon & McGannon, 2020, 2021). For example, across a range of
139 individual and team sports, Kerr et al. (2020) interviewed eight retired, elite, female Canadian
140 athletes who reportedly experienced emotionally abusive coaching practices. Of particular
141 significance was the observation that negative effects persisted in the long-term, including
142 disruption of relationships, avoiding talking about traumatic events, intrusive nightmares, and
143 negative self-concepts. In storied form, McMahon and McGannon (2020, 2021) represented
144 how former swimmer's experiences of abuse and ill-treatment permeated their lives post-
145 sport. They self-managed their abuse by using indirect self-injury, for example purging food,
146 abuse of prescription medications, excessive alcohol use, and sexual promiscuity.

147 Taken together, the findings of these studies as well as those from the general child
148 abuse literature indicate the need for further research devoted to understanding the long-term
149 effects of maltreatment in sport. To date, no researchers within the sporting domain have
150 included neglect within their focus of athlete experiences. As a result, the aim of our study
151 was to provide an understanding of retired gymnasts' maltreatment experiences, including

152 both acts of commission and omission. Adopting an interpretivist paradigm will allow
153 valuable insights to be obtained, in relation to the sport's impact during their elite women's
154 artistic careers through to their lives post-gymnastics. The following research questions
155 underpinned the study: (1) What specific omission (neglect) and commission (emotional and
156 physical abuse) practices did gymnasts encounter during their time in the sport? (2) What do
157 their current experiences tell us about the long-term psychological effects of athlete
158 maltreatment? By answering these research questions, we hope to advance the knowledge of
159 this potential culture of maltreatment and offer support for attachment theory by focusing on
160 the gymnast's perspective with respect to the long-term impacts of their childhood
161 experiences. Developing an understanding of retired gymnasts' maltreatment experiences,
162 may go one step towards questioning some of the assumptions that prevail in the sport and
163 raise awareness to safeguard future athletes.

164 **Method**

165 **Philosophical Underpinning**

166 Our aim to provide an understanding of retired gymnasts' maltreatment experiences
167 was underpinned by interpretivism, specifically ontological relativism (reality is multiple,
168 created, and mind-dependent) and epistemological constructionism (knowledge is constructed
169 and subjective; Smith & Sparkes, 2017). The lead author's prior immersion within elite
170 gymnastics led to a personal insight to the culture and potential impacts of the sport. Thus,
171 we used semi-structured interviews as a method of data collection to foster the co-
172 construction between researcher and participant, bringing their experiences and
173 understanding to influence a topic (Braun & Clarke, 2022). Reflexive thematic analysis
174 (Braun & Clarke 2019) was chosen as our method of data analysis based on our interpretive
175 paradigm and due to its flexibility; it enabled us to analyze the data inductively (e.g., new
176 experiences), deductively guided by previous research (e.g., attachment theory), and

177 reflexively (e.g., considering our position within the study). Braun and Clarke (2021) stated
178 that reflexive thematic analysis is suited to relativist and constructionist framings of
179 language, data, and meaning.

180 **Participants**

181 Participants were recruited through snowball sampling. Twelve female individuals (M
182 age = 29 years, $SD = 4.76$) who met the inclusion criteria accepted our invitation to
183 participate and provided written informed consent. Participants were required to be retired
184 from women's artistic gymnastics for a minimum of five-years and trained at their highest
185 level for at least 18-months. Inclusion criteria were set to allow for exploration of the long-
186 term impacts at an elite level and because previous researchers have reported athletes can
187 normalize their experience while in the sporting context but provide more reflective
188 experiences once retired (Kerr & Dacyshyn, 2000). During their careers, five of the gymnasts
189 were of International standard (i.e., competed on the Commonwealth, Junior/Senior
190 European, World, or Youth Olympic/Olympic stage) and seven were of National standard
191 (i.e., qualified for the British Championships). At the time of the interview, participants
192 reported being retired from the sport between seven and 20-years ($M = 12$; $SD = 4$ years),
193 with career lengths between eight and 15-years ($M = 11$; $SD = 2.1$ years).

194 **Interview Guide**

195 To elicit their experiences and long-term impacts of being an elite gymnast, we
196 conducted semi-structured interviews. This method provided participants the opportunity to
197 discuss their experiences while also aligning to the aims of the study (Sparkes & Smith,
198 2014). Therefore, although the interview guide provided structure to the interviews, the order
199 of questioning were dependent on how the participant responded. Interview questions were
200 open-ended to allow the respondent considerable scope to express their perceptions and
201 expand on views offered (Smith & Sparkes, 2017). Once developed, the interview guide was

202 piloted with a retired gymnast who had competed at National level. Following this process,
203 some questions were removed from the interview guide to better align the study aims.

