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Performance management: A systematic review of processes in elite sport and other  
performance domains

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### Abstract

Performance management is integral for high-performing organizations and teams. The purpose of this review was to synthesize evidence on performance management across elite sport and other performance-focused domains (business, performing arts, high-risk professions). A systematic search and screening strategy was undertaken. Twenty studies satisfied the inclusion criteria. Thematic synthesis enabled the identification of key components of performance management. Similarities and differences between elite sport and other domains are identified across the following themes: *strategic performance management; operational performance management; individual performance management; and leadership of the performance team*. Implications for practitioners in elite sport are also considered across these themes.

*Keywords:* expertise, high performance, organizational psychology in sport, Olympic, organizational functioning

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52 performance domains

53 Traditionally, the focus for psychologists in elite sport has centered on providing  
54 clinical and performance support services for athletes and coaches. However, practitioners  
55 are increasingly required to apply their skills beyond individual-level interactions to wider  
56 organizational processes (Fletcher & Wagstaff, 2009). While acknowledging that there is a  
57 myriad of factors that directly and indirectly influence performers in elite sport,  
58 organizational processes have emerged as a salient area of focus for sport psychologists due  
59 to the potential of these processes to influence the behaviors and attitudes of individuals and  
60 the wider performance team (Fletcher & Arnold, 2015). Consequently, there is a small but  
61 growing body of research examining organizational processes within elite sport (Wagstaff &  
62 Lerner, 2015).

63 One such organizational process is performance management which can be defined as  
64 “a continuing process of identifying, measuring, and developing the performance of  
65 individuals and teams and aligning performance with the strategic goals of the organization”  
66 (Aguinis, 2013 p.2). Initially, performance management research focused on the individual  
67 employee, with researchers and practitioners first concerned with how best to accurately  
68 measure the performance of individuals (i.e., performance appraisal), before shifting to focus  
69 upon how individual performance could be improved (performance management) (DeNisi &  
70 Murphy, 2017). For example, Landy, Barnes, and Murphy (1978) examined employee  
71 reactions to performance evaluation whereas, Pritchard, Harrell, Diaz Granados, and Guzman  
72 (2008) highlighted how a performance management system that combines feedback, goal  
73 setting, and incentives can improve employee performance.

74 More recently, studies have begun to look beyond the individual employee and to  
75 examine performance management at the operational and strategic level of organizations

76 (Brudan, 2010). Typically, operational performance management is focused on the  
77 achievement of group objectives, or how a department is functioning, and involves using  
78 performance indicators to guide management or human resource decisions (e.g. staffing, level  
79 of supervision), which may result in improvements to efficiency or effectiveness (Brudan,  
80 2010; Pritchard, et al., 2008). Strategic performance management can be defined as a process  
81 that steers an organization through development of their vision, strategy, and objectives,  
82 making these measurable in order to evaluate performance and inform planning (Brudan,  
83 2010; DeNisi & Murphy, 2017). Performance management now needs to be considered as an  
84 approach integrated across individual, operational, and strategic levels in order to have a  
85 meaningful effect on the organization (DeNisi & Murphy, 2017). However, there is a lack of  
86 research exploring the interaction of these levels and what combination of performance  
87 management practices are used. Furthermore, how these practices influence organizational  
88 performance will likely depend on additional contextual factors such as the culture of the  
89 organization and the leadership function.

90       Organizational culture can be viewed as the basic assumptions and values that guide  
91 life in organizations and is recognized as a key component that can facilitate high  
92 performance in business (Balthazard, Cooke, & Potter, 2006) and sport environments  
93 (Maitland, Hills & Rhind, 2015). Indeed, Hartnell, Ou, and Kinicki (2011) recently used the  
94 competing values framework (CVF) as a lens through which to view the positive relationship  
95 between culture and organizational performance. Briefly, the CVF generates four cultural  
96 types which are based on a distinct set of competing values. The findings highlighted how  
97 organizations scoring higher on certain cultural types were more successful across three  
98 organizational effectiveness criteria (i.e., financial performance, operational performance,  
99 and employee attitudes). Indeed, the CVF has been used in an elite sport context to explain  
100 the link between culture and performance (Jones, Gittins, & Hardy, 2009). Thus, it seems

101 important that selected performance management practices should align with the desired  
102 cultural type of the organization and it is through these interactions that improved  
103 organization-level performance is most likely to happen. Leadership is also an important  
104 contextual factor guiding performance management processes. To elaborate, effective  
105 performance management processes will depend on the ability of the leader to disseminate an  
106 organization's vision, clarify expectations, coordinate teams, motivate followers, and  
107 consistently recognize good performance behaviors (Reilly & Aronson, 2009). Therefore, it is  
108 vital to consider how leadership behaviors may co-occur with organizational processes, such  
109 as performance management.

110 Performance management has emerged as an area of significant interest within elite  
111 sport due to its potential for influencing the behaviors and attitudes of personnel working in  
112 the "twilight zone" (i.e. the layer that exists between the individual and governance levels of  
113 sporting organizations) (Fletcher & Arnold, 2015; Fletcher & Wagstaff, 2009). Currently  
114 there are a limited number of studies examining performance management in elite sport.  
115 However, the process of assessing and managing people's performance is not restricted to the  
116 business or sport domains and psychological researchers have been encouraged to examine  
117 concepts in different applied contexts (Jones, 2002). Indeed, performance management has  
118 been identified as a salient process within military, healthcare, and fire and rescue settings  
119 (e.g. Hedge, Borman, Bruskiwicz, & Bourne, 2002; Murphy & Greenhalgh, 2013). For  
120 example, Hedge et al. (2002), designed a performance management strategy to develop the  
121 knowledge, skills, and abilities required by sailors to drive organizational success in the US  
122 Navy. Interestingly, researchers have not yet considered how performance management is  
123 conceptualized and operationalized across different domains and if there are similarities and  
124 differences in their processes. This is somewhat surprising due to the increasing body of  
125 literature highlighting potential links between elite sport and different performance domains,

126 such as surgery, military, and the performing arts (e.g. Cotterill, 2014; Hays, 2002). For  
127 example, there are similarities between sport, business, performing arts, and military in how  
128 coaching methodologies can be used to enhance people's performance (e.g. Gould & Wright,  
129 2012). Further to this, Bryan, O'Shea, and McIntyre (2017) recently conducted a systematic  
130 review on the concept of resilience across competitive sport and business workplace settings,  
131 as both contexts require similar achievement and goal-oriented behavior.

