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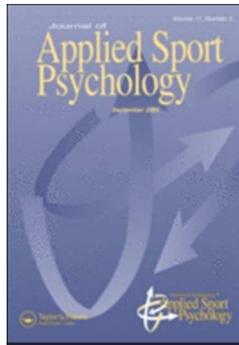
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Process Evaluation for Stressor Reduction Interventions in Sport

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Process Evaluation for Stressor Reduction Interventions in Sport

For Peer Review Only

Abstract

Stressor reduction interventions may have the potential to improve the well-being of those involved in sport. Organizational psychologists have used these primary interventions in various performance domains. The authors describe the stressor reduction design and implementation processes, and the contexts in which they occur, that impact on these interventions. The authors then examine how process evaluation methods can be applied during stressor reduction in sport settings. Process evaluation requires the frequent collection of data about intervention experiences and events from multiple sources using a mixed methods approach. The article contains practical recommendations for sport psychologists who implement stressor reduction interventions.

Keywords: primary, context, outcomes, design, implementation.

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3 1 Organizational stress in sport has been defined as “an ongoing transaction between an
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5 2 individual and the environmental demands associated primarily and directly with the
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7 3 organization within which he or she is operating” (Fletcher, Hanton, & Mellalieu, 2006,
8
9 4 p. 329). Outside of the competitive performance environment, organizational stressors have
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11 5 the potential to cause negative and unpleasant emotional responses that have implications for
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13 6 stakeholders’ well-being and performance (Arnold, Fletcher, & Daniels, 2017; Didymus &
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15 7 Fletcher, 2017). In reviewing the literature Arnold and Fletcher (2012) found that these
16
17 8 stressors included: strained and difficult relationships between those in different roles (e.g.,
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19 9 between athletes, coaches, governing bodies, etc.); the structure and content of training; poor
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21 10 facilities and demanding travel schedules; personal difficulties (e.g., injuries, rehabilitation
22
23 11 and finances) and team factors (e.g., difficult interactions with teammates, poor team
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25 12 atmosphere and high performance expectations from others). The links between exposure to
26
27 13 these stressors and well-being suggests that stressor reduction activities (also known as
28
29 14 primary stress management interventions, or primary SMIs) could be of benefit to a range of
30
31 15 stakeholders in sport (Tabei, Fletcher, & Goodger, 2012). Didymus and Fletcher (2017)
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33 16 conclude that “the aim is to adapt the environment to reduce or eliminate stressors” (p. 174)
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35 17 with these interventions.

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42 18 Organizational and occupational psychologists have attempted to use these
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44 19 interventions to reduce the severity of workers’ exposure to similar stressors in various
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46 20 performance domains. These often involve changes to the content of work tasks and are
47
48 21 sometimes implemented through activities labelled as job redesign (Parker, 2014). Such
49
50 22 changes include: adjustments to the amount, type and intensity of cognitive, emotional and
51
52 23 physical workload; fixing issues with unsuitable work equipment; and providing more
53
54 24 opportunities to use skills and make decisions (Bambra, Egan, Thomas, Petticrew, &
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56 25 Whitehead, 2007; Montano, Hoven, & Siegrist, 2014; Parker, 2014). Primary SMIs can also
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2
3 1 be used to address stressors found in the context of work such as interpersonal conflict,
4
5 2 inadequate feedback on performance and lack of clarity about roles in a team. Example
6
7 3 interventions include increasing opportunities for task-related interactions with colleagues
8
9 4 (e.g., through autonomous work groups), team development activities and the redesign of
10
11 5 performance feedback processes (Bambra et al., 2007; Bond, Flaxman, & Bunce, 2008; Egan,
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13 6 Bambra, Thomas, Petticrew, Whitehead, & Thomson, 2007; Holman & Axtell, 2016;
14
15 7 Nielsen, Randall, & Christensen, 2017). In one example, Pain and Harwood (2009) found
16
17 8 that regular post-match structured group discussion of their performance data by soccer
18
19 9 players had the potential to improve elements of team functioning, such as cohesion and
20
21 10 communication, that could be stressors if not well-managed. The delivery of interventions to
22
23 11 develop psychological resources in a workshop format, such as emotion regulation training
24
25 12 (Wagstaff, Hanlon, & Fletcher, 2013), may also provide some opportunities for participants
26
27 13 to obtain social support and improve communication.
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34 14 There are few examples of primary SMIs in sport contexts: most interventions are
35
36 15 secondary SMIs focused on the development of psychological resources (Didymus &
37
38 16 Fletcher, 2017; Rumbold, Fletcher, & Daniels, 2012). As in other performance domains,
39
40 17 some organizational stressors found in sport contexts are not readily amenable to primary
41
42 18 intervention. These include media and public scrutiny of well-funded and successful sport
43
44 19 organizations, intense competition for team selection and demands to travel to competition
45
46 20 (Arnold & Fletcher, 2012). However, primary interventions could be identified that reduce
47
48 21 the frequency, duration and intensity of some organizational stressors by increasing, for
49
50 22 example, the clarity of goals, stakeholders' control over their schedules and the methods they
51
52 23 use to achieve goals (Arnold, Fletcher, & Daniels 2016). There are strong ethical grounds for
53
54 24 using these interventions because changes to the content and context of activities can reduce
55
56 25 the need for individuals to risk harm by severely depleting their psychological and physical
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3 1 resources in pursuit of performance goals (LaMontagne, Keegel, Louie, Ostrey, &
4
5 2 Landsbergis, 2007). By altering the source of stress such interventions may also have long-
6
7 3 term effects although concrete evidence for such effects is lacking (Bambra et al., 2007;
8
9 4 Montano et al., 2014). In contrast to secondary interventions, the use of primary SMIs may
10
11 5 also carry less risk that participants will infer that they are in some way to blame for their
12
13 6 experience of stress (Briner & Reynolds, 1999). In summary, stressor reduction interventions
14
15 7 may represent a promising but largely untapped strategy for sport psychologists.
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20 8 An important finding from organizational psychology is that the way that primary
21
22 9 SMIs are designed and delivered has the potential to impact on their outcomes (Abildgaard,
23
24 10 Saksvik, & Nielsen, 2016; Egan et al., 2007; Nielsen & Miraglia, 2017). Interventions that
25
26 11 reduce the severity of stressors are argued to exert effects that are sustained over time by
27
28 12 causing sustained changes in perceptions of the environment (LaMontagne et al., 2007).
29
30 13 However, they take place within complex and changing contexts that can alter intervention
31
32 14 activities and render changes to environmental demands no longer relevant or suitable
33
34 15 (Nielsen & Randall, 2013). The involvement of multiple stakeholders (e.g., colleagues,
35
36 16 leaders and external consultants) in the identification of stressors and the design and delivery
37
38 17 of interventions means that interventions can derail before or during the implementation of
39
40 18 changes to environmental stressors (Biron, Ivers, & Brun, 2016). Much is now known about
41
42 19 the factors that have the potential to influence the effects of stressor reduction interventions in
43
44 20 organizational settings and this information may be useful to sport psychologists seeking to
45
46 21 make more effective use of them.
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53 22 In this article we identify a range of intervention design and implementation factors,
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55 23 and features of the intervention context and of the intervention recipients, that could be
56
57 24 examined as part of a process evaluation. We discuss the potential for using process
58
59 25 evaluation to enhance stressor reduction intervention and evaluation in sport contexts. We
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3 1 begin by examining the need for process evaluation by briefly outlining the working
4
5 2 mechanisms of stressor reduction.
6
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3 **Stressor Reduction Intervention Processes and Working Mechanisms**

