

1 Manuscript

2 Abstract:

3 Objectives: To quantify and compare the match demands and variability of international One-
4 Day (ODI) with Twenty20 (T20) cricket matches and to compare ODI match demands when
5 competing home and away.

6 Design: Single cohort, longitudinal observation.

7 Methods: Thirteen international male seam bowlers across 204 matches (ODI= 160; T20= 44)
8 were investigated over five-years (2015-2019). Using global positioning sensors and
9 accelerometers, physical demands were quantified using distance covered at different
10 velocities and the number of entries into high and low intensity acceleration and deceleration
11 bands. Variability was quantified using coefficient of variation (CV) and smallest worthwhile
12 change.

13 Results: Significantly greater ($p < 0.05$) match demands were found for all physical variables
14 relative to minutes played for T20 against ODI matches, except for distance covered 20-25
15 $\text{km}\cdot\text{h}^{-1}$ which was greater for ODI. Distance covered between 0-7 $\text{km}\cdot\text{h}^{-1}$ showed no
16 significance difference ($p = 0.60$). The number of moderate decelerations ($2-4 \text{ m}\cdot\text{s}^{-2}$) were
17 greater ($p = 0.04$) away compared to home in ODI. All other variables showed no significance.
18 Relative to minutes played, decelerations $< -4 \text{ m}\cdot\text{s}^{-2}$ (within-player ODI CV= 75.5%. T20=
19 72.0%) accelerations $> 4 \text{ m}\cdot\text{s}^{-2}$ (within-player ODI CV= 79.2%. T20 CV= 77.2%. Between-player
20 ODI CV= 84.7%. T20= 38.8%) and distance covered $> 25 \text{ km}\cdot\text{h}^{-1}$ (within-player ODI CV=
21 65.5%. T20= 64.1%) showed the greatest variability.

22 Conclusions: **Players are exposed to different physical demands in ODI Vs T20 matches, but**
23 **not for home Vs away ODI matches. Practitioners should be aware of the large variability in**
24 **high-speed/intensity accelerations and decelerations across matches.**

25 Keywords: One-Day International, T20, elite, longitudinal, seam bowling,

26 Introduction:

27 International one-day cricket matches are played in either fifty-over (one-day international
28 (ODI)) or twenty-over (T20) format. The physical demands of cricket, like most team sports,
29 are dependent on playing position, with seam bowlers in cricket experiencing the greatest
30 physical demands when compared to other positions such as batters and wicket keepers.^{1,2}
31 With the addition of T20 matches, the number of competitive days of international single day
32 cricket has increased.³ Given seam bowlers present the highest injury risk and greatest
33 workload of all playing positions,^{4,5} it is essential that the time motion demands of international
34 cricket are well understood.

35

36 To quantify external physical demands, cricket match play has been monitored using global
37 positioning system (GPS) technology and inertial sensors.⁶ Previous research has indicated
38 that when compared to other positions, seam bowlers perform the most high-intensity actions
39 when the team is fielding across all cricket formats (multi-day, ODI and T20) in both youth and
40 senior cricket.^{2,7,8} However, these analyses were conducted on a limited number of games
41 and players. Presently, there are no published time motion data on seam bowlers in
42 competitive international matches in ODI or T20 matches. Aside from any physical differences
43 in ODI and T20 international match play, elite international cricket is played in countries on
44 multiple continents and the effect of playing home vs away is unknown. In other team sports
45 such as soccer, greater high-speed running distance and total distance when playing at home
46 have been reported,⁹ while maximal accelerations have been shown to be greater when
47 playing away.¹⁰ Furthermore, in rugby sevens, weather conditions have been shown to have
48 an impact on physical performance, with poor weather (rain) possibly limiting high speed
49 running and maximal speeds achieved in matches.¹¹ Given the global nature of international
50 cricket, it is reasonable to suggest that contextual factors such as weather, ground size or
51 home advantage may influence the physical demands of seam-bowling in ODI and T20 match
52 play, though this hypothesis remains untested.

53

54 Considerable variability in the physical demands of match play, both within and between
55 players has been demonstrated over the course of a season in team sports such as rugby
56 union.¹² Conversely, other than high speed actions, the demands of Australian football are
57 relatively stable from match-to-match.¹³ Establishing variability in physical demands is
58 necessary to inform training prescription¹ of seam bowlers and provide information pertaining
59 to changes that occur between matches for individual athletes.^{14,15} To date, only two studies
60 have reported the variability in the physical demands of cricket match play in seam bowlers.
61 These were a single athlete case-study over a season¹⁶ and a study of eight seam bowlers
62 across only 17 matches in T20 county cricket (United Kingdom) over two seasons.¹⁷ Whilst
63 these studies offer some indications of the variability associated with cricket seam bowling,
64 international ODI and T20 matches remain unknown. The studies also did not report
65 acceleration and deceleration data, which might provide additional useful information on
66 match variability.

