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**Can Emotional Disclosure Promote Sport Injury-Related Growth?**

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### **Abstract**

This study makes an original and rigorous contribution to the psychology of sport injury literature by examining the efficacy of emotional disclosure to promote sport injury-related growth (SIRG). Participants (N=45) were assigned to one of three groups (i.e., written disclosure [WD], verbal disclosure [VD] or control), 30 of which took part in social validation interviews (>45hrs) and member reflections to evidence methodological rigor. VD group experienced SIRG. There was no significant difference between the WD and control groups. Practical implications are considered at intrapersonal, interpersonal, institutional, and cultural levels. Future research on emotional disclosure should proceed with caution and diversify.

Keywords: Trauma, Adversity, Stress, Recovery, Ethics

### **Introduction**

50 Building upon growth following adversity research (Colhoun & Tedeschi, 2006;  
51 Joseph & Linley, 2008), emerged the concept—Sport Injury-Related Growth (SIRG)—that has  
52 significantly extended the psychology of sport injury literature. For some time now,  
53 researchers in this field have examined the adversity experienced by injured athletes  
54 throughout their recovery and provided evidence-based recommendations to alleviate the  
55 overall demand placed upon them (Brewer, 2007; Podlog, Dimmock, & Miller, 2011; Wadey  
56 & Evans, 2011). **By adversity, we mean a relational state between an individual and his or her**  
57 **environment reflective of hardship or suffering that incorporates stressors, cognitions and**  
58 **affect (Fletcher & Sarker, 2013; Howells & Fletcher, 2015).** Yet, the concept of SIRG goes  
59 beyond this agenda by proposing that adverse experiences can lead to perceived positive  
60 changes (Podlog & Eklund, 2009; Salim, Wadey, & Diss, 2015a; Wadey, Clark, &  
61 McCullough, 2013). That is, injury-related experiences may propel injured athletes to a  
62 higher level of functioning than that which existed prior to the injury (Roy-Davis, Wadey, &  
63 Evans, 2017). Positive changes identified in the literature include psychological (e.g.,  
64 increased mental toughness), social (e.g., improved relationships with others), physical (e.g.,  
65 greater physical strength), and behavioral benefits (e.g., more empathetic towards other  
66 injured athletes). Although this line of research is still very much still in its infancy, recent  
67 significant strides have been made in the sport and exercise psychology literature from a  
68 conceptual, methodological, and theoretical standpoint (Day & Wadey, 2017; Roy-Davis et  
69 al., 2017). Yet, *how* practitioners can foster SIRG when working with injured athletes has  
70 received no research attention.

71 The *Theory of Sport Injury-Related Growth* (T-SIRG) was proposed by Roy-Davis et  
72 al. (2017) who provided a detailed justification for introducing a new concept and theory. The  
73 theory suggests that injured athletes who experience adversity during their recovery and have  
74 access to and mobilise certain resources are more likely to experience SIRG. That is, injured

75 athletes are more likely to experience SIRG if they have certain dispositional qualities (e.g.,  
76 optimistic, creative, proactive), access to physical spaces and equipment (e.g., gymnasium,  
77 rehabilitation equipment), previous experiences of adversity to draw upon, emotion- and  
78 problem-focused coping styles (e.g., meaning-making, emotional venting), a social support  
79 network that understands and meets one's needs, and access to narratives that reinforce  
80 growth-related experiences. Possessing, embodying, and/or mobilizing these resources in  
81 one's free time during recovery is proposed to help nurture SIRG through four specific  
82 mechanisms: meta-cognition, positive re-appraisal, positive emotions, and facilitative  
83 responses. Specifically, injured athletes who were aware of, and have control over, their own  
84 thoughts (i.e., meta-cognition) are more likely to positively reappraise how they interpreted  
85 their injury and the situation they find themselves in. Rather than interpreting their injury as a  
86 threat, they are more likely to identify it as a developmental opportunity. From positively  
87 reappraising their injury and the circumstances surrounding it, as well as continuing to draw  
88 from their resources, the theory proposes they are more likely to experience positive emotions  
89 (e.g., hopeful, grateful, interested). These emotions promote facilitative actions (e.g., acting  
90 upon the opportunities, engaging in purposeful reflection, reciprocating acts of kindness),  
91 which in turn ultimately lead to various dimensions of SIRG (i.e., psychological, social,  
92 physical, and behavioral) that are developmental and continuous across the lifespan.

93         Although the T-SIRG awaits future researchers to support, refute, and extend its  
94 underlying assumptions, recent research findings support one of its proposed internal  
95 resources: personality (Salim et al., 2015a; Salim, Wadey, & Diss, 2015b). Specifically, the  
96 personality trait of hardiness. Defined and conceptualized by Kobasa (1979) to reflect three  
97 resilient attitudes (i.e., commitment, control, and challenge), which provide the courage and  
98 motivation to transform stressful situations from potential disasters into opportunities for  
99 growth and development. Using a cross-sectional methodological design due to the

100 exploratory nature of the study, Salim et al. (2015a) identified a positive relationship between  
101 hardiness and growth-related experiences. That is, injured athletes who identified themselves  
102 at higher in hardiness were more likely to experience growth. Mediation analysis, together  
103 with a qualitative follow-up study (Salim et al., 2015b), identified that injured athletes' high  
104 in hardiness experienced more growth because they emotionally disclosed throughout their  
105 recovery to members of their social support network outside of sport. These transactions led  
106 to meta-cognitions, positive reappraisals, regulation of negative emotions, heightened  
107 positive emotions, and facilitative responses, which collectively led to growth-related  
108 experiences. Findings also revealed that those injured athletes low in hardiness had no  
109 emotional outlet, leading to sub-optimal outcomes (e.g., emotional outbursts, re-injury,  
110 inferior performance). Reasons for emotional suppression included the climate in sport (i.e.,  
111 the need to keep up the visage of being 'mentally tough'), personal beliefs about disclosure  
112 (e.g., talking will negatively impact team selection), and their social support network not  
113 meeting one's emotional needs (e.g., offering informational rather than emotional support).

