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Professional youth football academy injury data: collection procedures, perceived value, and use

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3
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51 **ABSTRACT**

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53 **Purpose:** There is a paucity of descriptive injury data relevant to professional academy
54 football, with little to no evidence reporting how sports science/medicine staff within
55 academies collect and use injury data.

56 **Materials and methods:** An online survey comprising of scaled, rank or open-ended
57 questions relating to the perceptions surrounding injury data collection, its value and use was
58 developed. Forty-seven applied practitioners working for different professional football
59 academies from seven countries completed the survey.

60 **Results:** Injury data collection procedures conducted by appropriately trained medical staff
61 are widespread among football academies. Injury data collection within academies was
62 deemed worthwhile and important by 79% of practitioners, with 88% strongly
63 agreeing/agreeing that it is used to inform injury prevention strategies. Similarly, 79%
64 strongly agreed/agreed that using injury data for academic research is worthwhile; however,
65 lack of time and reluctance from the academy to share its data were cited as barriers. The
66 engagement with and use of injury data by coaching staff appears to be relatively poor, with
67 only 49% of practitioners stating coaches formally review data.

68 **Conclusions:** Injury data are widely collected within academies and practitioners consider
69 this information valuable. However, improving engagement with coaches and using the data
70 for academic research could further improve applied practice via encouraging the
71 implementation of evidence-based practice.

72

73 **Practical implications:** Applied practitioners should consider sharing injury data with both
74 researchers and coaches. In doing so evidence-guided injury prevention interventions may be
75 developed and subsequently applied in the field.

76

77 **Keywords:** Adolescent, epidemiology, prevention, injuries, soccer

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101 **INTRODUCTION**

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103 Reducing the incidence and severity of injury is one of the primary tasks assigned to applied
104 practitioners, such as physiotherapists, medical doctors, strength and conditioning (S&C)
105 coaches and sport scientists working within professional football. The ‘sequence of
106 prevention’ model developed by van Mechelen et al. (1992) in relation to sports injury
107 highlights that the first step in this goal is establishing the extent of the problem (i.e. injury
108 epidemiology). Indeed, a wealth of evidence exists detailing the epidemiology of football-
109 related injury among senior professional players, most notably via the series of Union of
110 European Football Associations (UEFA) elite club injury studies (Ekstrand et al. 2011;
111 Uebliacker et al. 2015; Ekstrand et al. 2016). However, a recent systematic review
112 investigating injury epidemiology within elite youth football identified only six studies
113 meeting the inclusion criteria (injury and exposure data collected prospectively over the
114 course of at least six months among high-level players aged between eight and 19 years of
115 age), with only two of these published in the last 10 years (Pfirschmann et al. 2016). The
116 paucity of descriptive injury data relevant to professional club academy football players is
117 perhaps surprising given the prevalence of such institutions (Richardson et al. 2004).

118

119 Little evidence currently exists reporting how sports science/medicine staff within academies
120 collect and use injury data. Indeed, whether making use of this information is perceived as
121 important to these key stakeholders or not is currently unclear. Yet in order to function as
122 evidence-guided practitioners the collection of injury data within one’s own operating
123 environment is essential. Fuller et al. (2006) have provided guidelines related to injury data
124 collection and reporting. The guidelines are comprehensive and include definitions, severity
125 classifications, logistical protocols and numerous example scenarios. However, there are

126 some methodological issues associated with these guidelines when trying to apply them
127 within a non full-time playing environment such as an academy – namely the lack of daily
128 contact with the players (McCunn et al. 2016). A more holistic understanding of the academy
129 environment and the potential barriers hindering the conduction of scientific research within
130 these institutions is warranted. Such information may help encourage applied practitioners
131 and decision-makers within professional academies alike to address the lack of published
132 scientific research related to high-level youth injury epidemiology/prevention. Indeed, the
133 benefits related to academy injury prevention research extend beyond the scientific literature
134 and may ultimately facilitate improved applied practice.