67

68 The present study had three aims: 1) Investigate the physical demands of elite international
69 match play for seam bowlers during fielding in ODI and T20 matches, 2) investigate the effects
70 of match location (home vs away) on physical demand in ODI matches, 3) investigate the
71 within- and between-player variability of physical demands across ODI and T20 matches. The
72 hypotheses were that ODI matches would present a greater physical demand than T20
73 matches in absolute terms, but relative to minutes played, T20 would be more physically
74 demanding. Second, ODI away matches would present greater physical demand than home
75 matches. Finally, variability would be greater for ODI matches when compared to T20.

76

77 Methods:

78 Thirteen international male seam bowlers (age 28 ± 4.2 y, stature 1.87 ± 0.07 m, body mass
79 85.8 ± 6.6 kg) from 204 internationally sanctioned matches (ODI= 160 T20= 44) were involved
80 in this five-year (2015-2019) retrospective analysis. Using the same data set, the difference in
81 physical performance in ODI matches when competing at home (n= 87) compared to away
82 (n= 73) was investigated. Home vs away analysis was not carried out for T20 owing to the
83 smaller sample size and imbalanced number of home (n= 8) and away (n= 36) matches. Away
84 ODI matches were played in: Abu Dhabi, Australia, Bangladesh, India, New Zealand,
85 Scotland, South Africa, Sri Lanka, and the West Indies. Retrospective ethical approval for the
86 study was granted through the University's Ethics Committee (reference: SMEC_2019-
87 20_028) and was conducted in accordance with the Declaration of Helsinki.

88 During international fixtures, players wore a tight-fitting vest carrying a GPS device (2015-
89 2018 Catapult OptimEye S5 unit; 2018-2019 Catapult Optimeye G5, both Catapult
90 Innovations, Melbourne, Australia) positioned on the upper back, between the shoulder
91 blades, sampling at 10 Hz. The units additionally housed triaxial accelerometers (range of $3D$
92 ± 16 g), gyroscopes (range of $3D$ $2000^\circ \cdot \text{sec}^{-1}$), and magnetometers, all sampling at 100Hz.
93 Both the S5¹⁸ and G5¹⁹ units have been shown to be reliable and valid and share the same
94 componentry.²⁰ Units were activated at least 15 minutes prior to match start and data collected
95 from the units were exported from Catapult's OpenField Cloud database for analysis. Only the
96 period of fielding (including bowling) was analysed in this study. Non-fielding and bowling
97 activities (e.g. warm up, batting) were removed from the analysis. All physical performance
98 measures were represented as absolute and relative (per minute) values. For home compared
99 to away analyses, data collected from all players were used. However, for the assessment of
100 physical performance variability for ODI and T20 matches, players' inclusion required them to
101 have completed a minimum of three matches in the respective match format.¹² This resulted
102 in the variability analysis of ODI matches being reduced to 157 and T20 reduced to 38
103 matches, respectively.

104 Physical demands were quantified using distance covered in pre-selected and recommended
105 velocity bands (0-7 km·h⁻¹; 7-15 km·h⁻¹; 15-20 km·h⁻¹; 20-25 km·h⁻¹; >25 km·h⁻¹)²¹ as per
106 manufacturer guidelines. These velocity bands are utilised in the investigated team's day-to-
107 day operations and are in accordance with previous research in cricket.² The number of entries
108 into pre-selected acceleration (2-4 m·s⁻²; >4 m·s⁻²), and deceleration (-2-4 m·s⁻²; <-4 m·s⁻²)
109 bandwidths were also used in accordance with previous research.²² Other variables analysed
110 were maximal velocity, total distance covered and total duration of fielding, the latter being
111 used to calculate the aforementioned relative measures. Information on overs bowled, were
112 obtained from a specialist cricket database (www.espnccricinfo.com). Latitude, longitude, and
113 altitude of the match location were obtained from Google Maps (Google LLC, California, USA).
114 Location data were used to obtain the corresponding number of satellites and horizontal
115 dilution of precision (HDOP) statistics from a global position system website
116 (www.gnssplanning.com Trimble Terrasat GmH, Germany, Trimble Inc. v. 1.4.6.0)²³ and are
117 reported in line with recommendations on reporting standards for research utilising GPS
118 technology.²⁰