132         Acknowledging the contextual differences between elite sport and other performance-  
133 focused professions, it is important to identify the similarities in the psychosocial challenges  
134 where performance management can make an impact (Cotterill, 2014; Fletcher & Wagstaff,  
135 2009). In a business context, the pressure on individuals, teams or organizations to perform  
136 tends to be dispersed over time; however, similar to elite sport, it is crucial to understand the  
137 demands placed on people to perform (i.e. requirements of the job), and identify  
138 organizational processes that will maximize support and minimize constraints of their  
139 performance (Jones, 2002). In relation to the performing arts, (e.g., dance, music), like elite  
140 sport, the individuals and groups involved require management and support to execute their  
141 skills for an audience (Hays, 2002). Further commonalities exist between elite sport and  
142 domains centered on people in high-risk professions (Hays, 2009). These domains can be  
143 identified as high-stress, high-demand performance settings, such as surgical or emergency  
144 medicine, fire and rescue, aviation, law enforcement, and military operations, where the  
145 people working in them require processes to manage the potential risk, harm, or error  
146 involved (Salas, Driskell & Hughes, 2013). While these performance domains are all  
147 seemingly diverse in organizational structure and have specific nuances, they all require core  
148 performance management processes or employ components of performance management to  
149 optimize the behavior of people tasked with delivering performance (Hays, 2009).

150 In summary, the study of performance management within elite sport is in its infancy,  
151 and there is a lack of understanding as to the mechanisms that might underpin the  
152 performance management process and the contextual variables that influence it. Furthermore,  
153 there is uncertainty as to the similarities or differences in performance management processes  
154 across other performance-focused domains and ultimately their relevance to elite sport.  
155 Consequently, there is a need for a systematic review of the performance management  
156 literature to provide a clearer understanding across domains. While several reviews on  
157 performance management have been already conducted within the wider academic literature,  
158 they are somewhat limited in their contribution due to conceptual and methodological issues.  
159 Firstly, these reviews have tended to solely focus on narrative or conceptual information on  
160 this topic (e.g., Brudan, 2010), leading to calls for a focus on empirical research (DeNisi &  
161 Murphy, 2017). In addition, a rigorous systematic procedure in appraising the literature has  
162 not been applied, or at least reported (e.g., DeNisi & Murphy, 2017). Therefore, considering  
163 the emerging importance of performance management in elite sport, the potential for  
164 knowledge transfer across performance-focused domains, and the limited methodological  
165 rigour and absence of empirical research in previous reviews, the purpose of this study is to  
166 conduct a systematic review of performance management studies within elite sport, business,  
167 performing arts, and high-risk professions. The review aims to synthesize empirical evidence  
168 from across these domains, identify the similarities and differences in key components of the  
169 performance management process, and highlight implications for practitioners in elite sport.

## 170 **Method**

171 This systematic review followed the Preferred Reporting Items for Systematic  
172 Reviews and Meta-Analysis (PRISMA) guidelines to ensure an appropriate standard of  
173 reporting (Moher, Liberati, Tetzlaff, & Altman, 2009).

### 174 **Performance-focused Domain Definitions**

175 For the purposes of the review, elite sport was defined as the highest level of  
176 international or professional competitive sport where the athletes feature in major events and  
177 championships (e.g., Olympic Games, English Premier League) thus demonstrating their  
178 expertise (Swann, Moran, & Piggott, 2015). In order to examine leading business  
179 organizations, it was logical to select studies that sample high-performing firms operating in  
180 competitive markets in order to further understand how performance management contributes  
181 to achieving high levels of performance (Truss, 2001). In this review high-performing firms  
182 were defined as organizations demonstrating superior performance and reputation as an  
183 employer as identified by Fortune 500 listings<sup>1</sup> or equivalent national rankings. In relation to  
184 the performing arts, on-stage professional dance, music, or similar disciplines were identified,  
185 as these professions are strongly achievement-oriented and place emphasis on flawless  
186 technique and performance (Hays, 2002). Finally, high-risk occupations were defined as  
187 professions consisting of goal-oriented action teams working in high-stress, high-demand  
188 performance settings. Examples of such settings include surgical medicine, fire and rescue,  
189 military, aviation, and law enforcement, where there is considerable potential for risk, harm,  
190 or error for the people working within them (Salas, Driskell, & Hughes, 2013).

### 191 Sources

192 A systematic search of the literature was conducted using the following relevant  
193 electronic databases; Web of Science, Sport Discus (EBSCO), Business Source Complete  
194 (EBSCO), Wiley, JStor, SAGE Journals, Taylor and Francis, PsycINFO (ProQuest), Science  
195 Direct, Emerald Insight, and PubMed. The search strategy followed by Swann, et al. (2015)  
196 was used as a guide within each database (see supplementary file 3). Additionally, the search

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<sup>1</sup> Fortune listings are annual rankings of the world's top companies across various industries published by Fortune magazine. The rankings typically include the best companies to work for, most admired companies, fastest growing start-ups, and organizations with the greatest leaders.