114         These findings pose a dilemma for injured athletes low in hardiness. On the one hand,  
115 these athletes do not want to disclose their emotions to others because of the adverse  
116 consequences it may have (e.g., team selection) and that they do not believe members of their  
117 support network will be able to meet their needs. Yet, on the other hand by keeping their  
118 emotions to themselves it is likely to have a negative effect on their physical and  
119 psychological recovery following injury and subsequent return to competitive sport. One  
120 method of disclosure that may help to address this dilemma that has recently been explored in  
121 the context of sport injury is written disclosure. Mankad, Gordon, and Wallman (2009a)  
122 examined the effect of written disclosure with a male athlete rehabilitating from an anterior  
123 cruciate ligament reconstruction. The intervention required 3x20 minute writing tasks  
124 performed over three consecutive days. Findings demonstrated a decrease in strain (i.e.,

125 avoidance and intrusion symptoms) and mood disturbance (e.g., anger and tension), as well  
126 as an increase in self-esteem. Using the same intervention protocol, Mankad, Gordon, and  
127 Wallman (2009b) and Mankad and Gordon (2010) extended this study by examining a group  
128 of injured athletes and a diverse range of dependent variables (i.e., strain, mood disturbance,  
129 grief responses, rehabilitation beliefs, and immune functioning). Findings demonstrated no  
130 significant difference in rehabilitation beliefs; however, there was a significant decrease in  
131 negative affect (i.e., mood disturbance and grief responses) and an increase in positive affect  
132 (i.e., vigor and reorganization) and immune functioning (i.e., immune expression), which  
133 resonates with some of the proposed mechanisms (e.g., negative and positive affect) within  
134 the T-SIRG (Roy-Davis et al., 2017).

135         Although Mankad and colleagues' studies did not include SIRG as a dependent  
136 variable, they do provide preliminary evidence for written disclosure as a therapeutic tool in  
137 addressing injured athletes' psychological needs. Despite the novelty and merits of these  
138 intervention studies however, it is important that future researchers and practitioners are  
139 aware of their shortcomings: (a) no control groups were used, thereby making it challenging  
140 to assess the efficacy of the intervention; (b) specific populations of injured-athletes who are  
141 at risk of emotional suppression were not targeted (e.g., athletes low in hardiness), which may  
142 'dilute' the intervention effects; (c) mechanisms underlying the intervention effects were not  
143 explored, which is of both theoretical and practical importance; (d) no follow-up assessments  
144 or social validation of procedures and outcomes were accounted for to enhance  
145 methodological rigor; (e) only written disclosure was explored. Indeed, researchers in other  
146 disciplines have compared written disclosure with other types of disclosure such as verbal  
147 disclosure (e.g., Lyubomirsky, Sousa, & Dickerhoof; 2006, Murray & Segal, 1994); and (f)  
148 the interventions were all conducted during the rehabilitation phase of recovery. Future  
149 researchers should also aim to explore the efficacy of this intervention during injury onset

150 and return to sport phases, which have both been observed to be stressful (Wadey & Evans,  
151 2011). This study aims to address these shortcomings by including a control group, targeting  
152 a specific population (i.e., low in hardiness), accounting for the underlying mechanisms  
153 purported in the T-SIRG, integrating follow-up and social validation assessments, comparing  
154 written (WD) and verbal disclosure (VD), and examining the efficacy of this intervention at  
155 return to sport phase of recovery.

156 This study aims to make an original and rigorous contribution to the psychology of  
157 sport injury literature by examining the efficacy of a four-week written and verbal disclosure  
158 intervention (i.e., x 4 sessions; one session per week) to promote SIRG. Based on previous  
159 research (e.g., Mankad & Gordon, 2010; Salim et al., 2015a) and the T-SIRG (Roy-Davis et  
160 al., 2017), two hypotheses were proposed. Hypothesis 1: There will be a significant  
161 difference between groups for SIRG. The VD and WD Groups will report more SIRG than  
162 the control group. As Lyubomirsky et al. (2006) found no significant differences between  
163 written and verbal disclosure, no hypotheses are forwarded comparing written and verbal  
164 disclosure. Hypothesis 2: There will be a significant difference over time between Sessions 1-  
165 4 for positive emotions, negative emotions, and cognitive processing. Positive emotions and  
166 cognitive processing will increase, whereas negative emotions will decrease. The final aim of  
167 the study is to understand the participants' post-intervention appraisal of the acceptability of  
168 the intervention procedures (e.g., What did the participants think of the intervention? Were  
169 there any negative side effects?) and the importance of any elicited outcomes (e.g., What  
170 were the outcomes? Did the participants value them?).

## 171 **Method**

### 172 **Sample and Participant Selection**

173 Criterion, theoretical, and maximum-variation sampling were used to identify  
174 participants (Sparkes & Smith, 2014). The criteria were threefold: (a) potential participants