119 Data are reported as mean ± SD, with an alpha level ≤0.05 set *a priori*. Maximal values are
120 added for additional context. All completed matches were analysed but minimum values are
121 not reported as the bottom of the ranges may have been affected due to weather stoppages
122 or reduced over matches. Match data statistical analysis were performed in SPSS (IBM SPSS
123 Statistics, v.24, IBM Corp.). All dependent variables were screened for normality using the
124 Kolmogorov-Smirnov test, as well as visual inspection of histograms and Q-Q plots. Non-
125 normal data were transformed using the decadic logarithm. Mixed linear modelling (MLM) was
126 conducted with T20 and ODI as fixed factors, and individual players as random factors. A
127 further MLM was constructed with home and away matches modelled as fixed factors, and
128 players as random factors for ODI matches. Where significance was observed between fixed
129 factors, Bonferroni *post-hoc* tests were used for pairwise comparisons.

130

131 Variability was expressed using within- and between-participant coefficient of variation (CV%)
132 with 90% confidence intervals (CI). The smallest worthwhile change (SWC) was calculated
133 from between-participant standard deviations ($0.2 \times SD$) for each dependent variable.¹⁴
134 Cohen's *d* effect sizes were used with ODI and T20 matches, and between home and away
135 ODI matches and were classified as 0.0-0.19= trivial; 0.20-0.49= small; 0.5-0.79= moderate.
136 >0.8 = large with a 90% CI as it allows for clear outcomes to be identified if effects are unlikely
137 to be substantial.²⁴

138 Results:

139 Satellite data for ODI vs T20 were as follows: ODI: mean satellites available= 16 ± 1 . HDOP=
140 0.69 ± 0.05 %. T20: mean satellites available= 15 ± 1 HDOP= 0.74 ± 0.05 %. ODI Home:
141 mean satellites available= 17 ± 1 . HDOP= 0.68 ± 0.03 %. ODI Away: mean satellites available=
142 16 ± 1 . HDOP= 0.69 ± 0.06 %. Descriptive data and variability statistics for ODI vs T20 matches
143 are displayed in Table 1. Descriptive data for ODI home vs away are in Table 2. Bonferonni
144 *post hoc* pairwise comparisons (absolute and relative ODI vs T20; absolute and relative home
145 vs away) are displayed in Figure 1 alongside effect sizes and 90% confidence intervals. For
146 decelerations $<-4 \text{ m}\cdot\text{s}^2$, one players' bowling action caused an artificial inflation of this metric
147 and consequently was removed from the analysis of this dependent variable only.

148 Discussion:

149 This study aimed to quantify the physical match demands and variability of ODI and T20
150 international cricket matches. The study also compared the physical ODI match demands
151 when competing home and away. Contrary to our hypothesis, when T20 matches were
152 compared to ODI matches the absolute number of high intensity decelerations ($<-4 \text{ m}\cdot\text{s}^2$) and
153 accelerations ($>4 \text{ m}\cdot\text{s}^2$) were not greater in ODI matches despite lasting over twice as long as
154 T20. This contrasts with all other physical demand variables and may be explained, in part, by
155 the higher variability (CV up to 84%) observed in this study for high intensity decelerations and

156 accelerations across matches. Match durations were also shown to be greater away compared
157 to home, which likely contributed to the larger distances covered.

158 In accordance with previous research,²⁶ international T20 cricket demonstrated greater match
159 demands relative to time played than ODI matches. Here, entries into all acceleration and
160 deceleration bands, metres per minute, and distances covered at 7-15, 15-20, and >25 km·h⁻¹
161 were greater for T20 when compared to ODI, relative to time. The only variable demonstrated
162 to be greater in ODI matches compared to T20 relative to time was distance covered in the
163 20-25 km·h⁻¹ speed band. It is likely that this is attributable to bowling run up speeds as (owing
164 to the maximum allowable overs in each format) approximately three times more overs are
165 bowled in ODI matches by seam bowlers.

166 The data presented here also provides normative data for the physical demands of playing at
167 home (England or Wales) or away in ODI matches. These analyses have not been performed
168 in cricket, but recent work in football and rugby sevens has shown that differences do exist in
169 physical demand when situational factors such as match location and weather are
170 considered.^{10,11} The present study observed that only the number of decelerations $-2-4 \text{ m}\cdot\text{s}^{-2}$
171 were greater away from home in ODI matches and that there were no differences in any other
172 physical variables relative to match duration (Figure 1). Speculatively, this could be due to
173 situational differences such as ground layout and size of outfield being larger away from
174 home in ODI matches (players covered more total distance and distance in the 0-7km·h⁻¹ zone
175 in matches away from home), or individual player differences in bowling action (stopping
176 aggressively after delivery stride for example). However, as this was the only variable affected
177 relative to time played, it suggests that despite the potential of environmental and other
178 situational factors, match location has little effect on the overall physical demand in ODI
179 matches.