10
11 4 Primary SMIs involve changing for the better environmental conditions that have
12
13 5 established links through the experience of stress to significant health outcomes (Bambra et
14
15 6 al., 2007; LaMontagne, et al., 2007). These conditions include, for example, opportunities to
16
17 7 use skills and make decisions and levels and types of demands (Karasek, 1979).
18
19 8 Organizational psychologists have evaluated changes to these and other environmental
20
21 9 conditions and found significant improvements in self-reported affect (e.g. satisfaction with
22
23 10 the job), health and in some cases also performance (e.g., Bond et al., 2008; Holman &
24
25 11 Axtell, 2016). Transactional theories of stress indicate that altering environmental inputs to
26
27 12 the appraisal process can change individuals' evaluations of their situation (Lazarus, 1999,
28
29 13 2000; Lazarus & Folkman, 1984). Changes in individuals' perceptions of their environment
30
31 14 (e.g., a perception of clearer role expectations or reduced demand) can be associated with less
32
33 15 stressful appraisals (i.e., benefit or challenge appraisals rather than threat or harm / loss
34
35 16 appraisals). In theory, these changes to perceptions and appraisals must occur for primary
36
37 17 SMIs to be effective as these are crucial active ingredients of the intervention that are linked
38
39 18 to its outcomes (Daniels, Gedikli, Watson, Semkina, & Vaughn, 2017; Holman & Axtell,
40
41 19 2016). More positive appraisals can trigger changes in emotional states (e.g., reduced
42
43 20 anxiety, worry, fear and frustration) that over time and through complex physiological
44
45 21 mechanisms impact on individual well-being and associated performance (Nixon, Mazzola,
46
47 22 Bauer, Krueger, & Spector, 2011). Bakker and Demerouti (2007) have also argued that
48
49 23 through similar mechanisms providing environmental resources (such as those that result in
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51 24 both perceptions and enactment of autonomy to make decisions and use skills) can stimulate
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53 25 positive affect and behavioural outcomes such as increased enjoyment of tasks and
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3 1 motivation. There is a strong theoretical rationale for stressor reduction interventions but
4
5 2 intervention design and delivery processes are not simple and can support or undermine
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7 3 intervention mechanisms (Nielsen & Randall, 2013). A primary SMI must be developed
8
9 4 through activities that lead to changes in environmental demands that are linked to stressful
10
11 5 appraisals that, in turn, are linked to health (Kompier & Kristensen, 2001). In addition,
12
13 6 intervention delivery processes must sustain those changes in individuals' appraisals while
14
15 7 they continue to appraise many other health-related aspects of a dynamic and complex
16
17 8 environment (Abildgaard et al., 2016). In sport psychology interventions, outcome
18
19 9 evaluation and social validation data rarely provide sufficient information to support tests of
20
21 10 the validity of these hypothesized intervention processes and mechanisms (Didymus &
22
23 11 Fletcher, 2017).

29 12 **Process Evaluation**

30
31 13 We briefly outline definitions of process evaluation before discussing its use with
32
33 14 stressor reduction interventions. One widely used definition from organizational psychology
34
35 15 refers to it as "individual, collective or management perceptions and actions in implementing
36
37 16 any intervention and their influence on the overall result of the intervention" (Nytrø, Saksvik,
38
39 17 Mikkelsen, Bohle, & Quinlan, 2000, p. 214). Murta, Sanderson and Oldenburg (2007) define
40
41 18 process evaluation more in terms of intervention fidelity i.e., delivery of all intervention
42
43 19 activities according to a plan based on good theory that led to consistent exposure to the
44
45 20 intervention across the target population. Both definitions highlight the need to gather
46
47 21 information about actions taken and stakeholder perceptions (from those targeted by the
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49 22 intervention and from those involved in its design and delivery) of the quality of intervention
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51 23 components and activities.