197 strategy included citation pearl growing which involved searching reference lists of the  
198 included full-text documents, to identify further articles not captured in the original search.

### 199 **Eligibility Criteria**

200 The review employed the following inclusion criteria: studies were required to (1)  
201 focus on one of the specified performance-focused domains, (2) examine a performance  
202 management process at individual, operational, or strategic level, (3) contain original  
203 empirical evidence, and (4) be published in an English language, peer-reviewed article. The  
204 performance management process should focus on a set of activities that involves aligning  
205 and developing people, gathering performance feedback, and providing supervision in line  
206 with organizational goals (DeNisi & Murphy, 2017). Studies clearly focused solely on the  
207 measurement of job performance (e.g. appraisals) without activities aimed at developing or  
208 improving performance (e.g. rewards, training) were deemed outside the scope of the review  
209 and excluded. In addition, studies that only focused on micro-level (e.g., coach-athlete dyad  
210 or mental skills training) or macro-level (e.g., governance related) processes were also  
211 deemed outside the aims of the review and excluded. Studies that included leadership or  
212 culture as part of a process aimed at managing group performance were included if the study  
213 satisfied the other eligibility criteria (e.g., Rowold, 2011). However, studies focused only on  
214 leader performance or culture diagnosis without a performance management component were  
215 excluded.

### 216 **Procedure**

#### 217 **Screening process.**

218 *Stage one – preliminary screening.* After identifying and excluding duplicate  
219 references, the first author screened studies based on journal title only to exclude references  
220 that could be easily identified as book chapters, book reviews, conference proceedings,  
221 magazine articles, and editorials. In order to efficiently screen the high number of remaining

222 search results, the first author assessed the studies by article title only (Mateen, Oh, Tergas,  
223 Bhayani, & Kamdar, 2013) in order to identify and exclude titles that did not contain any  
224 reference explicitly, or implicitly, to performance management (see Figure 1).

225 ***Stage two – title and abstract screening.*** Initially, a pilot screening process was  
226 undertaken by the first and last author with a selection of articles (n = 20), to assess each  
227 reviewer's interpretation of the eligibility criteria. No issues were reported in the  
228 interpretations of the criteria. Next, the same two authors screened all remaining articles by  
229 title and abstract using the eligibility criteria (see Figure 1). Any disagreements were  
230 discussed and resolved by consensus. If consensus could not be achieved, the third author  
231 independently screened the study in question and the decision of the majority was taken.

232 ***Stage three – full text screening.*** The final stage involved screening all remaining  
233 articles by full text for eligibility criteria. Two authors completed the screening and selection  
234 separately (see Figure 1). Any disagreements not resolved through discussion were  
235 independently screened and decided by the third author.

### 236 **Quality Assessment.**

237 Due to a number of heterogeneous study designs included, a quality assessment was  
238 undertaken using the Mixed Method Appraisal Tool (MMAT) (Pluye et al., 2011). The  
239 MMAT is intended as a checklist for appraising the methodological quality of studies  
240 included in a systematic review containing both qualitative and quantitative studies. While no  
241 studies were excluded based on the quality assessment, the quality scores were reported in  
242 order for readers to contrast the quality of the studies and consider their relative contributions  
243 to the final themes and practical implications (Thomas & Harden, 2008).

### 244 **Data Collection.**

245 Data from included studies was recorded in a data extraction form (see supplementary  
246 file 2). The data extracted consisted of factors related to the performance management  
247 processes identified in each study.

#### 248 **Synthesis of Results.**

249 Thematic synthesis was specifically chosen as it offers a method of integrating and  
250 structuring diverse types of evidence (e.g., qualitative and quantitative) by identifying  
251 prominent themes in the studies. The three-stage thematic synthesis process, as outlined by  
252 Thomas and Harden (2008), was primarily conducted by the first and last author who met  
253 frequently to discuss and resolve any issues. The other authors acted as a review panel to  
254 critique and challenge decisions made throughout the process.

255 **Stage one.** Full-text hard copies of each study were read and re-read in order to  
256 ascertain the key components of performance management in each study. In correlational  
257 studies, the variables that correlated with performance outcomes were identified as key  
258 factors and extracted as reported in the study findings (Park, Lavalley, & Todd, 2013). In the  
259 case of qualitative or other methodological studies, key factors or concepts associated with  
260 performance, as interpreted by the original authors, were extracted as raw data to ensure the  
261 analysis remained close to the studies' original findings (Park, Lavalley, & Todd, 2013)

262 **Stage two.** The next stage of synthesis involved grouping factors with similar meanings  
263 and constructing 'descriptive themes' (Thomas & Harden, 2008). First, the factors from elite  
264 sport studies were organized separately to generate relevant descriptive themes. Following  
265 this, factors from other performance-focused domains were categorized into descriptive  
266 themes to facilitate critical analysis against the descriptive themes from elite sport.

267 **Stage three.** The third stage involved presenting and discussing the data-driven  
268 descriptive themes under higher-level 'analytical themes' based on current theoretical

269 conceptualizations of performance management (e.g., individual-level, operational-level,  
270 strategic-level, key contextual influences).

## 271 **Results**

### 272 **Search Strategy**

273 Following the search strategy and document screening process, 20 studies were  
274 identified as eligible for inclusion in the review. Seven studies were focused on elite sport,  
275 while 13 studies were included from other performance-focused domains (see supplementary  
276 file 4 for summary of included studies). While the search strategy was broad, returning  
277 12,848 results, the eligibility criteria, including the requirement for original empirical  
278 evidence, were applied rigorously as evidenced by the reduction to 20 studies. The PRISMA  
279 flow diagram in Figure 1 illustrates the results at each stage of the screening process (Moher,  
280 et al., 2009).