204 The final interview guide comprised of four sections. Section one involved finding
205 out about the participants' background (When did you start gymnastics? What was your
206 highest level of competition?). Section two encouraged participants to reflect on their
207 experiences as a gymnast, such as their relationship with their coach(es) (Can you tell me
208 what your coach(es) were like?), their teammates (Describe the relationships with your
209 teammates?), the environment they trained and competed in (What do you remember most
210 about your club? How did you feel when competing?), and their time outside of the sport
211 (What did you do when you were not training?). Section three explored their life post-
212 retirement, giving participants an opportunity to explain their leaving the sport and whether
213 gymnastics has had an impact on their life as an adult (How do you feel talking about
214 gymnastics now? Since retiring has gymnastics had any influence on your life?). The final
215 section gave the participants a chance to reflect on responses and add to anything previously
216 discussed. Throughout the interviews, participants were encouraged to elaborate on both
217 positive and negative aspects of their experiences, with a variety of neutral probe and
218 clarification questions employed to ensure complete understanding of respondents'
219 comments.

220 **Procedure**

221 Participants were provided with information to read regarding the aims and
222 requirements of the study and all ethical procedures were outlined. Given the sensitive nature
223 of the topic, further aspirational ethics considerations were implemented, in addition to
224 university ethical approval (Lahman et al., 2011). To support participant anonymity (outside
225 of the interviewer), the authors purposely omitted any identifying information. The content
226 presented in this article was subsequently approved by each of the participants, so they felt

227 comfortable with what was being shared (McMahon & McGannon, 2021). As the lead
228 researcher who conducted the interviews was a former gymnast who had been subjected to
229 maltreatment herself, self-ethics was another important consideration. Researching abuse in
230 sport has been found to affect investigative researchers (Brackenridge, 1999). The co-author
231 (a registered sport and exercise psychologist, trained in counselling) encouraged the lead
232 researcher to talk about her feelings, understood counter-transference responses, kept in
233 constant contact, and offered support throughout (Etherington, 2000). The 12 participants
234 who agreed to take part, provided written consent and all stated their preference was for their
235 interview to take place face-to-face in a venue of best convenience (e.g., the researcher
236 booked a private meeting room). All interviews were audio recorded, lasting between 65 and
237 240-minutes ($M = 96$ min, $SD = 46.62$), and transcribed.

238 **Data Analysis**

239 A reflexive thematic analysis was used to construct themes from the data (Braun &
240 Clarke, 2019). The process of reflexive thematic analysis involved six fluid and recursive
241 phases. The initial phase involved the lead author immersing herself in the data by reading
242 the transcripts multiple times and noting down initial ideas to gain an overall sense of the
243 dataset. Initial codes were then constructed by highlighting interesting features and key points
244 of interest that were interpreted as meaningful and relevant to the study. In the third phase,
245 generating initial themes from clustering codes together was a creative and active process
246 (Braun & Clarke, 2021). This process involved a dialogue between the interpretation of
247 meaning from the codes and comparisons with previous research (e.g., attachment theory) to
248 develop themes of shared meaning. The fourth phase included the co-author as a critical
249 friend (Smith & McGannon, 2018) reviewing the entire dataset and the overall story the
250 themes told about the participants' experiences. To further develop and refine the themes, the
251 authors debated coherence and distinctiveness from one theme to another to ensure

252 meaningful representations of the data. During the fifth phase, final refinements were made,
253 generating distinct names for each theme to reflect the description and how they aligned with
254 the overall story in relation to the research questions. The analytic process continued
255 throughout the final stage through the drafting of the reports. The reports were read by the co-
256 author who encouraged further reflection and ensure a balance was achieved between data
257 extracts and analytical commentary (Braun et al., 2017).

258 **Methodological Rigor**

259 Guided by our philosophical approach, the reader is encouraged to use the following
260 indicators to judge the quality of this research: merit of the topic (e.g., significant
261 contribution and timeliness), credibility (e.g., thick description), sincerity (e.g., transparency),
262 and overall coherence of the work (Sparkes & Smith, 2014). Aligned with these quality
263 indicators, three techniques were used to enhance the study's methodological rigour (Smith &
264 McGannon, 2018). Firstly, given the lead author's prior immersion within elite gymnastics,
265 personal reflexivity was deemed critical to document their insight into and articulation of
266 their generative role in the research. Being a cultural insider was deemed a strength to the
267 research process, in terms of developing rapport with participants, understanding the specific
268 terminology, and allowing for deeper exploration during the interview. However, it was also
269 important the lead author kept a reflexive journal to reflect on and interrogate their values and
270 personal positioning, assumptions and expectations about the topic of research, and their
271 relationship to and with participants (Braun & Clarke, 2022). This led to the co-author, taking
272 on the role of a critical friend who encouraged reflection on, and exploration of, alternative
273 explanations of the findings (Smith & McGannon, 2018). For example, the lead author
274 presented her interpretations of the data on a regular basis to the co-author. As a critical
275 friend, the co-author then offered constructive feedback and provided different plausible
276 interpretations to findings and reworked themes, which aided in the construction of coherent