175 had to have been injured through sport for a minimum of four-weeks. Indeed, this study was  
176 only interested in ‘sport’-related injuries and previous researchers have used four-weeks as  
177 the length of time to define a ‘serious’ sport injury (Bianco, Malo, & Orlick, 1999); (b)  
178 potential participants had to have returned to sport following injury in the past six months.  
179 This criterion aligns with the aim of the study, which is to examine the efficacy of the  
180 intervention during the return to sport phase of recovery; and (c) potential participants had to  
181 be low in hardiness. Theoretical sampling was used to meet this latter criterion, which  
182 entailed potential participants completing the Dispositional Resilience Scale to assess their  
183 level of hardiness (DRS; Bartone, Ursano, Wright, & Ingraham, 1989). If athletes scored  
184 below the 25th percentile (i.e., a score of 47 or below for this study), they were deemed low  
185 in hardiness. In total, 214 injured athletes who recently returned to sport were sampled, with  
186 only 52 deemed low in hardiness. This study is a stand-alone study and not part of a larger  
187 study; the questionnaire data has not been published elsewhere. The resultant 52 potential  
188 participants were then matched across three groups (i.e., WD, VD and control) using  
189 maximum variation sampling. The aim was to match the groups as much as possible across  
190 several pre-determined characteristics (i.e., sex, sport type, competitive level, type of injury,  
191 and severity of injury), which have been shown to impact psychological responses to injury  
192 (Brewer, 2007; Wadey & Evans, 2011). When a match was obtained for a participant already  
193 assigned to a group, the new participant was assigned to another group. In the case of two  
194 matches, the next matched participant was assigned to the remaining group. Participants who  
195 could not be matched across the three groups according to the criteria were omitted. This  
196 procedure ensured that any changes identified were the result of the intervention rather than  
197 demographic differences between groups.

198 Participants who were duplicated or could not be matched across the groups were  
199 omitted (N=5). Two dropped out due to external commitments (i.e., time commitments to



200 sport). The final sample consisted of 15 athletes in each group. All 45 athletes were then  
201 invited to participate. All agreed and provided written consent in line with the University's  
202 Ethics Committee. Of the 45 athletes, 17 were female and 28 were male, with a mean age of  
203 23.2 ( $SD = 5.22$ ). They represented several individual and team sports, ranging from  
204 recreational to international levels of competition, and had previously sustained a variety of  
205 injuries (see Tables 4-6). All participants had recovered from their injuries and returned to  
206 full training and/or competition at the time of this study. Following the intervention, a  
207 purposeful sample of 30 athletes from the original sample participated in follow-up social  
208 validation interviews and member reflections. Ten from each of the three intervention groups.  
209 Mean age of participants was 23.3 years ( $SD = 5.2$ ; 16 males, 14 females). Using maximum  
210 variation sampling (Sparkes & Smith, 2014), participants were matched across the groups and  
211 were selected because they represented diverse sports, levels of competition, and types and  
212 severities of injuries.

### 213 **Procedure**

214 Ethical approval was sought and granted from the University's ethics committee.  
215 Participants were recruited by approaching sporting Universities and clubs across the United  
216 Kingdom. Institutions were contacted by phone and email to discuss the nature of the study  
217 and whether they would allow access to potential participants. All Universities and clubs who  
218 were contacted agreed that the first Author could approach their athletes. For those athletes  
219 who met the selection criteria and provided informed consent, a suitable time to conduct the  
220 intervention was discussed. All interventions took place in a University office. Consistent  
221 with previous research and standardized instructions from Pennebaker and Beall (1986), the  
222 participants then experienced one of the three manipulations. Participants in the WD Group  
223 were asked to write about their deepest thoughts and feelings regarding their recent sporting  
224 injury. Those in the VD Group were asked to talk about their deepest thoughts and feelings

225 regarding their recent sporting injury into an audio-tape recorder. Finally, those in the control  
226 group were asked to write facts about their daily events (Stanton et al., 2002; Ullrich &  
227 Lutgendorf, 2002). Participants completed x 4 20-minute sessions, one session per week.  
228 Participants completed a measure of growth (Park, Cohen, & Murch, 1996) at the beginning  
229 of the first session, the end of the last session, and four weeks post-intervention. Importantly,  
230 safeguards were put in place to monitor the well-being of the participants. Following each  
231 session, participants were debriefed by the first Author who listened to any concerns and  
232 reminded them of organisations they could contact if they were experiencing any distress.  
233 From the outset of the study and during the intervention they were also reminded that they  
234 could stop the session or withdraw from the study at any time. A subset of participants  
235 (N=30) was then invited to take part in a social validation interview. Each interview was  
236 conducted face-to-face ( $M$  interview duration = 90.5 min.;  $SD=26.4$ ), resulting in over 45  
237 hours of qualitative data. All participants were debriefed.

### 238 **Measures**

239 **Growth.** As there is not a measure of SIRG, the Stress-Related Growth Scale (SRGS;  
240 Park et al., 1996) was used to measure growth. SRGS is a 50-item one-dimensional  
241 questionnaire designed to assess individuals' perceptions of whether they experience positive  
242 outcomes following a stressful event (e.g., "*I developed new relationships with helpful*  
243 *others*" and "*I learned that I was stronger than I thought I was*"). To ascertain athletes'  
244 perceptions of growth following injury and in line with Salim et al.'s (2015b) protocol, the  
245 original stem was modified from "*Rate how much you experienced each item below as a*  
246 *result of this year's most stressful event*" to "*Rate how much you experienced each item*  
247 *below as a result of your recent injury experience*". Participants were asked to rate each item  
248 from 0 (*not at all*), 1 (*somewhat*) or 2 (*a great deal*). SRGS has good internal consistency,  
249 model fit and test-retest reliability (Park et al., 1996).

250 Our rationale for using the SRGS was that the conceptualization of stress-related  
251 growth is more aligned with SIRG than with other concepts such as post-traumatic growth.  
252 To elaborate, Park (2009) described post-traumatic growth as radical and veridical positive  
253 transformation, which arises following traumatic events from rebuilding shattered  
254 assumptions. In contrast, stress-related growth is described as positive changes that are less  
255 dramatic or radical than post-traumatic growth, which arise through re-appraising the  
256 stressor. In Roy-Davis et al.'s (2017) T-SIRG, they identified that the process through which  
257 SIRG occurs is through re-appraising injury rather than rebuilding shattered assumptions.  
258 Therefore, we decided to use the SRGS rather than, for example, the Post-Traumatic Growth  
259 Inventory (Tedeschi & Colhoun, 1995).