281 [INSERT FIGURE 1 HERE]

### 282 **Research Design, Sample Characteristics and Quality Assessment**

283 A detailed table was created classifying the research design, sample characteristics and  
284 quality assessment scores (see Table 1). Samples were distinguished by size, gender, location  
285 at which study was conducted, and type of performance domain.

286 [INSERT TABLE 1 HERE]

### 287 **Similarities and Differences in Performance Management Processes across Domains**

288 The results were organized under the four analytical themes: strategic performance  
289 management, operational performance management, individual performance management,  
290 and leadership of the performance team (see Table 2). To identify key similarities and  
291 differences in each section, the descriptive themes in elite sport will be discussed first,  
292 followed by descriptive themes identified in other domains.

### 293 **Strategic Performance Management**

294 The review found that at a strategic level, performance management within elite sport  
295 comprised of 15 factors (see supplementary file 2 for details on extracted factors) across two  
296 descriptive themes: establishing the vision and working with organizational stakeholders.  
297 Establishing the vision referred to how general managers of professional sport organizations  
298 or Olympic sport performance directors developed and communicated their vision of success.  
299 Working with organizational stakeholders involved professional sport team managers  
300 interacting with important groups (e.g. board, media) in order to develop strategically  
301 important relationships that will support the vision and future plans.

302 In relation to other performance-focused domains, the review identified only two  
303 factors and one descriptive theme at a strategic level: alignment with organizational  
304 objectives. This descriptive theme originated from a study on world-leading business firms  
305 and referred to managers viewing performance management as a strategic tool that can help  
306 achieve organizational objectives. Specifically, this involved clearly aligning operational  
307 measures with the strategic objectives and including senior managers in the design and  
308 implementation of the performance management process.

309 A notable finding is the lack of evidence across elite sport and other performance-  
310 focused domains for strategic performance management. However, a key difference between  
311 business and elite sport domains at a strategic level did emerge. Specifically, in a business  
312 context performance management is viewed as organizational tool aimed at supporting the  
313 delivery of strategic objectives, while in elite sport the performance management process  
314 primarily involves the organization or performance department leader developing and  
315 negotiating their vision for success.

316 [INSERT TABLE 2 HERE]

317 **Operational Performance Management**

318 In terms of operational performance management in elite sport, 35 factors were extracted  
319 across five descriptive themes: understanding the context, assessing the performance, internal  
320 processes and procedures, adapting the culture, and debriefing, feedback and learning.  
321 Understanding the context involved management being acutely aware of how evolving  
322 situations inside (e.g. interactions with the board) and outside the organization (e.g. level of  
323 competition) may impact on their operational decisions. Addressing the performance  
324 environment referred to creating optimal conditions for athletes, coaches, staff, and  
325 management by identifying and removing unnecessary interferences. Internal processes and  
326 procedures consisted of implementing systems and structures, the management of policies  
327 and regulations, and performance planning. Adapting the culture involved creating an  
328 inclusive approach and shaping the values, behaviors, and attitudes within the performance  
329 team. In a professional sport context this included identifying social allies and cultural  
330 architects and making decisions clearly in line with the new values. Debriefing, feedback, and  
331 learning in elite sport referred to processes that athletes, coaches, and staff followed to assess  
332 performance and identify areas for improvement.

333 With regard to other performance-focused domains, the review identified 27 factors  
334 across four descriptive themes: addressing the performance environment, internal processes  
335 and procedures, building performance team relationships, and debriefing, feedback and  
336 learning. The factors emerged from nine different studies around high-risk domains such as  
337 emergency and surgical medicine, fire rescue services, and military operations. Addressing  
338 the performance environment referred to analyzing mission complexity in military settings,  
339 structured examinations of medical emergency scenes, and assessing available support and  
340 resources for surgical operating rooms. Internal processes and procedures involved  
341 developing action plans and pre-surgery briefings for surgical teams in order to take a  
342 systematic approach to avoiding error and clearly defining tasks, routines, and schedules for

343 personnel within fire rescue services and military domains. Building performance team  
344 relationships referred to improving social cohesion and the quality of interpersonal  
345 relationships within military and medical surgery settings, and how group cohesiveness  
346 assisted the development high performing groups within fire rescue services. Debriefing,  
347 feedback, and learning included using post-surgery reviews and continuous improvement  
348 processes with surgical operating room staff, and structured feedback processes with flight  
349 crew following military aviation missions.

350         There appears to be strong similarities in operational performance management  
351 between elite sport and certain action teams working in high-risk domains (e.g. medical  
352 surgery team, fire rescue services). In particular, addressing the performance environment  
353 (e.g. minimizing interferences to athlete training, identifying necessary resources and support  
354 for surgical operating rooms), having domain-specific processes and procedures in place, and  
355 using structured debriefing and feedback mechanisms are common performance management  
356 themes. Conversely, understanding the broader organizational context and adapting the  
357 culture was vital within elite sport but was not a prominent feature of performance  
358 management with high-risk professions.

### 359         **Individual Performance Management**

360 Moving to individual performance management in elite sport, the review identified 11 factors  
361 across two descriptive themes: evaluating the performance of people and enhancing the  
362 capability and capacity of people. Evaluating the performance of people referred to coaches  
363 and management using appropriate information (e.g. results, training data, athlete feedback)  
364 to assess athlete performance but also the effectiveness of role delivery within the  
365 performance department. Enhancing the capability and capacity of people included general  
366 managers of professional sports teams expressing an interest in the growth of their staff (e.g.

367 developing new mindsets in their role, promotions to new positions) and national sport  
368 organizations providing development opportunities for their Olympic performance staff.