180 To date, only one study has provided information with regards the variability of international
181 cricket match play, however, this was a single-athlete case study.¹⁶ Petersen et al observed
182 considerable variability in seam bowlers' physical demands during both ODI and T20 match

183 play. In absolute and relative terms, the variability for accelerations and decelerations are high
184 (24.9 – 84.7%), with the most intense accelerations and decelerations showing the largest
185 variability. The trend for variability to increase as actions become faster or more intense has
186 been demonstrated in T20 county cricket.¹⁷ We also found that as running speed increases,
187 or accelerations become more intense, the variability increases. This is consistent with the
188 only other study that has investigated variability in match demands relative to time played.¹⁷
189 The absolute between-player variability for total distance covered in T20 matches appears to
190 be almost identical in international cricket (absolute CV% = 10.7) as demonstrated here, and
191 county cricket (CV%= 10.6).¹⁷ However, as the maximum time allowed for T20 county matches
192 is shorter than international cricket, it is most pertinent to look at variability relative to time
193 played. Metres per minute is less variable in international cricket (CV%= 7.9) than county
194 cricket (CV%= 11.2). T20 international cricket is also less variable than county cricket when
195 considering peak speed (international CV%= 3.6. County CV%= 12.1), and high-intensity
196 running efforts (international 20-25 km·h⁻¹ CV%= 26.7. County >18 km·h⁻¹ CV% = 49.6). This
197 may be as a result of less player-to player variability in average fitness levels across the squad
198 as performance level increases. It has been demonstrated in football that as competition
199 standard increases, high-speed running decreases despite similar physical capacities
200 amongst players.²⁷ However, as physiological fitness data in elite cricket are lacking in
201 comparison to other team sports, comparing international cricket teams to national or county
202 teams fitness qualities remains elusive. Given that the time motion demands of matches vary
203 between positions in cricket,²⁸ it is likely that the changing fielding positions during a match or
204 between matches will contribute to the variability seen here. Finally, it is logical to suggest that
205 the number of runs (particularly through boundaries and non-boundaries) will also contribute
206 to match variability, though it is beyond the scope of our findings.

207 Between-player ODI variability has not previously been studied. A single athlete (within-player)
208 case-study demonstrated lower variability in physical demands for ODI cricket than has been
209 reported here.¹⁶ When compared to the aforementioned case study,¹⁶ the seam bowlers in the

210 present study demonstrated greater variability in distance covered walking, total distance
211 covered, and all speed bands > 15 km·h⁻¹. Like T20 cricket, the data presented here also
212 suggests that as running speed increases, so does within-player and between-player
213 variability in ODIs. However, making comparisons against a single athlete case study is
214 problematic and it is likely that data collected from a team will be inherently more variable than
215 from one player.

216 Despite acceleration being an important measure for team sports,²⁹ there is no consensus on
217 how to accurately quantify the metric²⁹ and investigations into decelerations particularly are
218 limited in team-sports which may be in part due to inconsistencies in descriptors for the
219 thresholds used.²¹ No other study has investigated the variability in accelerations and
220 decelerations in cricket. The present study suggests across ODI and T20, accelerations and
221 decelerations are highly variable, both within- and between-player, and that the more intense
222 the acceleration, the more variable the measure. The variability here is likely a result of some
223 players achieving multiple entries into these bandwidths per game, while others only achieve
224 a few entries across the entire study. The inconsistencies in within- and between-player
225 accelerations (>4 m·s⁻²) and decelerations (<-4 m·s⁻²) observed in this study likely owe to a
226 number of contextual and situational factors that are inherently variable such as: fielding
227 position; quality of opposition; match importance; innings length; size of outfield; boundary
228 rope proximity to stands; as well as individual factors such as bowling action and number of
229 overs bowled. The variability observed may also be compounded by reporting accuracy of the
230 GPS units. Although accuracy improves for multi-plane actions in the x- and y-axes as
231 accelerations increase in intensity, around a 5% error remains for accelerations ~5 m·s⁻².¹⁸
232 Future studies may wish to consider investigating these situational and contextual factors as
233 they relate to physical demand. Additionally, it might be that utilising the 4 m·s⁻² acceleration
234 and deceleration bands might be too high for cricket performance. Previously, it has been
235 demonstrated in Australian football that, because players often accelerate from a moving start,
236 4 m·s⁻² was too high to capture maximal accelerative efforts.³⁰ In cricket, players will “walk in”

237 during the bowler's run up when fielding, meaning that they too have a moving start and that
238 their maximal accelerations might not be consistently captured. Future research should
239 consider whether the $4 \text{ m}\cdot\text{s}^{-2}$ acceleration and deceleration zones are utilised.