135

136 Injuries sustained as a youth player can result in long-term health sequelae (e.g. osteoarthritis
137 later in life) (Øiestad et al. 2009). Similarly, injury can result in emotional and psychological
138 trauma in addition to the immediate physical complaint (McArdle, 2010). Furthermore,
139 limiting injury incidence equates to higher player availability and in turn more successful
140 team performance (Hägglund et al. 2013b). Mitigating the risk of injury and hence avoiding
141 these negative health consequences while in turn promoting improved performance should be
142 a priority for applied practitioners working in academies. Collecting epidemiological data
143 allows academies to understand the nature and burden of injuries suffered by their players. In
144 turn, this information can be used to inform prevention strategies aimed directly at addressing
145 the most common and burdening injury types. Therefore, the aim of the present study was to
146 establish: 1) if/how injury data are collected within professional youth football academies, 2)
147 how valuable applied practitioners consider injury data and, 3) if/how the injury data
148 collected are used and applied in the practical setting.

149

150 **MATERIALS & METHODS**

151

152 Following ethical approval from the Human and Health Sciences Ethics Committee at
153 ****blinded for peer review****, 125 practitioners from professional football academies were
154 identified as having roles associated with injury data collection and its application.
155 Practitioners were contacted electronically between January and March 2017. Only one
156 practitioner per football team was contacted to ensure that findings were not influenced by
157 multiple responses from the same team. The survey requested that the individual most
158 informed or primarily responsible for injury data collection within the academy answer the
159 questions. Completed responses were returned by staff from 47 individual academies,
160 representing a 38% response rate. Information regarding practitioners' role and level of
161 competition is provided in Table 1 and Table 2.

162

163 *****Table 1 & 2 near here*****

164

165 Information relating to the nature of the questions was provided to participants before the
166 survey and each practitioner gave consent before study involvement. The survey (Appendix
167 1) was created using an online resource (Bristol Online Surveys, University of Bristol, UK)
168 with an approximate completion time of 10 minutes. Practitioners were asked to disclose the
169 club they were affiliated to, and their position within the club. The survey contained nine
170 main questions with eight sub questions in a scaled, rank or open-ended format. While the
171 consideration of qualitative information (such as that derived from open ended questions) is
172 typically less common than quantitative data within the sport sciences, it allows for a more
173 holistic and nuanced understanding of any given issue, crucially providing real-world context
174 (Harper & McCunn 2017). The unstructured or open-ended component allowed practitioners
175 space to justify their answer to particular scaled questions. The specific wording used within

176 the survey was decided upon by consensus of all the present authors and the development of
177 the questions included two rounds of editing, discussion and amendments. Once a finalised
178 version had been agreed upon two non-native English speakers independently reviewed the
179 survey. This was to ensure it was comprehensible and did not contain any English idioms or
180 wording that may create ambiguity among non-native speakers. Similarly, the survey was
181 also translated into German and independently reviewed by a native German speaker to
182 ensure the nature of the questions remained consistent between both versions. A native
183 German speaker translated surveys completed in German back to English. These translated
184 answers were then reviewed by a native English speaker in conjunction with a native German
185 speaker to ensure clarity of interpretation.

186

187 **Survey Topics**

188

189 *Collection Procedures*

190

191 Practitioners were asked if injury data were collected in any form, with either yes or no as a
192 potential answer. If the practitioner answered yes they were also required to state who
193 primarily records the data, with the following options provided: *medical doctor, qualified*
194 *physiotherapist, qualified physical therapist, S&C coach/sport scientist, university student,*
195 *player (self-recording), coach, or other* (with space to elaborate). Furthermore, practitioners
196 who answered yes were then asked if all physical complaints were documented, or only time-
197 loss injuries.

198

199 Practitioners who answered yes were also asked if a clinical diagnosis was made for each
200 injury case or if the information gathered was limited to reporting of general location and

201 symptoms only. Clinical diagnosis was defined as the use of medical/anatomical
202 terminologies and laboratory/medical testing. If a clinical diagnosis was made the
203 practitioners were asked to specify if a medical doctor/qualified physiotherapist, or another
204 member of personnel made this diagnosis.

