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1 **Abstract**

2 This study examined if subjective wellbeing in soccer players was affected by match location,
3 match result and opposition quality before a match (PRE), 1 day after (POST-1), and 3 days after
4 a match (POST-3). Eleven professional male soccer players from the under 23 squad playing in
5 the Premier League 2 division completed a wellbeing questionnaire before and after 17 matches.
6 Match training load (session-rating perceived exertion) was not different, regardless of the
7 location, result, or quality of opposition faced ($P>0.05$). Subjective wellbeing was not different at
8 PRE ($P>0.05$); however, at POST-1 and POST-3, stress and mood were $\geq 20\%$ lower after playing
9 away from home or losing ($P<0.05$). Stress, mood and sleep were $\geq 12\%$ worse after playing against
10 a higher-level opposition at POST-1. Coaches need to be aware that match location, match result
11 and the quality of the opposition can influence post-match wellbeing, irrespective of match load.

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14 Key words: Wellbeing; soccer; sport; winning; home.

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26 **Introduction**

27 Professional soccer is characterized by high training loads, weekly competition, and frequent
28 periods of congested fixtures (Nedelec et al., 2012; Lundberg & Weckström, 2017; Thorpe et al.,
29 2017). High physical demands can leave players more susceptible to overtraining (Brink, Visscher,
30 Coutts, & Lemmink, 2012), illnesses (Brink, Nederhof, Visscher, Schmikli, & Lemmink, 2010),
31 injuries (Watson, Brickson, Brooks, & Dunn, 2016), and psychosocial disorders (Gouttebauge,
32 Backx, Aoki, & Kerkhoffs, 2015), all of which might negatively affect both acute and longer-term
33 performance (Brink et al., 2012; Nedelec et al., 2012; Thorpe et al., 2015). To minimise the
34 potential deleterious effects of such high physical demands, and to assess a players performance
35 readiness, individual training loads are closely monitored by utilising objective and/or subjective
36 measurement tools (Saw, Main, & Gastin, 2016; Thorpe et al., 2015, 2017). Common measures of
37 training load include the session-rating of perceived exertion (s-RPE) (Foster, 1998), global
38 positioning systems (GPS) (Scott, Lockie, Knight, Clark, & Janse de Jonge, 2013) and subjective
39 wellbeing questionnaires, that factor in perceived changes in mood, stress, fatigue, soreness and
40 other psychometric indices (Hooper & Mackinnon, 1995; Saw et al., 2016). Tracking markers in
41 response to changes in training load enables coaches to better manage a players fatigue status,
42 performance readiness, and injury/illness risk, as they can subtly modify their training between
43 matches to facilitate restoration or adaptation, as necessary (Saw et al., 2016; Thorpe et al., 2017).

44 While it is likely that all the tools currently available to monitor training load-induced stress (e.g.,
45 GPS, s-RPE) can be useful, and that measuring them simultaneously is better than in isolation,
46 subjective measures of a players wellbeing is one of the most attractive tools available. Indeed,
47 subjective wellbeing scores not only have the advantage of being inexpensive, simple to
48 administer, and for players to understand and complete, but they are also sensitive to daily, weekly
49 and seasonal fluctuations in training load (Fessi et al., 2016; Saw et al., 2016; Watson et al., 2016).
50 Furthermore, they are commonly reported as more sensitive when compared to costly, objective
51 measures such as GPS (Saw et al., 2016; Thorpe et al., 2015). Although it has been established
52 that subjective measures of wellbeing, such as mood and sleep are sensitive to changes in training
53 load (Fessi et al., 2016; Saw et al., 2016), less is understood about the non-physical factors that
54 could affect subjective wellbeing. Therefore, it would seem prudent to better understand what other

55 factors might influence wellbeing given that lowered wellbeing has been associated with the
56 negative consequences listed at the start of this introduction.

57 Some of the non-physical factors potentially influencing subjective wellbeing are match location,
58 the quality of the match opposition, and the match result, collectively referred to as situational
59 match variables (Lago-Penas, 2012). Although not a consistent finding (Brito, 2016; Waters,
60 2002), there are studies showing that indicators of wellbeing, such as mood, stress and sleep, are
61 influenced by match location (Fothergill, Wolfson, & Neave, 2017; Polman et al., 2007), and
62 match result (Oliveira, Gouveia, & Oliveira, 2009; Polman et al., 2007; Wilson, & Kerr, 1999).
63 This lends some support to the contention that these situational match variables may affect player's
64 perceived wellbeing. However, studies that have investigated the impact of these situational
65 variables in soccer, particularly the impact of the quality of the opposition, are limited.