240 Conclusion:

241 This study is the first to investigate the variability of physical demands in international cricket.
242 It is also the first to investigate the role of playing home or away on physical demand. Our data
243 show that T20 matches are more physically demanding than ODI matches relative to match
244 minutes played, particularly for the number of accelerations and decelerations, metres
245 covered per minute, and distances covered in most speed bands. We also show that there is
246 limited evidence for playing home or away having an influence on physical demand in ODI
247 cricket. Decelerations $-2-4 \text{ m}\cdot\text{s}^{-2}$ was the only variable that was greater away from home. High-
248 speed or high-intensity accelerations and decelerations were shown to be particularly variable
249 both within- and between-player. Total distance, metres per minute, and maximum velocity
250 demonstrated the smallest variability. Future research should investigate the variability of
251 physical demands for multi-day formats, tournament cricket, and other playing positions in the
252 team.

253

254 Practical Implications: (3 to 5 bullet points):

- 255 • The physical demands of ODI and T20 matches should not be considered
256 interchangeable and as such, specific preparation of athletes performing in either
257 format is required. However, conditioning requirements for players who play both
258 formats will remain complex and challenging.
- 259 • The number of decelerations $-2-4 \text{ m}\cdot\text{s}^{-2}$ performed are higher in away matches but all
260 other variables show no difference. Practitioners can expect their players to have a
261 higher decelerative demand during games where these factors are present. The lack
262 of other differences in physical demand between playing at home and away in ODI

263 cricket suggests that either there is limited rationale for specific physical preparation of
264 players for home and away matches, However, it is important to acknowledge that the
265 internal responses may differ between individuals despite the same demands,
266 especially given the differing environmental factors.

- 267 • Quantifying low intensity physical demands is achievable, but with the data showing
268 high variability of acceleration and decelerations, it suggests that making judgements
269 on training prescription or load monitoring from these metrics remains difficult.
270 Practitioners must act to ensure that all efforts are made to reduce errors that may
271 further compound the quality of data obtained.

272

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357 Tables:

358 Table 1: Descriptive Data (mean \pm standard deviation and variability statistics for ODI vs T20.

	ODI	T20	ODI	ODI	T20	T20	ODI	T20
	n= 157	n= 38	Within-player	Between-player	Within-player	Between-player	SWC	SWC
			CV%	CV%	CV%	CV%		
	(max value)	(max value)	(\pm 90% CI)	(\pm 90% CI)	(\pm 90% CI)	(\pm 90% CI)		
Absolute Physical Performance								
Decelerations <-4 m·s ⁻² (n)	2.7 \pm 2.3 (13.0)	3.0 \pm 2.3 (8.0)	68.7 (51.2, 105.0)	29.1 (23.4, 41.0)	64.6 (38.1, 211.7)	47.3 (30.4, 106.6)	0.2	0.3
Decelerations -2-4 m·s ⁻² (n)	25.9 \pm 12.6 (69.0)	19.1 \pm 7.8 (34.0)	37.0 (31.6, 44.5)	32.8 (26.9, 48.7)	36.2 (28.4, 49.9)	24.4 (19.8, 31.8)	1.9	0.9
Accelerations 2-4 m·s ⁻² (n)	35.8 \pm 18.9 (104.0)	29.1 \pm 13.8 (56.0)	35.8 (30.0, 46.6)	39.6 (32.3, 65.6)	30.8 (25.4, 39.1)	40.1 (29.0, 64.9)	3.5	2.1
Accelerations >4 m·s ⁻² (n)	4.2 \pm 6.3 (37.0)	4.1 \pm 3.1 (11.0)	79.6 (57.9, 148.5)	83.8 (53.7, 517.7)	64.9 (42.2, 139.8)	46.1 (32.0, 82.2)	0.7	0.3
Maximum Velocity (km·h ⁻¹)	29.2 \pm 2.5 (36.6)	30.0 \pm 2.8 (35.6)	7.9 (7.5, 8.39)	4.4 (4.3, 4.6)	7.7 (7.2, 8.3)	3.6 (3.5, 3.8)	0.3	0.2
Total Distance (m)	11927.0 \pm 2726.1 (17048.5)	6616.8 \pm 969.2 (8966.7)	21.5 (19.2, 24.5)	6.7 (6.4, 7.2)	12.7 (11.4, 14.3)	10.7 (9.7, 11.9)	157.3	136.0
Distance 0-7 km·h ⁻¹ (m)	8317.5 \pm 1919.5 (13185.5)	4115.4 \pm 970.5 (6047.8)	50.8 (18.8, 23.6)	8.2 (7.8, 8.9)	19.6 (16.6, 23.9)	20.8 (17.3, 25.9)	131.2	161.4
Distance 7-15 km·h ⁻¹ (m)	2147.4 \pm 665.7 (4159.3)	1545.2 \pm 441.3 (2434.8)	30.9 (26.6, 37.6)	11.3 (10.5, 12.8)	20.6 (17.5, 24.9)	20.6 (17.2, 25.7)	49.8	60.4
Distance 15-20 km·h ⁻¹ (m)	563.0 \pm 180.7 (1086.8)	453.0 \pm 160.4 (868.99)	29.5 (25.5, 35.5)	14.1 (12.9, 16.4)	26.7 (21.9, 34.2)	25.1 (20.2, 33.0)	16.9	21.0
Distance 20-25 km·h ⁻¹ (m)	840.8 \pm 298.2 (1410.9)	354.5 \pm 155.9 (689.7)	31.6 (27.2, 38.3)	23.2 (20.1, 30.2)	28.4 (23.2, 36.6)	27.8 (22.0, 37.8)	38.1	21.2
Distance >25 km·h ⁻¹ (m)	57.1 \pm 46.7 (253.2)	61.1 \pm 36.3 (124.9)	65.2 (496, 110.5)	44.4 (34.2, 79.8)	55.8 (37.9, 106.0)	27.3 (21.7, 37.0)	5.8	3.3
Overs	7.3 \pm 2.2 (10.0)	2.4 \pm 0.5 (4.0)	25.4 (22.3, 29.8)	17.0 (15.2, 20.4)	32.7 (25.7, 44.6)	7.6 (7.0, 8.2)	0.2	0.04
Duration (mins)	208 \pm 37 (295)	101 \pm 15 (136)	17.0 (15.7, 18.7)	3.6 (3.5, 3.7)	16.0 (13.9, 18.7)	8.3 (7.7, 9.1)	1.5	1.7