205

206 If a practitioner answered no to the question regarding if injury data was collected in any
207 form, they were automatically directed to a separate series of questions and were asked to
208 respond to the following statements: ‘Collecting player injury data within the academy is
209 important’ and ‘The player injury data collected within the academy is used to inform our
210 injury prevention strategies and guide financial investment within the medical/strength &
211 conditioning/sport science department(s)’ by using a 5-point Likert-type scale with the
212 following options given: *strongly agree, agree, neither agree or disagree, disagree, strongly*
213 *disagree*. Practitioners also were asked to justify their view to the first statement in an open-
214 ended answer box. They were also asked: ‘To the best of your knowledge, how much
215 consideration is given to player injury data when deciding whether to recruit, retain or release
216 an individual?’. The following options were provided: *none, very little, some, a lot,*
217 *considered critical, not sure.*

218

219 *Player illness*

220

221 Practitioners were asked if player illnesses (e.g., cold/flu, gastrointestinal complaints) data
222 were collected in any form, with a simple yes or no response required.

223

224 *Perceived value*

225

226 Practitioners stated how much they agreed with the following statement: ‘Collecting player
227 injury data within the academy is important’ by using a 5-point Likert-type scale with the
228 following options given: *strongly agree, agree, neither agree or disagree, disagree, strongly*
229 *disagree*. Practitioners were then asked to justify their view in an open-ended answer box.

230

231 Practitioners also stated how much they agreed with the statement ‘Sharing/using our data for
232 academic research purposes is worthwhile and important’, using a 5-point Likert-type scale
233 with the following options provided: *strongly agree, agree, neither agree or disagree,*
234 *disagree, strongly disagree*. Regardless of answer, practitioners were then asked what the
235 primary obstacle (if there was one) preventing/limiting the use of their injury data for
236 academic research is, with the following options provided: *the club does not want to share*
237 *their data with external partners, lack of time/staff resources, we (club staff) are unsure how*
238 *the data could best be used from a research perspective, there is no immediate*
239 *benefit/competitive advantage in engaging in academic research, no obstacle, other* (with
240 space provided for elaboration).

241

242 *Use and application*

243

244 Utilising a 5-point Likert-type scale with the following options given: *strongly agree, agree,*
245 *neither agree or disagree, disagree, strongly disagree*, practitioners were asked how much
246 they agreed with the statements ‘the player injury data collected within the academy is used
247 to inform our injury prevention strategies’ and ‘the player injury data collected within the
248 academy are used to guide financial investment within the medical/strength &
249 conditioning/sport science department(s)’.

250

251 Practitioners were then asked if medical staff formally review the data, and if so, how
252 frequently, with options provided as: *daily, weekly, monthly, annually, other* (with space to
253 elaborate). A similar question was then asked regarding if coaching staff formally review the
254 data, and if so, how frequently.

255

256 The final question was: ‘To the best of your knowledge, how much consideration is given to
257 player injury data when deciding whether to recruit, retain or release an individual?’. The
258 following options were provided: *none, very little, some, a lot, considered critical, not sure*.

259

260 **Data Analysis**

261

262 Due to the cross-sectional and descriptive nature of the study design, the data is presented in
263 a descriptive manner. For questions utilising a Likert-scale, frequency analysis was used to
264 establish the percentage of practitioners who had selected a particular response. Written
265 responses for the open-ended questions (i.e., where practitioners justified their answers) were
266 exported into a word processing program and read several times for habituation and to
267 construct a clear understanding of the content (Thomas 2006). The raw data were then
268 organised and subjected to inductive content analysis (also known as the General Inductive
269 Approach), a data driven technique, which occurs independently of any pre-existing
270 frameworks or preconceptions (Patton 2015). Analogous themes were classified as general
271 dimensions and allocated an overarching descriptor. For further detail on the General
272 Inductive Approach see Thomas (2006). Following inductive analysis, peer debriefing and
273 member checking (a form of independent validation) was utilised by the research team to
274 increase credibility and ensure that a correct interpretation of the data had occurred (Creswell
275 & Miller 2000). Finally, a deductive approach was employed to corroborate the findings of

276 the inductive analysis and to establish any theoretical relationships within the data (Patton
277 2015).

278

279 **RESULTS**

280

281 **Collection procedures and Player illness**

282

283 When asked if any injury data was collected at their academy, all practitioners answered yes.
284 Thirty-nine (83%) stated that a qualified physiotherapist records the data, 4 (9%) stated that a
285 strength and conditioning coach/sport scientist records the data, with medical doctor (2; 4%),
286 qualified physical therapist (1; 2%), and coach (1; 2%) also being selected. No one selected
287 university student, player, or other.