66 To the author's knowledge, only one recent study has explored the potential impact of these
67 specific situational variables on subjective wellbeing in a professional soccer setting (Brito,
68 Hertzog & Nassis, 2016). In this study, subjective wellbeing was not affected by match location,
69 the result of the previous match, or the quality of the upcoming opposition. Subjective wellbeing
70 was only assessed a day before the match and, as the authors acknowledged, this might not be the
71 most suitable time to assess the influence of these variables on match-to-match fluctuations in
72 wellbeing. Instead, it could be more relevant to measure their effects in the days following a match,
73 when the players are training for their next match. If, for instance, subjective wellbeing is still
74 affected several days after losing a match, then this could have important ramifications for
75 subsequent training and competition. A greater understanding of how these situational match
76 variables might be affecting player wellbeing could help coaches not only make more informed
77 decisions when prescribing subsequent training load but also help identify if there are certain
78 matches in the season when players might need additional support to cope with the demands (e.g.,
79 losing to a top-table team).

80 No study to date has attempted to measure the influence of these situational match variables on
81 subjective wellbeing (specifically; fatigue, soreness, sleep, stress and mood) in under 23 soccer
82 players after several matches throughout a season. Thus, the primary aim of this study is to examine
83 whether match location, match result and the quality of the opposition influences self-reported
84 wellbeing the day before a match and 1 and 3 days following a match. We hypothesized that self-

85 reported wellbeing would be negatively affected by these situational variables the day after the
86 match but not before the match.

87 **Materials and Methods**

88 *Participants*

89 Eleven under 23 male soccer players took part in this study over the 2016-2017 season (Age, 19.5
90 \pm 1.2 years; height, 1.80 \pm 5.20 m; body mass, 76.1 \pm 7.5 kg; 7.7 \pm 0.9% body fat). Four of the
91 players were defenders, five were midfielders, and two were forwards. The players were from a
92 squad competing in the Premier League 2 competition in England, as part of the new Elite Player
93 Performance Program (EPPP). Data was initially collected for 15 players; however, 4 players data
94 were omitted from the final analysis because they missed more than 50% of the matches (due to
95 loans, international duty, injury or illness) or did not play sufficient minutes in the matches (<45).
96 Ethical approval was granted by the University Ethics Review board. All players provided written
97 informed consent for this study.

98 Subjective wellbeing was measured with an in-house questionnaire that the players completed 4 –
99 6 times per week, dependent on the number of training sessions scheduled. The questionnaire had
100 5 separate aspects of player wellbeing and was developed from the recommendations for
101 identifying overtraining by Hooper and Mackinnion, (1995). These were: 1) how sore do your
102 muscles feel today? 2) How fatigued do you feel today? 3) How well did you sleep last night? 4)
103 How is your mood today? 5) How stressed do you feel today?. Each question was scored using a
104 1-5 likert scale with 1 representing a low score and 5 a high score. These items have been used
105 extensively to examine self-reported wellbeing and have been shown as sensitive to changes in
106 training load-induced stress (Fessi et al., 2016; Moalla et al., 2016; Watson et al., 2016). The
107 players completed the wellbeing questionnaires before training. The day after home matches, this
108 was ~09:30, but for away matches, on all but 2 occasions this was ~13:00. The later time after
109 away matches was to allow the players extra time to sleep given the travel involved with away
110 matches. At 3 days post-match, all measures were taken at ~09:30 before training. Players had
111 been completing the wellbeing questionnaire since U15 as part of the club's daily readiness to train
112 assessment. Players received regular education regarding the accuracy of values submitted in the
113 questionnaire, with sport scientists utilising the data to prescribe recovery interventions.

114 Rating of perceived exertion scores (RPE) were collected 30 minutes following the cessation of a
115 match, and multiplied by total duration (in minutes) to provide a marker of internal training load
116 for each match (Foster, 1998). An average of the s-RPE after each match was used for analysis.