277 discussion points in relation to the data. Finally, to help create a meticulous, robust, and
278 intellectually enriched understanding, member reflections on our analytical interpretations
279 were also sought to enhance the study's methodological rigor (Cavallerio et al., 2020). Here
280 findings were shared with participants to facilitate understanding through reflexive dialogues
281 with the researchers and co-participants, further promoting ethical practice (McGannon et al.,
282 2021). For example, some participants generated further insight and discussion points when
283 being reflexive, regarding if change was likely to occur within the sport and coaching
284 practices.

285 **Transparency and Openness**

286 In accordance with the transparency and openness promotion (TOP) guidelines
287 (Nosek et al., 2015) the study design, data collection, and analytic methods are described and
288 cited above for transparency, with the original interview guide available on request from the
289 first author. The study was not preregistered in an independent, institutional registry and the
290 raw data collected and interview transcripts are protected for confidential reasons as
291 stipulated within the ethical approval for the study and information conveyed to participants.

292 **Results**

293 Participant maltreatment experiences within women's artistic gymnastics and the
294 subsequent long-term psychological effects were categorized into three themes: (a) What we
295 went through, (b) How it's affecting us now, and (c) Will things ever change? The themes are
296 purposely presented in a temporal order to best tell the overall story, with representative
297 verbatim quotes, and participant identities protected through pseudonyms.

298 **What we went through**

299 Participants reflected and shared their accounts of when they were training and
300 competing as elite artistic gymnasts. Maltreatment experiences included the injuries they
301 trained through, fear of their coach, shouting, belittling, acts of denying attention, physical

302 punishments, and weight shaming. During their careers, participants recalled: “We would
303 train around 30-hours a week and typically spend more time with our coach than our parents”
304 (Amy). Because of this, the relationship has been conceptualized as critical, where young
305 gymnasts should be dependent on their coach for their sense of safety, trust, and fulfilment of
306 needs. This led Izzy to admit: “On many occasions I accidentally called my coach ‘mum’. I
307 craved more love and affection from her [coach] than I did my mum”. The term attachment
308 refers to an individual’s ongoing emotional bond with a significant figure e.g., caregiver
309 (Bowlby, 1982). To make sense of attachment theory within the gymnastics context, the
310 coach would subsume the role of ‘caregiver’. On this premise, the coach should be a figure
311 whom the gymnast has learnt to rely on for protection and care.

312 However, within the elite gymnastics system, it was not uncommon for participants to
313 continue with these countless hours of training while injured. In fact, it was emphasized that
314 training and competing while injured was simply what was expected: “Getting injured is just
315 part of the sport, it was normal for us to train on injuries. I had a torn ligament in my knee
316 which I competed on. My coach knew, but it was just what we did” (Emma). Being forced or
317 encouraged to train while injured is a well-documented form of physical abuse in sport.
318 Indeed, participants noted the pressure and fear from their coach to continue:

319 I was afraid to tell my coach I was injured because she always said that when I was
320 resting, my opponent was competing. I also knew she would get angry at me so I
321 would train until my body could not take it anymore. (Charlotte)

322 This highlights the complexity and interrelatedness of maltreatment experiences,
323 because arguably from these scenarios, gymnasts were being exposed to emotional abuse
324 (fear of the coach getting angry), physical abuse (training while injured), and neglect (lack of
325 reasonable care from the coach and risk of significant harm to the gymnasts).

326 Participants recalled how the fear of their coach within the training environment, was
327 often linked to the verbal threats and physical punishments they endured, as stated by Amy:
328 “I kept falling off bars and I could hear my coach shouting and saying how useless I was. I
329 got extra conditioning for those mistakes”. She went onto explain what this physical
330 punishment consisted of: “I got told to do 100 leg lifts then still had to try and re-do my
331 routine. When I didn’t manage it, I got more leg lifts or sent out the gym”. Conversely, some
332 gymnasts recalled acts of denying attention from their coach: “When I started getting injured
333 and new gymnasts started coming through, she pushed me aside like an old toy and made it
334 clear I was no longer important to her” (Ellen). Though it could be interpreted as a positive
335 that these gymnasts were no longer on the receiving end of the verbal threats (emotional
336 abuse) and punishments (physical abuse), the intentional removal of attention and support is
337 another form of neglect from within the critical coach-athlete relationship.