288

289 When asked if all physical complaints are documented or only time-loss injuries, answers
290 were more discordant. Thirty (64%) specified that all physical complaints are documented,
291 with the remaining 17 (36%) stating that only time-loss injuries are documented. Similarly,
292 36 (77%) of practitioners indicated that a clinical diagnosis is made for each injury case, with
293 all practitioners specifying that a medical doctor/physiotherapist makes the diagnosis. The
294 remaining 11 (23%) practitioners stated that location/symptoms are recorded, but a clinical
295 diagnosis is not made for each injury case. Thirty-seven (79%) practitioners indicated that
296 player illness data were collected in their academy, with 10 (21%) indicating that no player
297 illness data were collected.

298

299 **Perceived value**

300

301 When asked how much they agreed with the statement “Collecting player injury data within
302 the academy is important”, 41 (87%) practitioners strongly agreed and 6 (13%) agreed with
303 no one selecting strongly disagree/disagree or neither agree nor disagree. The second order
304 themes that were identified relating to the importance of collecting player injury data are
305 provided in Table 3.

306

307 ***Table 3 near here***

308

309 Twenty five (53%) practitioners agreed that sharing/using their academy’s injury data for
310 academic research purposes is worthwhile and important, with 12 (26%) strongly agreeing, 5
311 (11%) neither agreeing or disagreeing, 2 (4%) disagreeing, and 3 (6%) strongly disagreeing
312 (Figure 1). The obstacles preventing/limiting the use of injury data for academic research
313 from most selected to least selected were: lack of time/staff resources (21; 45%), club does
314 not want to share data with external partners (9; 19%), no obstacle (7; 15%) unsure how data
315 could be best used from a research perspective (6; 13%), other (3; 6%), and no immediate
316 benefit/competitive advantage in engaging in academic research (1; 2%). Of the three who
317 selected ‘other’, the only general dimension identified was confidentiality (e.g., “*we want to*
318 *make sure our players’ personal medical data isn’t publicly available*” and “*legally only*
319 *medical staff can access injury notes because it is considered confidential information –*
320 *however, sharing general injury information is something I believe the club would be willing*
321 *to share, e.g., number of hamstring injuries etc.*”).

322

323 ***Figure 1 near here***

324

325 **Use and application**

326

327 When asked if the player injury data collected within their academy was used to inform their
328 injury prevention strategies, 19 practitioners (41%) strongly agreed, 22 (47%) agreed, 4 (9%)
329 neither agreed or disagreed, 2 (4%) strongly disagreed, and no one disagreed. However, when
330 asked if the player injury data collected was used to guide financial investment within the
331 medical/strength and conditioning/sport science department(s), the results did not follow the
332 same pattern (Figure 2). The majority (19; 40%) of practitioners disagreed, 10 (21%) neither
333 agreed or disagreed, 4 (9%) strongly disagreed, 11 (23%) agreed, and 3 (6%) strongly agreed.

334

335 ***Figure 2 near here***

336

337 The majority of practitioners (41; 87%) indicated that academy medical staff formally review
338 player injury data, with 6 (13%) stating that no formal review is undertaken. In terms of
339 regularity, results were diverse. The review periods selected by respondents were as follows:
340 monthly, 11 (27%); weekly, 9 (22%); daily, 8 (20%); annually, 7 (17%); and other, 6 (15%).
341 When the responses of the six who selected other were grouped together, the following
342 timescales were stated: twice a year, three/four times each season, every 6 weeks, and no set
343 time period (reviewed when required).

344

345 When asked if coaching staff formally reviewed injury data there were as a contrast in
346 responses to medical staff reviewing the data with 24 (51%) specifying that coaching staff
347 did not formally review the data, and 23 (49%) stating that they did (Figure 3). Those who
348 selected yes were asked to state how regularly coaching staff reviewed the data, with weekly
349 (8; 35%) being the most common, followed by annually (6; 26%), daily (3; 13%), other (4;

350 17%), and monthly (2; 9%). All four who specified other stated differing timescales: “three
351 times a season”, “every 6 weeks”, “post pre-season and post-season”, and “spontaneous”.

352

353 ***Figure 3 near here***

354

355 Finally, when asked to the best of their knowledge how much consideration is given to player
356 injury data when deciding whether to recruit, retain or release an individual the majority of
357 practitioners selected some (24; 51%). This was followed by very little (15; 32%), a lot (7;
358 15%), and not sure (1; 2%), with no one selecting none or considered critical.