117 *Data analysis*

118 For the purpose of this study, self-reported wellbeing scores were taken on the morning before the
119 match (PRE), the day after the match (~12-15 hours after the match; POST-1) and 3 days after the
120 match (~60 hours after match; POST-3). Players data was excluded if they had 1) played less than
121 45 minutes in the matches; 2) suffered from an injury during the match; 3) not reported their
122 wellbeing at POST-1. This left 17 matches in total; 8 of which were played at home and 9 away;
123 8 were wins, 7 were losses and 2 ended in a draw. Because of the low number of matches that
124 ended in a draw in the data set, comparisons for the match result variable were only made between
125 matches won or lost. The average number of days between matches was 6; none were less than 3
126 days apart. Similar to a recent study (Varley et al., 2017), we determined the quality of opposition
127 from the final league position of the opposing team; those who finished in the top 4 were classified
128 as 'top-table', those in the middle 4 'mid-table' and those in the bottom 4 'low-table'. For the 3
129 cup matches (matches within competitions aside from those in the team's regular league) included
130 in the analysis, the opposition was classified as either high or low depending on whether they were
131 in the league above or below the current team. For the pre-match analysis, the quality of match
132 opposition, and match location variables were analysed with respect to the upcoming match that
133 day whereas the match result variable was analysed with respect to the outcome of the previous
134 match. For the post-match analysis, the quality of opposition, match location, and match result
135 were all analysed with respect to the most recent match.

136 *Statistical analysis*

137 All data were analysed using SPSS version 23 for Windows and significance set as $P < 0.05$ prior
138 to analysis. Data was considered normally distributed upon inspection of histograms and at $P \geq$
139 0.05 on the Kolmogorov-Smirnov test. A repeated measures analysis of variance (ANOVA) was
140 used to explore interaction effects in the subjective wellbeing variables (fatigue, soreness, sleep
141 quality, stress, mood) and the situational variables (match location, match result, quality of the
142 upcoming opposition) over time (PRE, POST-1, POST-3). Soreness was not normally distributed
143 so was log transformed for data analysis. In the event of a significant interaction effect, *post hoc*

144 analysis with Bonferroni adjustments were performed to locate where the significant differences
145 occurred. Paired t-tests were used to explore differences in subjective wellbeing and s-RPE for
146 two of the situational variables (match location and match result). A one-way analysis of variance
147 (ANOVA) was performed to evaluate differences in subjective wellbeing and s-RPE for the quality
148 of opposition variable (top-table team, mid-table team, and low-table team). All data are reported
149 as mean \pm SD. Cohen's *d* effect sizes (ES) were calculated for paired comparisons with the
150 magnitude of effects considered small (0.2–0.49), medium (0.5–0.79) and large (\geq 0.8) (Cohen,
151 1988).

152 **Results**

153 *Match loads*

154 Session-RPE is presented as arbitrary units. Player's s-RPE for the 17 matches did not differ,
155 irrespective of match location (home, 695 ± 90 AU vs. away, 636 ± 62 AU; $P = 0.095$, $ES = 0.77$),
156 match result (win, 619 ± 118 AU vs. away, 664 ± 54 AU $P = 0.227$, $ES = 0.52$) or opposition (top,
157 617 ± 134 AU vs. mid, 657 ± 117 AU vs. low, 708 ± 81 AU; $P = 0.241$).

158 *Match location*

159 The results for match location are displayed in Figure 1. There was a time*location interaction
160 effect for fatigue ($P = 0.027$) with post hoc analysis revealing that fatigue was greater after home
161 vs. away matches at POST-3 ($P = 0.014$; $ES = 0.29$). Similarly, there was a time*location effect
162 for soreness ($P = 0.001$), which was reported as greater at POST-3 after home matches ($P = 0.014$;
163 $ES = 0.49$). A time*location effect was also evident for sleep quality ($P = 0.001$), which was
164 reported as worse after away matches at POST-1 ($P = 0.05$; $ES = 0.34$) and POST-3 ($P = 0.032$;
165 $ES = 0.12$). Stress was also affected by match location (time*location effect: $P = 0.001$); stress
166 was higher after an away match at POST-1 ($P = 0.001$; $ES = 0.67$) and POST-3 ($P = 0.013$; $ES =$
167 0.29). Mood followed a similar pattern, and was lowered at POST-1 ($P = 0.001$; $ES = 0.77$) and
168 POST-3 after an away vs. home match ($P = 0.022$; $ES = 0.24$).

169 *Match result*

170 The effect of match result on subjective wellbeing is displayed in Figure 2. Both fatigue and
171 soreness were unaffected by the match result (time*result; $P = 0.223$ and $P = 0.378$, respectively).

172 However, sleep showed interaction effects ($P = 0.020$) and was reduced at POST-1 ($P = 0.011$).
173 Stress was also affected by the match result (time*result; $P = 0.001$) and was greater at POST-1 (P
174 $= 0.001$) and POST-3 ($P = 0.002$) after a defeat. Mood followed a similar pattern (time*result; P
175 $= 0.001$) and was lowered at POST-1 ($P = 0.001$) and POST-3 ($P = 0.004$) after a defeat compared
176 to a win.