338 The culture of gymnastics, particularly within the women’s artistic discipline, tends to
339 promote a small and light-weight physique. Participants reflected how belittling and
340 degrading emotionally abusive comments were specifically linked to this, whereby coaches
341 would refer to weight as something to be ashamed of:

342 My coach would call me fat in the gym or call me the ‘big girl’. I was bigger than the
343 other girls in the squad, but that was just my build. My coach would make a point to
344 highlight that I was bigger than other gymnasts and make it into a joke. It made me
345 feel awful because looking back I was not fat. (Chloe)

346 In this regard, Alice spoke about her fear of putting on weight. Her coach used
347 physical weights as an act of humiliation and to demonstrate the potential consequences of
348 this: “My coach made us do floor and beam routines with weights wrapped around our waist.
349 She said that if we put on weight, then this is what it would feel like”. There was unanimous

350 agreement across participants that putting on weight was something most gymnasts worried
351 about. Building on from this, Josie provided an example that resonated from her experiences
352 where her coach actively encouraged her to engage in unhealthy behaviors to lose weight:

353 I remember the time my coach told me that if she was my size then she would go and
354 make herself sick. She would always tell me to watch what I ate and constantly
355 commented on the amount of food I was eating. I got into the habit of making myself
356 sick and hiding it from my parents because I thought it was the right thing to do.

357 Again, this provided an example, where a range of maltreatment practices were
358 experienced within the elite women's artistic culture. In relation to weight shaming, gymnasts
359 were exposed to degrading comments and forced to train with weights, which not only put
360 them at harm from these emotional and physically abusive practices but also at risk of
361 developing an eating disorder (neglect) by coaches encouraging self-induced vomiting.
362 Stemming across their gymnastic careers, it was apparent both acts of commission and
363 omission were not in isolation. Participants were subjected to a combination of maltreatment
364 forms as child athletes, with coaches not fulfilling the safe or protective role of 'caregiver'.

365 **How it's affecting us now**

366 The multitude of maltreatment practices endured in their gymnastic careers, led
367 participants to discuss their current psychological experiences post-retirement. Although a
368 number of years had passed since being involved in the sport, symptoms were disclosed
369 associated to various psychological disorders, including unhealthy relationships with food,
370 low self-worth, depression, and post-traumatic stress. Participants further went on to divulge
371 how they had sought or were still engaged in professional support, and for some, their
372 symptomatology had been clinically diagnosed as a psychological disorder.

373 The range of maltreatment practices used by coaches to weight shame their gymnasts,
374 impacted participant's long-term perceptions of their body. With Chloe, she still agonized

375 about this on a daily basis: “Since I can remember I have worried about my size. I will look
376 at my stomach every day in the mirror and worry about getting fat...I am now obsessed with
377 my weight and fret about any change in my body”. In addition to negative body image
378 concerns and for some obsessive beliefs, this also led to participants engaging in disordered
379 eating practices outside of the sport: “If I notice the smallest change in my weight, then I go
380 on these extreme diets where I try to cut foods out or skip meals” (Anita). Beliefs can become
381 deep-rooted and for these ex-gymnasts, an unhealthy relationship with food was apparent,
382 stemming well into retirement years: “I still see eating as a bad thing, because that was what I
383 was made to believe for so long” (Alice).

384 Participant beliefs were also expressed with regards to low self-worth. Low self-worth
385 encompasses a negative overall opinion of oneself, judging, or evaluating oneself critically,
386 and placing a general negative value on oneself as a person (Aron et al., 2019). This was
387 articulated by Charlotte as follows:

388 My coach told me I was useless, and I believed it because I believed everything she
389 said...I would never meet her expectations...Feelings like that become ingrained in
390 you. My coach broke my mind as a young gymnast, and it stayed with me.

391 Artistic gymnastics is a sport whereby individuals are judged on their ability to
392 successfully execute skills. Coaches teach gymnasts to strive for perfection and would
393 constantly critique them. Participants explained how these perfectionistic standards impacted
394 their self-worth and continued into their adult lives:

395 Even the time I came first, my coach made it clear that it was still not perfect. When I
396 do things now, even at work, I need things to be perfect and will take a long time to
397 get them done...If it is not perfect, then in my mind I have failed. (Ellen)

398 The feeling of not being good enough, was reiterated by Amy: “I have frequent lows
399 and I genuinely believe it is because of what I experienced as a gymnast. Gymnastics left me

400 feeling like I am not good enough and I hate it”. Low self-worth in this regard was the result
401 of participant’s gymnastic experiences. As child athletes, they were led to believe that they
402 were not good enough and this narrative stuck with them into adulthood. Thus, athletes
403 seemed to describe what is depicted in attachment theory as internal working models
404 (Bowlby, 1982) of diminished self-worth, not just within a sporting context, but as a general
405 description of themselves. This long-term psychological impact would appear indicative of
406 an ambivalent-insecure attachment between the athlete and their coach. Attachment theory
407 proposes the distress felt by ambivalent children results in diminished self-worth, whom as
408 adults find it difficult to manage trauma and are often susceptible to mental health issues
409 including depression, anxiety, and eating disorders (Bacon & Richardson, 2001).