359

360 **DISCUSSION**

361

362 The present study is the first to investigate the injury data collection procedures, perceived
363 value and use of such data within professional football academies. The findings revealed that
364 qualified medical professionals conduct the majority of injury data collection procedures;
365 indicating the injury diagnoses are likely of high quality. All applied practitioners considered
366 injury data important and the majority (79%) also believe using it for academic research is
367 worthwhile. Injury data are used to inform injury prevention strategies within the majority
368 (88%) of academies; however, they are often not used to guide financial investment within
369 medical departments. While medical staff formally review injury data in the majority of
370 academies (87%), half of the respondents indicated that coaching staff do not.

371

372 **Data collection procedures**

373

374 All respondents indicated that injury data are collected within their respective academy. The
375 majority (83%) of respondents reported qualified physiotherapists are responsible for this
376 record keeping, and that clinical diagnoses are made for each injury, suggesting that the
377 injury diagnoses are of high quality. Similarly, the majority (79%) of academies also collect
378 data pertaining to player illness; indicating that current practice encompasses a
379 comprehensive monitoring system for player health.

380

381 **Perceived value**

382

383 All respondents either strongly agreed or agreed that collecting injury data within their
384 academy was important. This is encouraging and suggests that applied practitioners
385 understand the value of high quality and consistent injury records in the context of the
386 sequence of prevention described by van Mechelen et al. (1992). When asked to justify why
387 they felt collecting injury data was important, numerous explanations were provided with
388 central themes surrounding using data to inform future preventive strategies and to judge the
389 effectiveness of current training practices emerging (Table 3). These opinions are in
390 concordance with those of UEFA and the Fédération Internationale de Football Association
391 (FIFA) (D'Hooghe 2016).

392

393 The majority (79%) of respondents answered that they felt sharing/using their academy's
394 injury data for academic research was worthwhile and important. This is somewhat at odds
395 with the scarcity of epidemiological studies in elite youth football within the scientific
396 literature (Pfirrmann et al. 2016). However, that so many applied practitioners believe that
397 collaborating with academic researchers is of value bodes well for future investigations.
398 Ekstrand (2016) highlighted the benefits of multicentre collaboration in the context of

399 football injury research. The most immediate benefit of academies potentially pooling their
400 injury data is that the sample size and the resultant number of injury cases increases;
401 however, other benefits to multicentre collaboration also exist, such as better quality control
402 in terms of data collection procedures (Impellizzeri 2017). Larger sample sizes are hugely
403 beneficial since approximately 200 injury cases are required to detect small to moderate
404 associations between risk factors and injuries (Bahr & Holme 2003).

405

406 Another advantage to professional academies collaborating with academic researchers is the
407 fulfillment of the “Working fast and working slow” model of high performance outlined by
408 Coutts (2016). One of the tenets of this model is that researchers (so called ‘slow thinkers’)
409 can help provide applied practitioners (so called ‘fast thinkers’) with evidence-based
410 solutions for problems they themselves may not have the time or expertise to address (Coutts
411 2016). Since half of the respondents stated a lack of time as the major obstacle limiting the
412 use of their injury data for research purposes, such collaboration between professional
413 academies and researchers may benefit academies. However, the second most cited obstacle
414 to using injury data for research purposes was that the academy did not want to share their
415 data with external partners (presumably fearing the loss of a competitive advantage). This
416 highlights the importance of academic researchers building personal relationships with
417 applied practitioners and other key stakeholders within professional academies in an attempt
418 to establish trust and allay some of the fears related to data sharing. Furthermore, long-term
419 and sustainable collaboration between professional academies and universities may benefit
420 from relationships and agreements at an organisational level rather than simply between
421 individual practitioners and researchers. While some organisations may be concerned about
422 sharing data from an ethical/legal perspective, anonymising of raw data and ensuring
423 researchers are blinded to sensitive information may be a potential solution.

424

425 **Use and application**

426

427 A majority (88%) of the respondents either strongly agreed or agreed that the injury data
428 collected informed their prevention strategies. However, elucidating exactly *how* practitioners
429 use their injury data to inform the prevention strategies implemented was beyond the scope of
430 this survey. Nonetheless, the respondents' answers suggest evidence based practice is
431 apparent within the majority of professional academies.

432

433 Half of the respondents stated that injury data collected within their academy was not used to
434 inform financial investment within the medical/S&C/sport science department highlighting a
435 potential disconnect between the reality of the challenges faced by support staff and academy
436 hierarchies. It should be acknowledged that in some cases, the applied practitioners who
437 responded to this survey may not have been fully informed with regard to financial decisions
438 taken at the board/managerial level. Nonetheless, the fact that half of the respondents do not
439 perceive that injury data is used to inform decision-making from a financial perspective
440 highlights an undesirable disconnect between support staff and academy hierarchies. The cost
441 of individual injuries at the highest professional level has been estimated at ~€500,000 per
442 month (Ekstrand 2013). An obvious difference between senior professional and academy
443 level football players is the discrepancy in financial remuneration received. However, despite
444 the possible lack of 'lost wages' in the case of academy players, a significant monetary
445 burden may still exist due to the immediate cost of medical treatment and potentially the
446 loss/reduction of eventual player sell-on value. Ergo, it is in the financial interest of
447 professional academies to reduce the incidence and severity of injuries suffered by their
448 players. Presumably the greatest value for money will not be achieved in relation to

449 investment within the medical/S&C/sport science department without taking into account the
450 challenges they face, or in other words; considering the incidence of injury experienced
451 within ones own environment. Greater financial investment within a medical department does
452 not necessarily equate to improved injury related outcomes. Indeed, well-funded and staffed
453 medical departments may conversely appear to perform worse than others due to superior
454 detection and reporting of injury cases. Before decisions surrounding investment are made a
455 clear understanding of the key performance indicators and objectives of the medical
456 department should be established. Furthermore, injury data need not determine whether a
457 medical department receives more or less funding but rather *how* that money is spent.

458

459 While the majority (87%) of respondents indicated that medical staff formally reviewed the
460 collected injury data, half reported that coaching staff did not. This is a portentous finding
461 since coaches potentially have a significant influence on injury incidence since they typically
462 lead the design and delivery of training sessions. If coaches are not aware of the types or
463 typical patterns of injury experienced by their players then designing training sessions that
464 attempt to mitigate potentially relevant factors is unlikely.

465

466 A third of respondents stated that very little consideration was given to player injury data
467 when deciding whether to recruit/retain/release an individual. A recent injury prevention
468 model proposed that player recruitment and list management was the “first building block in
469 the injury prevention pyramid” (Coles 2017). Previous injury is well accepted as a significant
470 risk factor for future injury (Arnason et al. 2004; Hägglund et al. 2013a). As a result, it makes
471 intuitive sense to give some consideration to injury data when recruiting players in an attempt
472 to build a squad of injury resilient individuals with limited previous history (Coles 2017).

473

474 **Limitations**

475

476 Some limitations with regard to the present study exist. Of the 47 respondents, 34 (72%)
477 represented academies from either England or Germany. As a result, the conclusions drawn
478 are most generalizable to those two countries. The respondents represented a number of
479 different roles ranging from fitness coach to director of performance. This range of
480 perspectives may have influenced the responses since it is conceivable that the information
481 available to those occupying these various levels of seniority may differ. That seven countries
482 were represented in the present cohort of respondents also means that readers should be
483 cognizant of the differing sporting cultures that likely exist in each one and may have
484 influenced the interpretation of some of the survey questions. However, the international
485 nature of this study is also a positive aspect and provides a wide overview of academy injury
486 data collection practices worldwide. Similarly, the present study is purely descriptive in
487 nature with results largely based on the opinion of the respondents. Objective quantification
488 relating to some of the questions would improve and enhance the veracity of the conclusions
489 made. When invited to partake in the study, practitioners were made aware of the topic.
490 Therefore, it is acknowledged that the respondents who chose not to complete the survey may
491 not have had an interest in, or considered important, the issue of injury data collection within
492 the academy setting, potentially skewing our findings. An element of selection bias will be
493 present since applied practitioners who are not interested in injury data or its use would
494 understandably have been less inclined to take part in the survey.