260 **Manipulation Check.** A manipulation check (Pennebaker, Colder, & Sharp, 1990)  
261 was used to ensure the participants were conducting the task correctly after each intervention  
262 session (i.e., the experimental conditions were disclosing their thoughts and feelings). It  
263 contains nine statements (e.g., *Overall how much emotion did you disclose in the entries you*  
264 *wrote about?*) and one open ended question (i.e., *What do you think the experiment was*  
265 *trying to prove?*). Consistent with previous research (Murray & Segal, 1994), for those  
266 participants completing the verbal condition, the word 'wrote' was changed to 'spoke'. Each  
267 participant was asked to indicate the truthfulness of each statement on a 5-point Likert scale  
268 anchored from 1 (*not at all true*) to 5 (*completely true*). Higher scores demonstrated whether  
269 the participants adhered to the specific instructions.

270 **Social Validation.** Rather than using questionnaires or a structured interview guide  
271 (Kazdin, 1977), a semi-structured interview guide was developed for this study. This  
272 qualitative method of data collection was chosen to understand the participants' perceptions  
273 of the intervention procedures (i.e., positive, negative, and cognitive mechanism words) and  
274 the importance of potential outcomes (i.e., growth-related experiences). The semi-structured

275 nature also provided the flexibility to enable the interviewee to talk freely around the pre-  
276 determined themes, whilst also allowing the interviewer to explore any areas that arose  
277 spontaneously (Kvale & Brinkmann, 2009). The guide consisted of five sections. The first  
278 two section explained the objective of the study and sought to gain rapport with the  
279 participants. The third and fourth sections focused on the acceptability of the intervention  
280 protocol (e.g., What did you think of the intervention? Were there any side effects?) and the  
281 potential impact of the intervention respectively (e.g., What effect, if any, did the intervention  
282 have on you? What do these outcomes mean to you?). The concluding section invited the  
283 participants to add to anything previously discussed. Neutral non-directional probes (e.g.,  
284 Can you give me an example? What do you mean?) were used throughout the entire  
285 interview process (Kvale & Brinkmann 2009).

## 286 **Data Analysis**

287 Quantitative data were analysed using SPSS 19.0 and involved four stages. First, the  
288 data were screened to check for accuracy and statistical assumptions. Second, means and  
289 standard deviations from the manipulation check were examined to see how much emotion  
290 was disclosed. Third, a mixed-design (Group x Time) ANOVA was conducted to assess  
291 SIRG between groups. Follow-up Bonferroni corrected pairwise comparisons tests were used  
292 to isolate mean differences. Fourth, Linguistic Inquiry and Word Count (LIWC; Pennebaker,  
293 Francis, & Booth, 2001) was used to analyse the content of the verbal and written disclosure  
294 for each of the four intervention sessions. This software is designed to assess grammatical,  
295 linguistic, and psychological features of text documents. Based on T-SIRG (Roy et al., 2017),  
296 Salim et al.'s (2015) research findings with injured athletes high and low in hardiness, and  
297 our hypotheses, this study was interested in three measures: (a) words indicating that the  
298 participant experienced positive emotions, (b) words indicating that the participant  
299 experienced negative emotions, and (c) words indicating that the participant engaged in

300 cognitive processes. Finally, a mixed-design (Group x Time) MANOVA was conducted on  
301 the LIWC findings to examine the differences within groups for the intervention sessions.  
302 Follow-up ANOVA tests were conducted to isolate mean differences.

303         The large qualitative dataset was rigorously analysed using thematic analysis (Braun,  
304 Clarke, & Weate, 2016). First, the first Author familiarised herself with the data, which  
305 involved transcribing the data, repeat reading of the transcripts, and reading the data in an  
306 active way (i.e., searching for patterns). Next, initial codes were generated by identifying  
307 interesting features of the data in a systematic fashion across the entire data. Once the data  
308 had been coded, data relevant to each code was collated. The next phase considered how  
309 these different codes combined to form an overarching theme and involved thinking about the  
310 relationship between codes, between themes, and between different levels of themes. The  
311 themes were then reviewed in relation to the coded extracts, the entire data set, and the  
312 overall story they tell about the participants' experiences. Finally, producing the report  
313 involved ensuring the write up provided a concise, coherent, logical, non-repetitive, and  
314 interesting account of the data, with vivid, compelling extract examples. Although this  
315 description of thematic analysis may appear a linear stepwise process, in practice it was a  
316 more recursive and reflexive process of working with the data (Braun et al., 2016).

317         Enhancing the methodological rigour of the qualitative data analysis process, the co-  
318 author acted as a 'critical friend' throughout (Faulkner & Sparkes, 1999). For example, the  
319 first author presented her interpretations of the data on a regular basis to the co-author who  
320 provided a theoretical sounding board to encourage reflection upon, and exploration of,  
321 alternative explanations and interpretations as they were identified in relation to the data. As  
322 part of this process of critical dialogue, the first author was required to make a defensible  
323 case that the available data supported her interpretations. In addition, participant reflections  
324 on our analytical interpretations were also sought to enhance the study's methodological

325 rigour (Smith & McGannon, 2017), which took place on average six months following the  
326 social validation interviews. This involved sharing and dialoguing with the participants about  
327 the study's findings and providing opportunities for additional data and insight. To elaborate,  
328 this process involved discussing with our participants their experiences of the processes and  
329 'outcomes' of the intervention, which helped to further co-construct and crystalize the  
330 identified themes. For example, our discussions of the 'outcomes' ensured we understood  
331 their growth-related experiences from their perspective. Rather than using existing  
332 definitions, taxonomies or inventories in a deductive fashion, we remained open to novel  
333 forms and representations of growth-related experiences (Day & Wadey, 2017). In addition,  
334 the participants also expressed whether their perceptions of the intervention had changed  
335 since the social validation interview. For example, some participants expressed during the  
336 interview that the intervention was difficult for them in that it involved reliving a painful time  
337 in their lives. Yet, during the member reflections, it was expressed that the intervention had  
338 also been therapeutic for them over time. By generating more nuanced insights and additional  
339 data, which ultimately led to more well-rounded themes, the process of member reflections  
340 had a critical role in enhancing the rigor of this study.