410 Indeed, due to the extremity of what they encountered as child and adolescent
411 athletes, participants sought or were still engaged in professional help for the long-term
412 psychological impacts these maltreatment experiences had on them:

413 I had to get professional help because I have spent years feeling so rubbish about
414 myself. I can’t believe that one person can make me feel so terrible about myself...I
415 tried to forget, but I think it will always be part of me now. (Jasmine)

416 The professional help a number of participants were currently engaged with, included
417 counselling and types of psychological therapy, as conversed by Carrie: “I have to have
418 counselling to help me raise my low level of self-worth”. For Emma, she had received a
419 clinical diagnosis and required long-term professional help:

420 I still wake up with nightmares. I have been having therapy for the last two years for
421 post-traumatic stress. When I close my eyes, I see my coach in my face shouting. I
422 feel terrified, small, and a waste of space...I wake up sweating with my heart racing.

423 Post-traumatic stress is a mental illness that typically occurs when a person
424 experiences or witnesses a traumatic event, such as abuse (American Psychiatric Association,

425 2013). In Emma's case, she reported intrusive memories through recurrent nightmares,
426 flashbacks, and marked physiological or psychological distress at cues that lead to recall of
427 the traumatic event. Ultimately these psychological and clinically diagnosed disorders
428 developed due to the fear coaches had created within their elite environments, their
429 maltreatment practices, and insecure attachments, as stated by Hayli: "I spent years depressed
430 from my experience of being a gymnast".

431 **Will things ever change?**

432 Across their retirement years, participants were attempting to come to terms with and
433 understand their gymnastic experiences. This included the elite women's artistic culture, the
434 training environment, maltreatment practices and their long-term psychological impacts.
435 Participants were reflective regarding whether it was worth being an elite gymnast, trying to
436 make sense of what happened and why, and questioning if things would ever really change in
437 the sport. In relation to coaching behaviors, a dichotomy became apparent between
438 participants who believed their coaches needed to act in that manner, to those who questioned
439 the necessity of their actions. For example, Carrie perceived that to be successful it was a
440 necessity for coaches to be hard on gymnasts and warranted at the elite level:

441 Gymnastics is a hard sport, you are training for four completely different apparatus
442 and trying to master them all. Your coach needs to be hard on you, you need to make
443 those scarifies otherwise you won't make it to the top. How can you push your body
444 to the limits without someone being there to do that for you?

445 There was a somewhat shared belief between some participants surrounding elite
446 women's artistic gymnastics and justifying coaches' actions in order to be successful at this
447 level. Anita had normalized the behavior of her coach and believed it was needed for success:

448 You can't be an elite gymnast without the shouting, crying, and punishment. My
449 coach told me that her job was to make me do things I did not want to do, to succeed.

450 If my coach did not push me, I didn't train through those injuries, I would never have
451 made the National squad...nobody gets to the top with the coach asking you what you
452 want to do or having fun. Show me something different and I will change my opinion.

453 However, Josie had a different perspective. For her, training through injuries had left
454 her experiencing pain later on in her life. The physical pain being experienced as an adult,
455 also served as an additional reminder of feeling unaccomplished from the sport and
456 subsequently questioning the culture and neglectful coaching practices:

457 I still have pain now. I cannot even recall the number of times I landed on my head,
458 injuring my neck and back. To this day I wake up and go to bed with pain. Fifteen
459 years on and I feel like this, for what? A 10-year career and I never made it to the
460 Olympics. All I have now are sore bones and bad memories.

461 On the other side of the dichotomy, were the participants who questioned their
462 coaches' practices, the necessity of their actions, and why the negative experiences had to
463 occur: "I still wonder why my coach had to behave like that, there could have been another
464 way" Jasmine went on to explain: "The times I had to train with a concussion, the countless
465 times my coach sent me out the gym and threatened to drop me from the squad does not
466 make sense to me. She must have had her reasons". It was evident, participants were still
467 trying to make meaning from their maltreatment accounts. Interestingly, Hayli highlighted
468 that although she once thought it was appropriate, over time she has started to reflect and
469 question her coach's behaviors:

470 I used to think that was the only way to success but over time I have struggled to
471 understand why it was necessary. Surely not all coaches coach this way? How can
472 anyone treat children like that and think that is okay? I still constantly think about my
473 life as a gymnast, and it makes no sense to me.