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57 24 Others argue that process evaluation needs to go further and should also involve the
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59 25 collection and analysis of data about the organisational contexts within which the intervention

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3 1 occurs, the characteristics of those receiving the intervention and the psychological processes
4
5 2 that determine its outcomes (Havermans, Schelvis, Boot, Brouwers, Anema, & Van der Beek,
6
7 3 2016). This approach also addresses questions of how and why implementation activities
8
9 4 generate uptake (or avoidance) of the intervention (Weiner, 2009). In sport psychology there
10
11 5 are examples of process evaluation being used to identify the active ingredients of various
12
13 6 interventions. Robertson, Zwolinsky, Pringle, McKenna, Daly-Smith and White (2013) used
14
15 7 interviews with participants to identify the active ingredients that sustained voluntary
16
17 8 participation in a Premier League health promotion project: for some participants it was the
18
19 9 opportunity for involvement in very physical activities for others it was social contact. Using
20
21 10 a longitudinal interview study, Stotder and Cushion (2017) found that there were large
22
23 11 individual differences in the decisions that youth soccer coaches made when incorporating
24
25 12 elements of their coaching experiences into their learning and practice. Although not from
26
27 13 primary SMIs, these findings illustrate a particularly important element of process evaluation:
28
29 14 Diverse perceptions and responses can occur even when intervention participants are exposed
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31 15 to similar environmental conditions or intervention activities.
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38 16 Process evaluation can be used to identify factors in the design and delivery of
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40 17 interventions that are linked to their outcomes (Randall, Nielsen, & Tvedt, 2009). The
41
42 18 working mechanisms of stressor reduction means that process evaluation needs to capture
43
44 19 data about events occurring before and during the intervention and stakeholders' perceptions
45
46 20 of those events (with stakeholders being all those involved in designing or delivering or
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48 21 receiving the intervention). In addition, collecting both qualitative and quantitative data on
49
50 22 these factors allows for depth and flexibility of inquiry (since the factors impacting on the
51
52 23 intervention may not all be known in advance) and supports robust analysis of the links
53
54 24 between intervention processes and outcomes (Abildgaard et al., 2016; Nielsen et al., 2017).
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56 25 The process evaluation questions shown in Table 1 (discussed in more detail later) can be
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1
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3 1 used in three ways: to guide the identification and analysis of documentary evidence; to
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5 2 develop topic guides for interviews; and to design simple questionnaire measures (see also
6
7 3 Table 2).
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4 **The Need for Processes Evaluation**

5 The literature on stressor reduction in work organizations is small and shows that
6 interventions have inconsistent effects on affect and self-reported health outcomes (Montano
7 et al., 2014). Process evaluation can be used to identify whether implementation failures
8 (problems with intervention design and delivery) and contextual events account for this
9 inconsistency (Murta et al., 2007; Nielsen & Randall, 2013). The lack of intervention
10 evidence may also be a consequence of the constraints researchers encounter when trying to
11 establish and maintain methodological rigorous intervention studies (Cox, Karanika,
12 Griffiths, & Houdmont, 2007). The practicalities of intervention delivery in organizational
13 settings mean that very few studies of primary SMIs are randomized control trials involving
14 large numbers of participants (Richardson & Rothstein, 2008). Quasi-experimental studies of
15 interventions often lack sufficient rigour to maintain the internal and external validity of
16 research findings (Daniels et al., 2017; Montano et al., 2014; Richardson & Rothstein, 2008).
17 Process evaluation can be used to identify explanations for intervention outcomes when there
18 are limited options for using controlled intervention exposure and sophisticated quantitative
19 data analysis to isolate intervention outcomes (Cook & Fletcher, 2017; Cook & Shadish,
20 1994). It also can be used to bolster the reliability and validity of outcome evaluation when
21 there are significant constraints on the design of the outcome evaluation. For instance, when
22 control and intervention groups cannot be used to manipulate levels of intervention exposure,
23 documented differences in intervention exposure can be used to create “intervention” and “no
24 intervention” groups before data are analysed (Pawson, 2013; Randall, Griffiths, & Cox,
25 2005).
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3 1 Participatory approaches are frequently used to identify and tackle context-specific
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5 2 stressors in successful stressor reduction interventions (e.g., through participatory action
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7 3 research activities; see for example Holman & Axtell, 2016; Bond et al., 2008). This
8
9 4 approach can increase the likelihood of the intervention plan being appropriate for, delivered
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11 5 to, and perceived by participants, thus triggering its active ingredients (Nielsen & Randall,
12
13 6 2013). To replicate this approach sport psychologists may wish to draw upon the expertise of
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15 7 athletes, coaches, managers, administrators and external consultants during intervention
16
17 8 design (Arnold, Fletcher, & Daniels, 2013). Process evaluation can be used to examine
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19 9 whether the interventions developed through these processes: target the stressors being
20
21 10 experienced; integrate well with, and are sustainable in, the intervention setting; and are well-
22
23 11 supported by those involved in the intervention (Nielsen & Randall, 2012). Finally, the long-
24
25 12 term nature of stressor reduction activities means that interventions can rarely be insulated
26
27 13 from external factors that commonly impact on sports organisations such as a re-structuring
28
29 14 or a downsizing (Bambra et al., 2007). Processes evaluation can be used to identify whether
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31 15 such events are impacting on the delivery of the intervention and on how it is experienced
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33 16 and perceived by participants (Nielsen & Miraglia, 2017).
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41 17 It is likely that many stressor reduction interventions in sport will implemented with
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43 18 small and diverse participant groups (e.g., sports teams or groups of coaches), fluctuating
44
45 19 contexts (e.g., across a competitive season), involve intervention activities that are not wholly
46
47 20 under the practitioner's control (e.g., participants changing their training content and
48
49 21 schedules or their working relationships with teammates and coaches) and that control groups
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51 22 will often be unavailable. Process evaluation can provide valuable data that can be used to
52
53 23 better interpret intervention outcomes in such circumstances (Cook & Fletcher, 2017).
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The Constituents of Process Evaluation

As already mentioned, process evaluation can be used to examine a wide range of events occurring both within and around an intervention. At its most basic level, process evaluation resembles a manipulation check used in experimental psychology, often expressed as a dichotomous variable of intervention exposure vs. non-exposure (Randall et al., 2005). Measuring intervention exposure can be particularly important when interventions are delivered by third parties or across a wide range of locations, or in any other circumstances that result in the psychologist having limited control over the delivery of the intervention (Cox et al., 2007). Process evaluation data at this level may come from administrative records of participant attendance during intervention delivery and some audit of adherence to the delivery of the intervention activities such as researchers' observations (Nielsen & Randall, 2013; Rumbold, Fletcher, & Daniels, 2018). These data can then be used to avoid drawing the incorrect conclusion that an intervention is ineffective (i.e. theory failure) when implementation failure undermined its impact: this is a Type III error (Cook & Campbell, 1979; Dobson & Cook, 1980). Low levels of intervention fidelity (i.e., large differences between the intervention delivery and intervention plan) and exposure are likely to be symptoms of other problems with intervention processes that also need to be resolved if it is to have a chance of success (von Thiele Schwarz, Lundmar, & Hasson, 2016). Process evaluation can be used to identify the reasons for low fidelity (e.g., low levels of management support for the intervention or lack of knowledge, skills or confidence among those involved in its design and implementation). This information can then be used to resolve these issues before intervention effects are undermined (see section on Methodological and Practical Implications).

Organizational psychologists have found that process evaluation needs to extend beyond checks on intervention fidelity for four reasons. First, stressor reduction involves a

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2
3 1 number of different stages, activities and stakeholders. Intervention exposure is not a
4
5 2 dichotomy: Participants may report receiving none, some or all parts of the intervention (Cox
6
7 3 et al., 2007; Randall, et al., 2005). This means there can be significant between-participant
8
9 4 variance in intervention experiences, even among those who, in the researchers' judgement,
10
11 5 are exposed to the intervention. For example, a researcher may observe good attendance at a
12
13 6 well-facilitated team development session but the interventions that emerge from that group
14
15 7 might not transfer beyond the intervention setting in a way that reduces stressors in
16
17 8 participants' team interactions away from the intervention environment (Nielsen et al., 2017).
18
19 9 Second, variables other than the intervention itself can influence its effects. These include
20
21 10 barriers or facilitators found in the intervention contexts. Examples are evident in the review
22
23 11 by Arnold and Fletcher (2012) and include insecurity of financial support (a common
24
25 12 problem for elite athletes and those working with them as their funding is under constant
26
27 13 scrutiny) and selection during the season (a potential contextual stressor for all stakeholders
28
29 14 in sport even for those with relatively secure professional contracts and salaries). These
30
31 15 contextual factors may impact on participants' enthusiasm for or engagement in an
32
33 16 intervention. Such insecurity is also likely to have a direct impact on measures of
34
35 17 intervention outcomes such as well-being (De Cuyper & De Witte, 2006). Third, those
36
37 18 targeted by and involved in the intervention form views and opinions about the intervention
38
39 19 that influence their levels of participation in and engagement with intervention activities
40
41 20 (Nielsen, Randall & Albertsen, 2007; Robertson et al., 2013). Fourth, there may be
42
43 21 significant heterogeneity in the psychological characteristics and experiences of those in the
44
45 22 intervention participant group that have implications for the suitability or "fit" of the
46
47 23 intervention. In other words, the intervention is likely to be a better fit for some than it is for
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49 24 others (Randall & Nielsen, 2012).
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3 1 In order to fully evaluate complex multi-faceted interventions delivered to
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5 2 heterogeneous participant groups in complex settings a similarly complex and multi-faceted
6
7 3 approach to process evaluation is needed. Nielsen and Randall (2013) argued that this needs
8
9 4 to be done at three levels: the intervention context, the intervention content and the mental
10
11 5 models of stakeholders. In order to conduct a rigorous process evaluation, data need to be
12
13 6 collected about both intervention design and delivery activities (Nielsen & Abildgaard,
14
15 7 2013). In the following three sections (Intervention Context, Intervention Content and
16
17 8 Mental Models) we describe in more detail the types of data that can be collected. Table 1
18
19 9 summarises the specific questions that practitioners should seek to address at each stage.
20
21 10 Table 2 shows some examples of simple questionnaire items that can be used to collect
22
23 11 quantitative data from stakeholders.

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29 12 - Insert table 1 about here –

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32 13 - Insert table 2 about here –

33 34 35 14 **Intervention Context**

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39 15 The working mechanisms of stressor reduction are active in the day-to-day context
40
41 16 and occur within complex organisational contexts: their effects cannot be fully evaluated
42
43 17 without considering the effects that these contexts may have on the intervention and its
44
45 18 outcomes. Nielsen and Randall (2013) identify two layers of the intervention context, the
46
47 19 omnibus and discrete. The omnibus context refers to prevailing culture and overall condition
48
49 20 of the organisation. For example, this may include consideration of questions such as: is the
50
51 21 organisational culture focused on high performance (e.g., winning Olympic medals) and if so
52
53 22 how does this manifest itself through leaders' behaviour, goal-setting, the management of
54
55 23 athlete dissatisfaction and so on (Fletcher & Streeter, 2016)? A very different culture may
56
57 24 exist in an organization focused on increasing public participation and thus provide a very
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3 1 different backdrop for stressor reduction. By contrast Nielsen and Randall (2013) describe
4
5 2 the evaluation of a discrete context that “focuses on specific events that may have influenced
6
7 3 the effects of the intervention” (p. 607). In sport this may include fluctuating game
8
9 4 preparations, conflicting coaching styles, moving training locations, changes in team
10
11 5 composition and training schedules (Rumbold, Fletcher, & Daniels, 2018) and any number of
12
13 6 demands and resources that have a direct impact on the intervention activities. As in work
14
15 7 organizations these two contexts are likely to interact in sport. For example, changes in
16
17 8 organisational-level performance expectations may result in the disruption of coach-athlete
18
19 9 relationships, or increased public interest in a sport may result in higher levels of
20
21 10 participation and greater competition for places in a team.
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27 11 Throughout process evaluation contextual data need to be collected for two reasons.
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29 12 The first reason is that the context can impact on intervention design and delivery by
30
31 13 introducing barriers and facilitators to intervention activities. Discrete but significant events
32
33 14 in organisations can derail intervention activities thus reducing participants’ exposure to the
34
35 15 active ingredients of the intervention or changing their views of the intervention. For
36
37 16 example, during a competitive season clients may experience acute stressors (e.g., injury) that
38
39 17 make long-term stressor reduction activities (e.g., improving interactions within a team) a
40
41 18 lower priority. In this situation providing the athlete with more control over the acute stressor
42
43 19 (e.g., their rehabilitation programme) may become a higher priority and the psychologist may
44
45 20 have to pause or adjust the intervention that had originally been planned. The second reason
46
47 21 is that context can directly influence intervention outcomes, potentially masking the effects of
48
49 22 an intervention on health and performance (Bambra et al., 2007). The evaluation of an
50
51 23 otherwise potent intervention delivered against the backdrop of withdrawal of funding from a
52
53 24 sports organisation may not yield positive results if the loss of perceived monetary resources
54
55 25 itself impacts on participants’ emotional states and well-being (see Hobfoll, 1989). The
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3 1 discrete context can also impact on intervention outcomes in similar ways. For example,
4
5 2 members of a sports team that loses talented and influential players during the delivery of a
6
7 3 teambuilding intervention may find the intervention process more challenging when
8
9 4 compared to a team that experiences no significant personnel changes.
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13 5 From a practical perspective it is important that researchers remain alert to and
14
15 6 document information about context throughout the intervention process. However, it is also
16
17 7 important to collect information about how the participants' appraise the impact of the
18
19 8 context on their experiences of the intervention (see Tables 1 and 2). This helps to identify
20
21 9 whether the researchers' judgments about the significance of the impact of the context on the
22
23 10 intervention are reflected in the participants' experiences. The importance of participants'
24
25 11 appraisals of intervention process is discussed in more detail later (see section on Mental
26
27 12 Models).
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32 13 **Intervention Content**