369 In terms of other performance-focused domains, 15 factors emerged across two  
370 descriptive themes: evaluating the performance of people and enhancing the capability and  
371 capacity of people. The factors were extracted from seven studies on performing arts,  
372 business, military, fire rescue, and surgical medicine. Evaluating the performance of people  
373 referred to linking employee performance appraisal to decisions on rewards or contract  
374 terminations within leading companies and identifying measures of role effectiveness within  
375 medical surgery teams. Enhancing the capability and capacity of people included improving  
376 crisis situation and teamwork skills with surgical staff, autonomy-supportive strategies with  
377 musicians in classical orchestras, and using structured HR practices in business for acquiring,  
378 developing, and retaining employees.

379 At an individual level, although the descriptive themes across elite sport and the other  
380 performance-focused domains were labelled the same, the factors extracted from the studies  
381 across these domains were different. To elaborate, the practices utilized to develop personnel  
382 within business and high-risk professions appear to be more structured and professionalized  
383 compared to elite sport. Furthermore, the measurement and appraisal of role effectiveness  
384 appears to be more developed within business and medical surgery domains compared to elite  
385 sport which focused on athlete outcomes to evaluate staff performance.

### 386 **Leadership of the performance team**

387 The review found that leadership was an important contextual variable within elite sport that  
388 has significant influence at all levels of the performance management process. Leadership of  
389 the performance team consisted of 10 factors across three descriptive themes:

390 transformational leadership, transactional leadership, and other leadership approaches.

391 Transformational leadership primarily referred to examples of individual consideration with

392 athletes (e.g. understanding and supporting athlete and staff needs). Transactional leadership  
393 involved managers' use of contingent reward (e.g. positive reinforcement in return for  
394 enhanced performance) and active management-by-exception with athletes and staff (e.g.  
395 continually monitoring and managing interactions). For other leadership approaches there  
396 was only one factor which suggested that dark leadership traits (e.g. Machiavellianism), may  
397 be beneficial for manager's delivering their vision to key stakeholders (e.g. board, coaches).

398 Leadership of the performance team also emerged as an analytical theme in other  
399 performance-focused domains and consisted of 13 factors across three descriptive themes:  
400 transformational leadership, transactional leadership, and other leadership approaches. The  
401 factors emerged from studies on fire rescue, emergency medicine, and performing arts  
402 domains. Transformational leadership involved behaviors such as inspirational motivation,  
403 individual consideration, and high performance expectations which were used by fire rescue  
404 team managers to enhance employee self-efficacy and cohesiveness and by orchestra  
405 conductors to communicate performance demands to musicians. Transactional leadership  
406 referred to contingent reward (e.g. praise in return for enhanced performance) and active  
407 management-by-exception in relation to orchestra conductors monitoring musician  
408 performance. Other leadership approaches included senior medical professionals using  
409 precise instructions and feedback with team members in medical emergency situations and  
410 how team member leadership emerges within fire rescue services in the absence of a formal  
411 leadership figure.

412 While the evidence suggests that similar transactional leadership behaviors may be  
413 important for maintaining the performance of athletes in elite sport and musicians in classical  
414 orchestras, other leadership approaches appear to be strongly situation and context-  
415 dependent. For example, different types of leadership may be effective for senior medical

416 professionals managing the performance of emergency teams (e.g. directive leadership) and  
417 Olympic sport performance directors implementing their vision (e.g. dark leadership).

## 418 **Discussion**

419 The purpose of this review was to synthesis the evidence on performance management  
420 in elite sport and across other performance-focused domains. Following a comprehensive and  
421 rigorous assessment of the empirical literature, the similarities and differences between  
422 performance management processes in elite sport and other performance-focused domains  
423 were examined.

### 424 **Strategic Performance Management**

425 The findings indicated different approaches to performance management at a strategic  
426 level between elite sport and business domains. For example, the results suggested that  
427 strategic performance management with Olympic sport programmes or professional sports  
428 teams is primarily focused on a social (and politically charged) process of negotiating and  
429 implementing the performance leader's vision (e.g. Collins & Cruickshank, 2012). Whereas  
430 in world-leading firms, strategic performance management is most effective when it is  
431 viewed as an integrated organizational process that incorporates tactical goals, and senior  
432 staff are included in the design, implementation, and monitoring of strategy (e.g. Biron,  
433 2012). Strategic roles in elite sport (e.g. performance directors) may benefit from considering  
434 how their vision can be more effectively integrated within the organization. Signaling theory  
435 (Spence, 1973) may be useful for understanding how the performance director's vision can be  
436 translated into meaningful practice and communicated to promote positive staff and  
437 organizational outcomes. Signaling theory suggests that people need tangible information to  
438 help them understand what the organization really values and what the organization expects  
439 of them (Spence, 1973). To elaborate, observable strategic actions within elite sport (e.g.  
440 explicit communication of values and organizational objectives, development of strategic

441 plans, publication of aligned policies) are likely to be interpreted as signals which can  
442 influence the perceptions and behaviors of stakeholders (e.g. staff, clubs, funding agencies).