474 On reflection, participants were generally not hopeful that the sporting culture would
475 change, since coaching practices have been embedded for so many years:

476 I cannot see the sport being any other way. My coach admitted to still making her
477 gymnasts cry in pain because she believes it is necessary and said she will not change
478 unless other people do, to make it a level playing field. The problem is this type of
479 behavior leads to results and that seems to be the thing that coaches care about. (Izzy)

480 As a final note, it was encouraging to hear some participants were taking valuable
481 lessons from their negative gymnastic experiences. This was to help change the future of the
482 sport and ensure now as coaches, the safe and protective role of caregiver was being fulfilled:

483 My experience was bad, but I have learnt how to be better for future gymnasts. I have
484 realized that we need to develop a culture of quality rather than quantity to ensure our
485 gymnasts can make it past the age of 14 without physical and psychological problems.

486 We should be trying to get our gymnasts training and competing later on into their
487 life, without leaving them damaged as an adult. I am trying to embed this into my
488 own gymnastics club...Yes, of course winning is great, but I want my gymnasts to
489 have fun and enjoy themselves too. I want to try and ensure they have a good
490 experience of the sport because when done right, it is one of the most wonderful
491 sports in the world. (Chloe)

492 **Discussion**

493 The aim of this study was to provide an understanding of retired gymnasts'
494 maltreatment experiences, including both acts of commission and omission. Specifically, in
495 relation to understanding the sport's impact during their elite women's artistic careers
496 through to their lives post-gymnastics. Unique insights were obtained from participants
497 regarding the compound abusive and neglectful culture that existed in their sport and the
498 long-term psychological impacts of athlete maltreatment. While findings support previous

499 literature investigating gymnastics (Barker-Ruchti & Schubring, 2016; Cavallerio et al.,
500 2016; Jacobs et al., 2017; Tynan & McEvilly, 2017) and abuse in sport (Kavanagh et al.,
501 2017; Kerr & Stirling, 2019; Kerr et al., 2020), it is the first to examine the long-term
502 psychological consequences of suffering multiple forms of maltreatment (including neglect)
503 as a child or adolescent athlete, within elite women's artistic gymnastics.

504 In relation to the first research question regarding the specific commission and
505 omission practices gymnasts encountered during their time in the sport, a multitude of
506 maltreatment experiences were reported: namely emotional, physical abuse, and neglect
507 (Fortier et al., 2020). These maltreatment experiences included the injuries gymnasts trained
508 through, fear of their coach, shouting, belittling, acts of denying attention, physical
509 punishments, and weight shaming (Kerr, 2014; Pinheiro et al., 2014; Smits et al., 2017;
510 Stirling & Kerr, 2014). In the 2019 International Olympic Committee (IOC) consensus
511 statement, Reardon et al. note the different types of athletic maltreatment may occur in
512 isolation or in combination, and may be a one-time occurrence, continuous or repetitive.
513 Unanimous across the gymnast's accounts, were the interrelatedness of maltreatment
514 experiences, occurring in a continuous and repetitive manner. For example, being forced to
515 train while injured and degrading comments are conceptualized in the literature as physical
516 and emotional abuse types respectively (Alexander et al., 2011). Our participants were
517 continually exposed to both these abuse types, alongside the lack of reasonable care provided
518 by their coaches. These neglectful acts, in combination with abusive practices, subsequently
519 put the gymnasts at risk of significant psychological and physical harm (Fortier et al., 2020).

520 Non-accidental violence describes harm experienced by athletes because of an abuse
521 of actual or perceived differentials in power, based on a cultural context of discrimination
522 (Mountjoy et al., 2016). Specifically, within women's artistic gymnastics, authoritarian
523 coaching is notably prominent, viewed as normative within the culture, and based on a power

524 differential between the coach and athlete (Kerr, 2014). According to attachment theory, the
525 coach would subsume the role of caregiver (Bowlby, 1982). In stark contrast to this,
526 deliberate acts of non-accidental violence and subsequent harm were instigated by the
527 coaches of the gymnasts in this study (Stirling & Kerr, 2010). Researchers who have
528 examined the coach's perspective, have found they justified acts of non-accidental violence
529 (Jacobs et al., 2017; Kerr et al., 2020). For example, emotional abusive acts, such as shouting
530 and belittling athletes were perceived to develop respect and discipline, with some coaches
531 believing it develops mental toughness, motivates athletes to train harder, and enables them
532 to push on to a higher level of competition (Jacobs et al., 2017). Whereas forms of physical
533 abuse, such as exercise as punishment was perceived to deter athletes from making the same
534 mistake, effective for conformity, and facilitated developmental outcomes (e.g., resilience).
535 Coaches also believed this method was likely to have fewer damaging effects than emotional
536 abuse would on an athlete's well-being (Kerr et al., 2020), though neglect was not
537 considered.

