

1 **Title Page**

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5 Seasonal changes in the physical activity levels of youth Gaelic football players.

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34 **Word count:** 3550

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## Abstract

This study quantified changes in physical activity (PA) levels attained by adolescents during Gaelic football participation across two time points in a season and determined if these changes affected the overall daily PA levels of the participants. 130 Adolescents (65 male, 65 female; mean age  $15.3 \pm 1.5$  yrs) wore an activPAL accelerometer to determine total moderate physical activity (MPA), vigorous physical activity (VPA) and moderate-to-vigorous physical activity (MVPA) during a seven-day measurement period, including during Gaelic football participation. The PA measurement was completed at two time points, in line with the “preseason” (T1) and “in-season” (T2) phases. Between T1 and T2, females significantly increased time spent in MVPA daily ( $p < 0.001$ ,  $d = 0.95$ ), on sports days ( $p = 0.036$ ;  $d = 0.30$ ), on non-sports days ( $p < 0.001$ ;  $d = 0.43$ ), and during Gaelic football participation ( $p < 0.001$ ,  $d = 0.90$ ). Males did not record any significant changes in PA over time ( $p > 0.05$ ). At T2, there were no significant differences in time spent in MVPA daily, on sports days and non-sports days, and during Gaelic football participation between males and females ( $p > 0.05$ ). The results suggest that the change in daily PA levels by females is a consequence of increased MVPA attained during Gaelic football participation and reduced barriers to PA across the time points.

## Key Words:

Adolescents, Moderate-to-vigorous physical activity, Youth sports, Accelerometry.

# 1 Introduction

2 The importance of regular physical activity (PA) to the healthy development of children and  
3 adolescents is well established, with evidence highlighting links between PA and improved  
4 health markers (Janssen and LeBlanc, 2010; Poitras et al., 2016). Furthermore, PA behaviours  
5 adopted during adolescence are likely to be maintained into adulthood (Hayes et al., 2019;  
6 Tammelin et al., 2014), demonstrating the importance of promoting adequate PA participation  
7 during this early developmental stage (Camacho-Minano et al., 2011; Hallal et al., 2006).  
8 Latest guidelines for PA from the World Health Organization (WHO) recommend youth  
9 achieve at least an average of 60 minutes per day of moderate-to-vigorous physical activity  
10 (MVPA) across the week to attain these health benefits (World Health Organisation, 2020).  
11 Despite this, research has reported that up to 90% of Irish adolescents fail to meet the relevant  
12 guidelines for PA (Woods et al., 2018). Moreover, a gender disparity in PA participation has  
13 been widely reported, as females are consistently less physically active throughout youth (Sallis  
14 et al., 2016), and experience a steeper age-related decline in PA when compared to males  
15 (Farooq et al., 2020; Owen et al., 2017).

16 In response to the low levels of PA attained throughout adolescence, increased efforts have  
17 been placed on identifying effective settings to increase engagement in MVPA (Fenton et al.,  
18 2015). Participation in organised sport (OS) has been identified as one of the “eight investments  
19 that work” for increasing PA (The International Society for Physical Activity and Health,  
20 2020), and is particularly relevant to youth given the existing cultural norms and infrastructure  
21 that encourages sports participation amongst this cohort (Howie et al., 2020). Indeed, research  
22 indicates that 58-80% of Irish youth participate in at least one OS per week, while Gaelic  
23 football in particular is the most popular OS among this cohort, with 32% of youth participating  
24 regularly (Woods, et al., 2018). This could have positive implications for public health, as  
25 participation in youth OS is associated with increased daily PA levels (Hebert et al., 2015;

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26 Sprengeler et al., 2019), increased likelihood of attaining the PA guidelines (Kokko et al., 2018; Mooses and Kull, 2019), and psychological benefits (McMahon et al., 2017; Murphy et al., 2020).

29 However, the specific role of OS in youth daily PA levels remains unclear. Participation alone does not ensure youth will achieve the PA guidelines (Ridley et al., 2018), with one study reporting that less than 20% of OS participating youth met the recommendations (Vella et al., 2016). Also, studies consistently demonstrate that irrespective of the sport type, sport context (practice or game), age or gender, youth OS participants spend the majority of their sport time inactive or in light intensity physical activity (LIPA) (Cohen et al., 2014; Gavin et al., 2020; Kanters et al., 2015; Leek et al., 2011; Ridley, et al., 2018; Sacheck et al., 2011; Schlechter et al., 2017). Notably, a gender disparity in PA behaviour persists in an OS setting, with females accumulating significantly less time in MVPA during OS participation when compared to males (Gavin, et al., 2020; Leek, et al., 2011; Mooses and Kull, 2019; Ridley, et al., 2018; Sprengeler, et al., 2019).

40 To date, no research has examined the PA levels of OS participants across a competitive season, restricting data collection to one often undisclosed time point. This is limiting as once off estimates of PA may be biased due to seasonal variations such as temperature differences, daylight hours, amount of precipitation and discretionary time, which have been demonstrated to impact the PA levels of youth (Atkin et al., 2016). Moreover, across a competitive season, the coaching approach implemented has been shown to alternate between the use of a traditional approach and a games-based approach (GBA) (Harvey et al., 2013; Kinnerk et al., 2019), which can have a significant effect on the MVPA levels of the participants (Cohen, et al., 2014; Miller et al., 2017).