Relative Physical Performance

Decelerations <-4 m·s ⁻² (n·min ⁻¹)	0.01 ± 0.009 (0.05)	0.03 ± 0.03 (0.11)	75.5 (54.4, 123.4)	33.7 (27.0, 44.8)	72.0 (38.9, 482.2)	57.2 (34.2, 174.7)	0.008	0.004
Decelerations -2-4 m·s ⁻² (n·min ⁻¹)	0.13 ± 0.06 (0.35)	0.19 ± 0.06 (0.33)	35.3 (29.8, 43.2)	29.8 (24.9, 37.3)	30.8 (25.0, 40.0)	20.4 (17.1, 25.4)	0.008	0.007
Accelerations 2-4 m·s ⁻² (n·min ⁻¹)	0.18 ± 0.10 (0.54)	0.29 ± 0.12 (0.53)	34.6 (28.7, 43.7)	41.1 (32.2, 56.7)	24.9 (21.0, 30.8)	37.8 (27.8, 59.0)	0.02	0.02
Accelerations >4 m·s ⁻² (n·min ⁻¹)	0.02 ± 0.03 (0.17)	0.04 ± 0.03 (0.12)	79.2 (56.3, 133.9)	84.7 (54.1, 196.0)	77.2 (45.5, 256.7)	38.8 (28.3, 61.6)	0.003	0.003
Metres per minute (m·min ⁻¹)	58.0 ± 10.3 (73.7)	66.0 ± 7.6 (90.7)	15.9 (14.7, 17.3)	6.9 (6.6, 7.3)	8.5 (8, 9.2)	7.9 (7.3, 8.5)	0.8	1.0
Distance 0-7 km·h ⁻¹ (m·min ⁻¹)	40.3 ± 6.9 (54.9)	41.2 ± 8.9 (67.4)	14.2 (13.3, 15.3)	8.8 (8.3, 9.4)	15.5 (13.7, 17.8)	18.4 (15.7, 22.4)	0.7	1.5
Distance 7-15 km·h ⁻¹ (m·min ⁻¹)	10.5 ± 3.0 (19.2)	15.4 ± 4.3 (25.7)	28.7 (24.8, 33.9)	10.1 (9.4, 10.8)	19.3 (16.6, 23.0)	18.2 (15.5, 22.0)	0.2	0.5
Distance 15-20 km·h ⁻¹ (m·min ⁻¹)	2.7 ± 0.8 (4.8)	4.5 ± 1.3 (7.5)	23.7 (21.2, 26.9)	14.5 (13.2, 16.0)	18.8 (16.4, 22.0)	21.9 (18.1, 27.7)	0.08	0.2
Distance 20-25 km·h ⁻¹ (m·min ⁻¹)	4.1 ± 1.5 (10.3)	3.5 ± 1.4 (5.9)	30.1 (26.3, 35.1)	22.7 (19.7, 26.8)	24.3 (20.1, 30.7)	26.7 (21.3, 35.8)	0.2	0.2
Distance 25+ km·h ⁻¹ (m·min ⁻¹)	0.3 ± 0.2 (1.4)	0.6 ± 0.4 (1.7)	65.5 (48.0, 102.7)	51.4 (38.2, 78.3)	64.1 (401, 160.1)	29.6 (23.1, 41.2)	0.03	0.03