177 *Quality of opposition*

178 The effects of quality of the upcoming opposition on subjective wellbeing are displayed in Figure
179 3. Fatigue and soreness were not influenced by the quality of the upcoming opposition
180 (time*opposition; $P = 0.644$ and $P = 0.967$, respectively). There was an interaction effect for sleep
181 quality, however ($P = 0.005$); at POST-1, sleep quality was worse after playing a top team vs. a
182 bottom team ($P = 0.033$; $ES = 0.99$). Stress was also affected by opposition quality
183 (time*opposition; $P = 0.05$). Stress was higher at POST-1 after playing a top team vs. a bottom
184 team ($P = 0.014$; $ES = 1.14$) and a middle team vs. a bottom team ($P = 0.002$; $ES = 1.67$). Similarly,
185 at POST-1, mood was lower after playing a middle team vs. a bottom team ($P = 0.24$; $ES = 1.69$).

186 **Discussion**

187 The main findings of the present study are, that irrespective of the physical demands of the matches
188 (as measured by s-RPE), match location, match result, and the quality of the opposition
189 significantly affected subjective wellbeing after soccer matches. Of the five variables measured,
190 sleep quality, stress, and mood were the most affected by these situational variables. Furthermore,
191 match result and match location had the biggest influence on subjective wellbeing, as evidenced
192 by several variables still negatively affected 3 days after the match. This study provides new
193 information on the potential influence that these specific situational match variables have on
194 subjective wellbeing in soccer players.

195 On the morning before a match, the match location, result of the previous match and the quality of
196 the upcoming opposition did not influence subjective wellbeing. These findings are in agreement
197 with those of Brito et al., (2016) who reported a questionnaire measuring subjective levels of
198 fatigue (and that contained questions relating to soreness, sleep and stress) was not influenced by
199 these situational variables when assessed the day before a match. Others have also reported no
200 differences in mood or stress prior to home vs. away matches (Fowler, Duffield, & Vaile, 2014;

201 Polman et al., 2007); however, to the best of our knowledge, no other studies have examined the
202 impact of previous match result or the quality of the upcoming opposition on subjective wellbeing.
203 Our findings, alongside those of Brito et al. (2016), suggest that prior to a match, these situational
204 variables do not influence soccer player's perceived wellbeing and, thus, are unlikely to affect
205 subsequent performance.

206 The day after a match, sleep quality and mood were lower and stress higher if the match was played
207 away vs. home. These effects are more likely to be due to the psychological or environmental
208 factors as opposed to the physical demands of the matches, given that s-RPE was similar for home
209 and away matches. Our findings are actually in contrast to a previous study that measured the
210 effects of match location on subjective wellbeing. In Fowler et al. (2014), air travel had minimal
211 influence on perceived fatigue, soreness, sleep quality, and stress in 6 elite Australian soccer
212 players 1 and 2 days after an away match. Notably, they found soreness and stress tended to be
213 greater after home than away matches; we also observed this for soreness at POST-3, although we
214 are unclear why this might have occurred. Match load did tend to be greater after home matches
215 ($ES = 0.77$) so the increased soreness was perhaps due to the slightly higher physical demands
216 reported after home matches. There are a number of possible explanations for the discrepant
217 findings between those of Fowler et al. (2014) and the present study, including the different timings
218 that the measures were taken (2 days before and 2 days after in Fowler et al., 2014) the different
219 methods used to evaluate subjective wellbeing (theirs was scored between 1 - 7 not 1 – 5 as in the
220 present study), the technical and tactical performance during the matches, and the fact the players
221 were from an elite professional squad in Australia and not an under 23 squad in the UK.

