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

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26 Abstract

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

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

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

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

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

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

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

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

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

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

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

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

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

169 **Method**

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

173 **Performance-focused Domain Definitions**

174 For the purposes of the review, elite sport was defined as the highest level of
175 international or professional competitive sport where the athletes feature in major events and
176 championships (e.g., Olympic Games, English Premier League) thus demonstrating their
177 expertise (Swann, Moran, & Piggott, 2015). In order to examine leading business
178 organizations, it was logical to select studies that sample high-performing firms operating in
179 competitive markets in order to further understand how performance management contributes
180 to achieving high levels of performance (Truss, 2001). In this review high-performing firms
181 were defined as organizations demonstrating superior performance and reputation as an
182 employer as identified by Fortune 500 listings¹ or equivalent national rankings. In relation to
183 the performing arts, on-stage professional dance, music, or similar disciplines were identified,
184 as these professions are strongly achievement-oriented and place emphasis on flawless
185 technique and performance (Hays, 2002). Finally, high-risk occupations were defined as
186 professions consisting of goal-oriented action teams working in high-stress, high-demand
187 performance settings. Examples of such settings include surgical medicine, fire and rescue,
188 military, aviation, and law enforcement, where there is considerable potential for risk, harm,
189 or error for the people working within them (Salas, Driskell, & Hughes, 2013).

190 Sources

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

¹ 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.

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

198 **Eligibility Criteria**

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

215 **Procedure**

216 **Screening process.**

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

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

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

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

235 **Quality Assessment.**

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

243 **Data Collection.**

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

247 **Synthesis of Results.**

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

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

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

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

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

270 **Results**

271 **Search Strategy**

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

280 [INSERT FIGURE 1 HERE]

281 **Research Design, Sample Characteristics and Quality Assessment**

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

285 [INSERT TABLE 1 HERE]

286 **Similarities and Differences in Performance Management Processes across Domains**

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

292 **Strategic Performance Management**

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

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

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

315 [INSERT TABLE 2 HERE]

316 **Operational Performance Management**

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

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

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

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

358 **Individual Performance Management**

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

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

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

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

385 **Leadership of the performance team**

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

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

390 Transformational leadership primarily referred to examples of individual consideration with

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

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

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

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

417 **Discussion**

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

423 **Strategic Performance Management**

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

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

442 **Operational Performance Management**

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

463 **Individual Performance Management**

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

481 **Leadership of the performance team**

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

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

503 **Practical implications**

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

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

527 **Future research**

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

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

542 **Strengths and limitations**

543 The review applied considerable rigor to integrating and reporting such diverse data. This is a
544 significant strength of the study considering the apparent difficulty in synthesizing data in
545 reviews of mixed studies. A potential limitation was that the methodological quality of three
546 studies, based on criteria in the MMAT, is questionable and should be acknowledged.

547 Moreover, despite conducting a comprehensive search of published peer-reviewed literature,
548 the review did not include non-English language studies, grey literature, or unpublished
549 research. This was decided based on the known difficulties in identifying and including
550 relevant non-English studies and grey literature, and issues in assessing their methodological
551 quality.

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

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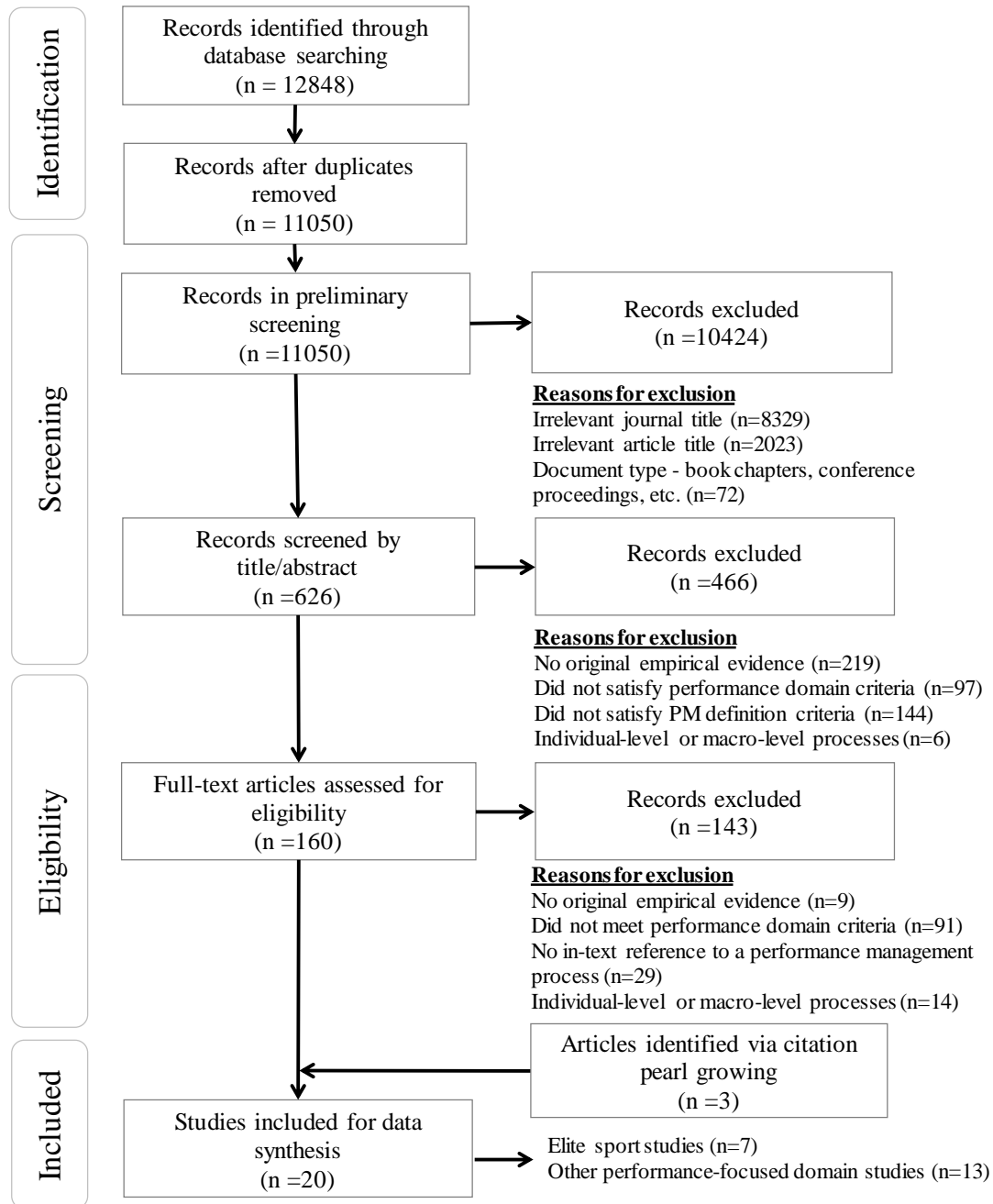


Figure 1. PRISMA flow diagram for document search and screening process

Table 1
Research Designs and Sample Characteristics

Study characteristics	Reference Number	Sample	<i>k</i>
Design			
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	
Data collection			
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	
Performance domain			
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 & rescue</i>	15, 16	2	
<i>Surgical/Emergency medicine</i>	11, 12, 18, 20	4	
Sample Size			
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>
Gender			
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	
Location			
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	
MMAT Quality Assessment			
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 & Streecher (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

Analytical themes	Descriptive themes (Elite Sport domains)	No. of factors	No. of studies	Descriptive themes (Other domains)	No. of factors	No. of studies
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)