## 341 **Results**

### 342 **Preliminary Analyses**

343 Consistent with other disclosure interventions (Lyubomirsky, Sousa, & Dickerhoof;  
344 2006, Murray & Segal, 1994), three preliminary analyses were conducted: (a) difference  
345 between groups for growth-related experiences at Time 1 (i.e., pre-intervention), (b)  
346 manipulation check, and (c) word count. Growth scores between groups at Time 1 revealed  
347 no significant difference: VD group and WD group ( $p = .87$ ), WD group and control group ( $p$   
348  $= .53$ ), and VD group and control group ( $p = .43$ ). Regarding the manipulation check, a  
349 significant difference between the experiment groups and control group for emotional

350 disclosure and its meaningfulness was identified ( $ps. < .05$ ). That is, both the WD and VD  
351 groups disclosed more emotions and their entries were more meaningful than the control  
352 group. There was no significant difference between the WD and VD groups ( $p > .05$ ).  
353 Consistent with Pennebaker et al. (1990) who developed the manipulation check, these  
354 findings show that the experimental manipulation was effective, with both experimental  
355 groups expressing more emotions than the control group. Means (SD) are displayed in Table  
356 1. Finally, the VD group ( $M = 4700.13$  [ $SD = 1431.03$ ]) disclosed three times as many words  
357 than the WD group ( $M = 1376.86$  [ $SD = 600.52$ ]). The control group disclosed the least  
358 amount of words ( $M = 1005.12$  [ $SD = 501.32$ ]).

### 359 **Hypothesis 1: Growth**

360 Findings revealed a significant Group x Time interaction (Wilks' Lambda = .34,  $F$  [4,  
361 82] = 14.51,  $p = .00$ ,  $\eta_p^2 = .41$ ). Post hoc test indicated a significant interaction effect at Time  
362 2 (post-intervention) and Time 3 (4-week follow-up) between groups. That is, the participants  
363 in the VD condition reported more growth than those in the WD and control groups at Time 2  
364 and Time 3 ( $ps < .05$ ). Findings also revealed a significant main effect between groups ( $F$   
365 [1,42] = 3.38,  $p = .04$ ,  $\eta_p^2 = .14$ ). Bonferroni pairwise comparisons indicated a significant  
366 difference between the VD Group and control group ( $p = .04$ ). From exploring the mean  
367 values, the VD Group reported more growth than the control group. No significant difference  
368 was found between the VD group and WD group or WD Group and control group ( $ps. > .05$ ).  
369 All means (SD) are displayed in Table 2.

### 370 **Hypothesis 2: Linguistic Inquiry**

371 Findings revealed a significant Group x Time interaction (Wilks' Lambda = .76,  $F$  (4,  
372 82) = 2.95,  $p = .025$ ,  $\eta_p^2 = .12$ ). Post hoc test indicated a significant interaction effect for  
373 positive, negative and cognitive mechanism words for all four sessions. This interaction was  
374 due to the condition differences. That is, between the VD and WD groups during the final

375 disclosure session. Findings also revealed a significant main effect for time (Wilks' Lambda  
376 = .60,  $F [3, 40] = 8.76$ ,  $p = .00$ ,  $\eta_p^2 = .40$ ). Bonferroni pairwise comparisons revealed no  
377 significant difference between Sessions 1 and 2 ( $p = .30$ ), Sessions 2 and 3 ( $p = .40$ ), or  
378 Sessions 3 and 4 ( $p = 1.00$ ). However, a significant difference was found between Sessions 1  
379 and 4 ( $p = .02$ ). From exploring the mean values, there was a significant increase in positive  
380 emotions and cognitive mechanism words over the four weeks and a decrease in negative  
381 words for both the WD and VD groups. All means (SD) are displayed in Table 3.

### 382 **Social Validation**

383         **Verbal disclosure.** Participants' experiences of the processes of the VD intervention  
384 were grouped into four themes (i.e., *Retraumatization*, *Therapeutic Experience*, *One-Way*  
385 *Conversation*, and *Putting the Puzzle Together*), whereas the outcomes reflected three themes  
386 of SIRG: *Seeing Myself in a Different Light*, *Seeing Others in a Different Light*, and *Stop,*  
387 *Reflect, Act*. Regarding processes, the first theme was *Retraumatization*. Participants reported  
388 from the outset that the intervention was a difficult and challenging experience for them in  
389 that it led to reliving an upsetting period in their lives, resulting in negative affect (e.g., anger,  
390 frustration, guilt, feelings of depression, restlessness). One athlete recalled "Talking about  
391 being injured made me feel angry because it takes you back to that moment again. I could *feel*  
392 that same *frustration* from when I was off for so long. It was a horrible experience. It's like  
393 opening the door to the past." These negative emotions lingered with the participants during  
394 and after the first two sessions. One participant expressed, "I remember coming out of the  
395 first session, and the negative feelings staying with me. They, they, came home with me that  
396 evening. I couldn't shake them off. I kept replaying the injury over again in my head. It  
397 wasn't a pleasant experience for me." Yet, these negative emotions were reported to dissipate  
398 in later sessions as the participants worked through their experiences, leading to what they



399 described as a *Therapeutic Experience* that lowered negative affect and heightened positive  
400 affect. One participant expressed:

401           It was nice to talk in the later sessions. It was cathartic. Better out than in, I guess. I  
402           don't know, it was just nice to take the time to understand, well, *me*. It was like  
403           therapy. I clearly had a lot of shit going on in my head about my injury, and it was  
404           nice to unleash it. To let it all out. It felt good to do it. It felt nice to offload. To get  
405           everything out of my head. I'd do it again. I'd recommend it to others.

406           Another theme identified was having a *One-Way Conversation*. Participants reported  
407           that talking into a Dictaphone was a strange experience; strange in the sense that no one was  
408           replying to them and no one was physically present in the room. For example, one athlete  
409           recalled, "For the first minute it seemed, well, *weird*. Weird to be talking to myself, because I  
410           had never done anything like that before, you know, talking out loud by myself." Yet on the  
411           other hand, they also reported that over time it soon became an effortless process for them.  
412           One participant expressed, "Initially, it felt really weird to be talking to myself out loud. But,  
413           as the sessions went on, I started to feel more comfortable talking. It felt quite natural to talk.  
414           To talk to myself." Participants also reported having a one-way conversation was pleasurable.  
415           Indeed, no one was interrupting them, no one was telling them how they should think and  
416           feel, no one was pretending to listen, and no one was following up with their own examples.  
417           In addition, they reported that they could be honest with themselves: "It was nice because no  
418           one was judging me. I was just being honest with myself. Saying how I *really* felt." Yet,  
419           while having a one-way conversation was deemed pleasurable, they also reported that one of  
420           the main challenges for them was *Putting the Puzzle Together*. Participants' recalled that their  
421           thoughts were initially jumbled and unorganized, but over the four sessions they were soon  
422           able to put their experiences into a story-like format. One participant recalled:

423 In my head, it seemed like a jumbled, incoherent mess! Funny enough though, over  
424 the four sessions, I think it started to come out in a more structured way; almost like a  
425 story. As each session went on, it became more and more structured and I think it  
426 ended up as a story from the start of my injury all the way through to my return. It  
427 was like putting a puzzle together.

428 Regarding intervention outcomes, participants reported three areas of SIRG. The first  
429 was *Seeing Myself in a Different Light*. The participants reported learning a great deal about  
430 themselves (i.e., heightened self-awareness). This included how selfish they were and that  
431 they need to be more caring, how their actions have consequences on themselves and others,  
432 how they took their health for granted and they need to be more compassionate to their  
433 bodies, how they need to be less pessimistic and more optimistic or more pessimistic and less  
434 optimistic, how they were more resilient than they give themselves credit for, and the  
435 importance of emotional-disclosure. One athlete recalled:

436 I never thought it would change me, but I have learnt so much about myself from  
437 doing this task. I wouldn't have call myself a resilient or strong person. I always  
438 thought I was weak ... I don't handle pressure very well. I don't deal with adversity  
439 as well as I would like to. I'm often not able to speak out about how I'm really  
440 feeling. But, I've realised that despite feeling rubbish, I still overcame my injury. So, I  
441 must be stronger than I thought.

442 Participants also reported *Seeing Others in a Different Light*. This theme encompassed  
443 strengthened and weakened relationships with others, heightened awareness of their support  
444 network, understanding the importance of reciprocal relationships, realisation of who they  
445 can and cannot rely on in times of need, and a greater insight into the support exchanges  
446 between members of their support network. Indeed, participants reported that many of their

447 support network did not meet their needs. On the other hand, they also acknowledged how  
448 they had affected these support exchanges:

449 I learnt my friends and family didn't really help me much when I was injured. But,  
450 this task also made me realize that I didn't tell them what I was really thinking and  
451 feeling, because I didn't think they would understand what I was going through. I  
452 guess I'm partly to blame here, as I didn't give them the chance to understand because  
453 I was so angry. Relationships are messy.

454 The final theme is *Stop, Reflect, Act*. The theme reflected how the participants  
455 changed behaviors because of the intervention in terms being more empathetic to other  
456 injured athletes, changing training regimes to integrate rehabilitation exercises to prevent  
457 injury, and eating more healthily. One athlete reported, "I now understand the importance of  
458 warming up and cooling down properly. Talking forced me to think about why I got injured. I  
459 never warmed up or cooled down properly. I have definitely taken this on board now."  
460 Regarding eating more healthily, one participant said, "I took my health for granted. I ate so  
461 unhealthily when I was injured. I've realised that I need to change this. I need to look after  
462 me, my body. Now, I only put good stuff on my plate, which makes me feel better about me."

463 **Written disclosure.** Participants' experiences of the processes of the intervention  
464 were grouped into five themes (i.e., *Retraumatization, Therapeutic Experience, A Structured*  
465 *Approach, Struggling to Keep Up with My Thoughts*, and *Seeing is Believing*), whereas the  
466 outcomes reflected two themes: *Still Putting the Pieces of the Puzzle Together* and *Seeing*  
467 *Myself in a Different Light*. Like the VD group, participants found WD to be both  
468 retraumatizing and therapeutic. Two participants reported, "I got dropped from the squad  
469 because of my injury. I've never really discussed how I felt with anyone or written anything  
470 down. It was tough reliving and putting my emotions down on paper" and "I enjoyed writing.  
471 I don't write enough. It was nice to chronicle my experiences. It was therapeutic in a way."

472 However, a novel theme for WD was *A Structured Approach*. This theme reflects how the  
473 participants found the intervention challenging, because they felt their writing had to be  
474 structured, with a clear beginning and end. Although they were instructed not to worry about  
475 spelling, grammar, and sentence structure, they reported feeling conscious that their entries  
476 made sense and progressed chronologically. One athlete recalled:

477 I overthought about what I should and shouldn't write. I felt it needed to be  
478 structured, like a story. In the first session, I tried to write my whole story. In later  
479 sessions, I tried to go back and forth to re-address things. In ended up a bit of a mess,  
480 with bits of my story all over the place.

481 Despite wanting to take a structured approach, the participants found this difficult to  
482 do in practice; they reported *Struggling to Keep Up with My Thoughts*. This theme reflected  
483 what the participants described as their thoughts moving faster than their ability to write.  
484 They reported their thoughts as jumping around, darting in different directions as new  
485 insights emerged and as their reflections widened and narrowed. This incongruence between  
486 their thoughts and ability to write them down fast enough led to them forgetting certain things  
487 they wanted to write. One participant mentioned:

488 Once I got into the flow of writing I found that I had too much I wanted to write down  
489 but I could only think and write about one thing at a time. I had so many thoughts  
490 running through my mind and often when I was writing, there were things I wanted to  
491 say but forgot once I finished the point I was making. In all of the sessions, I ran out  
492 of time before I could finish what I wanted to say.

493 The final theme, *Seeing is Believing*, represented that the interventions allowed them  
494 to see their thoughts and feelings in a written format, which validated them and made them  
495 real. Until the intervention, they had not stopped and reflected on their experience and they

496 were surprised by what they were writing, their thoughts and feelings, theirs and other  
497 people's actions, and what their injury clearly meant to them. One athlete recalled:

498 I never realized how I felt about my injury until I wrote it all down and saw it on the  
499 paper, you know what they say, *seeing is believing*. I didn't believe that my injury  
500 affected my life in such a way until I wrote it down. It explains a lot of my behavior  
501 because I was so upset about my injury.

502 Regarding outcomes from the intervention, two outcomes were identified: *Still*  
503 *Putting the Pieces of the Puzzle Together* and *Seeing Myself in a Different Light*. The  
504 participants felt they had not yet reached closure. That their stories had chapters missing.  
505 That they had unanswered questions. That they had yet to dot-the-i's and cross the t's. All in  
506 all, they still felt they were working through their injury experience. One athlete recalled:

507 My story was like a jumbled puzzle and I spent each session trying to write it down  
508 and put it together. I never managed to write everything I wanted because the time  
509 would run out. I managed to tell parts of my story, but it was probably incoherent in  
510 places and I still have no idea about what really happened when I got injured.

511 The second theme, *Seeing Myself in a Different Light*, reflected what the participants  
512 had learned about themselves during the intervention and reflected SIRG, which contradicts  
513 and extends the quantitative findings. They had learnt how to train more effectively, how they  
514 manage adversity, how they should not take their health for granted, and how they should be  
515 more optimistic and less critical of themselves. One athlete reported:

516 This task has made me realize I'm negative about everything in my life, and always  
517 think the worst-case scenario, rather than thinking about how I can make things better.  
518 The more I talked the more I realized this. I now know I need to change this and try to  
519 be more positive because my negativity just makes me feel rubbish.



545 methodologically, and theoretically (Day & Wadey, 2017; Howells & Fletcher, 2015; Roy et  
546 al., 2017), *how* to promote SIRG has received no research attention. Second, this study  
547 significantly extends previous research on written disclosure with injured athletes in terms of  
548 its methodological rigor (Mankad et al., 2009a; Mankad et al., 2009b; Mankad & Gordon,  
549 2010). Heeding recommendations from the psychology of sport injury (Cupal, 1998; Evans &  
550 Hardy, 2002) and emotional disclosure (Frattaroli, 2006) literature, this study uses a rigorous  
551 methodology that incorporates a control group, follow-up assessment, manipulation check,  
552 and social validation of procedures and outcomes. Finally, this study has also accounted for a  
553 sub-group of athletes that have received limited research attention (i.e., injured athletes low in  
554 hardiness). The sport and exercise psychology literature has lots of excellent examples of  
555 research conducted with athletes who identify themselves as resilient or mentally tough (e.g.,  
556 Connaughton, Wadey, Hanton, & Jones, 2008; Fletcher & Mustafa, 2012; Gucciardi, 2017;  
557 Hardy, Bell, & Beattie, 2013). Yet, athletes who lack resilience or mental toughness have  
558 received less empirical attention (Uphill & Hemmings, 2017).

559         As hypothesized (Hypothesis 1), findings support the efficacy of VD to promote  
560 growth in athletes' low in hardiness. The VD group reported significantly more growth than  
561 both the WD and control groups, which was identified to represent three themes: *Seeing*  
562 *Myself in a Different Light*, *Seeing Others in a Different Light*, and *Stop, Reflect, Act*. This  
563 finding supports the T-SIRG (Roy et al., 2017) and research by Salim et al. (2015a,b) that  
564 suggest or provide evidence that injured athletes who disclose their emotions are more likely  
565 to experience SIRG. In contrast to our hypotheses, WD was not found to significantly  
566 promote SIRG. This conflicts with research in other disciplines that have demonstrated the  
567 efficacy of expressive writing to promote growth following adversity in diverse populations,  
568 including cancer patients, bereaved individuals, and rheumatoid arthritis patients (e.g.,  
569 Danoff-Burg, Agee, Romanoff, Kremer, & Strosberg, 2006; Lichtenthal & Cruess, 2010;