### 443 **Operational Performance Management**

444 There are commonalities in the performance management processes used within elite sport  
445 and with action teams working in high-risk domains (e.g. fire rescue services, medical  
446 surgery, military) at an operational level. For example, addressing the performance  
447 environment within medical surgery domains involved assessing if the necessary support and  
448 resources were in place for efficient operating room performance (Forse, Bramble, &  
449 McQuillan, 2011). While in Olympic sport, minimizing unnecessary distractions and  
450 interferences in the performance environment is important to ensure athletes and staff  
451 function effectively (Arnold, Fletcher, & Molyneux, 2012). In terms of differences, the  
452 results suggest that understanding the context and adapting the culture are unique components  
453 of performance management within elite sport and can have a significant influence at an  
454 operational level. Indeed, developing context-specific expertise is key for managers to  
455 understand and make decisions while facing cultural challenges within the sport (Collins &  
456 Cruickshank, 2012). Moreover, the CVF may be useful for practitioners to diagnose the  
457 existing organizational culture and understand the type of culture they might adapt to (e.g.  
458 achievement, wellbeing, innovation, internal processes) (Jones et al., 2009). Once this is  
459 understood, cultural change may be facilitated via performance management practices in  
460 order to ultimately influence organizational effectiveness. For example, an Olympic sport  
461 programme with excessive focus on a culture of achievement may benefit from prioritizing  
462 performance management practices that value and promote a sense of wellbeing among  
463 personnel (e.g. enhancing interpersonal relationships) (Wagstaff, Fletcher, & Hanton, 2012).

### 464 **Individual Performance Management**

465 The findings suggest that, at an individual level, there are differences in performance  
466 management processes between elite sport and other performance-focused domains, such as  
467 high-performing business and medical surgery. Although each domain aims to evaluate and  
468 enhance the performance of its people, the methods for training and development of staff  
469 within business and high-risk professions appears to be significantly more advanced  
470 compared to elite sport. For example, evidence from business suggests that organizations that  
471 use a system of high-commitment HR practices with staff, such as extensive training and  
472 development practices and routine performance feedback from multiple sources, can  
473 demonstrate higher levels of business performance (Armstrong et al., 2010). Despite evidence  
474 supporting the use of feedback mechanisms for staff and encouraging personal growth (e.g.  
475 Fletcher & Arnold, 2011), the review indicates that the professional development of coaches,  
476 support staff, and management in elite sport organizations is heavily focused towards  
477 informal or on-the-job learning. Practitioners may draw on principles from organizational  
478 psychology to inform the development of professional development procedures. For example,  
479 role re-design or job crafting theory (e.g. van Wingerden, Bakker, & Derks, 2017) may help  
480 organizations achieve a better understanding of demands faced by coaches, staff, and  
481 management, and the support they require to achieve professional growth within elite sport.

#### 482 **Leadership of the performance team**

483 While performance management is conceptualized as a distinct organizational process,  
484 leadership of the performance team emerged in the review as a significant element across  
485 various domains. In complex performance-focused settings, such as elite sport, performing  
486 arts, and high-risk professions, leadership behaviors provide much needed social exchanges  
487 that shape the performance management process (Reilly & Aronson, 2009). While similar  
488 transactional leadership behaviors were evident in elite sport and performing arts domains,  
489 overall the leadership behaviors identified appear to be strongly context and situation

490 dependent. For example, dark leadership traits may be important for facilitating the vision of  
491 newly appointed Olympic sport performance director's (Collins & Cruickshank, 2012), while  
492 directive leadership appears vital for senior medical professionals coordinating emergency  
493 response teams (Tschan et al., 2006). Aligning with the proposed layers of performance  
494 management, a multi-level approach to leadership (Peachey, et al., 2015) may be a useful  
495 model to further understand the relationship between leadership and performance  
496 management in elite sport. This model highlights the unique factors in sport that impact on  
497 the leader's capacity to guide activities at the organizational level (e.g. strategic performance  
498 management within politicized governance structures), at the group/team level (e.g.  
499 operational performance management within the performance department), at the dyad level  
500 (e.g. individual performance management with coaches), and at the personal level (e.g.  
501 influence of lived experience, adoption of darker traits). Recognizing these levels of  
502 leadership may help explain the dynamic interaction between performance management  
503 activities and the performance leader's role within elite sport.

#### 504 **Practical implications**

505 The findings in this review should be targeted at sport psychologists and managers working  
506 within the performance departments of sport organizations (e.g. Olympic sport programmes,  
507 professional teams). By considering the components of performance management at  
508 individual, operational, and strategic levels and their interaction with contextual variables  
509 such as leadership and organizational culture, practitioners will be better positioned to  
510 develop, support, and implement performance management processes within elite sport. At  
511 the strategic level, performance leaders should negotiate with key institutional stakeholders  
512 (e.g. CEO, board members) to build strategic consensus and develop appropriate signals (e.g.  
513 vision, strategic goals) that will explicitly communicate a shared understanding of  
514 organizational priorities. It is imperative that practitioners subsequently translate these

515 priorities into meaningful practice for individual roles and groups. At an operational level,  
516 debriefing and feedback processes should examine if team members demonstrated  
517 performance behaviors that align with the desired culture. For example, if the intention is to  
518 adapt towards a culture that emphasizes well-being, post-competition debriefs may include  
519 analysis of specific teamwork behaviors or how the team handled stressful situations. At the  
520 individual level, it is important that coaches, staff, and management have clarity on where  
521 they invest time within their roles. By reflecting on this, personnel can try to ensure that they  
522 focus on areas that will maximize impact on athlete performance. This will also enable them  
523 to identify gaps or opportunities for professional development. Moreover, this process will  
524 ensure that their role delivery is evaluated based on proximal outcomes (e.g. coach's strategy  
525 for competition preparation) rather than distal ones such as athlete performance. Overall,  
526 these findings will help sport psychologists and performance managers further understand  
527 specifically where support may be required in the performance management process.