359 CV%= coefficient of variation. CI= confidence interval. SWC= smallest worthwhile change.

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364 Table 2: Descriptive Data (mean \pm standard deviation) for ODI home vs away matches.

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	ODI	
	Home n= 87	Away n= 73
Absolute Physical Performance		
Decelerations $<-4 \text{ m}\cdot\text{s}^{-2}$ (n)	2.5 \pm 1.7	3.4 \pm 1.8
Decelerations $-2-4 \text{ m}\cdot\text{s}^{-2}$ (n)	22.6 \pm 10.8	30.6 \pm 14.5
Accelerations $2-4 \text{ m}\cdot\text{s}^{-2}$ (n)	36.3 \pm 19.1	36.0 \pm 19.0
Accelerations $>4 \text{ m}\cdot\text{s}^{-2}$ (n)	4.8 \pm 7.3	3.5 \pm 4.6
Maximum Velocity ($\text{km}\cdot\text{h}^{-1}$)	29.1 \pm 2.3	29.4 \pm 2.5
Total Distance (m)	11499.8 \pm 2919.2	12409.3 \pm 2363.8
Distance $0-7 \text{ km}\cdot\text{h}^{-1}$ (m)	7945.3 \pm 1930.5	8718.3 \pm 1843.4
Distance $7-15 \text{ km}\cdot\text{h}^{-1}$ (m)	2149.3 \pm 755.5	2158.4 \pm 537.8
Distance $15-20 \text{ km}\cdot\text{h}^{-1}$ (m)	555.9 \pm 203.0	571.5 \pm 149.8
Distance $20-25 \text{ km}\cdot\text{h}^{-1}$ (m)	786.2 \pm 316.3	904.2 \pm 256.7
Distance $>25 \text{ km}\cdot\text{h}^{-1}$ (m)	62.5 \pm 51.8	55.1 \pm 44.5
Overs	7.2 \pm 2.2	7.4 \pm 2.0
Duration (mins)	201 \pm 38	216 \pm 36

Relative Physical Performance

Decelerations <-4 m·s ⁻² (n·min ⁻¹)	0.01 ± 0.01	0.02 ± 0.01
Decelerations -2-4 m·s ⁻² (n·min ⁻¹)	0.12 ± 0.05	0.14 ± 0.07
Accelerations 2-4 m·s ⁻² (n·min ⁻¹)	0.19 ± 0.10	0.17 ± 0.09
Accelerations >4 m·s ⁻² (n·min ⁻¹)	0.02 ± 0.04	0.02 ± 0.02
Metres per minute (m·min ⁻¹)	58.0 ± 11.8	58.0 ± 8.3
Distance 0-7 km·h ⁻¹ (m·min ⁻¹)	40.1 ± 7.7	40.6 ± 5.8
Distance 7-15 km·h ⁻¹ (m·min ⁻¹)	10.8 ± 3.4	10.3 ± 2.8
Distance 15-20 km·h ⁻¹ (m·min ⁻¹)	2.8 ± 0.8	2.7 ± 0.8
Distance 20-25 km·h ⁻¹ (m·min ⁻¹)	4.0 ± 1.5	4.3 ± 1.5
Distance 25+ km·h ⁻¹ (m·min ⁻¹)	0.3 ± 0.3	0.3 ± 0.2

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373 Figure Legends:

374 Figure1: Comparison of absolute (A) and relative (B) physical demand of ODI vs T20 and absolute (C) and relative (D) physical demands of home
375 vs away comparison. Effect sizes \pm 90% CI. P values = Bonferroni *post-hoc* pairwise comparisons.