495

496 **CONCLUSION**

497

498 The results of the present survey revealed a number of encouraging findings; however there
499 also appears to be scope for practice to be improved. Qualified medical professionals conduct
500 the majority of injury data collection procedures within academies; indicating the injury
501 diagnoses are likely of high quality. In addition, the majority (79%) of applied practitioners
502 feel that it is important to use their injury data for academic research purposes yet most cited
503 barriers related to lack of time and reluctance from the academy to share information with
504 external partners. This is of concern since a lack of access to such data will inhibit
505 researchers attempting to satisfactorily answer questions related to injury
506 epidemiology/prevention in high-level youth populations. Academies not opposed to
507 engaging with external partners should consider formally allocating some of their employees'
508 time to academic research. Senior academy decision-makers may wish to consider taking into
509 account their own injury data when reviewing financial investment in their academies.
510 Understanding the types and incidence of injuries experienced by their players could
511 potentially lead to superior value for money through more efficient spending. That half of
512 respondents indicated coaching staff do not formally review injury data is concerning since
513 coaches are arguably the best placed individuals within the academy to implement strategies
514 aimed at reducing injury rates.

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524

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528

529 **DISCLOSURE STATEMENT**

530

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532

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622 **APPENDIX 1**

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624 **How do professional football academies collect and use player injury data?**

625

626 *Personal information*

627

628 Club:

629

630 Position within the organization (job title):

631

632 *Collection procedures*

633

634 1. Are player injury data collected in any form?

635

636 - *Yes*

637 - *No*

638

639 2. If the answer to question 1 is 'Yes'; who primarily records the data?

640

641 - *Medical doctor*

642 - *Qualified physiotherapist*

643 - *Qualified physical therapist*

644 - *S&C coach/sport scientist*

645 - *University student*

646 - *Player (self-recording)*

647 - *Coach*

648 - *Other*

649

650 3. If the answer to question 1 is 'Yes'; are all physical complaints documented or only
651 time-loss injuries (i.e. those that result in missed training/match play)?

652

653 - *All physical complaints are documented*

654 - *Only time-loss injuries are documented*

655

656 4. Are player illness (e.g. cold/flu, gastrointestinal complaints) data collected in any
657 form?

658

659 - *Yes*

660 - *No*

661

662 5. If the answer to question 1 is 'Yes'; is a clinical diagnosis made for each injury case or
663 is the information gathered limited to reporting of general location and symptoms
664 only? (By "clinical diagnosis" we mean: are medical/anatomical terminology used
665 and is the diagnosis based on reported symptoms rather than laboratory testing)

666

667 - *A clinical diagnosis is made for each injury case*

668 - *Location/symptoms are recorded but a clinical diagnosis is not made for each injury*

669 *case*

670

- 671 6. If the answer to question 5 is ‘*A clinical diagnosis is made for each injury case*’; are
672 diagnoses made by a medical doctor/physiotherapist?
673
674 - *Yes (medical doctor/physiotherapist)*
675 - *No (other personnel)*
676

677 ***Perceived value***

- 678
679 7a. How much do you agree with the following statement?

680
681 “Collecting player injury data within the academy is important”
682

683 *Strongly disagree Disagree Neither agree or disagree Agree Strongly agree*
684

- 685 7b. Please, justify your answer to question 7a: Why do you hold this point of view?
686

687 *Answer:*
688

- 689 8a. How much do you agree with the following statement?
690

691 “Sharing/using our injury data for academic research purposes is worthwhile and
692 important”
693

694 *Strongly disagree Disagree Neither agree or disagree Agree Strongly agree*
695

- 696 8b. What is the primary obstacle (if there is one) preventing/limiting the use of your
697 injury data for academic research?
698

699 - *The club does not want to share their data with external partners (e.g.*
700 *universities/other clubs)*

701 - *Lack of time/staff resources*

702 - *We (club staff) are unsure how the data could best be used from a research*
703 *perspective*

704 - *There is no immediate benefit/competitive advantage to engaging in academic*
705 *research (therefore no incentive to do so)*

706 - *Other reasons*
707

708 ***Use and application***

- 709
710 9. How much do you agree with the following statement?
711

712 “The player injury data collected within the academy are used to inform our injury
713 prevention strategies”
714

715 *Strongly disagree Disagree Neither agree or disagree Agree Strongly agree*
716

- 717 10. How much do you agree with the following statement?
718

719 “The player injury data collected within the academy are used to guide financial
720 investment within the medical/strength & conditioning/sport science department(s)”

721
722 *Strongly disagree* *Disagree* *Neither agree or disagree* *Agree* *Strongly agree*
723
724 11a. If the answer to question 1 is ‘Yes’; do club medical staff formally review the player
725 injury data? If ‘Yes’, please specify how regularly.
726
727 - *Yes*
728 - *No*
729
730 11b. How regularly:
731
732 - *Daily*
733 - *Weekly*
734 - *Monthly*
735 - *Annually*
736
737 12a. If the answer to question 1 is ‘Yes’; do club coaching staff formally review the player
738 injury data? If ‘Yes’, please specify how regularly.
739
740 - *Yes*
741 - *No*
742
743 12b. How regularly:
744
745 - *Daily*
746 - *Weekly*
747 - *Monthly*
748 - *Annually*
749
750 13. To the best of your knowledge, how much consideration is given to player injury data
751 when deciding whether to recruit, retain or release an individual?
752
753 *None* *Very little* *Some* *A lot* *Considered critical*
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771 **FIGURE CAPTIONS**

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773 **Figure 1.** Responses to the question: “How much do you agree with the following statement?

774 Sharing/using our injury data for academic research purposes is worthwhile and important.”

775

776 **Figure 2.** Responses to the question: “How much do you agree with the following statement?

777 The player injury data collected within the academy are used to guide financial investment
778 within the medical/strength & conditioning/sport science department(s).”

779

780 **Figure 3.** Responses to the questions: “Do club medical staff formally review the player

781 injury data?” and “Do club coaching staff formally review the player injury data?”

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796 **TABLES**

797

798 **Table 1** Practitioner role within their professional academy

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Role	<i>n</i>
Sport Scientist	18
Head of Academy Sport Science/Sport Medicine	8
Fitness Coach	7
Director of Performance	5
Physiotherapist	5
Strength and Conditioning Coach	4

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838 **Table 2** League and competitive level of practitioners
 839

League and Level	<i>n</i>
English Championship (second tier)	9
German Bundesliga (first tier)	8
English Premier League (first tier)	7
English League One (third tier)	5
German 2 nd Bundesliga (second tier)	5
Scottish Premiership (first tier)	4
Major League Soccer (first tier)	3
Scottish Championship (second tier)	3
National Football Association Academy	1
Portuguese Primeira Liga (first tier)	1
Australian A-League (first tier)	1

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875 **Table 3** General dimensions (bold) with quotes to support why collecting injury data is
876 important
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Identify patterns and common injuries: *“looking for trends that are a possible contributor to injury”; “if a large number of hamstring injuries are reported over a short space of time, it will prompt staff to look into any potential influences to this injury data”; “what type of injuries occur and at which events (match/training etc.)”*

Player history: *“to have a comprehensive log of a player’s injury history will help support and develop a player into the first team”; “give the club a detailed history of each individual’s response to different types and intensities of load”; “provides a player history that can be used to protect the player”*

Training effectiveness: *“this is how we evaluate the effectiveness of our programming – are players able to tolerate the work asked of them?”; “to find out how/if prevention methods help to avoid injuries”; “how training loads, maturation, injuries and performance interact and how it may help us better comprehend and evaluate the current training practices within our academy”*

Ethics/Legality: *“care of duty”; “legal requirement”; “personal protection”; “liability and player health/wellbeing”*

Reduce injury risk: *“prevent future injury”; “understanding how and why potential injuries happen can help us reduce the risk of them occurring”*

Inform training strategies: *“the aim is to work out the best preventive strategies you can get”; “because we need all data of the development of the player to build an individual program in training”; “help optimise injury prevention training design”*

Time loss: *“determine individual and team time loss from training/matches through injury; “player availability is critical to the player’s development therefore we must have appropriate tools and databases to monitor this”; “monitor days missed”*

Between squads: *“we have a very close relationship with the first team and the national team – it’s important to share injury reports with them before they join other teams training sessions/camp and after”; “it is important to have an overview concerning all teams, and it is helpful to see any tendencies in each team and across all teams”*

Return to play: *“it allows us to gauge how far off a player is from returning to play”; “it is crucial as it allows coaches to be able to compare and contrast between the data recorded when the player is injured and when the player has returned to play once again”*

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