222 Some of the non-performance related factors that could have affected mood and stress in the away
223 matches include travel, unfamiliarity with surroundings, habit disruption, changes in food
224 provision, pressure from away supporters, and sleep loss (Waters & Lovell, 2002). In qualitative
225 interviews, travel and sleep loss were actually identified as being the two key reasons why soccer
226 players preferred playing at home (Walters & Lovell, 2003). In line with this, sleep quality was
227 significantly lower in the present study after away matches. It would be reasonable to assume that
228 this contributed to the player's reduction in mood and increase in stress over the same period. The
229 main reason why sleep quality was reduced after away matches is probably due to the fact that the
230 players went to sleep later, as the matches were all played at night (19:00 kick off) and they had

231 to travel a further distance to get home. This chronobiological disruption alone could be enough
232 to affect perceived sleep quality (Nedelec, Halson, Abaidia, Ahmaidi, & Dupont, 2015). It could
233 be argued if the matches were played during the day then sleep quality would not have been
234 affected by match location, as recently reported (Fullagar et al., 2016). However, unlike the present
235 study, Fullagar and colleagues (2016) found no differences in sleep quality after home vs. away
236 matches that were played at a similar time to those in the present study ($\geq 18:00$). The reason for
237 this discrepancy is not clear, but it could be related to when the questionnaire was administered
238 (pre-training in the present study vs. immediately waking), or simply due to differences in when
239 the players went to sleep or when the players woke up the following morning. Regardless of the
240 precise reason, the present study's findings suggests more emphasis needs to be placed on
241 improving sleep quality to ensure teams playing at night are adequately rested and recovered for
242 subsequent training and competition. These results could be particularly pertinent for the Category
243 1 teams currently competing in the Premier League Division 1 and 2 Under 23 leagues in England
244 as due to competition rules all matches are played at night.

245 Subjective wellbeing was significantly lower after losing a match vs. winning a match;
246 specifically, stress was increased while mood and sleep quality were reduced after a loss. It is
247 perhaps not surprising that losing a match negatively affects wellbeing in the immediate hours or
248 the day following a match, and this has been observed before in both rugby players (Polman et al.,
249 2007; Kerr & Schaik, 1995) and female soccer players (Oliveira et al., 2009). The novel finding
250 in this study is that mood and stress were still negatively affected 3 days after suffering a defeat,
251 suggesting the disappointment of losing a match persists for several days. Such changes could have
252 important ramifications for subsequent training prescription in the weeks after losing a match,
253 given that lowered mood has been associated with several deleterious effects, including impaired
254 recovery and performance (Nedelec et al., 2015), poor decision-making (Polman et al., 2007) and
255 increased injury risk (Galambos et al., 2005; Watson et al., 2016). Therefore, coaches and sports
256 scientists need to be cognizant that players might need better coping strategies after losing matches,
257 as well as an increased emphasis on sleep hygiene practices to minimise the potential for
258 deleterious psychobiological effects.

259 Previous studies have shown that the quality of the opposition can affect physical performance
260 during a soccer match (Lago, Casais, Dominguez & Sampaio, 2010), and training loads in the 3

261 days following a match (Brito et al., 2016); however, to the author's knowledge, this is the first
262 study to demonstrate that it can also affect subjective wellbeing in the days after a match. Indeed,
263 1-day post match, fatigue and stress were higher and sleep quality was lower after playing a top-
264 table team, and mood was lower after playing a mid-table team. Unlike with location and result,
265 subjective wellbeing was not affected at 3 days post-match, suggesting that the quality of
266 opposition might have less of an impact than these two variables on subjective wellbeing. It is not
267 entirely clear as to why playing a top team would affect subjective wellbeing the day after a match.
268 It is unlikely to be due to match result as in the 7 matches played against a top-table team, a similar
269 number were lost vs. won (4 vs. 3, respectively). Also, s-RPE was not different between the
270 matches, so differences in the physical demands is not able to explain these findings. With that
271 said, GPS data was not available so we were unable to determine if there were any differences in
272 speed thresholds between these matches. We acknowledge that this is a limitation of the study. It
273 has been shown that the quality of opposition effects running speed during a soccer match (Lago
274 et al., 2010; Liu, Gómez, Gonçalves & Sampaio, 2016), so it is possible that differences in running
275 speed or explosive actions could have contributed to these findings. In addition, technical and
276 tactical performance have also been shown to be influenced by the quality of the opposition (Liu
277 et al., 2016; Varley et al., 2017) and this might also influence subjective wellbeing. Although
278 information on the effects of technical and tactical changes on subjective wellbeing have not been
279 established, intuitively, the technical and tactical demands of playing against a top opposition
280 would be greater and this could impose a higher mental stress on the players. This could be, at
281 least in part, because of the greater challenge/threat posed by the opposition or increased
282 importance of the match (Arruda, 2017). In turn, this might elicit changes in stress quality, sleep
283 and mood substantial enough to persist for several hours after the match. In partial support for this
284 idea, matches perceived as being more difficult or of greater importance have been shown to
285 provoke greater increases in cortisol (Arruda, Aoki, Paludo & Moreira, 2017; Moreira et al., 2014),
286 a hormone secreted by the adrenal gland in response to stress, and has been shown to affect mood
287 and sleep (Leproult, Copinschi, Buxton, & Van Cauter, 1997; van Eck, Berkhof, Nicolson, &
288 Sulon, 1996). However, this is a speculative explanation and further research investigating why
289 the quality of opposition might affect post-match subjective wellbeing is required.

290 There are several limitations to this study that need to be acknowledged. Firstly, it is not clear how
291 meaningful the observed changes in wellbeing are, because, as recommended by Saw et al., (2017)

292 we were unable to collect a series of baseline scores to assess the typical day-to-day variation for
293 each player, irrespective of training load. It is important that these be factored into future research.
294 Secondly, our data set was relatively small (11 players across 17 matches) and, therefore, we may
295 have been underpowered to detect more subtle changes in wellbeing by these situational variables.
296 Indeed, a power analysis revealed that to detect a significant difference (α of 0.05) in sleep quality
297 at POST-3 (using the data observed) we would need 56 players at 80% power. Of course, such
298 analysis was not possible in the present study due to the squad size and thus multiple squads would
299 be required. Also, along with low participant numbers, the low number of matches was the main
300 reason for not assessing interactions between the different variables with more sophisticated
301 statistical techniques such as regressions equations (e.g., losing an away match against a top team).
302 We felt this analysis would be more impactful with a larger data set. Our analysis did include
303 significantly more matches than several other similarly designed studies (Fowler et al., 2014;
304 Polman et al., 2007). Future studies should look to include larger numbers and we must stress these
305 findings are far from definitive but rather exploratory. In addition, because the participants were
306 playing in the Under 23 Premier League 2 Division, our findings might not be generalizable to
307 other soccer populations, e.g., senior teams competing in the highest competitions. However, these
308 findings clearly have high relevance to those teams who currently play under the EPPP in England.
309 Finally, it is important to acknowledge that there are several other variables that could have
310 affected subjective wellbeing other than the situational match variables examined in this study.
311 Most notably, tactical and technical performance, the environment—and non-match related events
312 such as peer group or general life stressors—and it is important that these are kept in mind when
313 interpreting these findings.

314 **Conclusion**

315 In conclusion, this study provides the first evidence that the quality of opposition, and especially
316 the match location and match result, might negatively influence the subjective wellbeing of Under
317 23 soccer players for several days after matches. From a practical perspective, these findings
318 highlight that practitioners working in soccer, especially those working with under 23 teams in
319 England, might need to factor in the potential influence of these specific situational match variables
320 when prescribing training load between matches. The data also suggests that players might need

321 additional psychological support (e.g., effective coping strategies) after fixtures that might be
322 affected by these specific variables.

323

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325 The authors received no funding for this study and report no conflict of interest.

326 **Reference List**

327 Arruda, A. F., Aoki, M. S., Paludo, A. C., & Moreira, A. (2017). Salivary steroid response and
328 competitive anxiety in elite basketball players: Effect of opponent level. *Physiology & Behavior*,
329 177, 291-296.

330 Brink, M. S., Nederhof, E., Visscher, C., Schmikli, S. L., & Lemmink, K. A. (2010). Monitoring
331 load, recovery, and performance in young elite soccer players. *J Strength Cond Res*, 24(3), 597-
332 603. doi:10.1519/JSC.0b013e3181c4d38b

333 Brink, M. S., Visscher, C., Arends, S., Zwerver, J., Post, W. J., & Lemmink, K. A. (2010).
334 Monitoring stress and recovery: new insights for the prevention of injuries and illnesses in elite
335 youth soccer players. *Br J Sports Med*, 44(11), 809-815. doi:10.1136/bjism.2009.069476

336 Brink, M. S., Visscher, C., Coutts, A. J., & Lemmink, K. A. (2012). Changes in perceived stress
337 and recovery in overreached young elite soccer players. *Scand J Med Sci Sports*, 22(2), 285-292.
338 doi:10.1111/j.1600-0838.2010.01237.x

339 Brito, J., Hertzog, M., & Nassis, G. P. . (2016). Do match-related contextual variables influence
340 training load in highly trained soccer players? *J Strength Cond Res*, 30(2), 393-399.

341 Fessi, M. S., Nouira, S., Dellal, A., Owen, A., Elloumi, M., & Moalla, W. (2016). Changes of the
342 psychophysical state and feeling of wellness of professional soccer players during pre-season and
343 in-season periods. *Res Sports Med*, 24(4), 375-386. doi:10.1080/15438627.2016.1222278

344 Foster, C. (1998). Monitoring training in athletes with reference to overtraining syndrome. *Med
345 Sci Sports Exerc*, 30(7), 1164-1168.