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35 14 Evaluation of program content includes: adherence (fidelity of delivery); frequency,
36
37 15 amount, timing and maintenance of participant exposure to intervention components that help
38
39 16 to deliver its active ingredients; and the quality of intervention delivery (e.g., information
40
41 17 supplied about the intervention and the competence of those involved in its delivery).
42
43 18 Therefore, this element of process evaluation shares several of the features of program
44
45 19 integrity (i.e., the degree to which the program, or intervention, was delivered as planned), a
46
47 20 concept that may already familiar to sport psychologists (see Brown & Fletcher, 2017; Dane
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49 21 & Schneider, 1998). Rigorous process evaluation draws these data from multiple
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51 22 stakeholders who are viewing and experiencing intervention activities from different
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53 23 perspectives.
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1 Making available to participants information about how and why an intervention is
2 being initiated can influence recipients' perceptions of its suitability and its effects (Fredslund
3 & Strandgaard, 2005). Identifying the individuals involved in the key choices about the
4 design of the intervention (and their reasons for implementing it) is important as it can be
5 linked to recipients' discretionary choices about involvement in the intervention (Nielsen,
6 Randall, & Christensen, 2010). This may be especially relevant in sport contexts as case
7 study research has pointed to the importance of influential leaders' behaviour and the
8 prevailing culture on athletes' involvement in various performance-related interventions
9 (Fletcher & Streeter, 2016). Organizational psychologists have found that interventions
10 implemented with the explicit objective of improving performance can have unintended
11 negative consequences for well-being (Egan et al., 2007). Although the reasons for this are
12 not yet known sport psychologists may need to remain particularly aware of this possibility
13 (e.g., if there is evidence that participants are over-committing to performance-related
14 interventions at the expense of their well-being).

15 Interventions developed in response to a strong analysis of underlying problems (e.g.,
16 a risk assessment or stress audit) have a better chance of matching the needs of intervention
17 recipients than interventions implemented without such an analysis (Nielsen, Randall, Holten,
18 & Rial Gonzalez, 2010). The same authors found that intervention design processes that take
19 into account the controls and resources already in place to manage risks can result in more
20 efficient and targeted interventions. Documentary evidence regarding the nature and rigor of
21 activities carried out in the problem-identification phase can be used to critically evaluate the
22 appropriateness of the intervention (Nielsen & Randall, 2013).

23 The need to make stressor reduction context-specific and bespoke also suggests that
24 appropriately qualified and knowledgeable stakeholders need to be involved in intervention
25 design (Nielsen et al., 2010). In sport, stakeholder credibility (i.e. their track record of

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2
3 1 delivering interventions elsewhere) may also be important. There is some evidence of the
4
5 2 importance such referent power in delivering physical education interventions (Lyngstad,
6
7 3 2017) but the role of various forms of power in stressor reduction interventions has not been
8
9 4 widely researched in organizational psychology. Involving recipients in the design of
10
11 5 primary SMIs can help with the development of interventions that are appropriate for the
12
13 6 context and that include activities that participants are motivated towards to making work
14
15 7 (Nielsen et al., 2010). The process of participating in the design of solutions to problems can
16
17 8 enhance participants' perceived control and autonomy making the process itself a positive
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19 9 intervention (Elo, Ervasti, & Mattila, 2008). Arnold et al. (2016) have suggested that
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21 10 enhancing control may be a particularly important method of stressor reduction in sport.
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23 11 Observational data and researchers' records of the type, quality, frequency and amount of
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25 12 stakeholder involvement in intervention design can provide extremely valuable process
26
27 13 evaluation data when evaluating intervention outcomes (Saksvik, Nytrø, Dahl-Jørgensen, &
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29 14 Mikkelsen, 2002).

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36 15 Participatory design and implementation processes can challenge and stretch
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38 16 participants. In participatory interventions the nature and allocation of leadership activities
39
40 17 can change. Leadership tasks may be divided up and allocated across different team
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42 18 members, or leaders take on more coaching tasks while allocating transactional leadership
43
44 19 tasks to team members (Nielsen et al., 2017). In sport psychology similar changes may occur
45
46 20 through the use of team resilience interventions (Morgan, Fletcher, & Sarkar, 2015). The
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48 21 new demands that can accompany interventions make it important to document the measures
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50 22 taken to assess and develop the competencies of those whose roles change because of the
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52 23 intervention.
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Mental Models

Intervention context and implementation factors should be carefully recorded and documented by researchers and practitioners. However, it is often the way that these are represented in stakeholders' mental models that are linked to intervention outcomes. Contextual effects and implementation factors that go unnoticed, or that are considered unimportant, are unlikely to have any significant impact on the way that participants appraise the stressors they are facing and the resources they have available to them (Randall et al., 2005). The breadth of intervention-specific appraisals that need to be captured is described by Nielsen and Randall (2013) in their summary of Nytrø et al.'s (2000) conclusions:

For interventions to be effective, it has been argued that employees should perceive that they have problems that need to be addressed, believe that the intervention will be effective in addressing those problems, and be motivated to actively support the intervention by participating in intervention activities. (Nielsen & Randall, 2013, p. 607).

Therefore social validation and process evaluation share some common features. Social validation necessitates the collection of participants' appraisals of satisfaction with the intervention taking into account issues such as the importance of the intervention goal and its effects to the participants and the appropriateness of the intervention activities (Page & Thelwell, 2013).

Beyond social validation, as part of process evaluation participants also need to be asked about their exposure to and experience of the active ingredients of the intervention (e.g., did they attend a team de-briefing and was there sufficient opportunity for them to share their experiences and get developmental feedback). These questions should include an element of evaluation as the experience of an intervention may not always be positive (Biron

1 et al., 2016). Simple questions (see Table 2) can be used to capture information on the
2 valence and size of the impact of the intervention on the problematical issues targeted by the
3 intervention (Randall et al., 2005).

4 Data also need to be collected about the proximal outcomes of interventions. In
5 organizational research the focus has too often been on distal outcomes such as attendance at
6 work or diagnosed illness: These are complex variables that are determined by many factors
7 unrelated to the intervention activities (Nielsen & Miraglia, 2017). A similar criterion
8 problem may occur when using such interventions in sport contexts. For example,
9 interventions designed to increase support from teammates and coaches should be evaluated
10 primarily by gathering data about perceived support. Well-validated measures exist to track
11 such outcomes (e.g., the OSI-SP; Arnold et al., 2013). This is important because inadequate
12 levels of support are a significant potential organizational stressor in sport and thus changes
13 in perceived support are relevant markers of intervention success. It is theoretically possible
14 that such interventions lead to improved results for the team (Pain & Harwood, 2009).
15 However, such outcomes may also be determined by many other factors unrelated to the
16 intervention but found in the competitive environment (such as the quality of the opposition,
17 weather conditions, refereeing decisions and so on). In sport contexts stakeholders' well-
18 being and performance may also be influenced by a number of factors related to their
19 involvement in sport but that occur outside of the sport organization. These may include
20 difficulties in balancing sport activities with family commitments or the impact of stressors at
21 home spilling over into sport activities. For example, the demands associated with
22 developing the skills and experience required to coach in elite contexts can cause disruption
23 to work-life balance (Dawson, Dioth, & Gastin, 2016).

24 Given that participatory approaches are argued to result in better fitting interventions
25 (Elo et al., 2008) data should be captured on breadth and depth of felt participation in

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3 1 intervention design and delivery activities. This can be done through interviews or
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5 2 questionnaire methods (see Randall et al., 2009, and Tables 1 and 2). Participants should also
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7 3 be asked to give their views on the reasons for the implementation of the intervention as these
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9 4 can be linked to their motivation to participate in the intervention activities (Randall &
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11 5 Nielsen, 2013). Participants, especially those leading the intervention (see Nielsen et al.,
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13 6 2017), should be asked about the extent to which they feel adequately equipped and able to
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15 7 participate in the designing and implementing interventions that address difficult or persistent
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17 8 problems. This is a prospect some may find daunting or burdensome (Daniels et al., 2017).
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19 9 When external consultants help with the intervention, their activities, credibility and
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21 10 perceived impact could also be examined.
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27 11 Stressor reduction interventions can result in some degree of conflict and uncertainty
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29 12 about role requirements as the nature and allocation of tasks change. Perceptions about
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31 13 whether these issues are handled constructively and how roles are clarified (especially by
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33 14 leaders) have been shown to be linked to the healthiness of change processes (Tvedt, Saksvik,
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35 15 & Nytrø, 2009). More generally, data on stakeholders' (other than the recipients) attitudes to
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37 16 the intervention need to be captured especially if they are particularly influential in making it
38
39 17 effective (Randall et al., 2009). Emotional contagion around intervention activities may be
40
41 18 particularly relevant in sport given what is known about the impact of individuals' outward
42
43 19 displays of emotion on other team members (Jones, 2012; Totterdall, 2000). Comments
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45 20 about and reactions to intervention activities from those not directly targeted by the
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47 21 intervention may have an impact on recipients (e.g., if peers or leaders are vocal in their
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49 22 scepticism about or support for a stressor reduction activity). This topic has received
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51 23 relatively little attention in organizational psychology. Social learning theories indicate that in
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53 24 a team environment the views about the intervention held by strong role models will
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55 25 influence the extent to which other team members engage with that intervention. Research
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3 1 has shown that the effects of interventions are enhanced if those involved share similar views
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5 2 of its value to them (Hasson, von Thiele Schwarz, Nielsen & Tafvelin, 2016). It is possible
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7 3 that when perceptions of stressors are shared, self-initiated stressor reduction interventions
8
9 4 may transfer to others more readily (Hayward, Knight, & Mellalieu, 2017). Even within the
10
11 5 same sports there may be different intervention needs and therefore different responses to
12
13 6 interventions. For example, for those competing at very high levels, stressors associated with
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15 7 travel and accommodation and problems with coaching relationships may be particularly
16
17 8 intense and frequent (Arnold et al., 2016). Therefore, interventions that address these issues
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19 9 might be seen as more relevant and worthwhile by those involved in high level competition
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21 10 than by others competing at lower levels or less frequently. These findings indicate that sport
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23 11 psychologists should examine the consistency between- and within-stakeholder groups in
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25 12 their perceptions of stressors and in their attitudes to the design and delivery of the
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27 13 intervention.