538 Drawing upon the child abuse literature, multiple types of maltreatment have been
539 investigated. For example, Higgins and McCabe (2001) reviewed 29 studies where
540 information was available on the effects of multiple types of maltreatment and noted an
541 apparent consensus between participants who had experienced two or more types of
542 maltreatment being associated with greater internalizing symptoms (e.g., depression, self-
543 esteem) and externalizing behaviors (e.g., aggression, substance abuse). Whereas, in the
544 systematic review of the scientific literature and quantitative meta-analyses conducted by
545 Norman et al. (2012), they identified 124 studies that examined the association between non-
546 sexual child maltreatment, physical abuse, emotional abuse, and neglect in childhood.
547 Despite some variability, overall, experiencing multiple types of childhood maltreatment
548 were found to approximately double the likelihood of adverse mental health outcomes

549 (Norman et al., 2012). An additive model has thus been proposed within the child abuse
550 literature, whereby the long-term psychological effects increase with the experience of
551 different types of maltreatment (e.g., Arata et al., 2005). However, a distinction can be made
552 when comparing our findings to the Higgins and McCabe (2001) review. The only reports of
553 our participants exhibiting maladaptive externalizing behaviors as an adult, was through
554 unhealthy relationships with food, which arguably can be placed on an internalizing symptom
555 - externalizing behavior continuum (Bonci et al., 2008). A similar contrast is evident to
556 McMahon and McGannon's (2020, 2021) body of research on legacies of abuse in sport.
557 Their participants predominantly used externalizing behaviors as adults to self-manage their
558 abuse and ill-treatment endured as swimmers, by using indirect self-injury, abuse of
559 prescription medications, excessive alcohol use, and sexual promiscuity. Hence, our findings
560 provide greater support for internalizing symptoms to manage the subsequent distress, which
561 relates to our second research question: what participant current experiences tell us about the
562 long-term psychological effects of athlete maltreatment.

563 Attachment theory (Bowlby, 1982) is one of social development that offers a
564 framework for understanding maltreatment, focusing on the child's responses. The theory
565 predicts individuals who have experienced insecure attachment styles tend to hold negative
566 internal working models of themselves (Bowlby, 1982) which ostensibly guide patterns of
567 cognition, affect, and behavior (Reardon et al., 2019). Gymnasts in this study disclosed
568 symptoms associated to various sub-clinical psychological disorders, including negative body
569 image concerns, unhealthy relationships with food, low self-worth, depression, post-traumatic
570 stress and thus, seemed to describe what is depicted in attachment theory as negative internal
571 working models resulting from their coach-athlete relationships. This is consistent with those
572 described by attachment theory because of insecure attachments with significant adults,
573 particularly those who should offer the promise of security (Davis & Jowett, 2014).

574 Specifically, these long-term psychological impacts would appear indicative of an
575 ambivalent-insecure attachment where the unpredictability of the coaches' action causes the
576 child athlete to be confused and often distressed. The distress felt by ambivalent children
577 results in diminished self-worth, whom as adults find it difficult to manage trauma and are
578 often susceptible to mental health issues including depression, anxiety, post-traumatic stress,
579 and eating disorders (Bacon & Richardson, 2001).

580 Our findings therefore lend support for attachment theory, where insecure
581 interpersonal bonds with significant others are negatively linked to mental health issues, that
582 can persist throughout their life course (Mónaco et al., 2019). Indeed, for some participants
583 their symptomatology had been clinically diagnosed as a psychological disorder. For
584 example, post-traumatic stress disorder (PTSD) is a mental illness that typically occurs when
585 a person experiences or witnesses a traumatic event, such as maltreatment (American
586 Psychiatric Association, 2013). The core symptoms of PTSD are divided into four categories,
587 with participants in this study reporting three out of the four categories: intrusive memories
588 (e.g., recurrent nightmares and flashbacks), negative mood and thoughts (e.g., low self-
589 worth), and affected state of arousal (e.g., sleep disturbance), demonstrating the interrelated
590 nature of these core symptoms (Yehuda et al., 2015). In support of this, Aron et al. (2019)
591 reported how athletes may exhibit greater rates of PTSD (up to 13-25% in some athlete
592 populations) and other trauma-related disorders relative to the general population. They
593 described common inciting events leading to symptoms of PTSD, included trauma incurred
594 in sport through direct physical injury, secondary/witnessed traumatic events, and abusive
595 dynamics within the sport – all apparent within our participant's gymnastic culture.

596 Culture plays an important role in sport; it can influence how athletes think, feel, and
597 behave, in addition to impacting an individual's life and identity (McGannon & Smith, 2015).
598 Some of our participants had been retired for up to 20-years, yet the memories and