### 528 **Future research**

529 The limited research to date on performance management within elite sport provides  
530 significant opportunities for theoretical, conceptual, and methodological advances in future  
531 studies. In terms of theoretical implications, socio-ecological theory (Bronfenbrenner, 1979)  
532 may be a useful perspective for examining how context-related features across multiple levels  
533 interact with performance management processes within the elite sport environment. To  
534 investigate this interaction, qualitative studies are required to explore performance  
535 management as an integrated process across strategic, operational, and individual layers in  
536 elite sport. Future research should also aim to address the limited experimental research on  
537 management-led processes in elite sport by conducting and evaluating theory-based  
538 interventions (Wagstaff, Hanton, & Fletcher, 2013). After engaging with and assessing the  
539 needs of organizations, researchers may consider the theoretical frameworks referenced in the

540 discussion section (e.g. job crafting theory, signaling theory) to inform bespoke interventions  
541 and further understand how performance management can support organizational functioning  
542 within elite sport.

### 543 **Strengths and limitations**

544 The review applied considerable rigor to integrating and reporting such diverse data. This is a  
545 significant strength of the study considering the apparent difficulty in synthesizing data in  
546 reviews of mixed studies. A potential limitation was that the methodological quality of three  
547 studies, based on criteria in the MMAT, is questionable and should be acknowledged.  
548 Moreover, despite conducting a comprehensive search of published peer-reviewed literature,  
549 the review did not include non-English language studies, grey literature, or unpublished  
550 research. This was decided based on the known difficulties in identifying and including  
551 relevant non-English studies and grey literature, and issues in assessing their methodological  
552 quality.

553 In conclusion, this systematic review is the first study to appraise studies on  
554 management across multiple domains with a view to informing elite sport research and  
555 practice. The findings provide an important step in understanding performance management  
556 processes across elite sport and similar performance-focused domains. By synthesizing the  
557 data from the selected studies, the findings highlight how performance management  
558 processes occur at individual, operational, and strategic levels of an organization. Further  
559 exploration of these processes will inform practitioners on how performance management can  
560 be packaged and introduced within elite sport to positively impact on organizational  
561 effectiveness.

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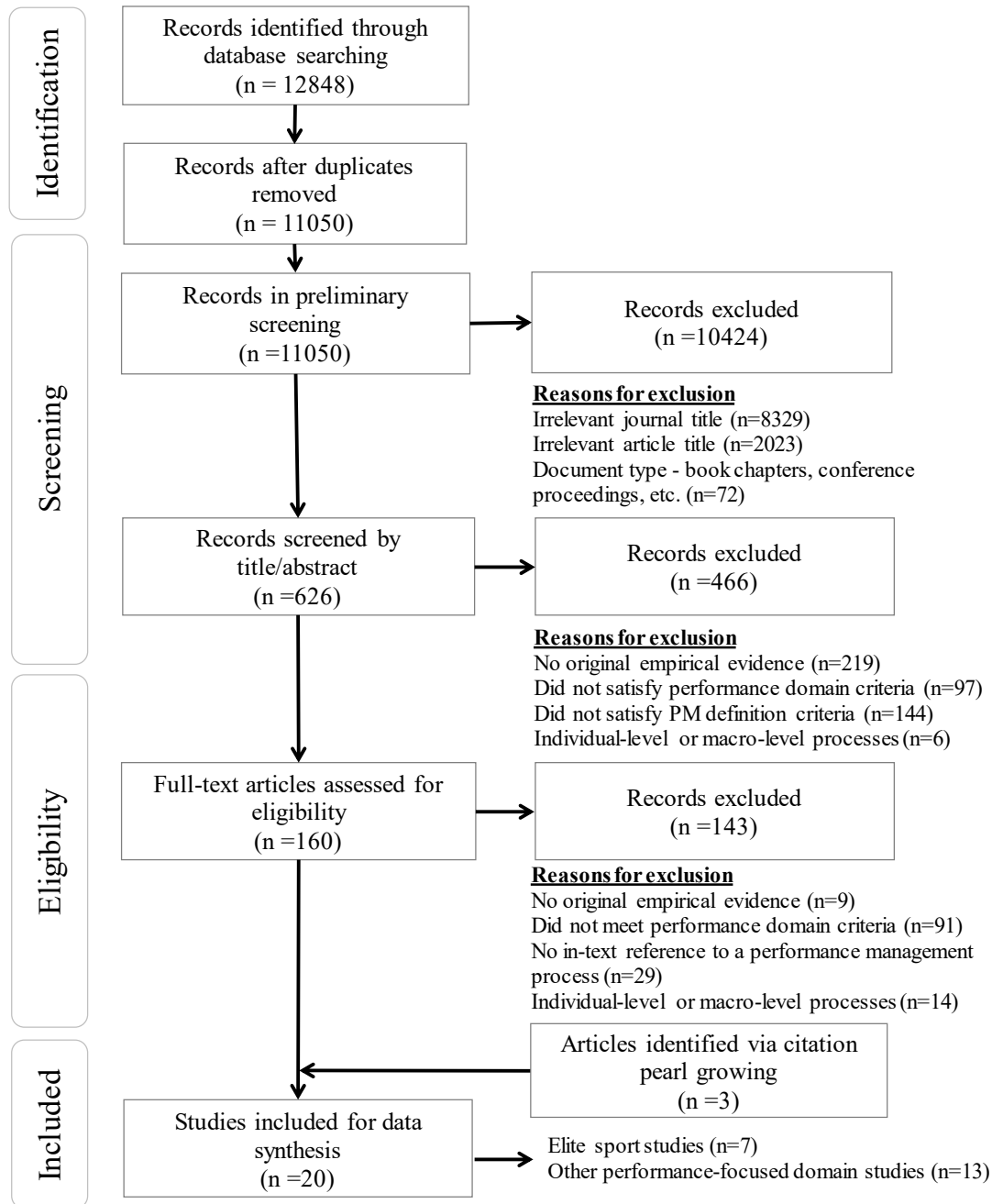