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34 14 Organizational research has also indicated that it is important to assess participants'
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36 15 readiness for the intervention (Randall et al., 2009). Developing and implementing stressor
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38 16 reduction interventions can be a source of additional demands (e.g., the time and effort
39
40 17 required to fully participate). For individuals already experiencing intense training regimes,
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42 18 leading others or preparing for important competitive events, intervention activities may be
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44 19 seen as unwelcome distractions unless these activities are carefully designed and delivered.
45
46 20 In organizational psychology increases in autonomy are often identified as interventions that
47
48 21 improve employee satisfaction and well-being (Montano et al., 2014). In sport this may
49
50 22 include giving stakeholders more choice about nutrition, training and rehabilitation schedules
51
52 23 (Arnold et al., 2016). In such circumstances it would be important to examine whether those
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54 24 involved felt ready and equipped to make these decisions. Outcome expectancies, the extent
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56 25 to which the participants believe that the intervention will be effective and sustainable, can
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3 1 also provide good information about the reasons why participants may choose to avoid or
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5 2 approach intervention activities (Fridrich, Jenny, & Bauer, 2016). These expectancies can be
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7 3 in part determined by previous experiences of similar interventions and it can sometimes be
8
9 4 useful to gather information about whether participants' views of the intervention are linked
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11 5 to their previous experiences (either good or bad). Novel intervention activities often require
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13 6 those involved to develop new knowledge and skills (e.g., developing an understanding of the
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15 7 specific behaviours that can be used to provide additional emotional support for teammates)
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17 8 and therefore participants' level of confidence and competence in these skills should be
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19 9 evaluated.
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10 **Methodological and Practical Implications**

11 Here we highlight some of the specific ways that such data can be used to improve
12 outcome evaluation and enhance intervention practice. Many observations over time and
13 many sources of data are needed for thorough process evaluation. It is recommended that
14 practitioners keep detailed field notes of their observations, seek out useful organisational
15 records (e.g., attendance at intervention activities, recent stress audit results), interview
16 stakeholders in the intervention about its design and delivery and use short questionnaire
17 surveys throughout the intervention process. These data are more easily obtained and
18 informative when the practitioner maintains frequent contact with those designing, delivering
19 and receiving the intervention. In unpredictable and changing intervention processes,
20 interviews and the collection of field notes provide deep and flexible forms of enquiry.
21 Questionnaire data (see Table 2) provides a more practicable means of collecting data
22 (especially from larger populations) and facilitates direct analysis of the links between
23 perceptions of the intervention process and outcome measures (see Abildgaard et al., 2016;
24 Randall et al., 2009).

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3 1 Process evaluation data should also be used to examine the degree of heterogeneity
4
5 2 within the recipient group so that different sub-groups can be identified within those targeted
6
7 3 by the intervention. Even with changes to environmental stressors, it is best not to assume
8
9 4 that all participants are equally likely to experience the average intervention effect (Ivarsson
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11 5 & Andersen, 2016). For example, outcomes for those reporting exposure to the intervention
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13 6 as intended can be compared to those reporting limited or no exposure to intervention
14
15 7 activities (Biron et al., 2016; Randall et al., 2005). This principle should be extended to make
16
17 8 multiple comparisons based on variability in process evaluation data, for example by
18
19 9 comparing outcomes for those indicating that they felt equipped and motivated to get the best
20
21 10 from the intervention to those who did not. It should also be used to identify whether those
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23 11 experiencing problems before the intervention report the most improvements after its delivery
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25 12 (Flaxman & Bond, 2010). Such differences in the need for the intervention can mask
26
27 13 important intervention effects among those most at risk from the stressor (Randall et al.,
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29 14 2005).

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36 15 Process evaluation will often require the design of data collection tools that are
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38 16 bespoke to the intervention being evaluated. This may appear to be a daunting task. The
39
40 17 underlying process factors described in Table 1 appear to be relevant across a range of
41
42 18 interventions and can be used as a starting point for the design of bespoke tools. Many of the
43
44 19 process evaluation measures, both qualitative and quantitative, used to collect the data
45
46 20 described in Table 2 are brief and user-friendly (see Nielsen and Randall, 2013). The
47
48 21 examples in Table 2 are indicative of how these might be translated to sport contexts.

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53 22 Nielsen and Miraglia (2017) have argued that the question asked during most
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55 23 interventions, “did the stressor reduction intervention work?” is too simple. Meta-analysis
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57 24 allows researchers to identify consistent effects but allows only limited consideration of
58
59 25 intervention processes as moderators of intervention effects. Organizational research shows

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3 1 that intervention processes, especially exposure to active ingredients, are mediators of
4
5 2 intervention outcomes (see Bond et al., 2008; Holman & Axtell, 2016). For example, the
6
7 3 context can act as a trigger for, or brake on, intervention activities. Members of teams
8
9 4 experiencing conflict and mired in a sequence of particularly bad results may be more likely
10
11 5 to seek an intervention than those who are in a team on a winning streak. However, there
12
13 6 may be a risk that the problems that those in the team are experiencing are so severe that
14
15 7 intervention activities are difficult to manage. In circumstances such as these some pre-
16
17 8 intervention work such as role clarification and the development of individual and collective
18
19 9 self-efficacy may be needed to prepare participants for intervention design (Randall, 2013).
20
21 10 Intervention processes and perceptions of them should be measured to assess the extent to
22
23 11 which participants believe they can engage with and benefit from the design and delivery of
24
25 12 stressor reduction. Process evaluation can be particularly useful when attempting to examine
26
27 13 context + mechanism = outcome pathways (Pawson, 2013). This approach provides better
28
29 14 insight into “what works for whom in which circumstances” (Nielsen & Miraglia, 2017, p.
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31 15 46). This may be a useful new way of considering the impact of stressor reduction in sport
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33 16 contexts, especially given within-sport diversity in exposure to stressors (Arnold et al., 2016).
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41 17 Process evaluation could be used to fix problems with intervention processes before
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43 18 or as these occur to prevent interventions from becoming derailed and ineffective (note the
44
45 19 use of the present tense in the questions presented in Table 1). Low levels of participant
46
47 20 engagement and motivation frequently undermine stressor reduction (Nielsen et al., 2010).
48
49 21 Process evaluation should be used to identify and correct the causes of these implementation
50
51 22 problems (e.g., through the modification of the intervention or its design and delivery
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53 23 processes). Process monitoring approaches are recent developments in organizational
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55 24 psychology and there is little information about their effectiveness (Randall, 2013; von Thiele
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57 25 Schwarz et al, 2016). During stressor reduction interventions sport psychologists should
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3 1 consider collecting processes evaluation data frequently using brief and unobtrusive methods
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5 2 so that it is available to help keep intervention activities appropriate and effective.
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3 **Conclusion**

4 Sport psychologists may see stressor reduction intervention as an under-used method
5 that has the potential to tackle a number of problems faced by those involved in sport. The
6 lessons learned by organizational psychologists about the conduct of process evaluation
7 provide sport psychologists with a significant amount of information that they can use during
8 the design, delivery and evaluation of these interventions. Process evaluation data can be
9 used to identify why stressor reduction is working (or failing); for whom it seems to be
10 working best (and for whom it seems to be working less well); and the contextual conditions
11 under which it seems to be most (and least) effective.
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Table 1:

Example Questions to be Used as Part of a Process Evaluation

Intervention contexts (omnibus and discrete)

Data collected throughout the intervention process (combination of observations, documentary evidence, interviews and questionnaires)

- What are the cultural contexts for the intervention (e.g. cohesive team environment; administrators under pressure to improve participation; group of athletes preparing for intensive selection process etc.)?
- What contextual factors impact on the intervention design and delivery activities?
- What are the contextual barriers to and facilitators of the intervention (e.g. are acute stressors or other chronic stressors faced by participants getting in the way of or diluting intervention activities)?
- What other environmental factors are influencing the stressors and outcomes targeted for intervention?
- What other controls and resources are in place to help manage or reduce the stressor? How effective are these?

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5 Table 1 continued:
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7 *Example Questions to be Used as Part of a Process Evaluation*
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9 Intervention content
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11 Design phase questions (predominantly observations, documentary evidence, and stakeholder interviews)
12

- 13 ▪ Who are the stakeholders in the intervention (e.g. athletes, coaches, administrators, external consultants, support staff etc.)?
- 14 ▪ What stress audit activities are carried out in order to identify the stressors and target individuals requiring intervention?
- 15 ▪ How is the intervention designed and who is involved (and what extent were stakeholders adequately involved)?
- 16 ▪ How knowledgeable, qualified and credible are those involved in stressor identification and intervention design?
- 17 ▪ What are the intended active ingredients of the intervention? What is its proposed working mechanism and what are the intended outcomes?
- 18 ▪ What is the intervention plan (activities, timings, delivery mechanisms)?
- 19 ▪ What actions are taken to develop the competencies stakeholders needed for effective design and delivery of the intervention?
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27 Delivery phase questions (combination of observations, documentary evidence, interviews and questionnaires)
28

- 29 ▪ How often and when are participants exposed to the active ingredients and how long for?
- 30 ▪ What are, if any, the deviations from or changes to the planned intervention when it was delivered? Why do these deviations occur?
- 31 ▪ What information is provided to stakeholders about reasons for the intervention?
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- 33 ▪ What are the objectives of the intervention and do different stakeholders hold different views about the intervention objectives?
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5 Table 1 continued:
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7 *Example Questions to be Used as Part of a Process Evaluation*
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10 Mental models

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12 Design phase questions (predominantly interview and questionnaire data)

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14
- 15 ■ Have stakeholders experienced a similar intervention in the past and what are their experiences and views of that intervention?
 - 16 ■ How ready do stakeholders feel for the intervention activities and do these activities fit well with other demands they are facing?
 - 17 ■ To what extent do stakeholders believe they are competent to deliver and / or benefit from the intervention activities?
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20 Delivery phase questions (interview and questionnaire data)

- 21
- 22 ■ What are stakeholders' views of the suitability, quality and likely effectiveness of the intervention (and are there differences between
 - 23 stakeholders' views)?
 - 24 ■ What do participants perceive to be the active ingredients of the intervention (i.e. what are the stressors being targeted by the intervention)?
 - 25 ■ What active ingredients of the intervention participants report they are experiencing? How big is the perceived impact and is it positive or
 - 26 negative?
 - 27 ■ What are stakeholders' levels of motivation towards the intervention activities?
 - 28 ■ How, and how well, are any difficulties or problems with the intervention being dealt with?
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Table 2

*Some Example Process Evaluation Questionnaire Items**Intervention context*

- This intervention is fitting in well with my other commitments / my goals
- The way this intervention is being designed and implemented fits in well with the way things are done around here
- Other things happening around here are disrupting intervention design / delivery activities

Intervention content

- This intervention addresses a stressor that impacts on me
- This intervention is relevant to, and appropriate for, my situation
- I am contributing effectively to the design / implementation of this intervention
- Appropriate expertise is being used in intervention design and implementation
- Problems with the intervention design / delivery are being resolved

Mental models

- I understand the aims and objectives of this intervention
- Others stakeholders around me are supporting this intervention
- This intervention is causing some conflict / uncertainty / ambiguity
- I am doing things differently now as a result of this intervention
- This intervention is making a sustainable, positive / negative difference for me
- This intervention is making a sustainable, large / small difference for me
- This intervention fits well with my preferred ways of doing things
- I have the knowledge, skills, abilities and confidence to make this intervention effective for me

Notes. Suggested scale 1-5 Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). These example items will need to be tailored according to the nature of the intervention being implemented and may not be applicable to all interventions. Depending upon the nature of the intervention, other questions may also be needed for a complete process evaluation.