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A Systematic Review of Interventions to Promote Growth Following Adversity

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1 **Abstract**

2 **Background:** Athletes experience adversity across many aspects of their lives. Challenging the
3 dominant idea that adversity is just a negative experience, a significant body of research in sport
4 has demonstrated that these adverse events can also act as catalysts for positive change (Howells,
5 Fletcher, & Sarkar, 2017). Yet, a limited number of researchers have focused on how to promote
6 growth following adversity in sport. To support this line of inquiry our aim in this study was to
7 facilitate knowledge transfer from other psychology disciplines by systematically reviewing
8 intervention studies that aim to foster growth following adversity. **Methods:** We conducted the
9 systematic review using PRISMA guidelines. Following inclusion and exclusion criteria, we
10 appraised the studies using the Mixed Methods Appraisal Tool (Pluye & Hong, 2014). **Results:**
11 Thirty-six studies were included in the review. We synthesized the studies in relation to participant
12 characteristics (i.e., sample size, age, gender, ethnicity, adversity), study characteristics (i.e.,
13 design, content, duration, delivery, outcome measures), intervention outcomes (i.e., statistical
14 significance, effect size, qualitative indicators of growth), antecedents (viz. mediators, moderators),
15 and quality appraisal. **Conclusion:** In the discussion we critically consider the lessons sport and
16 exercise psychology researchers can learn from published intervention studies from other fields of
17 research (e.g., the use of meaningful metrics, that there are different trajectories of growth, growth
18 is a multidimensional phenomenon). Future researchers should seek to build on findings to advance
19 knowledge and understanding in the most significant and meaningful ways.

20 *Keywords:* Benefit-Finding, Injury, Sport, Stress, Synthesis, Trauma

1 **A Systematic Review of Interventions to Promote Growth Following Adversity**

2 Athletes encounter a wide range of negative events and experiences throughout their
3 sporting careers. These events have been variously labelled *stressors* (e.g., time demands),
4 *adversities* (e.g., coach bullying), and *traumas* (e.g., injury) (cf. Howells, Sarkar, & Fletcher, 2017).
5 However, one of the challenges with researching adversity is that the meaning of these terms (e.g.,
6 what constitutes a ‘traumatic’ event?) vary within and across fields of research and cultures
7 (Tedeschi, Shakespeare-Finch, Taku, & Calhoun, 2018); therefore, it is important that researchers
8 define their terms of reference from the outset. Although some researchers are more interested in
9 the objective qualities of the events, we agree with Tedeschi et al. (2018) that, “whether or not an
10 event is traumatic, is in the eye of the beholder” (p. 4). Therefore, **accounting for both the** objective
11 qualities, **and** the subjective meaning to the individual **is important**. Accordingly, herein we employ
12 the term *adversity* **to** represent a more inclusive term than *stressor*. We define adversity as a
13 relational state between an individual and their environment (cf. Howells & Fletcher, 2015) that
14 includes the event (e.g., injury) and the individual’s cognitive (e.g., appraisal, rumination) and
15 affective (e.g., distress) responses to it.

16 Despite the dominant **conceptualization** of adversity in sport as an undesirable occurrence
17 with predominantly negative consequences (e.g., depression, post-traumatic stress disorder),
18 **researchers in the sporting domain have** suggested that adverse events can also act as catalysts for
19 positive change (e.g., Collins & MacNamara, 2012), **particularly in elite cohorts (e.g., Hardy,**
20 **Barlow, Evans, Rees, Woodman et al., 2017)**. This **premise** of positive change following adversity
21 has been labelled in the sport and exercise psychology literature as *growth* (Howells et al., 2017).
22 According to Tedeschi et al. (2018), growth is defined as, “positive changes in cognitive and
23 emotional life that are likely to have behavioral implications; the changes can be profound and may
24 be truly transformative” (p. 5). Researchers who have explored this concept in the context of sport
25 and exercise have identified several indicators of growth, including increased spiritual awareness,
26 better emotional regulation, more prosocial behavior, improved social relationships, and enhanced

1 sport performance (cf. Howells et al., 2017). Although some researchers might suggest these
2 positive changes are analogous to normative development, Tedeschi et al. (2018) suggested growth
3 can be distinguished from normative maturation processes as only growth is the direct result of the
4 struggle with the aftermath of adversity. It could, **however**, be argued that growth following
5 adversity may indeed help to ‘accelerate’ normative development **or that adversities themselves**
6 **may impact on developmental pathways (cf. Tedeschi et al., 2018) but these are** conceptual issues
7 **that warrant** future research attention. **Furthermore, despite seemingly overwhelming evidence that**
8 **adversity-related experiences are associated with subsequent positive change, there are differential**
9 **findings suggesting that growth in sport may be overstated. To elaborate, in a study that examined**
10 **what factors associated with trauma experiences discriminate between super-champions,**
11 **champions and those who did not succeed at the highest level of performance, Collins, MacNamara,**
12 **and McCarthy (2016) reported a lack of universal trauma in the development pathways of**
13 **performers across all levels.**

14 **Despite these differential findings (e.g., Collins et al., 2016), the evidence to support growth**
15 **in sport and exercise is compelling. However, the focus** thus far has been how we should
16 conceptualize growth, the methodological processes involved in studying growth, testing and
17 developing theory, exploring growth experiences, and identifying its antecedents and consequences
18 (cf. Howells et al., 2017). Despite making significant strides conceptually, theoretically, and
19 methodologically *how* to promote growth following adversity has received limited research
20 attention.

21 One methodological approach that has been increasingly used in sport and exercise
22 psychology to enhance knowledge and understanding in under-researched and/or emerging areas
23 of empirical enquiry is a systematic review. **This methodological approach was utilized by Howells**
24 **et al., 2017) to understand how growth has been conceptualized in competitive sport, but their**
25 **review focused on how growth has been researched rather than how growth may be facilitated.**
26 Given the paucity of intervention research on growth following adversity in sport, **our aim in this**

1 study was to facilitate knowledge transfer from other psychology disciplines to guide sport and
2 exercise psychology researchers by systematically reviewing intervention studies that aim to foster
3 growth following adversity. Our rationale for this was twofold. First, we strongly believe that
4 addressing the lessons that sport and exercise psychology researchers can learn from existing
5 published intervention studies in other fields of research (e.g., cognitive psychology,
6 developmental psychology, existential and humanistic psychology, health psychology) will help
7 inform the design of intervention studies with athletes who have experienced adversity. Our
8 intention here is not to identify the ‘best’ approach, rather to encourage diverse and innovative
9 approaches to promote growth. Second, we believe that identifying what Hardy (2015) termed the
10 “genuine unknowns” (p. 258), specifically, those issues that may not have been addressed by the
11 reviewed literature, will help guide the direction of future research, such that it reduces the
12 likelihood of needless replication. Hardy suggested that too often sport and exercise psychologists
13 replicate studies from other fields and call them ‘new’, when we should be focusing on the genuine
14 unknowns. Although our aim with this study was to facilitate knowledge transfer from other
15 psychology disciplines, we seek to identify genuine unknowns to reciprocate knowledge transfer.
16 Some might argue that there is limited transferability between disciplines, however, the evidence
17 thus far on growth following adversity suggests that many of the findings ‘ring true’ across
18 disciplines (cf. Tedeschi et al., 2018).

19 **Methods**

20 **Search Strategy**

21 The protocol we used for this systematic review was the Preferred Reporting Items for
22 Systematic Reviews and Meta Analyses guidelines (PRISMA; Moher, Liberati, Altman, &
23 PRISMA Group, 2009). The search strategy was threefold. First, in April 2018, the first author
24 carried out an online search of the following electronic databases: PsycINFO, PsycARTICLES,
25 SPORTDiscus, Web of Science Core Collection, and the Cochrane Library, to include all
26 identifiable published studies up to 3rd April 2018. We did not identify an earliest publication

1 boundary but **as** growth came to fruition with the advent of Tedeschi and Calhoun's development
2 of the PTGI in 1995, perhaps not surprisingly, the earliest study we identified was from 2001 (viz.
3 Antoni et al., 2001). The keywords **we** used in the search were deductively informed by the **terms**
4 **utilized by researchers who have** explored adversarial growth in sport and exercise participants **in**
5 systematic reviews (Hefferon, Greal, & Mutrie, 2009; Howells et al., 2017). They were: "post-
6 traumatic growth", "posttraumatic growth", "stress-related growth", "adversarial growth", "benefit
7 finding", "perceived benefits", "positive outcomes", "thriving", "well-being" and "wellbeing". **We**
8 combined **these** terms with the following keywords related to interventions: "intervention",
9 "program", "programme", "therapy", "counseling", "counselling", and "treatment". **We conducted**
10 **the** primary search using the following combination of search strings: String 1: Post-traumatic
11 growth* OR Posttraumatic growth* OR Stress-related growth* OR Adversarial Growth* OR
12 Benefit finding* OR Perceived benefits* OR Positive outcomes* OR Thriving* OR Well-
13 being/Wellbeing. String 2: Interventions* OR Program/Programme* OR Therapy* OR
14 Counseling/Counselling* OR Treatment. **Our** second strategy involved **us** manually exploring
15 germane journals in the trauma, psychology, and sport performance literature.

16 **Criteria**

17 **We used** the following inclusion criteria to include studies **that**: (a) involved an intervention
18 that focused on inducing change; (b) were directed at those who had experienced adversity first-
19 hand rather than vicariously; (c) aimed to promote growth; (d) were published in peer-reviewed
20 journals; and (e) were available in the English language. **We excluded** studies if they were book
21 chapters, unpublished, dissertations, conference abstracts, or not written in the English language.

22 **Sifting of Research Papers**

23 Data were extracted by the first author and evaluated by title, abstract, and full text (see
24 Figure 1). At each stage **we** appraised papers and excluded **them** from the sifting process if they
25 did not meet the inclusion criteria. To illustrate, we excluded papers if they did not comprise an
26 intervention (e.g., **Collins et al., 2016**), involved vicarious trauma or growth (e.g., Shoji et al.,

1 2014), did not explicitly aim to promote growth (e.g., Gray et al., 2012), or were an unpublished
2 dissertation (e.g., Averill, 2007). The second author independently assessed a random selection of
3 15 titles, 15 abstracts, and 15 texts using the inclusion and exclusion criteria to ensure the accuracy
4 of the study selection procedure.

5 **Methodological Appraisal**

6 Thirty-seven studies (see Table 1) met the inclusion criteria which the first two authors
7 assessed for methodological quality using the Mixed Methods Appraisal Tool (MMAT; Pluye &
8 Hong, 2014). The MMAT has been identified as a valid and reliable tool that comprises of 19
9 quality criteria for appraising qualitative, quantitative randomized controlled trials, quantitative
10 non-randomized controlled, quantitative (descriptive), and mixed methods studies (Souto et al.,
11 2015). Nevertheless, we were aware that using this tool meant we were potentially appraising
12 studies (particularly the qualitative research), regardless of their intent and purpose, in preordained
13 and set ways (cf. McGannon & Smith, 2018). Therefore, the quality assessment provided detail as
14 a starting point for us to appraise the methodological quality of the studies rather than the quality
15 of the writing, or the effectiveness of a trial, and we acknowledge the role that our own
16 interpretation may have had in this process. We categorized studies according to the MMAT criteria
17 whereby quasi-experimental studies were classified as *quantitative nonrandomized controlled*,
18 single subject-design as *quantitative descriptive*, and studies that used interviews, participant
19 observation, or written narratives were classified as *qualitative*. Further explanation on the criteria
20 we utilized is included in Table 3. We added up scores for each methodological design; mixed
21 method studies only scored as high as their lowest score for each study design (cf. Smith, Sestak,
22 Forster, Partridge, Side, et al., 2016).

23 **Data Extraction and Analysis**

24 Once we had selected and quality appraised the studies, we extracted the following data:
25 participant characteristics (i.e., sample size, age, gender, ethnicity, adversity), study characteristics
26 (i.e., design, content, duration, delivery, outcome measures), intervention outcomes (i.e., statistical

1 significance and effect size, their meaning or qualitative indicators of growth), antecedents (viz.
2 mediators, moderators), and quality appraisal (see Table 1). **Abbreviations are detailed in Table 2.**
3 At this juncture it is important to explain what was meant by an ‘effective’ intervention. Recent
4 systematic reviews have **involved the authors assessing** intervention effectiveness by examining
5 whether the test statistic reaches the desired level of $p < .05$ (viz. Jaarsma & Smith, 2018). However,
6 this focus on the existence or non-existence of an effect has been heavily criticized for its narrow-
7 focus and incomplete reporting (Ivarsson, Andersen, Stenling, Johnson, & Lindwall, 2015). To
8 elaborate, Cohen (1990) reported that a common misconception is that $p < .05$ is a dichotomous
9 breaking point: the point upon which a *yes-no* decision is made. However, “*significant* does not
10 mean *important* or *meaningful*” (Higgs, 2013, p. 458). The p value does not inform us about the
11 magnitude or the meaningfulness of differences or associations; therefore, it is not a **good indicator**
12 **of** intervention effectiveness. To illustrate, one standard method of assessing growth is the use of
13 self-report measures, such as the Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun,
14 1996). Yet questions about how to interpret the scores include: What cut off values researchers
15 should use to determine whether (or not) growth has occurred because of an intervention. How
16 much is enough? What does an increase in growth mean in terms of real-world behavior? Tedeschi
17 et al. (2018) **suggested:**

18 Even the endorsement of a great deal of growth on only one item of the PTGI can indicate
19 significant change for an individual, even if the total score is low. In addition, a moderate
20 total score that is the result of a sum of many relatively low scores on individual items may
21 not indicate much significant growth (p. 34).

22 With this knowledge in mind, we **needed** to address how to assess the effectiveness of the
23 growth interventions included in this study. Regarding quantitative studies, Ivarsson et al. (2015)
24 recommended a more meaningful interpretation of statistics. That is, they suggested moving away
25 from just reporting p values to also including effect sizes *and* interpret what they might mean.
26 Andersen et al. (2007) reported, “Not only do consumers of sport and exercise psychology research

1 need to have information regarding effect sizes, but we also need to read what researchers have to
2 say about what those effect sizes actually mean” (p. 670). **In relation to** qualitative studies, **we**
3 **examined** participants’ accounts of their experiences of the intervention. Not all participants had to
4 report positive changes for the intervention for it to be deemed effective, **as** meaningful outcomes
5 might differ between participants and over time.

6 **Results**

7 **Study Selection and Quality Assessment**

8 Of the 938 papers that we originally identified for potential inclusion, 37 studies met the
9 eligibility criteria. One paper by Taku, Cann, Tedeschi, and Calhoun (2017) comprised two studies
10 with distinct **samples, accordingly, it** was reported as two separate studies (i.e., Taku et al., 2017a;
11 Taku et al., 2017b). **All studies were appraised using the MMAT numerical scoring (see Tables 3**
12 **and 4).** We removed one study (Gregory & Prana, 2013) from the review as **we interpreted the**
13 **research question could not be addressed with the data collected.** The quality of the 36 final studies
14 ranged from two (low) to six (high) (see Table 4).

15 **Participant Characteristics**

16 **Sample Size.** Collectively across the 36 studies included, there were 2970 participants with
17 a mean sample size of 82.44 ($SD = 61.64$). **Collectively the quantitative studies comprised 2907**
18 **participants with a mean sample size of 90.84 ($SD = 60.26$).** The qualitative studies ranged in
19 **sample size from seven to 27 participants ($M = 15.25, SD = 7.69$).** Studies were categorized into
20 those that sampled between 1 to 50 participants ($n = 13$), 51 to 100 participants ($n = 13$), 101 to
21 200 participants ($n = 7$), and 201 participants or more ($n = 3$).

22 **Age and Gender.** Two studies provided age ranges (Hefferon, Grealy, & Mutrie, 2008;
23 Singer et al., 2012) and 34 studies provided mean values, with **an overall** mean of 40.58 years (SD
24 $= 14.65$) across studies. One study (Chaves, Vázquez, & Hervás, 2016) involved children. Eight
25 hundred and twenty-six (28%) **participants** were male and 2144 (72%) were female.

26 **Ethnicity.** Most of the studies ($n = 24$) provided information about **participant** ethnicity or

1 national identity. Of these, the majority reported diversity in the study cohort despite a dominant
2 group that reflected the country of study origin. Eight studies focused on one ethnicity (see Table
3 1). A more in-depth analysis was hindered by a lack of coherence in terminology used in respect
4 of ethnicity, with some studies reporting on non-mutually exclusive groupings involving both
5 ethnicity and national identity. For example, Lo et al. (2014) reported percentages of Caucasian
6 and Canadian participants.

7 **Adversity.** The majority of the interventions ($n = 28$) targeted a specific type of adversity.
8 (Table 1). One study (Roepke, Benson, Tsukayama, & Yaden, 2017) addressed a range of
9 adversities that conformed to the criteria established through completion of the Life Events
10 Checklist (LEC; Weathers, Blake, Schnurr, Kaloupek, Marx et al., 2013), and the remainder ($n =$
11 7) addressed a range of adversities that participants self-reported as traumatic (see Table 1). The
12 majority ($n = 29$) of studies detailed the length of time since the adversity occurred.

13 **Study Characteristics**

14 **Study Design.** Twenty-two studies used a randomized controlled trial, whereby
15 participants were randomly allocated to either the intervention or control conditions. Three studies
16 used a quasi-experimental design with two experimental groups and one control group, whereas
17 three studies used a quasi-experimental design that involved one intervention and control condition.
18 Four studies adopted a single subject design where there was no control condition. Four studies
19 used a retrospective or concurrent qualitative methodology to assess the intervention effects (see
20 Table 1). Data was collected either through quantitative (i.e., questionnaires) and/or qualitative
21 methods (i.e., interviews, participant observation) at various time points (see Table 1). Where the
22 design included a follow-up assessment the follow-up data collection point ranged from three to 78
23 weeks ($M = 21.73$, $SD = 19.56$) post intervention. Thirty-two studies used standardized quantitative
24 instruments; data was collected at two time points (i.e., pre-intervention, post-intervention; $n = 13$),
25 three time points (i.e., pre-intervention, post-intervention, follow-up; $n = 10$), four time points (i.e.,
26 pre-intervention, post-intervention, two follow-up points; $n = 8$), and at five time points (i.e., pre-

1 **intervention**, post-intervention, three follow-up points; $n = 1$). Qualitative studies collected data at
2 one point ($n = 1$), two points (i.e., pre-**intervention**, post-event $n = 2$) and at five points ($n = 1$).

3 **Content.** The **studies** used different **intervention strategies** categorized as (see Table 5):
4 cognitive-behavioral ($n = 6$), mindfulness ($n = 3$), psychoeducation ($n = 6$), disclosure ($n = 8$),
5 social support ($n = 4$), sport and leisure ($n = 5$), and other ($n = 5$). Three studies were allocated to
6 multiple categories as the interventions involved a comparison between different approaches. We
7 allocated one study (Nijdam et al., 2018) to the same category twice as the study involved a
8 comparison between different approaches.

9 **Duration and Delivery.** The duration of the interventions ranged from one day to 19
10 months, with an average of 9.79 weeks ($SD = 16.12$). Where a study presented a range in length
11 (e.g., 8-12 weeks), the median of that intervention was used. Thirty-two studies were delivered
12 face-to-face and four were online. Eleven studies reported on the training and/or competencies of
13 the intervention facilitators (see Table 1).

14 **Outcome Measures.** Of the 25 studies (including Kallay and Baban [2008] which referred
15 to multiple constructs) that referred to PTG, 22 (88%) measured growth using the PTGI (Tedeschi
16 & Calhoun, 1996) or the PTGI-SF (Cann et al., 2010). One study (Stockton et al., 2014) used the
17 PTGI-SF **and** the psychological well-being post-traumatic change questionnaire (PWB-PTCQ;
18 Joseph et al., 2012), three studies utilized interviews, and two studies used the Stress-Related
19 Growth Scale (SRGS; Park, Cohen, & Murch, 1996). Of the seven studies that referred to benefit
20 finding, there was a lack of coherence about how the construct was measured (see Table 1). One
21 study (Dolbier et al., 2010) referred to stress-related growth (SRG; Park et al., 1996), but used the
22 PTGI. One study that referred to a context-specific form of growth (i.e., sport injury-related growth;
23 Salim & Wadey, 2018), in the absence of a measurement tool for the concept, used the SRGS.

24 **Intervention Outcomes**

25 Of the 36 studies, 29 (80.5%) reported growth as an outcome of the intervention (i.e.,
26 significant statistical difference between groups, significant statistical difference between pre- and

1 post-intervention scores, perceived growth from qualitative methods). They comprised all of the
2 mindfulness studies (Carlson et al., 2016; Garland, Carlson, Cook, Lansdell & Speca, 2007;
3 Victorson et al., 2017; Zhang et al., 2017), 83% of the cognitive-behavioral studies (Antoni et al.,
4 2001; Knaevelsrud et al., 2010; McGregor et al., 2014; Penedo et al., 2006; Ye et al., 2017), 86%
5 of the bespoke psychoeducation programs (Dolbier, Jaggars, & Steinhardt, 2010; Karagiorgou, et
6 al., 2018; Ramos, Leal, & Tedeschi, 2016; Taku et al., 2017 a, b; Wagner et al., 2007), 75% of the
7 social support studies (Carlson et al., 2016; Chiba et al., 2016; Morris et al., 2011), 78% of the
8 disclosure studies (Hagenaars & van Minnen, 2010; Hijazi et al., 2014; Kallay & Baban, 2008;
9 Roepke et al., 2017; Salim & Wadey, 2018; Slavin-Spenny et al., 2011, Stockton et al., 2014), 60%
10 of those studies that utilized sport or leisure (Garland et al., 2007; Hefferon et al., 2008;
11 McDonough et al., 2011), and 100% of studies that could not be categorized that comprised wish-
12 granting, brief eclectic psychotherapy (BEP), eye movement desensitization and reprocessing
13 theory (EMDR), and individual therapy, narrative group psychotherapy (Chaves et al., 2016;
14 Nijdam et al., 2018; Ruini et al., 2014; Salo et al., 2008).

15 Twenty quantitative studies presented significant differences ($p < .05$) between the
16 experimental and control groups (cf. Jaarsma & Smith, 2018). However, their effect sizes, where
17 reported, were variable (see Table 1) and none reported on how these effect sizes related to real
18 world application. To elucidate, the studies either did not report the measure of effect size used
19 (Salo et al., 2008), did not report effect sizes (Kallay & Baban, 2008; Karagiorgou et al., 2018;
20 Penedo et al., 2006; Ramos et al., 2017; Stockton et al., 2014; Taku et al., 2017b), used omnibus
21 effect sizes with scores ranging from .03 to .21 (i.e., η^2 or η^2_p ; Antoni et al., 2001; Chaves et al.,
22 2016; Dolbier et al., 2010; Hagenaars & van Minnen, 2010; McGregor et al., 2014; Ruini, Masoni,
23 Ottolini, & Ferrari, 2014; Salim & Wadey, 2018; Slavin-Spenny et al., 2011; Taku et al., 2017a;
24 Ye et al., 2017; Zhang et al., 2017) or Cohen's d with scores ranging from 0.03 to 1.16 (Carlson et
25 al., 2016; Garland et al., 2007; Hijazi et al., 2014; Nijdam et al., 2018; Roepke et al., 2017; Wagner
26 et al., 2007). Given the positive directions of the effect sizes, the findings correspond with an

1 effective intervention (i.e., increased growth in the treatment condition compared to the control
2 condition). However, the size of the effects varied greatly between studies, thereby suggesting
3 differences in the magnitude (i.e., how much) of growth experienced. That said, the findings are
4 challenging to interpret because they correspond to self-report scales (e.g., what does an increase
5 in scores from 10 and 15 on a PTGI subscale mean?) rather than actual behaviors or action-oriented
6 growth (cf. Ivarsson et al., 2015). Furthermore, none of the authors interpreted the meaningfulness
7 or practical significance of the effect size to help the reader understand them in terms of their real-
8 world meaning (for our interpretations, see the discussion).

9 All four of the qualitative studies reported growth with Hefferon et al. (2008) reporting
10 that: “the women [who were cancer survivors engaged in the physical activity intervention]
11 regarded the class as a sort of ‘saviour’ and there was evidence to suggest that this type of group
12 therapy facilitated PTG” (p. 38). Karagiorgou et al. (2018) interviewed four individuals who
13 participated in a brief positive psychotherapy trial (PPT) and three who took part in a treatment as
14 usual (TAU) condition. Although both groups reported positive changes, only those who took part
15 in the PPT reported intent to adopt healthier behaviors; this was categorized as reflecting lifestyle
16 improvements and new possibilities. In McDonough et al.’s (2011) study, PTG was identifiable in
17 all domains but the number of participants who reported growth in each domain varied from 15 out
18 of 17 participants (viz. appreciation of life; new possibilities) to only three (viz. spiritual growth).
19 Morris et al. (2011) reported that “all participants reported positive life changes, or PTG . . . since
20 being diagnosed with cancer and taking part in [the intervention]” (p. 670). These changes were
21 reported across the five domains of PTG.

22 Contrary to hypotheses, some participants in the control groups also experienced growth.
23 Zhang et al. (2017) identified that the Chinese breast cancer patients undergoing the usual care
24 condition showed significant increases in PTG, whereas, Taku et al. (2017b), Gallagher et al.
25 (2018), and Karagiorgou et al. (2018) identified higher levels of PTG in the control group than in
26 the experimental condition. In the latter study, the authors acknowledged that it is possible that

1 some of the positive themes discussed in their study (in both groups) may have reflected premorbid
2 traits rather than growth per se. Seven studies did not report significant differences between groups
3 in respect of growth (Bennett, Lundberg, Zabriskie, & Eggett, 2014; Gallagher et al., 2018; Liu &
4 Kia-Keating, 2017; Lo et al., 2014; Salo et al., 2008; Singer et al., 2012; Zoellner et al., 2011) but
5 collectively the studies provide further insight into the facilitation of growth. Bennett et al. (2014)
6 speculated that growth was not observed in the cohort of PTSD sufferers as the recreation
7 experience was sufficient to reduce PTSD in some participants but was not enough to facilitate
8 PTG. Gallagher et al. (2018) reported that although PTG was not observed in an expressive writing
9 condition, in fact there was a reduction in PTG from baseline with a small effect size. Interestingly,
10 the cancer facts condition (established as a control comparison) was associated with higher levels
11 of PTG lending some support for an education intervention. Despite reporting that there were no
12 significant differences between two different writing groups (affirmation and expressive),
13 qualitative open questions in Liu and Kia-Keating's (2017) study suggested that participants'
14 perceptions about positive outcomes can be incoherent with PTG outcomes measured by
15 standardized instruments. For example, despite the study reporting that the intervention did not
16 appear to have significant effects on participants' perceived levels of PTG (measured by the PTGI),
17 one participant was reported as saying: "The questions have helped me to see meaning in what
18 happened" (p. 12) suggesting that the participant was able to identify a positive impact of the
19 intervention. Lo et al. (2014) reported on participants' spiritual wellbeing in a CALM intervention
20 and suggested that the effect was not robust ($p = .06$). Salo et al. (2008) reported no growth in
21 individual therapy. Singer et al. (2012) found no difference in PTG between an art therapy
22 intervention and control group after 22 weeks. They suggested their results may reflect
23 shortcomings of the measurement approach that they employed, specifically, that the SRGS may
24 not have been sensitive enough to measure positive changes in their participants. However, they
25 argued that the SRGS, as a unidimensional instrument, is conceptually and empirically more valid
26 than the PTGI (Joseph & Linley, 2006). The unidimensional aspect of the SRGS resonates with the

1 inconsistent findings in Zoellner et al.'s (2011) study that identified PTG in specific domains.

2 **Antecedents and Durability of Growth.** Nine studies identified mechanisms that
3 accounted for growth or were able to isolate moderators of growth. However, many studies
4 speculated why growth may (or may not) have occurred. The need to speculate rather than be able
5 to confidently identify why growth had occurred was often reported as a limitation of the studies.
6 To illustrate, Hefferon et al. (2008) stated: "There is the challenge of determining whether it was
7 the class or simply the activity that influenced experience of growth" (p. 38), and in discussing
8 their findings, McDonough et al. (2011) stated **their findings from breast cancer survivors engaging**
9 **in dragon boating** "reinforce the roles of social relationships and support as possible mechanisms
10 in the development of posttraumatic growth" (p. 645). Of those studies that were able to isolate the
11 mechanisms and/or moderators that contributed to growth, two studies (Antoni et al., 2001; Hijazi
12 et al., 2014) **provided evidence** that emotional processing directly promoted growth and two studies
13 (Kallay & Baban, 2008; Salim & Wadey, 2018) attributed growth to emotional disclosure and
14 cognitive processing. Specifically, Salim and Wadey (2018) suggested that verbal disclosure,
15 measured by: **(a) an increase in cognitive mechanism words, (b) an** increase in positive emotions,
16 **and (c)** a decrease in negative emotions, was the mechanism through which growth occurred in
17 injured athletes who were low in hardiness. Stockton et al. (2014), who found increased levels of
18 PTG when measured by the PWB-PTCQ but not the PTGI-SF, suggested that increased insight
19 words demonstrating a coherent narrative, were instrumental in the realization of PTG. One study
20 (Ramos et al., 2017) identified that challenge to core beliefs and subsequent intrusive rumination
21 moderated the development of PTG, and Ye et al. (2018) identified that problem-focused (adaptive)
22 coping mediated the development of PTG (but were only able to speculate on why this was the
23 case). Finally, Knaevelsrud et al. (2010) found a significant positive relationship between optimism
24 and growth, and Dolbier et al. (2010) identified personal characteristics of self-esteem and self-
25 leadership and the coping category of hopeful coping as being related to greater growth.

26 Of the studies that reported growth, and included a follow-up assessment, most identified

1 that the differences between the conditions were maintained over time. However, several suggested
2 significant changes over time that were contradictory. Specifically, Antoni et al. (2011) reported
3 that Cognitive Behavioral Stress Management (CBSM) intervention participants had higher benefit
4 scores than controls at the post treatment assessment, but that the difference had faded by the 9-
5 month follow-up. Conversely, Victorson et al. (2017) found their mindfulness group demonstrated
6 significant within group improvements in PTG, which increased longitudinally (see Table 1).

7 **Discussion**

8 The aim of this study was to facilitate knowledge transfer from other psychology disciplines
9 by systematically reviewing intervention studies that aim to foster growth following adversity.
10 Given the current landscape of research in sport and exercise psychology (cf. Howells et al., 2017),
11 minimal interventions to facilitate growth in athletes (Salim & Wadey, 2018), and the repeated
12 calls for intervention studies, this study is timely **as the findings from the review** address two critical
13 issues. The first involves identifying what sport and exercise psychology researchers can learn from
14 existing published interventions in growth following adversity to help inform future growth
15 intervention research in sport. The second relates to identifying the genuine unknowns that can
16 inform future research in both our discipline and the wider psychology disciplines.

17 **What Lessons can we Learn?**

18 We identified several lessons as a result of the systematic review that can help to inform
19 future research in sport and exercise psychology: (a) growth can be facilitated **through a range of**
20 **different interventions**, (b) growth can have different trajectories, and (c) growth is a
21 multidimensional phenomenon. The first lesson from this systematic review is that growth
22 following adversity can be facilitated. Preliminary support is offered from the studies reviewed for
23 several intervention strategies (i.e., mindfulness, psychoeducation, emotional disclosure, social
24 support, sport and exercise, eye movement desensitization and reprocessing therapy; see Table 1).
25 This is encouraging as it provides a “persuasive narrative of hope” (Howells et al., 2017, p. 151)
26 for athletes who experience adversity. Further, this finding provides the basis for future research in

1 this area to inform professional practice (cf. Wadey et al., 2018). However, two caveats to this
2 lesson are that many of the studies reviewed did not report the practical significance and meaning
3 of an increase in growth and the studies also had several methodological shortcomings. Therefore,
4 researchers and practitioners should interpret this lesson with caution.

5 To expand, the outcome measures used were self-report scales such as the PTGI; therefore,
6 does a change in the numbers on a questionnaire pre-to-post-intervention translate into meaningful
7 **change**? One of the reasons why many of the studies in this review were not able to address this
8 issue was because they did not report effect sizes or reported “empty effect sizes” (Ivarsson et al.,
9 2015, p. 453). Future research, therefore, should aim to use meaningful metrics in intervention
10 studies. Ivarsson et al. (2015) suggested that reporting an effect size without interpretation adds, in
11 principle, little to the results and encouraged future researchers to interpret effect sizes in terms of
12 their real-world meaning. Tedeschi et al. (2018) argued that: “there are various ways of approaching
13 the interpretation of responses to the PTGI and associated measures depending on the purposes of
14 the research” (p. 95). Researchers could interpret effect sizes in respect of the magnitude of change;
15 that is some changes may be transformative suggesting evidence of constructive growth, **whereas**
16 others may represent small changes that may be representative of illusory growth (cf. Zoellner &
17 Maercker, 2006). In this review some studies reported low effect sizes, which **may indicate** less
18 transformative growth (e.g., **SRG**) **involving** individuals regressing to old habits. Those studies that
19 reported high effect sizes, could **indicate** more radical and veridical positive transformation that is
20 enduring **and** is representative of Tedeschi and Calhoun’s (2004) conceptualization of PTG.

21 The studies that we reviewed also had several other methodological shortcomings. First,
22 many of the intervention studies employed analyses that compared growth scores between the
23 experimental and control groups. One problem with between-person analyses is the omission of
24 within-person variation. To detect such variation, future research could use analyses such as latent
25 growth modelling (Wang, Shen, & Boye, 2012). Second, the studies relied on one method of
26 assessment of growth (e.g., self-report questionnaires). Future research should aim to adopt several

1 methods of assessment (e.g., questionnaires, surveys, interviews, observations, experience
2 sampling, neurological indicators, biological markers) to provide a more nuanced understanding of
3 growth. This might involve extending the sample to include significant others (e.g., friends, family,
4 teammates) who could provide additional insights. Finally, future quantitative intervention studies
5 could improve on the validity and reliability of previous research by using randomization, blinded
6 trials (or providing more information on these processes), and meaningful metrics, as well as ensure
7 congruence between the conceptualization and operationalization of growth (e.g., using the PTGI
8 for PTG). Qualitative studies could safeguard rigor by engaging in reflexivity and employing
9 methods such as member reflections (Smith, 2018).

10 The second lesson is that there are different trajectories of growth. The studies in this
11 systematic review that conducted follow-up assessments **using validated instruments (e.g., PTGI)**
12 showed that growth remained stable, declined, or increased over time. One interpretation of this
13 finding is that the studies that identified growth remained stable over time promoted transformative,
14 enduring change, **for example, in how the participants related to others (e.g., Hagedaars & van**
15 **Minnen, 2010). Those that increased over time reflect the ongoing temporal process of growth. In**
16 **contrast, those that declined** promoted less transformative and more fleeting positive change (cf.
17 Tedeschi et al., 2018) **and may be indicative of illusory growth (cf. Zoellner & Maercker, 2006).**
18 To account for this finding, it is important that sport and exercise psychology researchers use
19 longitudinal, repeated measures designs to examine interventions designed to promote adversarial
20 growth in athletes. The third lesson is that it is also important that future research accounts for the
21 multidimensional nature of growth in their measurement. **Some of the interventions did not** result
22 in an increase in all the dimensions of growth (see Table 1); therefore, future research should be
23 clear from the outset what dimensions of growth the intervention aims to foster.

24 **What are the Genuine Unknowns?**

25 Rather than sport and exercise psychologists replicating the studies identified in this review
26 with athletes to answer ‘safe’ research questions that are limited in their scope and **contribution**

1 **beyond** existing research from other disciplines, this review identifies genuine unknowns that **could**
2 **enable researchers to** make a more substantive contribution to our knowledge and understanding.
3 To this end, the identified genuine unknowns are the: **(a) establishment of the extent to which the**
4 **findings are transferable to the sport and exercise population;** **(b) exploration of** novel types of
5 growth; **(c) identification of** mediators and moderators of growth; **(d) movement** beyond the
6 individual (i.e., an intrapersonal level of analysis); and **(e)** accounting for cultural variations. One
7 of the first unknowns is that **we cannot be certain that the findings from the wider literature will be**
8 **transferable to sport and exercise participants. The participants in the reviewed studies encountered**
9 **traumatic experiences such as cancer, however, we argue that athletes and exercise participants are**
10 **not exempt from the misfortunes and hardships of life; they are human beings first and foremost.**
11 **Beyond the adversities, we cannot be sure what strategies (e.g., mindfulness, cognitive behavioral**
12 **therapy) will be of most value to athletes. Thus, we encourage researchers to design interventions**
13 **that comprise multiple strategies to identify those that are most suited to an athletic population.**

14 **The reviewed studies did not** address novel growth dimensions. To expand, the
15 interventions took a cerebral approach rather than, for example, an embodied perspective, **and over-**
16 **relied on the PTGI.** In a qualitative meta-synthesis of the growth literature on life-threatening
17 physical illnesses, Hefferon et al. (2009) suggested a new domain of growth: new awareness of the
18 body. This focus on the physical has also been addressed in respect to the measurement of growth.
19 Walsh, Groarke, Morrison, Durkan, Rogers, **et al.** (2018) recently developed a new measure of
20 growth: Physical Post Traumatic Growth Inventory (P-PTGI). In light of research that indicated
21 that athletes have reported physical indicators of growth following adversity (e.g., physically
22 stronger, increased fitness; Howells et al., 2017), future sport and exercise psychology researchers
23 could design interventions to foster this dimension of growth. Another unknown is that many of
24 the interventions did not address *when* or *for whom* (i.e., moderators) nor *how* or *why* (i.e.,
25 mediators) the interventions led to increased growth. **This focus warrants further exploration.**
26 Researchers should also be cognizant of what level(s) the theory operates at (e.g., intra, inter, group,

1 organizational, national, international). Research on growth and specifically, the intervention
2 studies reviewed, was focused primarily at an individual (psychological) level and has targeted
3 intraindividual dimensions measured by the PTGI (e.g., personal strength, appreciation of life).
4 Future researchers in sport and exercise psychology should consider whether the concept of growth
5 can operate at other levels. These avenues represent exciting and uncharted waters for future
6 intervention research in sport and exercise.

7 A final unknown is how the meaning and understanding of growth may vary across
8 cultures. A limitation of many of the studies in this review was that they did not report the
9 ethnicity of the study population. Although it was encouraging that many of the studies emanated
10 from different countries, what was also not clear was how the interventions were culturally
11 defined. Given that many researchers have pointed to the importance of taking culture into
12 consideration when describing and explaining growth (Weiss & Berger, 2010) and that cultural
13 diversity is an important challenge faced by sport and exercise psychologists (Ryba, Stambulova,
14 Si, & Schinke, 2013), it is critical that future research moves beyond the “universal” athlete. For
15 example, Americans have been shown to report higher levels of growth compared to Japanese,
16 Australian, and Spanish samples. Furthermore, the indicators of growth might be different
17 between cultures. Furthermore, engagement in competitive sport requires socialization into a
18 micro-culture of sport and the internalization of specific norms, values, and behaviors (Hanrahan,
19 2010). Athletes who experience adversity and challenges are culturally expected to narrate their
20 experiences in certain ways and this can impact on their perceptions of adversity and the
21 development of growth. That said, these cultural variations have not been accounted for in
22 interventions studies thus far and represent an important area of future research in sport and
23 exercise psychology.

24 **Limitations**

25 This systematic review had a specific focus on interventions designed to facilitate growth.
26 Its scope meant that studies with an alternative aim, such as those involving healing trauma

1 through EDMR, or **those that** tangentially identified growth were excluded. This exclusion could
2 have potentially discounted strategies that could facilitate growth. **For those studies that did meet**
3 **the inclusion criteria we** went beyond an erroneous identification of intervention effectiveness as
4 constituting a significant difference between the experimental and control group. Although we
5 identified effect sizes reported in the studies, we found that many did not sufficiently “interpret
6 what they mean in the real world” (Ivarsson et al., 2015, p. 449). Furthermore, we are cognizant
7 of a publication bias that means that potentially non-significant and ineffective interventions may
8 not have been published and therefore excluded from this review. **In respect of the transferability**
9 **of the findings, the participants in this review were diverse both in their characteristics and in the**
10 **adversities that they experienced; accordingly, the findings have relevance to an athletic**
11 **population. Nevertheless, although athletes are susceptible to the same adversities experienced by**
12 **the wider population, athletes may experience other adversities that are contextually unique (e.g.,**
13 **a career ending injury), and elite athletes in particular, have different motivations for**
14 **participation, different psychological responses to competition (e.g., Collins et al., 2016; Hardy et**
15 **al., 2017), and may experience adversity in different ways to non-elite athletes (e.g., Anderson,**
16 **Hanrahan, & Mallet, 2014). Accordingly, we should be cautious about the extent to which the**
17 **findings can inform interventions in sport and exercise psychology.**

18 **Conclusion**

19 To conclude, it is hoped that in synthesizing existing empirical intervention research this
20 systematic review provides a springboard to enhance the quality of future intervention research
21 and **professional** practice to help foster growth in athletes who have experienced **adversity**. That
22 said, we end this systematic review on a cautionary note. Some studies in this systematic review
23 did identify that participants may experience re-traumatization during interventions (although no
24 authors explicitly identified this as having been the case in their studies). Future researchers
25 should aim to put appropriate safeguards in place to ensure that the well-being of participants is at
26 the forefront of research and practice.

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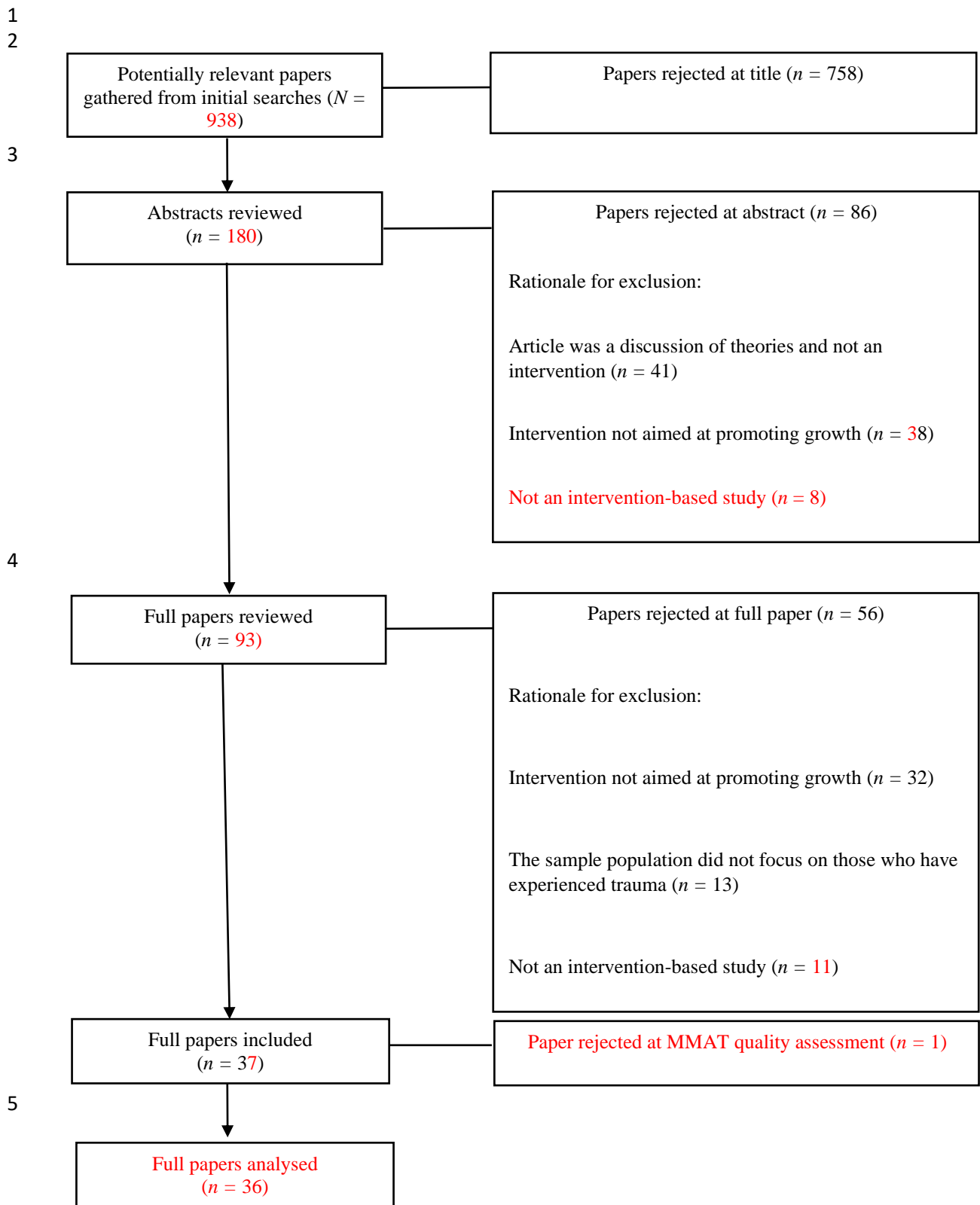


Figure 1.

PRISMA Diagram of the Stages of the Systematic Review

1 Table 1

2

3 *Summary of Studies Included in the Review*

4

Author(s) and Year	Sample size (M/F)	Age (SD) [Range]	Adversity	Design	Duration (Time points)	Measures	Data Analysis	Growth Findings	Significance and effect size
Antoni et al. (2001)	100 (0/100)	50.23 (9.15) [29-79]	Early Stage Breast Cancer	RCT	10 weeks (4)	POMS; CES-D; IES; LOT-R; BF (author designed) Emotional processing Trained facilitators	Factor analysis; Mixed effect ordinal regression analysis; MIXOR analysis	Increased participants' BF. Remained significantly elevated at 3 months follow-up. Greatest impact on those women who were lowest in optimism at baseline	Intervention $F(3, 138) = 12.36, p < .001, \eta^2 = .21$ Intervention vs Control Initial \rightarrow Post: $F(1, 99) = 4.69, p < .04, \eta^2 = .05$ 3 months follow-up: $F(1, 99) = 3.28, p = .07, \eta^2 = .03$ 9 months: ($F = 1.58, ns$).
Bennett et al. (2014)	34 (17/17)	36.59 - -	Varied	Quasi-experimental	5 days (2)	RDAS; PCL-M/C; PTGI Trained facilitators	Statistical Analysis Systems (SAS); Descriptive statistics; ANOVA; ANCOVA (using pretest scores as a covariate)	No significant outcomes for growth	No significant changes were observed on the pretest and posttest scores using the PTGI for Group A ($M = -.37, SE = 3.76, i(15) = -.10, p = .922$), Group B ($M = -2.64, SE = 3.43, f(15) = -.77, p = .453$), or the Control Group ($M = -4.63, SE = 3.43, i(15) = -1.35, p = .197$)
Carlson et al. (2016)	252 (0/252)	54.66 (10.02) -	Breast cancer	RCT	12 weeks (4)	Mindfulness: POMS, SOSI, FACT-B, MOS-SSS, FACIT-Sp, PTGI-R SET: POMS, SOSI, FACT-B, MOS-SSS, FACIT-Sp, PTGI-R	Descriptive statistics (demographics); SAS; Two-level piecewise hierarchical linear modelling with random intercepts	PTGI-R scores improved during the intervention period in both groups. The full impact of MBCR on the ability to appreciate life, find meaning and purpose and see new possibilities developed slowly over time. SET had less benefit to breast cancer survivors	PTGI-R Intervention Group x Time $p = .02$ $d = .26$ Follow-up Group x Time $p = .03$
Chaves et al. (2016)	78 (45/33)	11.68 (3.39) [5-18]	Severe Physical Illness	RCT	1 session (2)	PNES, SLSS, BMSLSS, PedsQoL, BFSC, BBWS, YLOT, VIA-Y,	Chi-squared and t-tests; repeated measures mixed between-within subject ANOVAs;	Higher levels of BF in those children in the wish-making condition	BFSC $F = 1.54 \eta^2_p = .03$

						PedsQoL, CESD-7, Medical status	repeated measures ANCOVAs; univariate <i>F</i> tests		
Chiba et al. (2015)	31 (21/10) ¹	41.17 - [23-64]	Chronic mental illness	RCT	8 weeks (2)	SISR-A, Kessler 6 Trained facilitators	Content analysis	Of the 31 participants, 23 responded that they realized some sort of BF through the intervention.	Testing for statistical significance between the results for the two groups was not completed due to the small sample size.
Dolbier et al.(2010)	64 (10/74)	21 (median) - [18-53]	Most stressful event	RCT	4 weeks (2)	PTGI, CD- RISC, Rosenberg Self- Esteem Scale, Self-Leadership Scale, CES-D, Social Provisions Scale	Multiple regression, 2 x 2 repeated measures ANOVA	A significant group by time interaction for total growth: the intervention group showed greater increases in PTG pre- to post-intervention compared with the control group.	Group x Time interaction for the total growth scale ($\eta^2 =$.09; growth subscales, appreciation of life ($\eta^2 = .10$), personal strength ($\eta^2 = .08$), new possibilities ($\eta^2 = .06$); relating to others and spiritual change (each η^2 = .01).
Gallagher et al. (2018)	96 (0/96)	54.54 (7.91) -	Breast cancer	RCT	3 weeks (5)	PTGI, PSS-SR	Latent growth curve modelling	Breast cancer survivors did not experience a clinically significant improvement in PTG. The cancer facts condition resulted in superior outcomes for PTG.	The effect size magnitude of the decrease in PTG was small (ESsg = -.16; 95% CI -.03: -.28), but statistically significant based on the confidence interval of the effect size.
Garland et al.(2007)	104 (9/95)	52.45 - [26-79]	Cancer	Quasi- experimental	6-8 weeks (2)	PTGI-R, FACIT-Sp12 SOSI, POMS	T-tests, chi- squared test, repeated measures ANOVA, Pearson product-moment correlations	Both MBSR and creative arts (HA) programs improved significantly over time on PTG. Increased PTG was positively related to increased spirituality in the MBSR program, but not the HA program.	Pre →post PTGI-R (total) HA (Cohen's $d = .09$); MBSR (Cohen's $d = .28$) Increased spirituality ($r =$.285, $p = .028$) in MBSR.
Hagenaars & van Minnen (2010)	80 (18/62)	35.7 (11.7) -	PTSD from mixed traumas	Single subject	8-12 weeks (2)	SCID-I, SCID- II, PSS-SR, PTGI Trained facilitators	ANOVAs, bivariate correlations, hierarchical regression analyses	Increases in PTG (but not Appreciation for Life).	Pre → post $F(1, 64) = 8.39$, $p < .01$, $\eta^2_p = .14$. Significant for: Relating to Others, $F(1, 64) = 6.35$, $p <$.05, $\eta^2_p = .12$

¹ Only intervention group demographics provided

									New Possibilities, $F(1, 64) = 8.84, p < .01, \eta^2_p = .16$ Personal Strength, $F(1, 64) = 8.37, p < .01, \eta^2_p = .15$
Hefferon et al. (2008)	10 (0/10)	[43-63]	Breast cancer	Qualitative (IPA)	12 weeks (1)	Individual open-ended interview	Interpretative Phenomenological Analysis	Increases in PTG (especially Appreciation for Life).	N/A
Hijazi et al. (2014)	63 (28/35)	48.2 (8.9) -	Refugees suffering from post-traumatic stress	RCT	3 weeks (4)	PTGI, WHO-5, HTQ, BDI, PHQ-15	Mixed design (between-within) repeated measures analyses of variance (RM-ANOVA)	Compared to waitlist controls, NET increased PTG 2 and 4 months later, with medium to large effects.	PTG effect at 2 months $d = 0.23$ 4 months $d = .52$ Interaction (Condition x Time) between condition at 2 months $ES = .48$ and at 4 months $ES = .83$ (ES was calculated as ((Brief NET follow-up M – baseline M) – (control follow-up M – baseline M)) / SD of the pooled change Scores).
Kallay & Baban (2008)	82 (0/82)	50.09 - [41-55]	Cancer	Single subject	4 days (3)	BDI, POMS, LRI, SRGS	Paired samples t-test	Participants experienced at the follow-up assessment significantly higher levels BF.	Intervention (meaning in life) $t = -3.60$ at $p < .01$, BF $t = -2.60$ at $p < .01$.
Karagiorgou et al. (2018)	7 (5/2)	60.57 (7.96) -	Acquired Brain Injury	Qualitative (Thematic Analysis)	8 sessions (1)	PTGI	Thematic Analysis	Growth in both but lifestyle improvements and new possibilities were only evident in the PPT group	N/A
Knaevelsrud et al. (2010)	96 (9/87)	35 - [18-68]	PTSD	RCT	5 weeks (3)	IES-R, BSI, PTGI, LOT-R, NEO-PI-R	ANOVAs, Regression analysis	Significant changes in PTG in the treatment group.	Difference between groups $F = 11.34, p < .001$.
Liu & Kia-Keating (2017)	39 (9/30)	20.7 - -	Exposed to Isla Vista Tragedy	RCT	4 days (3)	CSE, PTGI-SF, PCL-C, BTQ	ANOVAs, pairwise comparisons with Bonferroni adjustment, bivariate correlations	No significant effects on participants' perceived levels of PTG	There was no significant change in PTG across time in either group: PTG x Group $F = 0.07, \eta^2_p = < .01$

Lo et al. (2014)	41 (10/31)	52 (12) -	Advanced Cancer	Single subject	6 months (4)	PHQ-9, FACIT- Sp-12, DADDS, ECR-M16, PTGI Trained facilitators	Multilevel modelling	Spiritual wellbeing was found to increase. No significant changes in growth	Regression estimates of the effect of time on PTG, $p =$.57
McDonough et al. (2011)	17 (0/17)	51.4 (11.09) -	Breast cancer survivors	Qualitative (IPA)	19 months (5)	Multiple semi- structured interviews	IPA	Progressive improvements in social relationships, support, and PTG	N/A
McGregor et al. (2014)	29 (0/29)	47.52 (6.39) -	Breast cancer	RCT	10 weeks (3)	Immune measures, perceived benefits, distress	ANCOVAs and hierarchical regression analysis	Women who took part in the CBSM intervention reported increases in BF from having been diagnosed with breast cancer.	Group x Time T1 to T2 [$F(1,26) = 4.69, p$ $< .05, \eta^2 = .15$]. T1 to T2 CBSM group $t(17)$ $= 2.95, p < .01, 95\% CI =$ 0.13–1.07.
Morris et al. (2011)	27 (0/27)	49.82 (7.04) -	Breast cancer	Qualitative (IPA and Thematic Analysis)	10 days (2)	Participant observation, Semi-structured interviews, written narratives	IPA, Thematic Analysis	PTG was reported by all participants.	N/A
Nijdam et al. (2018)	116 (55/61)	38.53 (11.33) -	Diagnosis of PTSD from a single traumatic event	RCT	$M = 6.65$ weeks (SD $= 4.24$) (3)	PTGI, SCID- I/P, IES-R	Independent sample t-tests, Mann-Whitney U tests; Chi-square tests and Fisher's. Pearson's r correlations Spearman's rho correlations	Significant increases in PTG with medium to large effect sizes.	Baseline \rightarrow 2 nd post assessment PTGI $F(1, 77) = .06, p =$.809, $d = .056$ PTGI relating to others $F(1,$ $77) = .37, p = .547, d = .138$ PTGI new possibilities $F(1, 77) = .63, p =$.432, $d = .18$ PTGI personal strength $F(1,$ $77) = .05, p = .818, d = .051$ PTGI spiritual change $F(1,$ $77) = 2.23, p = .139, d = .339$ PTGI appreciation of life F $(1, 77) = .02, p = .883, d =$.032
Penedo et al. (2006)	191 (191/0)	65.1 (7.7) -	Localized prostate cancer	RCT	10 weeks (3)	Measure of Current Status, FACT-G, PCS Trained facilitators	Bivariate correlations and ANOVAs	The CBSM condition led to increases in BF.	CBSM was a significant predictor of post intervention BF (F for $\Delta R^2 = 5.52, p <$.05) Pre \rightarrow post (experimental)

									Increases in BF ($t = 2.65, p < .01$), PSMS ($t = 3.35, p < .01$)
Ramos et al. (2017)	205 (0/205)	54.31 (9.98) -	Breast cancer	RCT	8 weeks (4)	PTGI, CBI, ERRI	Descriptive statistics and Pearson correlations, Latent Growth Modelling (LGM), ANCOVA	The intervention group had higher levels of PTG when compared with the control group. There was inter-individual variability in the rate of growth.	PTG over time The mean of the slope (v) = .15, ($z = 1.79, p = .073$). PTG T1 to T3. ($v = .39, SE = .14, z = 2.72, p = .006$)
Roepke et al. (2017)	188 (22/146)	42.79 (12.71) -	Adversity that conformed to LEC within last 6 months	RCT	4 weeks (4)	LEC, S-PCL-C, PTGI, C-PTGI, DOQ, CES-D, SWLS	Hierarchical linear modeling and response profile analysis, Latent Growth Curve Modeling	Those who engaged in prospective writing experienced greater current-standing PTG over time compared to both control groups.	Effect sizes (Cohen's d) were 0.03 and 0.16 at posttest and 0.28 and 0.46 at follow-up
Ruini et al. (2014)	21 (0/21)	39.33 (11.51) -	Adjustment disorder following various stress and difficulties	Single subject (with qualitative social validation)	7 weeks (2)	PTGI, PWB, SQ, Focus groups for social validation	General linear model	Participants reported increased personal growth, an enhanced sense of appreciation of life and personal strength.	Significant effect of intervention ($F(12, 9) = 8.406, p = .002, \eta^2_p = .918$)
Salim & Wadey (2018)	45 (28/17)	23.3 (5.22) -	Sport related injury	Quasi-experimental (with qualitative social validation)	4 weeks (3)	SRGS, Social validation interviews	Mixed design ANOVAs, Bonferroni-corrected pairwise comparison tests, Linguistic Inquiry and word count	Findings support the efficacy of VD to promote growth in athletes' low in hardiness. The VD group reported significantly more growth than both the WD and control groups	Group \times Time interaction (Wilks's $\lambda = .34, F [4, 82] = 14.51, p = .00, \eta^2_p = .41$). T2 and T3 increased growth ($ps < .05$) Between groups ($F [1, 42] = 3.38, p = .04, \eta^2_p = .14$). Between the VD Group and control group ($p = .04$)
Salo et al. (2008)	115 (115/0)	30.99 (6.25) -	Ex political prisoners	Quasi-experimental	12 months (2)	HTQ, somatic symptoms survey, PTGI, traumatic experiences, self and other representations, and the contents of representations	Descriptive statistics, within-subject MANOVAs	Only individual treatment was effective in increasing PTG.	PTGI change ($F = 1.70, ES = .03$)

						Trained facilitators				
Singer et al. (2012)	165 (88/77)	- - [18- > 55]	Hematological malignancy patients	Quasi-experimental	22 weeks (2)	SRGS, German Questionnaire for Social Support	Descriptive statistics, ANCOVAs	No evidence of PTG.	Intervention x control group $F = 1.61, p = .21$	
Slavin-Spenney et al. (2011)	193 (35/158)	22 (5.5) -	Unresolved stressful experiences	RCT	1 day (2)	PTGI, IES-R, BSI, Physical Health Symptoms Questionnaire	ANOVA, chi-squares, ANCOVAs	Disclosure leads to PTG but different types of disclosure have similar effects	Disclosure led to significantly higher PTGI total score $F(1, 190) = 8.69, p = .004, \eta^2 = .04$ Disclosure led to significantly higher scores on 4 sub-scales: New possibilities: $F(1, 190) = 10.84, p = .001, \eta^2 = .05$ Relating to Others: $F(1, 190) = 7.70, p = .006, \eta^2 = .04$ Personal Strength: $F(1, 190) = 5.58, p = .019, \eta^2 = .03$ Appreciation of life: $F(1, 190) = 7.25, p = .008, \eta^2 = .04$ Spiritual change unaffected by disclosure: $F(1, 190) = 0.53, p = .47, \eta^2 = .00$	
Stockton et al. (2014)	24 (1/23)	33.18 (12.31) [19-36]	Traumatic events	RCT	- (3)	IES-R, PTGI-SF, PWB-PTCQ, EEM	Independent samples t-tests, chi-squared tests	PTG significantly increased from baseline to 8-week follow-up in the expressive writing group but not in the control group.	No significant difference between groups on PTGI-SF: $t = -0.065, p = .949$ Significant differences between groups on PWB—PTCQ: $t = -2.490, p = .022$	
Taku et al. (2017) – Study 1	67 (0/67)	17.12 (1.25) -	A traumatic event in the last 3 years (unspecified)	Quasi-experimental	- (2)	PTGI	2-way mixed ANOVA	Participating in the intervention fostered adolescents' PTG perceptions and knowledge.	A main effect of Time $F(1, 65) = 11.84, p = .001, \eta^2_p = .15$. T2 ($M = 2.28, SE = .11, 95\% CI = [2.07, 2.49]$) vs T1 ($M = 2.02, SE = .10, 95\% CI = [1.81, 2.23]$)	

									$F(1, 65) = 6.24, p = .015, \eta^2_p = .09.$
Taku et al. (2017) – Study 2	136 (53/83)	16.18 (.40) -	A traumatic event in the last 3 years (unspecified)	RCT	- (2)	PTGI	2-way mixed ANOVA	Participating in the PTG intervention program fostered PTG perceptions three weeks later, compared to participation in a program focusing on negative changes or PTSD. Those who were in the control group showed a higher level of PTG at Time 2.	Experimental Group 1 ($M = 2.32, SE = .13, 95\% CI = [2.06, 2.58]$) and the Control Group ($M = 2.21, SE = .13, 95\% CI = [1.96, 2.46]$) showed higher PTG than Experimental Group 2 ($M = 1.83, SE = .13, 95\% CI = [1.58, 2.08]$) at Time 2
Victorson et al. (2017)	43 (43/0)	70.19 (6.84) [57-83]	Men diagnosed with low-risk localized prostate cancer	RCT	8 weeks (4)	MAX-PC, PTGI, IUS, MAAS, PGH-10,	Chi-squared and t-tests, regression analysis	PTG was the only outcome to demonstrate significant and robust increases over the 12-month period for participants in the mindfulness arm, compared with those in the control arm.	Mindfulness (increased) between baseline and 8 week ($p = .01; ES = .43$), baseline and 6 months ($p < .05; ES = .41$), and baseline and 12 months ($p < .01; ES = .72$). Between groups ($p = .01; ES = .73$). PTGI subscales: relating to others ($p = .03; d = .55$) and personal strength ($p < .01; d = .80$).
Wagner et al. (2007)	51 (4/47)	37.59 (10.42) -	Individuals with complicated grief.	RCT	5 weeks (4)	PTGI-SF, LOT-R, IES, SCL-90, SF-12, measures of complicated grief and psychopathological outcomes Trained facilitators	Repeated measures ANOVAs	PTG increased with the treatment group.	Group x Time interaction for PTG (PTGI), $F(1, 47) = 13.23, p < .001, d = 1.16$.
Ye et al. (2017)	60 (0/60)	27.45 (3.25) -	Young HIV-infected Chinese MSM	RCT	4 weeks (2)	WCC, PTGI, IES, interviews (in preparation phase) Trained facilitators	Chi-squared, ANOVAs, Mediation analysis	Enhanced the level of PTG.	Significant Group x Time interaction effects occurred for PTG ($F[1, 58] = 4.28, p < .05, \eta^2 = .07$).

Zhang et al. (2017)	60 (0/60)	47.34 (7.01) -	Breast cancer	RCT (3)	8 weeks (3)	CPTGI, STAI, CPSS Trained facilitators	ANOVA	Significantly improved level of PTG but both groups showed improvements in PTG.	Group x Time interaction of the PTGI total score ($F = 34.73, p = .00, \eta^2 = .38$)
Zoellner et al. (2011)	40 (10/30)	41.2 (10.7) -	Severe motor vehicle accident survivors with PTSD	RCT (3)	8-12 weeks (3)	ISS, trauma severity survey, CAPS, PTGI, LOT-R, NEO-PI-R Trained facilitators	Two-way repeated measures ANOVAs	There was no evidence of a significant treatment effect on overall PTG and only a small effect size.	Effect sizes: The CBT group, medium size increase in new possibilities ($d = .42$) and personal strength ($d = .69$). The WLC group, medium size increase in spiritual change ($d = .53$). Small decrease in appreciation of life for both groups ($d = .19$ and $-.26$).

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1 Table 2
 2
 3 *Abbreviations and Measures used in the Interventions*
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Abbreviation	Measure
BBWS	Beliefs in the Benevolence of the World Scale
BDI	Beck Depression Inventory
BFSC	Benefit Finding Scale for Children
BMSLSS	Brief Multidimensional Students' Life Satisfaction Scale
BSI	Brief Symptom Inventory
BTQ	Brief Trauma Questionnaire
CAPS	Clinician-Administered PTSD Scale
CBI	The Brief Cancer Behavior Inventory
CD-RISC	Connor-Davidson Resilience Scale
CES-D	Center for Epidemiologic Studies-Depression Scale
CPSS	Chinese Version of the Perceived Stress Scale
CPTGI	Chinese version of the Post-Traumatic Growth Inventory
C-PTGI	Current Standing Post-Traumatic Growth Inventory
CSE	Coping Self Efficacy
DADDS	Death and Dying Distress Scale
DOQ	Doors Opening Questionnaire
ECR-M16	Modified Experiences in Close Relationships
EEM	Essay Evaluation Measure
ERRI	Event Related Rumination Inventory
FACIT-Sp-12	Functional Assessment of Chronic Illness Therapy- Spiritual Well-Being Scale
FACT-B/G	The Functional Analysis of Cancer Therapy
HTQ	Harvard Trauma Questionnaire
IES (-R)	Impact of Events Scale (-Revised)
ISS	Injury Severity Score
IUS	Intolerance of Uncertainty Short Form
LEC	Life Events Checklist
LOT-R	Life-Orientation Test-Revised
LRI	Life Regard Index
MAAS	Mindful Attention Awareness Scale
MAX-PC	Memorial Anxiety Scale for Prostate Cancer
NEO-PI-R	Openness to Experience Scale of the NEO Personality Inventory Revised
PCL-M/C	PTSD Checklist, Military/Civilian Version
PCS	Positive Contributions Scale
PedsQoL	Pediatric Quality of Life Scale
PGH-10	PROMIS Global Health-10
PHQ-15 / 9	Patient Health Questionnaire
PNES	Positive and Negative Emotional Style Scale
POMS	Profile of Mood States
PROMIS	Patient-Reported Outcomes Measurement Information System
PSS-SR	Posttraumatic Stress Symptom Scale, Self-Report
PTGI (-SF)	Post-Traumatic Growth Inventory (-Short Form)
PWB-PTCQ	Psychological Well-Being Post-Traumatic Changes Questionnaire
RDAS	Revised Dyadic Adjustment Scale
SCID-I/P/II	Structured Clinical Interview for DSM-IV Disorders
SCL-90	Brief Symptom Inventory
SF-12	Health Survey Short Form- 12 version 2
SISR-A	Self-Identified Stage of Recovery- Part A
SLSS	Student Life Satisfaction Scale
SOSI	Symptoms of Stress Inventory
SQ	Symptom Questionnaire
SRGS	Stress-Related Growth Scale
STAI	State-Trait Anxiety Inventory
SWLS	Satisfaction with Life Scale
VIA-Y	Values in Action Inventory of Character Strengths for Youth
WCC	Ways of Coping Checklist-Revised
WHO-5	World Health Organization Well-Being Index-Arabic translation
YLOT	Youth Life Orientation Test

1 Table 3

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3 *Mixed Methods Appraisal Tool (MMAT) Criteria for Assessing Studies*

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MMAT - Screening questions (for all types)	Qualitative	Quantitative (randomized controlled trials)	Quantitative nonrandomized	Quantitative descriptive	Mixed methods
A. Are there clear qualitative and quantitative research questions (or objectives*), or a clear mixed methods question (or objective*)?	1.1. Are the sources of qualitative data (archives, documents, informants, observations) relevant to address the research question (objective)?	2.1. Is there a clear description of the randomization (or an appropriate sequence generation)?	3.1. Are participants (organizations) recruited in a way that minimizes selection bias?	4.1. Is the sampling strategy relevant to address the quantitative research question (quantitative aspect of the mixed methods question)?	5.1. Is the mixed methods research design relevant to address the qualitative and quantitative research questions (or objectives), or the qualitative and quantitative aspects of the mixed methods question (or objective)?
B. Do the collected data allow address the research question (objective)? E.g., consider whether the follow-up period is long enough for the outcome to occur (for longitudinal studies or study components)	1.2. Is the process for analyzing qualitative data relevant to address the research question (objective)?	2.2. Is there a clear description of the allocation concealment (or blinding when applicable)?	3.2. Are measurements appropriate (clear origin, or validity known, or standard instrument; and absence of contamination between groups when appropriate) regarding the exposure/ intervention and outcomes?	4.2. Is the sample representative of the population under study?	5.2. Is the integration of qualitative and quantitative data (or results*) relevant to address the research question (objective)?
--	1.3. Is appropriate consideration given to how findings relate to the context, e.g., the setting, in which the data were collected?	2.3. Are there complete outcome data (80% or above)?	3.3. In the groups being compared (exposed vs. non-exposed; with intervention vs. without; cases vs. controls), are the participants comparable, or do researchers take into account (control for) the difference between these groups?	4.3. Are measurements appropriate (clear origin, or validity known, or standard instrument)?	5.3. Is appropriate consideration given to the limitations associated with this integration, e.g., the divergence of qualitative and quantitative data (or results*) in a triangulation design?
--	1.4. Is appropriate consideration given to how findings relate to researchers' influence, e.g., through their interactions with participants?	2.4. Is there low withdrawal/drop-out (below 20%)?	3.4. Are there complete outcome data (80% or above), and, when applicable, an acceptable response rate (60% or above), or an acceptable follow-up rate for cohort studies (depending on the duration of follow-up)?	4.4. Is there an acceptable response rate (60% or above)?	--

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1 *Table 4*

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3 *MMAT Quality Appraisal of Intervention Studies*

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Authors	Screening Questions		Qualitative				Quantitative Randomized Controlled				Quantitative Nonrandomized				Quantitative Descriptive				Mixed Methods			Total
	A	B	1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	3.1	3.2	3.3	3.4	4.1	4.2	4.3	4.4	5.1	5.2	5.3	
Antoni et al. (2001)	1	1	-	-	-	-	0	0	1	0	-	-	-	-	-	-	-	-	-	-	-	3
Bennett et al. (2014)	1	1	-	-	-	-	-	-	-	-	0	1	1	1	-	-	-	-	-	-	-	5
Carlson et al. (2016)	1	1	-	-	-	-	1	1	0	0	-	-	-	-	-	-	-	-	-	-	-	4
Chaves et al. (2016)	1	1	-	-	-	-	0	0	1	1	-	-	-	-	-	-	-	-	-	-	-	4
Chiba et al. (2015)	1	1	-	-	-	-	0	0	1	1	-	-	-	-	-	-	-	-	-	-	-	4
Dolbier et al.(2010)	1	1	-	-	-	-	0	0	1	1	-	-	-	-	-	-	-	-	-	-	-	4
Gallagher et al. (2018)	1	1	-	-	-	-	0	1	X	1	-	-	-	-	-	-	-	-	-	-	-	4
Garland et al.(2007)	1	1	-	-	-	-	-	-	-	-	0	1	1	1	-	-	-	-	-	-	-	3
Gregory & Prana (2013)	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Hagenaars & van Minnen (2010)	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	-	-	-	6
Hefferon et al. (2008)	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
Hijazi et al. (2014)	1	1	-	-	-	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	6
Kallay & Baban (2008)	1	1	-	-	-	-	-	-	-	-	-	-	-	-	X	1	0	0	-	-	-	3
Karagiorgou et al. (2018)	1	1	1	1	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
Knaevelsrud et al. (2010)	1	1	-	-	-	-	0 ²	0	1	1	-	-	-	-	-	-	-	-	-	-	-	3
Lo et al. (2014)	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	0	-	-	-	5
Liu & Kia-Keating (2017)	1	1	-	-	-	-	0	0	1	1	-	-	-	-	-	-	-	-	-	-	-	4
McDonough et al. (2011)	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
McGregor et al. (2014)	1	1	-	-	-	-	0	0	X	X	-	-	-	-	-	-	-	-	-	-	-	2
Morris et al. (2011)	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
Nijdam et al. (2018)	1	1	-	-	-	-	0 ³	1	1	0	-	-	-	-	-	-	-	-	-	-	-	4
Penedo et al. (2006)	1	1	-	-	-	-	1	1	0	X	-	-	-	-	-	-	-	-	-	-	-	4
Ramos et al. (2017)	1	1	-	-	-	-	0 ⁴	0	X	X	-	-	-	-	-	-	-	-	-	-	-	2

² The details including recruitment procedures are available in Knaevelsrud and Maercker (2007)

³ The details including recruitment procedures are available in Nijdam, Gersons, Reitsma, De Jongh, and Olff (2012)

⁴ The details including recruitment procedures are available in Ramos, Leal, and Tedeschi (2016)

Authors	Screening Questions		Qualitative				Quantitative Randomized Controlled				Quantitative Nonrandomized				Quantitative Descriptive				Mixed Methods			Total
	A	B	1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	3.1	3.2	3.3	3.4	4.1	4.2	4.3	4.4	5.1	5.2	5.3	
Roepke et al. (2017)	1	1	-	-	-	-	1	0	0	0	-	-	-	-	-	-	-	-	-	-	-	3
Ruini et al. (2014)	1	1	1	0	0	0	-	-	-	-	-	-	-	-	1	1	1	1	-	-	-	3
Salim & Wadey (2018)	1	1	1	1	1	0	-	-	-	-	1	1	1	X	-	-	-	-	1	1	1	5
Salo et al. (2008)	1	1	-	-	-	-	-	-	-	-	1	1	1	X	-	-	-	-	-	-	-	5
Slavin-Spenny et al. (2011)	1	1	-	-	-	-	0	0	1	1	-	-	-	-	-	-	-	-	-	-	-	4
Singer et al. (2012)	1	1	-	-	-	-	-	-	-	-	1	0	1	1	-	-	-	-	-	-	-	5
Stockton et al. (2014)	1	1	-	-	-	-	0	0	1	0	-	-	-	-	-	-	-	-	-	-	-	3
Taku et al. (2017) – Study 1	1	1	-	-	-	-	-	-	-	-	0	1	0	X	-	-	-	-	-	-	-	3
Taku et al. (2017) – Study 2	1	1	-	-	-	-	0	0	X	X	-	-	-	-	-	-	-	-	-	-	-	2
Victorson et al. (2017)	1	1	-	-	-	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	6
Wagner et al. (2007)	1	1	-	-	-	-	0 ⁵	0	X	X	-	-	-	-	-	-	-	-	-	-	-	2
Ye et al. (2017)	1	1	-	-	-	-	0	0	X	1	-	-	-	-	-	-	-	-	-	-	-	3
Zhang et al. (2017)	1	1	-	-	-	-	1	1	X	1	-	-	-	-	-	-	-	-	-	-	-	5
Zoellner et al. (2011)	1	1	-	-	-	-	0 ⁶	1	1	0	-	-	-	-	-	-	-	-	-	-	-	4

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2 *Note.* 0 = Indicates a negative response to the question; 1 = Indicates a positive response to the question; X = Indicates that there is insufficient information to
3 answer the question.

⁵ The details including recruitment procedures are available in Wagner, Knaevelsrud, & Maercker (2005).

⁶ The details including recruitment procedures are available in Maercker (2006).

1 Table 5

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3 *Thematic Categorization of Programs*

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Higher Order Categories	Programs	Studies
Cognitive-Behavioral	Behavioral and cognitive strategies	Antoni et al., 2001
	Cognitive-behavioral therapy	Knaevelsrud et al., 2010; Zoellner et al., 2011
	Cognitive-behavioral stress management	McGregor et al., 2014; Penedo et al., 2006
	Coping enhancement program	Ye et al., 2017
Mindfulness	Mindfulness based cancer recovery (MBCR)	Carlson et al., 2016; Garland et al., 2007
	Mindfulness based stress reduction	Victorson et al., 2017; Zhang et al., 2017
Psychoeducation	Transforming lives through resilience education	Dolbier et al. 2010
	Positive psychotherapy	Karagiorgou, et al., 2018
	Managing Cancer and Living Meaningfully (CALM) (individual)	Lo et al., 2014
	Closed and structured group	Ramos et al., 2017
	Learning about stress changes	Taku et al, 2017 a,b
	Internet education program	Wagner et al., 2007
Disclosure	Expressive writing	Gallagher et al., 2018; Kallay & Baban, 2008; Stockton et al., 2014
	Online narrative writing	Liu & Kia-Keating, 2017
	Narrative exposure therapy (NET)	Hijazi et al., 2014
	Exposure therapy	Hagenaars & van Minnen, 2010
	Prospective writing	Roepke et al., 2017
	Disclosure (written, private spoken, passive listening, active facilitation)	Slavin-Spenny et al., 2011
	Emotional disclosure	Salim & Wadey, 2018
Social Support	Supportive expressive therapy (group)	Carlson et al., 2016
	Role modelling and reflection (peer)	Chiba et al.
	Peer support program – AHT	Morris et al., 2011
	Group therapy	Salo et al., 2008
Sport and Leisure	Sport and recreation program	Bennett et al., 2014
	Physical activity intervention	Hefferon et al., 2008
	Dragon boating	McDonough et al., 2011
	Art therapy	Singer et al., 2012
	Healing through the creative arts (HA)	Garland et al., 2007
Other	Wish-granting	Chaves et al. 2016
	Brief Eclectic Psychotherapy (BEP)	Nijdam et al., 2018
	Eye movement desensitization and reprocessing theory (EMDR)	Nijdam et al., 2018
	Narrative group psychotherapy	Ruini et al., 2014
	Individual therapy	Salo et al., 2017

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