599 psychological impacts have stayed with them throughout, arguably due to the culture created
600 within their sporting environment. Interventions are therefore needed to change the culture of
601 gymnastics and the normalization of maltreatment practices. It is important for the major
602 stakeholders involved in women's artistic gymnastics (e.g., coaches, parents, educators,
603 officials, support staff, performance director) to have greater awareness of the long-term
604 implications when developing young athletes. Both parents and performance directors have
605 been referred to as 'silent bystanders' allowing maltreatment to continue because they still
606 held the belief these methods were necessary for performance (Jacobs et al., 2017; McMahon
607 et al., 2018; Smits et al., 2017). Highlighting it is not a lack of understanding or awareness,
608 but instead the perception that these are the required coaching practices for the desired
609 outcome. Those involved within the sport accept unethical coaching behaviors because the
610 culture at the elite level has typically prioritized performance above all else. If the narrative
611 focuses on a 'win at all costs', this is problematic for the young elite athlete's well-being,
612 leaving them vulnerable to maltreatment, and the justification and normalization of abusive
613 practices will continue (Barker-Ruchti & Schubring, 2016; Cavallerio et al., 2016; Pinheiro et
614 al., 2014). What it takes to be an elite athlete therefore needs to be reconsidered, paying
615 particular attention to sports where the athletes are young children/adolescents (Wilensky &
616 McCabe, 2020). In addition, it would be worthwhile to explore those high-performance
617 coaches who have experienced success without using maltreatment practices and the positive
618 impact this has on the well-being of the gymnasts (Kerr & Stirling, 2019). This in turn would
619 provide valuable insights into best coaching practices for the future of the sport.

620 Despite provisions being in place to supposedly safeguard children from maltreatment
621 (e.g., British Gymnastics safeguarding policies, the IOC consensus statement, child
622 protection in UK sport, the implementation of welfare officers in clubs), none of these
623 prevention strategies were able to protect the gymnasts in the current study. Barker-Ruchti

624 (2020) highlighted those current procedures need to be more effective. We would strongly
625 agree with this, in terms of effectiveness (e.g., reporting and being heard), wrongdoings
626 should be properly acknowledged (e.g., acknowledge the abuse or neglect and victims to
627 have sustained support) and creating an effective athlete welfare (e.g., engage welfare
628 officers whose role it is on a day-to-day basis to support the athletes), if future gymnasts are
629 not to experience the same maltreatment practices and subsequent long-term psychological
630 impacts our current participants have endured. Furthermore, sport psychologists have a role
631 to play in safeguarding (Kerr & Stirling, 2019). The virtue of their role and nature of their
632 work may provide sport psychologists with insights into potentially harmful practices and be
633 the first point of contact for athletes to disclose distressing experiences. It is therefore
634 essential for sport psychology consultants to be up-to-date and familiar with the processes for
635 reporting misconduct to authorities and referrals for psychological support (Leahy, 2008).

636 Treatment for the array of negative disorders experienced, required psychological,
637 sometimes clinical support. Our findings resonate with those by Kerr et al. (2020) whose elite
638 female athletes all required professional psychological support to recover from their
639 experiences of emotional abuse. Building on these findings, longitudinal research is needed
640 with former athletes currently working with psychologists to navigate through their
641 maltreatment experiences, so that the most appropriate support mechanisms can be provided,
642 thus extending the duty of care for athletes' post-sport. Regardless of training and
643 competence, all sport psychologists have a role to play in prevention efforts, creating a
644 culture that safeguards athletes against maltreatment, including organizational policies, and
645 promoting mental health literacy (Gorczynski et al., 2021). Moreover, it is important that
646 educational programmes and professional bodies include mandatory content about
647 maltreatment and methods of safeguarding if sport psychology practitioners are to fulfil their
648 responsibilities to protect athletes. Future researchers and applied practitioners should

649 document case study work supporting the use of prevention and early intervention projects
650 targeting maltreatment at the sport and/or organisational level for evidence of best practice.
651 Finally, given the limitation associated with one-time interviews (McGannon et al., 2021),
652 alternative qualitative approaches such as athlete autobiographies and case studies might be
653 considered to further research athlete maltreatment experiences.

654 Overall, this study was the first to examine the long-term psychological impacts of
655 experiencing multiple forms of maltreatment within elite women's artistic gymnastics,
656 including both acts of commission and omission. Advancing previous literature, we highlight
657 the combination of abusive and neglectful practices endured by gymnasts as children and
658 adolescents can have a prolonged psychological impact on their lives up to 20-years post-
659 retirement. Support is lent for attachment theory, specifically the various sub-clinical and
660 clinical psychological disorders would appear indicative of negative internal working models
661 resulting from their coaches' maltreatment and ambivalent-insecure attachments. This
662 understanding demonstrates the need to change the beliefs ingrained within the sport,
663 regarding maltreatment practices being a necessity for performance results at the elite level.
664 Effective provisions therefore need to be implemented, to both prevent the abuse from
665 happening in safeguarding future athletes and supporting those individuals who have already
666 suffered. We hope the findings from this study raise awareness and encourage performance
667 directors, coaches, educators, and sport psychologists, to think carefully about the culture that
668 is being created within their own sporting organizations and the potential long-term
669 psychological impacts it can have on athletes' mental health and well-being, both during and
670 after their retirement from sport.

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