Figure 1. PRISMA flow diagram for document search and screening process

Table 1  
*Research Designs and Sample Characteristics*

Study characteristics	Reference Number	Sample	<i>k</i>
<b>Design</b>			
Quantitative descriptive (correlational)	8, 13, 14, 15, 16, 18	6	
Quantitative non-randomised (cohort study)	12, 17, 20	3	
Quantitative randomised control (trial)	11	1	
Qualitative (phenomenology)	1, 4, 6, 7	4	3
Qualitative (description)	9	1	
Qualitative (narrative)	2	1	
Qualitative (case study or case studies)	10, 5	2	
Qualitative (grounded theory)	3	1	
Action research	19	1	
<b>Data collection</b>			
Questionnaire(s)	8, 12, 13, 14, 15, 16	6	
Interview	1, 2, 3, 4, 5, 7, 9, 10	10	9
Various measures of task and workload performance	17	1	
Video recording and time-based coding	18	1	
Observation protocol	20	1	
Questionnaire and blinded observation assessment	11	1	
<b>Performance domain</b>			
Business	8, 10, 14	3	
Performing arts	9	1	
Elite sport	1, 2, 3, 4, 5, 6, 7	7	6
High-risk occupations:			
<i>Military setting</i>	13, 17, 19	3	
<i>Fire &amp; rescue</i>	15, 16	2	
<i>Surgical/Emergency medicine</i>	11, 12, 18, 20	4	
<b>Sample Size</b>			
1-10	2, 3, 6, 7	4	
11-50	1, 4, 5, 9, 11, 17, 19	7	6
51-100	14, 18	2	
101-200	8	1	
201-300	10, 15, 16	3	
Over 300	13, 20	2	
Not identified	12	1	

Table 1 (continued)  
*Research Designs and Sample Characteristics*

Study characteristics	Reference Number	Sample	<i>k</i>
<b>Gender</b>			
Male-only	2, 3, 6, 17	4	
Female-only		0	
Combined	1, 4, 5, 7, 11, 13, 15, 16, 18	9	8
Not identified	8, 9, 10, 12, 14, 19, 20	7	
<b>Location</b>			
North America	6, 11, 12, 13, 14, 15, 17	7	
Europe	1, 2, 3, 4, 5, 7, 8, 16, 18	9	8
Other nations	10 (various), 19, 20 (Israel)	3	
Not identified	9	1	
<b>MMAT Quality Assessment</b>			
High quality (100%)	1, 3, 4, 10, 15, 16	6	
Good quality (75%)	5, 6, 7, 8, 11, 13, 18	8	
Moderate quality (50%)	2, 17	2	
Low quality (0-25%)	9, 12, 14	3	
N/A (could not be assessed with tool)	19	1	
Inter-rater reliability (Cohen's Kappa value)	0.85		

Note: *k* = number of sample populations

Note: Same samples (11/1, 11/2)

References: 1 = Arnold, Fletcher, & Molyneux (2012), 2 = Collins & Cruickshank (2012), 3 = Cruickshank, Collins, & Minten (2015), 4 = Fletcher & Arnold (2011), 5 = Fletcher & Streeeter (2016), 6 = Frontiera (2010), 7 = Macquet, Ferrand, & Stanton (2015), 8 = Armstrong, Flood, Guthrie, Liu, MacCurtain & Mkamwa (2010), 9 = Atik (1994), , 10 = Biron, Farndale, & Pauuwe (2012), 11 = Dedy, Bonrath, Ahmed, & Grantcharov (2016), 12 = Forse, Bramble, & McQuillan (2011), 13 = Jordan, Feild, & Armenakis (2002), 14 = Lawler III (2003), 15 = Pillai & Williams (2004), 16 = Rowold (2011), 17 = Sperling & Pritchett (2011), 18 = Tschan, Semmer, Gautschi, Hunziker, Spychiger, & Marsch (2006), 19 = Vashdi, Bamberger, & Erez (2013), 20 = Vashdi, Bamberger, Erez, & Weiss-Meilik (2007)

Table 2

*Thematic Synthesis representing performance management processes in elite sport and across other performance-focused domains*

<b>Analytical themes</b>	<b>Descriptive themes (Elite Sport domains)</b>	<b>No. of factors</b>	<b>No. of studies</b>	<b>Descriptive themes (Other domains)</b>	<b>No. of factors</b>	<b>No. of studies</b>
Strategic Performance Management	Establish the vision	7	5 (1, 2, 4, 5, 6)	Alignment with organizational objectives	2	1 (10)
	Working with organizational stakeholders	8	3 (1, 3, 6)			
Operational Performance Management	Addressing the performance environment	5	3 (1, 5, 6)	Addressing the performance environment	5	3 (12, 17, 18)
	Understanding the context	8	4 (1, 2, 3, 6)	Internal processes & procedures	10	6 (11,12,16,17, 19,20)
	Internal processes & procedures	4	4 (1, 4, 5, 7)	Building performance team relationships	7	4 (12, 13, 15, 19)
	Adapting the culture Debriefing, feedback, & learning	12 6	5 (1, 3, 4, 5, 6) 2 (6, 7)	Debriefing, feedback, & learning	5	3 (12, 19, 20)
Individual Performance Management	Enhancing the capability & capacity of people	7	4 (1, 4, 5, 6)	Enhancing the capability & capacity of people	10	6 (8, 9 ,10, 11, 12, 15)
	Evaluating the performance of people	4	2 (3, 5)	Evaluating the performance of people	6	3 (10, 12, 14)
Leadership of the performance team	Transformational leadership	4	2 (5, 7)	Transformational leadership	5	3 (9, 15, 16)
	Transactional leadership	5	4 (3, 5, 6, 7)	Transactional leadership	3	1 (9)
	Other leadership approaches	1	1 (2)	Other leadership approaches	5	3 (12, 16, 18)