570 Low, Stanton, Bower, & Gyllenhammer, 2010; Smyth, Hockemeyer, & Tulloch, 2008).  
571 Several reasons may explain this finding. First, the intervention did not have enough sessions.  
572 Despite following recommendations in the literature (Pennebaker & Beall, 1986), one of the  
573 themes identified from the social validation interviews was that the participants were *Still*  
574 *Putting the Pieces of the Puzzle Together*. Future researchers, therefore, should consider the  
575 number of sessions and the duration between them (Frattaroli, 2006), as well as alternative  
576 methods of disclosure (e.g., video logs), to add to our knowledge of the optimal conditions  
577 under which disclosure should take place. A second reason why WD did not significantly  
578 promote growth is the nature of the intervention itself. The VD groups were found to disclose  
579 three times as many words than the WD group. Considering the T-SIRG suggests that the  
580 cognitive and emotional processes of working through injury is a challenging endeavor (Roy  
581 et al., 2017), this is perhaps not surprising that the VD group had moved further along the  
582 pathway to SIRG than the WD group. Finally, a measure of stress-related growth was used  
583 rather than SIRG; therefore, the measure used might not have adequately accounted for the  
584 nuanced differences between the concepts. **Future researchers need to develop a measure of**  
585 **SIRG to ensure the coherence of terminology and the associate use of a measurement tool**  
586 **(Howells, Sarker, & Fletcher, 2017)**. However, this will be a challenging endeavor as SIRG  
587 manifests itself within, and is perceived by, injured athletes differently. For example, one  
588 athlete might view strengthened relationships with others as SIRG, whereas another might  
589 report weakened relationships as an indicator of SIRG (Day & Wadey, 2017).

590 As hypothesized (Hypothesis 2), negative emotions decreased and positive emotions  
591 and cognitive words increased over time for both the VD and WD groups. This finding  
592 resonates with the identified themes from the social validation interviews that identified the  
593 role of negative emotions (i.e., *Retraumatization*) and positive emotions and cognitions (e.g.,  
594 *Therapeutic Benefits* and *Putting the Pieces of the Puzzle Together*). Further, these findings



595 align with the T-SIRG (Roy et al., 2017) that suggests that the adverse experiences  
596 following injury need to be rationalized and positively reappraised throughout recovery,  
597 which in turn will generate positive emotions, facilitative actions, and ultimately SIRG. Yet,  
598 while the present findings do support these theoretical proposals, the T-SIRG also stipulates  
599 that the relationship between these phenomena is far more complex. For example, Roy et al.  
600 (2017) reported, "... negative demands and responses not only trigger the development of  
601 SIRG, but also co-occur with the processes and experiences of SIRG" (p. 41). Indeed, the  
602 process to SIRG is not linear and SIRG itself is not a static phenomenon; rather they both are  
603 very much reflective of the ebb and flow of recovery from injury (Wadey & Evans, 2011).  
604 This might be explained by drawing on a limitation of our study. That is, the method of data  
605 collection used (i.e., questionnaire) and the study's methodological pre-post design, might not  
606 have been able to account for such complexity. Future researchers, therefore, should seek to  
607 use alternative methods (e.g., diaries, observation, informal interviews) and methodologies  
608 (e.g., ideographic rather than nomothetic such as action research and case studies) to generate  
609 a more critical and nuanced understanding the complexities of SIRG. **Importantly, these**  
610 **methodologies should also be longitudinal to account for the temporal nature of growth**  
611 **(Helegson, Reynolds, & Tomich, 2006).**

612 Underpinned by the *Multilevel Model of Sport Injury* (Wadey, Day, Cavallerio, &  
613 Martinelli, 2018), the study's implications for applied practice are now considered across  
614 several levels. At an intrapersonal level, injured athletes' beliefs of emotional disclosure need  
615 to be challenged. Salim et al. (2015a) identified that athletes low in hardiness believe that  
616 emotional disclosure burdens others, does not affect recovery, and can have negative  
617 repercussions (e.g., team-selection). These beliefs should be prioritized as targets for change.  
618 Other examples at this level include hardiness training (Maddi, 1987). Taking an  
619 interpersonal perspective, findings suggest that the support received by injured athletes does

620 not often meet their needs. Therefore, support providers should receive adequate training.  
621 This can include teammates, physiotherapists, and family members. An excellent example of  
622 how this could be done with parents, for example, is provided by Thrower, Harwood, and  
623 Spray (2017). At a broader institutional level, sports organizations and clubs should reflect on  
624 their resources, practices, and policies (Wadey et al., 2018). Questions worth considering  
625 include: What physical spaces exist that are conducive to emotional disclosure? If an injured  
626 athlete needed to disclose, what is the current protocol? What relationships with external  
627 agencies exist that can facilitate disclosure? Excellent examples of how this could be  
628 explored within a sports organization are provided by Parent (2011) and Cavallerio, Wadey,  
629 and Wagstaff (2016). Finally, it is important to consider the cultural context: What are the  
630 collective beliefs, norms, traditions, and values? What cultural narrative resources prevail?  
631 For example, sporting cultures have been identified to revere positivity, which govern what  
632 stories can be told and what stories are silenced (Mankad et al., 2009a). As recommended by  
633 Brown, Gilbourne, and Claydon (2009), all injured athletes need to be afforded the space and  
634 opportunity to share their stories, which should be met with support, understanding, and  
635 empathy (Wadey & Evans, 2011).

### 636 **Conclusion**

637 This study is original in that it is the first study to provide rigorous support for the  
638 efficacy of VD to promote SIRG. Yet, while this study is rigorous and its findings are of  
639 practical significance, it is recommend that future researchers proceed with caution. One  
640 finding from the social validation interviews is that injured athletes can experience  
641 retraumatisation. That is, talking or writing about injury can be an upsetting experience and  
642 such retraumatisation may constitutes abuse on the part of the researcher (Andersen &  
643 Ivarsson, 2016). While research is often fundamentally an exploitative process, future  
644 researchers should put appropriate safeguards in place to ensure the well-being of their

645 participants is not compromised. Future researchers should seek to extend this study by  
646 diversifying. Drawing from other disciplines of research on growth following adversity,  
647 researchers have examined art therapy (Singer et al., 2012), narrative exposure therapy  
648 (Hijazi, Lumley, Ziadni, Haddad, Rapport, & Arnetz, 2014), and poetry (Tegner, Fox,  
649 Philipp, & Thorne, 2009). These interventions, amongst others, represent exciting and  
650 unfamiliar terrains for the psychology of sport injury literature.

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