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Process Evaluation for Stressor Reduction Interventions in Sport

Raymond Randall

School of Business and Economics, Loughborough University

Karina Nielsen

Management School, University of Sheffield

Jonathan Houdmont

Faculty of Medicine and Health Sciences, University of Nottingham

Correspondence about this article should be addressed to: Dr Raymond Randall, School of Business and Economics, Loughborough University, Loughborough, Leicestershire, LE11 3TU. Email: [r.randall@lboro.ac.uk](mailto:r.randall@lboro.ac.uk).

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### **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.

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

18           Organizational and occupational psychologists have attempted to use these  
19 interventions to reduce the severity of workers’ exposure to similar stressors in various  
20 performance domains. These often involve changes to the content of work tasks and are  
21 sometimes implemented through activities labelled as job redesign (Parker, 2014). Such  
22 changes include: adjustments to the amount, type and intensity of cognitive, emotional and  
23 physical workload; fixing issues with unsuitable work equipment; and providing more  
24 opportunities to use skills and make decisions (Bambra, Egan, Thomas, Petticrew, &  
25 Whitehead, 2007; Montano, Hoven, & Siegrist, 2014; Parker, 2014). Primary SMIs can also

1 be used to address stressors found in the context of work such as interpersonal conflict,  
2 inadequate feedback on performance and lack of clarity about roles in a team. Example  
3 interventions include increasing opportunities for task-related interactions with colleagues  
4 (e.g., through autonomous work groups), team development activities and the redesign of  
5 performance feedback processes (Bambra et al., 2007; Bond, Flaxman, & Bunce, 2008; Egan,  
6 Bambra, Thomas, Petticrew, Whitehead, & Thomson, 2007; Holman & Axtell, 2016;  
7 Nielsen, Randall, & Christensen, 2017). In one example, Pain and Harwood (2009) found  
8 that regular post-match structured group discussion of their performance data by soccer  
9 players had the potential to improve elements of team functioning, such as cohesion and  
10 communication, that could be stressors if not well-managed. The delivery of interventions to  
11 develop psychological resources in a workshop format, such as emotion regulation training  
12 (Wagstaff, Hanlon, & Fletcher, 2013), may also provide some opportunities for participants  
13 to obtain social support and improve communication.

14         There are few examples of primary SMIs in sport contexts: most interventions are  
15 secondary SMIs focused on the development of psychological resources (Didymus &  
16 Fletcher, 2017; Rumbold, Fletcher, & Daniels, 2012). As in other performance domains,  
17 some organizational stressors found in sport contexts are not readily amenable to primary  
18 intervention. These include media and public scrutiny of well-funded and successful sport  
19 organizations, intense competition for team selection and demands to travel to competition  
20 (Arnold & Fletcher, 2012). However, primary interventions could be identified that reduce  
21 the frequency, duration and intensity of some organizational stressors by increasing, for  
22 example, the clarity of goals, stakeholders' control over their schedules and the methods they  
23 use to achieve goals (Arnold, Fletcher, & Daniels 2016). There are strong ethical grounds for  
24 using these interventions because changes to the content and context of activities can reduce  
25 the need for individuals to risk harm by severely depleting their psychological and physical

1 resources in pursuit of performance goals (LaMontagne, Keegel, Louie, Ostrey, &  
2 Landsbergis, 2007). By altering the source of stress such interventions may also have long-  
3 term effects although concrete evidence for such effects is lacking (Bambra et al., 2007;  
4 Montano et al., 2014). In contrast to secondary interventions, the use of primary SMIs may  
5 also carry less risk that participants will infer that they are in some way to blame for their  
6 experience of stress (Briner & Reynolds, 1999). In summary, stressor reduction interventions  
7 may represent a promising but largely untapped strategy for sport psychologists.

8         An important finding from organizational psychology is that the way that primary  
9 SMIs are designed and delivered has the potential to impact on their outcomes (Abildgaard,  
10 Saksvik, & Nielsen, 2016; Egan et al., 2007; Nielsen & Miraglia, 2017). Interventions that  
11 reduce the severity of stressors are argued to exert effects that are sustained over time by  
12 causing sustained changes in perceptions of the environment (LaMontagne et al., 2007).  
13 However, they take place within complex and changing contexts that can alter intervention  
14 activities and render changes to environmental demands no longer relevant or suitable  
15 (Nielsen & Randall, 2013). The involvement of multiple stakeholders (e.g., colleagues,  
16 leaders and external consultants) in the identification of stressors and the design and delivery  
17 of interventions means that interventions can derail before or during the implementation of  
18 changes to environmental stressors (Biron, Ivers, & Brun, 2016). Much is now known about  
19 the factors that have the potential to influence the effects of stressor reduction interventions in  
20 organizational settings and this information may be useful to sport psychologists seeking to  
21 make more effective use of them.

22         In this article we identify a range of intervention design and implementation factors,  
23 and features of the intervention context and of the intervention recipients, that could be  
24 examined as part of a process evaluation. We discuss the potential for using process  
25 evaluation to enhance stressor reduction intervention and evaluation in sport contexts. We

1 begin by examining the need for process evaluation by briefly outlining the working  
2 mechanisms of stressor reduction.

### 3 **Stressor Reduction Intervention Processes and Working Mechanisms**

4 Primary SMIs involve changing for the better environmental conditions that have  
5 established links through the experience of stress to significant health outcomes (Bambra et  
6 al., 2007; LaMontagne, et al., 2007). These conditions include, for example, opportunities to  
7 use skills and make decisions and levels and types of demands (Karasek, 1979).  
8 Organizational psychologists have evaluated changes to these and other environmental  
9 conditions and found significant improvements in self-reported affect (e.g. satisfaction with  
10 the job), health and in some cases also performance (e.g., Bond et al., 2008; Holman &  
11 Axtell, 2016). Transactional theories of stress indicate that altering environmental inputs to  
12 the appraisal process can change individuals' evaluations of their situation (Lazarus, 1999,  
13 2000; Lazarus & Folkman, 1984). Changes in individuals' perceptions of their environment  
14 (e.g., a perception of clearer role expectations or reduced demand) can be associated with less  
15 stressful appraisals (i.e., benefit or challenge appraisals rather than threat or harm / loss  
16 appraisals). In theory, these changes to perceptions and appraisals must occur for primary  
17 SMIs to be effective as these are crucial active ingredients of the intervention that are linked  
18 to its outcomes (Daniels, Gedikli, Watson, Semkina, & Vaughn, 2017; Holman & Axtell,  
19 2016). More positive appraisals can trigger changes in emotional states (e.g., reduced  
20 anxiety, worry, fear and frustration) that over time and through complex physiological  
21 mechanisms impact on individual well-being and associated performance (Nixon, Mazzola,  
22 Bauer, Krueger, & Spector, 2011). Bakker and Demerouti (2007) have also argued that  
23 through similar mechanisms providing environmental resources (such as those that result in  
24 both perceptions and enactment of autonomy to make decisions and use skills) can stimulate  
25 positive affect and behavioural outcomes such as increased enjoyment of tasks and

1 motivation. There is a strong theoretical rationale for stressor reduction interventions but  
2 intervention design and delivery processes are not simple and can support or undermine  
3 intervention mechanisms (Nielsen & Randall, 2013). A primary SMI must be developed  
4 through activities that lead to changes in environmental demands that are linked to stressful  
5 appraisals that, in turn, are linked to health (Kompier & Kristensen, 2001). In addition,  
6 intervention delivery processes must sustain those changes in individuals' appraisals while  
7 they continue to appraise many other health-related aspects of a dynamic and complex  
8 environment (Abildgaard et al., 2016). In sport psychology interventions, outcome  
9 evaluation and social validation data rarely provide sufficient information to support tests of  
10 the validity of these hypothesized intervention processes and mechanisms (Didymus &  
11 Fletcher, 2017).

### 12 **Process Evaluation**

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

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

1 occurs, the characteristics of those receiving the intervention and the psychological processes  
2 that determine its outcomes (Havermans, Schelvis, Boot, Brouwers, Anema, & Van der Beek,  
3 2016). This approach also addresses questions of how and why implementation activities  
4 generate uptake (or avoidance) of the intervention (Weiner, 2009). In sport psychology there  
5 are examples of process evaluation being used to identify the active ingredients of various  
6 interventions. Robertson, Zwolinsky, Pringle, McKenna, Daly-Smith and White (2013) used  
7 interviews with participants to identify the active ingredients that sustained voluntary  
8 participation in a Premier League health promotion project: for some participants it was the  
9 opportunity for involvement in very physical activities for others it was social contact. Using  
10 a longitudinal interview study, Stotder and Cushion (2017) found that there were large  
11 individual differences in the decisions that youth soccer coaches made when incorporating  
12 elements of their coaching experiences into their learning and practice. Although not from  
13 primary SMIs, these findings illustrate a particularly important element of process evaluation:  
14 Diverse perceptions and responses can occur even when intervention participants are exposed  
15 to similar environmental conditions or intervention activities.

16         Process evaluation can be used to identify factors in the design and delivery of  
17 interventions that are linked to their outcomes (Randall, Nielsen, & Tvedt, 2009). The  
18 working mechanisms of stressor reduction means that process evaluation needs to capture  
19 data about events occurring before and during the intervention and stakeholders' perceptions  
20 of those events (with stakeholders being all those involved in designing or delivering or  
21 receiving the intervention). In addition, collecting both qualitative and quantitative data on  
22 these factors allows for depth and flexibility of inquiry (since the factors impacting on the  
23 intervention may not all be known in advance) and supports robust analysis of the links  
24 between intervention processes and outcomes (Abildgaard et al., 2016; Nielsen et al., 2017).  
25 The process evaluation questions shown in Table 1 (discussed in more detail later) can be

1 used in three ways: to guide the identification and analysis of documentary evidence; to  
2 develop topic guides for interviews; and to design simple questionnaire measures (see also  
3 Table 2).

#### 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).

1           Participatory approaches are frequently used to identify and tackle context-specific  
2 stressors in successful stressor reduction interventions (e.g., through participatory action  
3 research activities; see for example Holman & Axtell, 2016; Bond et al., 2008). This  
4 approach can increase the likelihood of the intervention plan being appropriate for, delivered  
5 to, and perceived by participants, thus triggering its active ingredients (Nielsen & Randall,  
6 2013). To replicate this approach sport psychologists may wish to draw upon the expertise of  
7 athletes, coaches, managers, administrators and external consultants during intervention  
8 design (Arnold, Fletcher, & Daniels, 2013). Process evaluation can be used to examine  
9 whether the interventions developed through these processes: target the stressors being  
10 experienced; integrate well with, and are sustainable in, the intervention setting; and are well-  
11 supported by those involved in the intervention (Nielsen & Randall, 2012). Finally, the long-  
12 term nature of stressor reduction activities means that interventions can rarely be insulated  
13 from external factors that commonly impact on sports organisations such as a re-structuring  
14 or a downsizing (Bambra et al., 2007). Processes evaluation can be used to identify whether  
15 such events are impacting on the delivery of the intervention and on how it is experienced  
16 and perceived by participants (Nielsen & Miraglia, 2017).

17           It is likely that many stressor reduction interventions in sport will implemented with  
18 small and diverse participant groups (e.g., sports teams or groups of coaches), fluctuating  
19 contexts (e.g., across a competitive season), involve intervention activities that are not wholly  
20 under the practitioner's control (e.g., participants changing their training content and  
21 schedules or their working relationships with teammates and coaches) and that control groups  
22 will often be unavailable. Process evaluation can provide valuable data that can be used to  
23 better interpret intervention outcomes in such circumstances (Cook & Fletcher, 2017).

24

## **The Constituents of Process Evaluation**

1  
2 As already mentioned, process evaluation can be used to examine a wide range of  
3 events occurring both within and around an intervention. At its most basic level, process  
4 evaluation resembles a manipulation check used in experimental psychology, often expressed  
5 as a dichotomous variable of intervention exposure vs. non-exposure (Randall et al., 2005).  
6 Measuring intervention exposure can be particularly important when interventions are  
7 delivered by third parties or across a wide range of locations, or in any other circumstances  
8 that result in the psychologist having limited control over the delivery of the intervention  
9 (Cox et al., 2007). Process evaluation data at this level may come from administrative  
10 records of participant attendance during intervention delivery and some audit of adherence to  
11 the delivery of the intervention activities such as researchers' observations (Nielsen &  
12 Randall, 2013; Rumbold, Fletcher, & Daniels, 2018). These data can then be used to avoid  
13 drawing the incorrect conclusion that an intervention is ineffective (i.e. theory failure) when  
14 implementation failure undermined its impact: this is a Type III error (Cook & Campbell,  
15 1979; Dobson & Cook, 1980). Low levels of intervention fidelity (i.e., large differences  
16 between the intervention delivery and intervention plan) and exposure are likely to be  
17 symptoms of other problems with intervention processes that also need to be resolved if it is  
18 to have a chance of success (von Thiele Schwarz, Lundmar, & Hasson, 2016). Process  
19 evaluation can be used to identify the reasons for low fidelity (e.g., low levels of management  
20 support for the intervention or lack of knowledge, skills or confidence among those involved  
21 in its design and implementation). This information can then be used to resolve these issues  
22 before intervention effects are undermined (see section on Methodological and Practical  
23 Implications).

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

1 number of different stages, activities and stakeholders. Intervention exposure is not a  
2 dichotomy: Participants may report receiving none, some or all parts of the intervention (Cox  
3 et al., 2007; Randall, et al., 2005). This means there can be significant between-participant  
4 variance in intervention experiences, even among those who, in the researchers' judgement,  
5 are exposed to the intervention. For example, a researcher may observe good attendance at a  
6 well-facilitated team development session but the interventions that emerge from that group  
7 might not transfer beyond the intervention setting in a way that reduces stressors in  
8 participants' team interactions away from the intervention environment (Nielsen et al., 2017).  
9 Second, variables other than the intervention itself can influence its effects. These include  
10 barriers or facilitators found in the intervention contexts. Examples are evident in the review  
11 by Arnold and Fletcher (2012) and include insecurity of financial support (a common  
12 problem for elite athletes and those working with them as their funding is under constant  
13 scrutiny) and selection during the season (a potential contextual stressor for all stakeholders  
14 in sport even for those with relatively secure professional contracts and salaries). These  
15 contextual factors may impact on participants' enthusiasm for or engagement in an  
16 intervention. Such insecurity is also likely to have a direct impact on measures of  
17 intervention outcomes such as well-being (De Cuyper & De Witte, 2006). Third, those  
18 targeted by and involved in the intervention form views and opinions about the intervention  
19 that influence their levels of participation in and engagement with intervention activities  
20 (Nielsen, Randall & Albertsen, 2007; Robertson et al., 2013). Fourth, there may be  
21 significant heterogeneity in the psychological characteristics and experiences of those in the  
22 intervention participant group that have implications for the suitability or "fit" of the  
23 intervention. In other words, the intervention is likely to be a better fit for some than it is for  
24 others (Randall & Nielsen, 2012).



1 different backdrop for stressor reduction. By contrast Nielsen and Randall (2013) describe  
2 the evaluation of a discrete context that “focuses on specific events that may have influenced  
3 the effects of the intervention” (p. 607). In sport this may include fluctuating game  
4 preparations, conflicting coaching styles, moving training locations, changes in team  
5 composition and training schedules (Rumbold, Fletcher, & Daniels, 2018) and any number of  
6 demands and resources that have a direct impact on the intervention activities. As in work  
7 organizations these two contexts are likely to interact in sport. For example, changes in  
8 organisational-level performance expectations may result in the disruption of coach-athlete  
9 relationships, or increased public interest in a sport may result in higher levels of  
10 participation and greater competition for places in a team.

11       Throughout process evaluation contextual data need to be collected for two reasons.  
12 The first reason is that the context can impact on intervention design and delivery by  
13 introducing barriers and facilitators to intervention activities. Discrete but significant events  
14 in organisations can derail intervention activities thus reducing participants’ exposure to the  
15 active ingredients of the intervention or changing their views of the intervention. For  
16 example, during a competitive season clients may experience acute stressors (e.g., injury) that  
17 make long-term stressor reduction activities (e.g., improving interactions within a team) a  
18 lower priority. In this situation providing the athlete with more control over the acute stressor  
19 (e.g., their rehabilitation programme) may become a higher priority and the psychologist may  
20 have to pause or adjust the intervention that had originally been planned. The second reason  
21 is that context can directly influence intervention outcomes, potentially masking the effects of  
22 an intervention on health and performance (Bambra et al., 2007). The evaluation of an  
23 otherwise potent intervention delivered against the backdrop of withdrawal of funding from a  
24 sports organisation may not yield positive results if the loss of perceived monetary resources  
25 itself impacts on participants’ emotional states and well-being (see Hobfoll, 1989). The

1 discrete context can also impact on intervention outcomes in similar ways. For example,  
2 members of a sports team that loses talented and influential players during the delivery of a  
3 teambuilding intervention may find the intervention process more challenging when  
4 compared to a team that experiences no significant personnel changes.

5 From a practical perspective it is important that researchers remain alert to and  
6 document information about context throughout the intervention process. However, it is also  
7 important to collect information about how the participants' appraise the impact of the  
8 context on their experiences of the intervention (see Tables 1 and 2). This helps to identify  
9 whether the researchers' judgments about the significance of the impact of the context on the  
10 intervention are reflected in the participants' experiences. The importance of participants'  
11 appraisals of intervention process is discussed in more detail later (see section on Mental  
12 Models).

### 13 **Intervention Content**

14 Evaluation of program content includes: adherence (fidelity of delivery); frequency,  
15 amount, timing and maintenance of participant exposure to intervention components that help  
16 to deliver its active ingredients; and the quality of intervention delivery (e.g., information  
17 supplied about the intervention and the competence of those involved in its delivery).  
18 Therefore, this element of process evaluation shares several of the features of program  
19 integrity (i.e., the degree to which the program, or intervention, was delivered as planned), a  
20 concept that may already familiar to sport psychologists (see Brown & Fletcher, 2017; Dane  
21 & Schneider, 1998). Rigorous process evaluation draws these data from multiple  
22 stakeholders who are viewing and experiencing intervention activities from different  
23 perspectives.

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

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

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

24

## 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

1 intervention design and delivery activities. This can be done through interviews or  
2 questionnaire methods (see Randall et al., 2009, and Tables 1 and 2). Participants should also  
3 be asked to give their views on the reasons for the implementation of the intervention as these  
4 can be linked to their motivation to participate in the intervention activities (Randall &  
5 Nielsen, 2013). Participants, especially those leading the intervention (see Nielsen et al.,  
6 2017), should be asked about the extent to which they feel adequately equipped and able to  
7 participate in the designing and implementing interventions that address difficult or persistent  
8 problems. This is a prospect some may find daunting or burdensome (Daniels et al., 2017).  
9 When external consultants help with the intervention, their activities, credibility and  
10 perceived impact could also be examined.

11         Stressor reduction interventions can result in some degree of conflict and uncertainty  
12 about role requirements as the nature and allocation of tasks change. Perceptions about  
13 whether these issues are handled constructively and how roles are clarified (especially by  
14 leaders) have been shown to be linked to the healthiness of change processes (Tvedt, Saksvik,  
15 & Nytrø, 2009). More generally, data on stakeholders' (other than the recipients) attitudes to  
16 the intervention need to be captured especially if they are particularly influential in making it  
17 effective (Randall et al., 2009). Emotional contagion around intervention activities may be  
18 particularly relevant in sport given what is known about the impact of individuals' outward  
19 displays of emotion on other team members (Jones, 2012; Totterdall, 2000). Comments  
20 about and reactions to intervention activities from those not directly targeted by the  
21 intervention may have an impact on recipients (e.g., if peers or leaders are vocal in their  
22 scepticism about or support for a stressor reduction activity). This topic has received  
23 relatively little attention in organizational psychology. Social learning theories indicate that in  
24 a team environment the views about the intervention held by strong role models will  
25 influence the extent to which other team members engage with that intervention. Research

1 has shown that the effects of interventions are enhanced if those involved share similar views  
2 of its value to them (Hasson, von Thiele Schwarz, Nielsen & Tafvelin, 2016). It is possible  
3 that when perceptions of stressors are shared, self-initiated stressor reduction interventions  
4 may transfer to others more readily (Hayward, Knight, & Mellalieu, 2017). Even within the  
5 same sports there may be different intervention needs and therefore different responses to  
6 interventions. For example, for those competing at very high levels, stressors associated with  
7 travel and accommodation and problems with coaching relationships may be particularly  
8 intense and frequent (Arnold et al., 2016). Therefore, interventions that address these issues  
9 might be seen as more relevant and worthwhile by those involved in high level competition  
10 than by others competing at lower levels or less frequently. These findings indicate that sport  
11 psychologists should examine the consistency between- and within-stakeholder groups in  
12 their perceptions of stressors and in their attitudes to the design and delivery of the  
13 intervention.

14         Organizational research has also indicated that it is important to assess participants'  
15 readiness for the intervention (Randall et al., 2009). Developing and implementing stressor  
16 reduction interventions can be a source of additional demands (e.g., the time and effort  
17 required to fully participate). For individuals already experiencing intense training regimes,  
18 leading others or preparing for important competitive events, intervention activities may be  
19 seen as unwelcome distractions unless these activities are carefully designed and delivered.  
20 In organizational psychology increases in autonomy are often identified as interventions that  
21 improve employee satisfaction and well-being (Montano et al., 2014). In sport this may  
22 include giving stakeholders more choice about nutrition, training and rehabilitation schedules  
23 (Arnold et al., 2016). In such circumstances it would be important to examine whether those  
24 involved felt ready and equipped to make these decisions. Outcome expectancies, the extent  
25 to which the participants believe that the intervention will be effective and sustainable, can

1 also provide good information about the reasons why participants may choose to avoid or  
2 approach intervention activities (Fridrich, Jenny, & Bauer, 2016). These expectancies can be  
3 in part determined by previous experiences of similar interventions and it can sometimes be  
4 useful to gather information about whether participants' views of the intervention are linked  
5 to their previous experiences (either good or bad). Novel intervention activities often require  
6 those involved to develop new knowledge and skills (e.g., developing an understanding of the  
7 specific behaviours that can be used to provide additional emotional support for teammates)  
8 and therefore participants' level of confidence and competence in these skills should be  
9 evaluated.

### 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).

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

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

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

1 that intervention processes, especially exposure to active ingredients, are mediators of  
2 intervention outcomes (see Bond et al., 2008; Holman & Axtell, 2016). For example, the  
3 context can act as a trigger for, or brake on, intervention activities. Members of teams  
4 experiencing conflict and mired in a sequence of particularly bad results may be more likely  
5 to seek an intervention than those who are in a team on a winning streak. However, there  
6 may be a risk that the problems that those in the team are experiencing are so severe that  
7 intervention activities are difficult to manage. In circumstances such as these some pre-  
8 intervention work such as role clarification and the development of individual and collective  
9 self-efficacy may be needed to prepare participants for intervention design (Randall, 2013).  
10 Intervention processes and perceptions of them should be measured to assess the extent to  
11 which participants believe they can engage with and benefit from the design and delivery of  
12 stressor reduction. Process evaluation can be particularly useful when attempting to examine  
13 context + mechanism = outcome pathways (Pawson, 2013). This approach provides better  
14 insight into “what works for whom in which circumstances” (Nielsen & Miraglia, 2017, p.  
15 46). This may be a useful new way of considering the impact of stressor reduction in sport  
16 contexts, especially given within-sport diversity in exposure to stressors (Arnold et al., 2016).

17 Process evaluation could be used to fix problems with intervention processes before  
18 or as these occur to prevent interventions from becoming derailed and ineffective (note the  
19 use of the present tense in the questions presented in Table 1). Low levels of participant  
20 engagement and motivation frequently undermine stressor reduction (Nielsen et al., 2010).  
21 Process evaluation should be used to identify and correct the causes of these implementation  
22 problems (e.g., through the modification of the intervention or its design and delivery  
23 processes). Process monitoring approaches are recent developments in organizational  
24 psychology and there is little information about their effectiveness (Randall, 2013; von Thiele  
25 Schwarz et al, 2016). During stressor reduction interventions sport psychologists should

1 consider collecting processes evaluation data frequently using brief and unobtrusive methods  
2 so that it is available to help keep intervention activities appropriate and effective.

### 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*

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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?

Table 1 continued:

*Example Questions to be Used as Part of a Process Evaluation*

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Intervention content

Design phase questions (predominantly observations, documentary evidence, and stakeholder interviews)

- Who are the stakeholders in the intervention (e.g. athletes, coaches, administrators, external consultants, support staff etc.)?
- What stress audit activities are carried out in order to identify the stressors and target individuals requiring intervention?
- How is the intervention designed and who is involved (and what extent were stakeholders adequately involved)?
- How knowledgeable, qualified and credible are those involved in stressor identification and intervention design?
- What are the intended active ingredients of the intervention? What is its proposed working mechanism and what are the intended outcomes?
- What is the intervention plan (activities, timings, delivery mechanisms)?
- What actions are taken to develop the competencies stakeholders needed for effective design and delivery of the intervention?

Delivery phase questions (combination of observations, documentary evidence, interviews and questionnaires)

- How often and when are participants exposed to the active ingredients and how long for?
- What are, if any, the deviations from or changes to the planned intervention when it was delivered? Why do these deviations occur?
- What information is provided to stakeholders about reasons for the intervention?
- What are the objectives of the intervention and do different stakeholders hold different views about the intervention objectives?

Table 1 continued:

*Example Questions to be Used as Part of a Process Evaluation*

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Mental models

Design phase questions (predominantly interview and questionnaire data)

- Have stakeholders experienced a similar intervention in the past and what are their experiences and views of that intervention?
- How ready do stakeholders feel for the intervention activities and do these activities fit well with other demands they are facing?
- To what extent do stakeholders believe they are competent to deliver and / or benefit from the intervention activities?

Delivery phase questions (interview and questionnaire data)

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

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.