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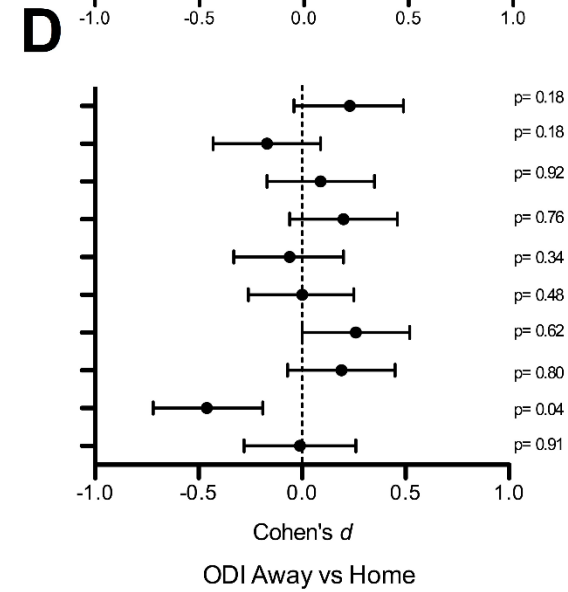
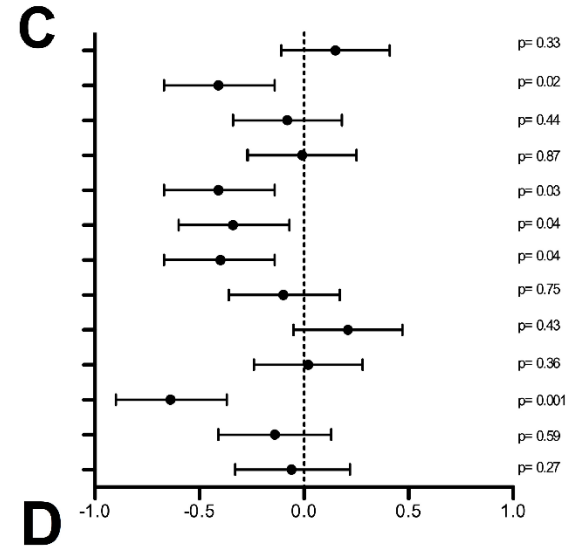
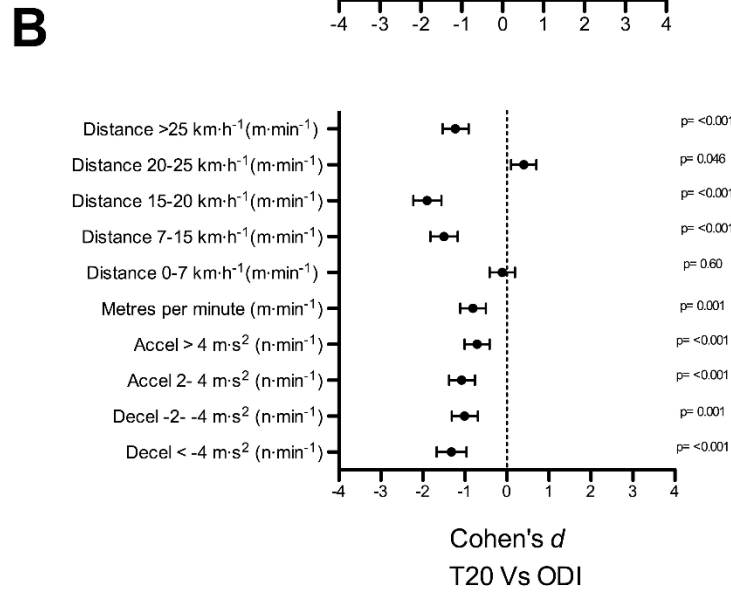
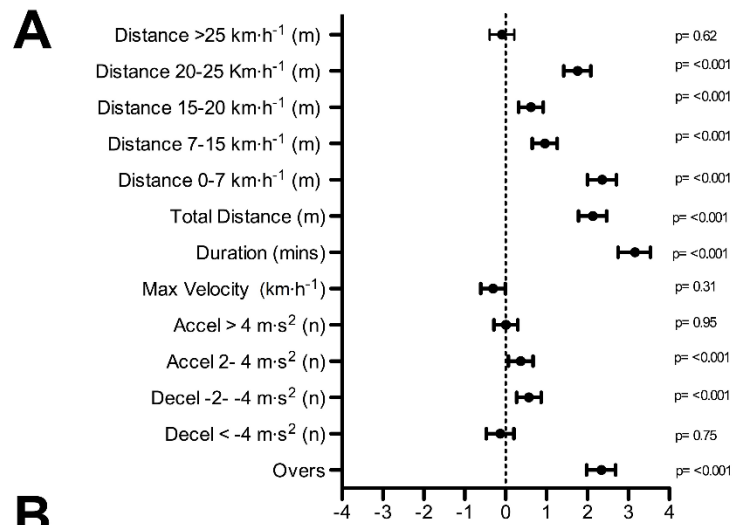
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389 Supplementary material: