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This is an accepted manuscript of an article published by Elsevier in *Current Opinion in Psychology*

Morgan Paul BC, Fletcher D & Sarkar Mustafa: **Recent developments in team resilience research in elite sport**, *Current Opinion in Psychology* 2017, **16**:159-164

Published version available at:

<https://doi.org/10.1016/j.copsyc.2017.05.013>

Recent developments in team resilience research in elite sport

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In this paper we review recent developments in team resilience research in elite sport. Although resilience has become a popular and well-researched topic from an individual (psychological) perspective, less attention has been paid to whether this construct is conceptually and operationally robust at a group level. In this review, we provide an overview of definitional aspects of team resilience followed by an outline of research in the general psychology literature, and a discussion of the findings of the first two studies of team resilience in elite sport. Recent developments in this area of sport psychology research suggest that an understanding of how teams mobilize their collective psychosocial resources to withstand stressors is essential for optimal performance.

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Introduction

Elite sport teams perform in highly pressurized situations and although some teams manage to withstand the demands encountered, others experience debilitating effects under pressure. Developing an understanding of how athletes withstand the pressures of elite sport to sustain performance has been addressed in sport psychology research through the study of psychological resilience (e.g., [1–3]). Yet, despite the pervasiveness of team sport competition and the strong association that communities, nations, and even continents have with teams [4], it is only recently that resilience research has shifted from individual athletes to teams. This is somewhat surprising considering the challenges that exist for teams to handle the setbacks they often encounter. Indeed, teams encounter stressors that are often specific to groups including group tensions, blame, and sudden slumps in collective performance [5,6]. Therefore, team resilience in elite sport is being recognized as an important avenue for researchers to investigate to better understand how teams can sustain optimum performance under pressure [4,7,8^{**}].

Lately, there has been a growing interest in team resilience research across a range of performance domains such as health [9], military [10^{**}], and management [11]. A common theme running throughout this body of work is that team members do not exist in isolation. Their experiences of adversity are shared and, therefore, team resilience research should investigate resilient factors above the level of the individual [12]. Moreover, the rise in team resilience studies partly reflects that there is no guarantee that a group of resilient individuals will automatically yield a resilient team. Therefore, the purpose of this review is to discuss resilience at the group level and examine recent developments in team resilience research. The narrative is organized into three main sections. First, an overview of emerging definitional aspects of team resilience is provided. Second, a review of team resilience research in general psychology is presented. Third, findings of the two available studies of team resilience in elite sport are discussed. Applied recommendations are offered to maintain high levels of performance despite the pressures that are ubiquitous in elite team sport and suggestions are provided for further research.

Defining team resilience

Over the past decade, team resilience has been researched across a range of contexts (see Refs. [7,8^{**},9,10^{**},11^{*},13–18,19^{*},20,21^{*},22–25]). There is a general recognition that the relational fabric inherent in teams means that resilience at the group level should be conceived differently to the individual level. Indeed, when researching resilience, it is important to be cognizant of the potential changes in the meaning of constructs at different levels [26]. Definitions of team resilience are presented in Table 1. Of the 18 team resilience publications that exist, only eight include a definition and just five of these are

original, empirical studies [7,11[•],13,17,18]. Therefore, identification of common features of definitions and conceptualizations of team resilience is limited. However, there is some consensus about the protective nature of team resilience from the potentially harmful effects of stressors. For example, the definitions in Table 1 point to resilient teams' abilities to withstand [7], resist [11[•]], and overcome [9,21[•]] stressors.

The notion that team resilience is a dynamic, temporal process is another feature arising from the definitions.

Table 1

Definitions of team resilience		
Authors (year)	Context	Definition
West <i>et al.</i> [13]	Work teams	"A positive team level capacity that aids in the repair and rebound of teams when facing potentially stressful situations. Teams which display the ability to either thrive under high liability situations, improvise, and adapt to significant change or stress, or simply recover from a negative experience are less likely to experience the potentially damaging effects of threatening situations" (p. 254).
Morgan <i>et al.</i> [7]	Elite sport teams	"A dynamic psychosocial process which protects a group of individuals from the potential negative effects of the stressors they collectively encounter. It comprises of processes whereby team members use their individual and combined resources to positively adapt when experiencing adversity" (p. 522).
Carmeli <i>et al.</i> [17]	Top management teams	". . . a team's belief that it can absorb and cope with strain, as well as a team's capacity to cope, recover and adjust positively to difficulties" (p. 149).
Stephens <i>et al.</i> [18]	Top management teams	"Resilience refers to the ability of individuals, groups, and organizations to absorb the stress that arises from . . . challenges and to not only recover functioning back to a 'normal' level but also learn and grow from the adversity to emerge stronger than before" (p. 15).
Rodríguez-Sánchez and Perea [9]	Emergency services/ work teams	"A capacity teams have to overcome crises and difficulties" (p. 30).
Alliger <i>et al.</i> [21 [•]]	Business teams	". . . the capacity of a team to withstand and overcome stressors in a manner that enables sustained performance; it helps teams handle and bounce back from challenges that can endanger their cohesiveness and performance" (p. 177).
Amaral <i>et al.</i> [11 [•]]	Project teams	"The resilience of a team can be defined as the team's ability to deal with problems, overcome obstacles, or resist the pressure of adverse situations, without entering into rupture, and allowing a positive adjustment to successfully perform particular tasks, increase reliability, longevity, and the overall performance" (p. 1182).

Given that team resilience research recognizes the particular importance of relationships, it is perhaps surprising that

most definitions do not refer to team resilience as a shared, collective, and psychosocial phenomenon. There are, therefore, opportunities for researchers to advance knowledge by explaining the basis of their definition and conceptualization of team resilience in future studies. For example, in the area of organizational psychology, Meneghel *et al.* [24] justified their conceptualization of team resilience as a collective level construct by drawing on studies across a range of psychology contexts and using multilevel approaches [27]. Furthermore, these authors [23] directed attention to the potential role of affective processes in groups. Employing structural equation modelling, their findings revealed a positive relationship between collective positive emotions, team resilience, and performance in teams. Since team resilience research is at a nascent, albeit burgeoning stage of development, we recommend that researchers adopt an integrated (*i.e.*, cross-disciplinary), systematic approach to advance definitional, conceptual, and theoretical development.

Team resilience research in general psychology

In general psychology, team resilience investigations have begun to identify collective resilient characteristics of teams that can protect them from the potential negative effects of stressors. Examples include: the quality of emotional expression among team members [18], high quality relationships and structural ties [17], coordination [19,24], diverse team composition and talents [11,19], and social support [21,24]. Particularly at the group level, research suggests that the cultivation of relational protective factors buffer teams from potentially harmful consequences [17]. Furthermore, in addition to conceiving team resilience as a constellation of collective traits, some researchers have conceptualized team resilience as a process that can be developed over time rather than comprising a set of static group attributes (*e.g.*, [10,13,17]). To illustrate, researchers have suggested that leadership processes may influence the development of team resilience [9,21]. Indeed, Alliger *et al.* [21] proposed that leadership processes equip resilient teams with the physical and psychosocial resources to withstand stressors. In findings that resonate with team resilience research in sport psychology [8], other researchers have highlighted the role of transformational and shared team leadership for work teams to stimulate a proactive approach to challenging situations [9,22].

Stevens *et al.* [10] adopted a novel design to establish links between neurodynamic measures and observations of team performance. Specifically, they explored the role of cognitive behavioral group processes in a military context when team members were exposed to disruptions. Findings showed that a high level of collective organization prior to a task facilitated performance during stressors. The researchers proposed that developing collective organization of a task facilitates a team's ability to reorganize this knowledge during pressurized situations. In summary, it is evident from developments in general psychology that team resilience research has illuminated the distinctive role of group-level factors to withstand stressors. However, since this research is in its infancy, questions remain about how team resilience should be defined, conceptualized, measured, and developed in specific contexts.

Team resilience research in sport psychology

A feature of early team resilience research across psychology subdisciplines is, perhaps, the piecemeal approach and lack of integrated development. In contrast, recent advances in sport psychology include a more systematic agenda of team resilience research [7,8]. In accordance with recommendations by Luthar *et al.* [28], this programme of research aimed to explore team resilience to develop contextually-specific meanings (*i.e.*, team sport). In the first study of team resilience in sport psychology, Morgan *et al.* [7] conducted focus groups with members of five elite sport teams. Using thematic analysis to analyze the data, team resilience was defined as a dynamic psychosocial process which protects a group of individuals from the potential negative effect of the stressors they collectively encounter. It comprises of processes whereby team members use their individual and combined resources to positively adapt when experiencing adversity" [7]. Four resilient characteristics of elite sport teams were identified: group structure (*i.e.*, working communication channels during stressors), mastery approaches (*i.e.*, a collective commitment to ongoing learning despite adversity), social capital (*i.e.*, high quality, caring relationships), and collective efficacy (*i.e.*, drawing on setbacks to increase shared belief for future success). This study advanced resilience research by providing greater definitional clarity about the nature, meaning, and scope of team resilience (*i.e.*, what team resilience is), and proposing a framework to profile the

resilient characteristics of elite sport teams (*i.e.*, what a resilient team 'looks' like). Notwithstanding these advancements, by describing team resilience as a 'dynamic psychosocial process' [], Morgan *et al.* [7] recommended that future research should explore the processes underpinning the resilient characteristics to examine how a resilient team functions over time.

Employing narrative inquiry, Morgan *et al.* [8**] subsequently analyzed autobiographies of eight members of the 2003 England rugby union World Cup winning team. Findings revealed five main psychosocial processes underpinning team resilience: transformational leadership (*e.g.*, inspiring team members' commitment to their shared vision despite setbacks), shared team leadership (*e.g.*, a wide distribution of team member responsibilities), team learning (*e.g.*, sharing knowledge of setbacks), social identity (*e.g.*, developing a distinctive team identity), and positive emotions (*e.g.*, promoting humor despite setbacks). This study illustrated how team resilience processes were essential for the development of excellence which resonates with other research in sport psychology that has identified the critical role of transformational leadership, team leadership, and team identity during challenging situations in elite sport [4,29,30]. Importantly, in both studies conducted by Morgan *et al.* [7,8**], team resilience was portrayed as a dynamic, temporal process. Teams do not exist in static environments [31,32] and these findings suggest that team resilience development should occur in accordance with the stage of a team's existence and the specific stressors encountered in that context and at that time. In summary, sport psychology research has captured the contextual and temporal nature of team resilience in elite sport and suggests that leveraging a team's collective resources can enhance their ability to withstand stressors and ultimately perform at the highest level.

Applied implications

A number of practical suggestions arise from team resilience research. Indeed, understanding how teams should collectively perform in the context of pressure and setbacks has particular benefit for coaches and sport psychologists. An overarching theme is that, while teams consist of individuals, there are distinct factors peculiar to groups that must be considered when developing a resilient team. Research findings have defined team resilience as a shared experience and a resilience training and education programme should commence by involving team members in discussions about their own team's resilience [7]. By exchanging views about stressors they have experienced together, team members can isolate situations when they have collectively withstood stressors. This could enhance shared anticipation and identify early warning indicators for future stressors [21*,22]. Using the findings of Morgan *et al.*'s [7] study as a framework, coaches should profile and assess the resilient characteristics of their team and identify strategies to mobilize specific psychosocial resources to enhance team resilience. For example, group structures could enhance team resilience by facilitating working communication channels (*e.g.*, practising effective verbal and non-verbal communication during pressurized situations). When profiling a team's resilience, coaches should observe signs of brittleness such as disorganized pre-match team briefings and poor coordination during stressors [10**,19*,21*].

Another overarching theme is that psychosocial processes leverage team resilience by ensuring that team members are 'on the same wavelength' during stressors. The processes identified in Morgan *et al.*'s [8**] study provide practitioners with a scaffold to boost the combined relational, cognitive, and affective protective processes of teams. Transformational leadership strategies should generate a compelling team vision which is reinforced during setbacks to stimulate collective constructive sensemaking (*e.g.*, to see the 'bigger picture'). Those working with teams should also consider shared team leadership as a vital psychosocial process [33]. Leadership groups and role rotation will improve team members' connectivity and accountability during setbacks.

Furthermore, coaches should devise team learning strategies to facilitate team resilience. Through group reflections of adversity pooled knowledge can be collated of 'what works' in pressurized situations. Simulation training, error exposure drills, and 'what-ifs' can facilitate team resilience through effective learning [8**,10**,19*,21*,22]. Practitioners should consider how pressurized situations are rehearsed during training (*i.e.*, adverse weather, poor officiating, fatigue). Interestingly, research in the emergency response context showed that team resilience was enhanced when simulations involved dynamic unpredictable situations rather than static predictable tasks [19*]. Social identity strategies could improve team resilience by strengthening team bonds, displaying team imagery and celebrating 'resilient successes'. Finally, positive emotion strategies include monitoring for fatigue, promoting enjoyment, and social opportunities.

Our findings suggest that the relative emphasis of team resilience processes will vary at different times and in different situations (e.g., in line with a team's development and/or the types of stressors encountered). This resonates with Alliger *et al.*'s [21] framework of behavioral strategies that could be applied. To illustrate, coaches and sport psychologists should consider how they *anticipate* challenging situations (e.g., identify warning signs); how they will *manage* stressors (e.g., quickly assess what's not working); and how they *mend* difficult situations (e.g., identify future risk points). Based on insights in general psychology [11], teams should develop a prioritized list of collectively agreed team resilience actions, behaviors, or protocols that will harness shared sensemaking and relationships during stressors.

Future research

There are a number of directions for future research. Kleinert *et al.* [34] commented that team-level topics are underrepresented in sport psychology and a need exists to address the lack of investigations focused on the everyday practices of teams. Team resilience provides researchers with many fruitful opportunities to tackle these gaps [4,35,36]. First, researchers could build on existing studies to investigate the specific role of psychosocial processes for team resilience development. For example, qualitative approaches such as ethnography have been recommended to capture 'first-hand' the dynamic nature of team resilience [8]. In general psychology, explanations of the role of particular psychosocial processes for team resilience are emerging. Meneghel *et al.* [23] proposed that collective positive emotions might be harnessed through social contagion. Researchers should investigate this concept to explain how the ripple effects of team members' responses during adversity influences team resilience. Interestingly, while social identity has been reported as a key team resilience process in elite sport teams [8], there is little evidence in other contexts.

Second, since team resilience is conceptualized as a dynamic process that evolves over time [7], research designs should reflect this conception. Longitudinal research conducted over the cycle of a team's existence would advance our knowledge of its temporal, unfolding nature [8,34]. In other areas of psychology, dynamic team processes have been regarded as emergent phenomena [37,38] although longitudinal approaches should be employed to provide empirical evidence. Bonnano *et al.* [39] provided a framework to explore the temporal nature of resilience (*i.e.*, baseline functioning, aversive circumstances, resilient outcomes, predictors of resilient outcomes), which could be applied to research at the team level. The framework proposed by Alliger *et al.* [21] could also be used to investigate team resilience strategies over time.

Third, the protective characteristics and processes identified by Morgan *et al.* [7,8] should be used as a framework in the design of team resilience interventions. Quantitative methods could be used to advance our knowledge of what works in specific types of stressors. For example, Gomes *et al.* [19] conducted observations of teams during simulations and used timeline analysis to identify sequences of resilient actions. Furthermore, quasi-experimental designs could be employed to assess pre-post changes in measures of team resilience protective factors during a sports season. A recent systematic review has shown that resilience training interventions (in the workplace) have significant positive effects on mental health and subjective well-being, psychosocial outcomes, physical/biological outcomes, and performance [40]. Post-intervention qualitative evaluations of the process of conducting team resilience interventions also provide intriguing opportunities to examine the intervention experience itself [41].

Fourth, there is a need to address team resilience measurement. This should include the operationalization of each integral component of the resilience process (*i.e.*, adversity, protective factors, positive adaptation) [36,42] and researchers should adopt multilevel approaches [8,27,43]. Given the relative infancy of team resilience research, investigators should provide clear definitional, conceptual, and theoretical consideration when developing a measure. Furthermore, if team resilience is conceptualized as a process, measures should reflect this, rather than relying on trait conceptualizations and cross-sectional designs [24]. Interestingly, in general psychology, the findings of Morgan *et al.* [7] were recently used as the basis for team resilience scale development [25] although future research should operationalize the constituent components of the resilience process [36,42].

Finally, the integration of psychological data (e.g., via interviews) and physiological assessments (e.g.,

salivary cortisol) has the potential to generate a more holistic understanding of team resilience. Recently, individual level resilience research investigated the relationship between physiological arousal and resilience and findings indicated that protective factors moderated the potential negative effects of high cortisol levels in elite athletes [44]. At the team level, Stevens *et al.* [10**] adopted a neurodynamic approach (*e.g.*, using electroencephalography) for the study of team resilience in the US Navy involving simulation of exposure to hazards.

Conclusion

This review has highlighted the growing interest in team resilience research. Recent investigations in elite sport have provided greater definitional and conceptual clarity of team resilience and identified several team-level protective characteristics and processes. A future research agenda is provided which points toward further examination of the role of protective psychosocial processes, team resilience development, the design and evaluation of team resilience interventions, and the measurement of team resilience. Finally, it is hoped that this review highlights the theoretical and practical benefits of advancing our understanding of the relationship between team resilience and optimal group functioning.

Conflict of interest statement

Nothing declared.

References and recommended reading

Papers of particular interest, published within the period of review, have been highlighted as:

- of special interest
- of outstanding interest

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The authors of this investigation extended the findings of their original study of team resilience in elite sport by using qualitative methods to explore the psychosocial processes underlying team resilience. Five psychosocial processes were identified as being important in protecting teams from the pressures encountered along this team's pathway to excellence: transformational leadership, shared team

leadership, social identity, team learning, and positive emotions.

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This study provides a good example of capturing team-level specific mechanisms (e.g., team cognition) to better understand team resilience processes. The authors used neurodynamic approaches to assess collective responses to stressors during a military simulation task. Findings revealed the importance of team briefings and prior organization of collective knowledge to protect teams from the effects of disturbances in dynamic environments.

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This case study applies cognitive task analysis techniques to assess emergency responses to a simulated nuclear disaster. Observations of the simulation identified sources of resilience and brittleness related to team coordination activities during the simulation. This study provides an example of creative research approaches that points to specific actions and behavior that might facilitate team resilience.

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This paper draws on the authors' own experiences of working with teams in various settings and provides a framework of behavior and actions for team resilience development. The review recognizes the distinctive nature of team resilience compared to the individual level and their framework includes three behavioral strategies to enhance a team's ability to withstand stressors (*i.e.*, minimize, manage, mend). This paper offers a valuable framework for those working in group settings that includes specific actions to build team resilience.

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