346 Fothergill, M., Wolfson, S., & Neave, N. (2017). Testosterone and cortisol responses in male
347 soccer players: The effect of home and away venues. *Physiology & Behavior*, 177, 215-220.
348 doi:10.1016/j.physbeh.2017.04.021

349 Fowler, P., Duffield, R., & Vaile, J. (2014). Effects of domestic air travel on technical and tactical
350 performance and recovery in soccer. *Int J Sports Physiol Perform*, 9(3), 378-386.
351 doi:10.1123/IJSP.2013-0484

352 Fullagar, H. H., Skorski, S., Duffield, R., Julian, R., Bartlett, J., & Meyer, T. (2016). Impaired
353 sleep and recovery after night matches in elite football players. *J Sports Sci*, 34(14), 1333-1339.
354 doi:10.1080/02640414.2015.1135249

355 Galambos, S. A., Terry, P. C., Moyle, G. M., Locke, S. A., & Lane, A. M. (2005). Psychological
356 predictors of injury among elite athletes. *Br J Sports Med*, 39(6), 351-354; discussion 351-354.
357 doi:10.1136/bjism.2005.018440

358 Gouttebauge, V., Backx, F. J., Aoki, H., & Kerkhoffs, G. M. (2015). Symptoms of Common Mental
359 Disorders in Professional Football (Soccer) Across Five European Countries. *J Sports Sci Med*,
360 14(4), 811-818.

361 Hooper, S. L., & Mackinnon, L. T. (1995). Monitoring overtraining in athletes. Recommendations.
362 *Sports Med*, 20(5), 321-327.

363 Kerr, J. H., & van Schaik, P. (1995). Effects of game venue and outcome on psychological mood
364 states in rugby. *Personality and Individual Differences*, 19(3), 407-410.

365 Lago-Penas, C. (2012). The role of situational variables in analysing physical performance in
366 soccer. *J Hum Kinet*, 35, 89-95. doi:10.2478/v10078-012-0082-9

367 Lago, C., Casais, L., Dominguez, E., & Sampaio, J. . (2010). The effects of situational variables
368 on distance covered at various speeds in elite soccer. *Eur J Sport Sci*, 10(2), 103-109.

369 Leproult, R., Copinschi, G., Buxton, O., & Van Cauter, E. (1997). Sleep loss results in an elevation
370 of cortisol levels the next evening. *Sleep*, 20(10), 865-870.

371 Liu, H., Gómez, M. A., Gonçalves, B., & Sampaio, J. . (2016). Technical performance and match-
372 to-match variation in elite football teams. *J Sports Sci*, 34(6), 509-518.

373 Lundberg, T. R., & Weckström, K. (2017). Fixture congestion modulates post-match recovery
374 kinetics in professional soccer players. *Res Sports Med*, 25(4), 408-420.

375 Moalla, W., Fessi, M. S., Farhat, F., Nouira, S., Wong, D. P., & Dupont, G. . (2016). Relationship
376 between daily training load and psychometric status of professional soccer players. *Res Sports*
377 *Med*, 24(4), 387-394.

378 Moreira, A., Mortatti, A. L., Arruda, A. F., Freitas, C. G., de Arruda, M., & Aoki, M. S. (2014).
379 Salivary IgA response and upper respiratory tract infection symptoms during a 21-week
380 competitive season in young soccer players. *J Strength Cond Res*, 28(2), 467-473.
381 doi:10.1519/JSC.0b013e31829b5512

382 Nedelec, M., Halson, S., Abaidia, A. E., Ahmaidi, S., & Dupont, G. (2015). Stress, Sleep and
383 Recovery in Elite Soccer: A Critical Review of the Literature. *Sports Med*, 45(10), 1387-1400.
384 doi:10.1007/s40279-015-0358-z

385 Nedelec, M., McCall, A., Carling, C., Legall, F., Berthoin, S., & Dupont, G. (2012). Recovery in
386 soccer: part I - post-match fatigue and time course of recovery. *Sports Med*, 42(12), 997-1015.
387 doi:10.2165/11635270-000000000-00000

388 Oliveira, T., Gouveia, M. J., & Oliveira, R. F. (2009). Testosterone responsiveness to winning and
389 losing experiences in female soccer players. *Psychoneuroendocrinology*, 34(7), 1056-1064.
390 doi:10.1016/j.psyneuen.2009.02.006

391 Polman, R., Nicholls, A. R., Cohen, J., & Borkoles, E. (2007). The influence of game location and
392 outcome on behaviour and mood states among professional rugby league players. *J Sports Sci*,
393 25(13), 1491-1500. doi:10.1080/02640410601175436

394 Saw, A. E., Main, L. C., & Gatin, P. B. (2016). Monitoring the athlete training response:
395 subjective self-reported measures trump commonly used objective measures: a systematic review.
396 *Br J Sports Med*, 50(5), 281-291. doi:10.1136/bjsports-2015-094758

397 Saw, A. E., Kellmann, M., Main, L. C., & Gatin, P. B. (2017). Athlete self-report measures in
398 research and practice: considerations for the discerning reader and fastidious practitioner. *Int J*
399 *Sports Physiol Perform*, 12(Suppl 2), S2-127.

400 Scott, B. R., Lockie, R. G., Knight, T. J., Clark, A. C., & Janse de Jonge, X. A. (2013). A
401 comparison of methods to quantify the in-season training load of professional soccer players. *Int*
402 *J Sports Physiol Perform*, 8(2), 195-202.

403 Thorpe, R. T., Strudwick, A. J., Buchheit, M., Atkinson, G., Drust, B., & Gregson, W. (2015).
404 Monitoring Fatigue During the In-Season Competitive Phase in Elite Soccer Players. *Int J Sports*
405 *Physiol Perform*, 10(8), 958-964. doi:10.1123/ijssp.2015-0004

406 Thorpe, R. T., Strudwick, A. J., Buchheit, M., Atkinson, G., Drust, B., & Gregson, W. (2017). The
407 Influence of Changes in Acute Training Load on Daily Sensitivity of Morning-Measured Fatigue
408 Variables in Elite Soccer Players. *Int J Sports Physiol Perform*, 12(Suppl 2), S2107-S2113.
409 doi:10.1123/ijssp.2016-0433

410 van Eck, M., Berkhof, H., Nicolson, N., & Sulon, J. (1996). The effects of perceived stress, traits,
411 mood states, and stressful daily events on salivary cortisol. *Psychosom Med*, 58(5), 447-458.

412 Varley, M. C., Gregson, W., McMillan, K., Bonanno, D., Stafford, K., Modonutti, M., & Di Salvo,
413 V. . (2017). Physical and technical performance of elite youth soccer players during international
414 tournaments: influence of playing position and team success and opponent quality. *Science and*
415 *Medicine in Football*, 1(1), 18-29.

416 Waters, A., & Lovell, G. . (2002). An examination of the homefield advantage in a professional
417 English soccer team from a psychological standpoint. *Football Studies*, 5(1), 46-59.

418 Watson, A., Brickson, S., Brooks, A., & Dunn, W. (2016). Subjective well-being and training load
419 predict in-season injury and illness risk in female youth soccer players. *Br J Sports Med*.
420 doi:10.1136/bjsports-2016-096584

421 Wilson, G. V., & Kerr, J. H. . (1999). Affective responses to success and failure:: a study of
422 winning and losing in competitive rugby. *Personality and Individual Differences*, 27(1), 85-99.

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Figure 1 – The effects of match location on subjective wellbeing the day before a match (PRE) to 1 day after the match (POST-1) and 3 days after a match (POST-3). Boxplots show mean \pm SD and minimum to maximum values. Transparent plots represent home matches, grey plots represent away matches. AU = arbitrary units; scored between 1 and 5. *represents significant difference between home vs. away at the three different time points.

Figure 2 – The effects of match result on subjective wellbeing the day before a match (PRE) to 1 day after the match (POST-1) and 3 days after a match (POST-3). Boxplots show mean \pm SD and minimum to maximum values. Transparent plots represent a win matches, grey plots represent a loss. AU = arbitrary units; scored between 1 and 5. *represents significant difference between win vs. loss at the three different time points.

Figure 3 – The effects of the quality of the opposition on subjective wellbeing the day before a match (PRE) to 1 day after the match (POST-1) and 3 days after a match (POST-3). Boxplots show mean \pm SD and minimum to maximum values. Transparent plots represent top-table teams, grey plots represent mid-tables teams and black plots represent bottom table teams. AU = arbitrary units; scored between 1 and 5. *represents significant difference between top-table vs. bottom table team at the three different time points. #represents significant difference between mid-table team vs. bottom table team at the three different time points.