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Overall, the impact of seasonal and coaching variations on PA levels attained during OS is unclear in any youth sport context. Therefore, the purpose of this study was to investigate longitudinal changes in PA levels attained by adolescents during Gaelic football participation across a competitive season and to determine if these changes had an effect on the overall daily PA levels of the participants.

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## 54 **Methods**

### 55 **Participants**

56 The OS selected for this study was Gaelic football, as it has the highest participation rates  
57 among Irish adolescents (Woods, et al., 2018). Participants were recruited from a convenience  
58 sample of three local Gaelic football clubs in the midlands and western regions of Ireland.  
59 Written informed consent was first obtained from club executive committees, followed by  
60 written informed parental consent and participant assent prior to the commencement of the  
61 study. A total of 138 adolescents (71 male, 67 female) between the ages of 12 and 18 years  
62 (mean age=14.4±1.7) took part in data collection at both the first time point (T1) between the  
63 months of January-March, and second time point (T2) between the months of June–August.  
64 Ethical approval was granted from the Athlone Institute of Technology Research Ethics  
65 Committee.

### 66 **Study Protocol**

67 Data collection was conducted at two distinct time points, scheduled in line with the preseason  
68 (T1) and in-season (T2) period of the youth Gaelic football calendar. Data was collected at the  
69 participating Gaelic football clubs prior to an organised practice session. Participant's height  
70 and weight were first recorded following standard procedures. Height was measured to the  
71 nearest 0.1cm using a portable stadiometer (Marsden model HM-250P, Marsden weighing  
72 machine group, UK). Weight was measured to the nearest 0.1kg using a portable electronic  
73 scale (Seca model 813, Seca Corporation, Hanover MD). The activPAL3 micro activity  
74 monitor (activPAL<sup>3M</sup>; PAL Technologies Ltd., Glasgow, UK) was the device-based  
75 measurement tool used to assess free-living PA levels in this study. The activPAL<sup>3M</sup> device  
76 was first waterproofed by placing it into a small flexible nitrile sleeve. The activPAL<sup>3M</sup> devices  
77 were distributed and under the supervision of the primary investigator, the participants attached  
78 the device directly to the skin on the midline of the anterior aspect of the right thigh using a

79 transparent dressing (Tegaderm™ Foam Adhesive Dressing). Participants were instructed to  
80 wear the activPAL<sup>3M</sup> 24 hours per day (except while swimming or bathing) for a total of seven  
81 consecutive days and were required to partake in a minimum of one practice session and one  
82 game during this measurement period. The participants were provided an activity log to record  
83 any time the accelerometer was removed and reapplied over the 7-day period. In addition, the  
84 coaches were provided with a journal to record the start and finish time of each practice session  
85 and game, and to detail the activities performed during the practice sessions. Following the 7-  
86 day measurement period, the primary investigator collected the activity monitors.

### 87 **Physical Activity Assessment:**

88 The activPAL<sup>3M</sup> is a triaxial accelerometer that has been established as a valid measure of body  
89 posture (i.e. sitting/lying versus standing) and for quantifying sedentary time and PA in youth  
90 (Dowd, Harrington, & Donnelly, 2012). The activPAL<sup>3M</sup> recorded information in 15s epochs,  
91 which aids in the effective capture of the intermittent patterns of children and adolescents PA  
92 behaviour (Trost et al., 2005). The activPAL Professional Software™ (version 7.2.32) was  
93 used to access the recorded epoch data for the 7-day period and the data files were exported to  
94 a Microsoft Excel 2010 (Redmond, WA, USA) file format to be processed. The protocol used  
95 for data reduction is described in detail elsewhere (Dowd, Harrington, Bourke, et al., 2012).  
96 Briefly, participant data was determined acceptable for analysis if there was one Gaelic football  
97 practice session and one game recorded, and a minimum of four valid days of measurement  
98 (including one weekend day) were recorded at both T1 and T2. A 24-hour period was defined  
99 from 5am to 5am the following day in line with previous analysis conducted using this device  
100 (Dowd, et al., 2012). A valid day was determined as a measured day with  $\leq 4$  hour's non-wear  
101 time during waking hours. Non-wear time was defined as a period with  $\geq 60$  minutes of  
102 consecutive zero activity counts. The amount of waking time was calculated by subtracting  
103 bedtime from rise time. To estimate bed hours, the first registered non-sedentary epoch each

104 day was identified as the rise time while the last registered non-sedentary epoch followed by  
105 an uninterrupted sedentary period (>2h) was identified as the time participants went to bed  
106 (Dowd, et al., 2012).

107 The output files were examined to produce daily PA variables, which include moderate  
108 intensity physical activity (MPA), vigorous physical activity (VPA) and MVPA. Previously  
109 developed and validated thresholds for the determination of MPA (9286 counts per 15 second  
110 epoch) and VPA (16100 counts per 15 second epoch) were utilized (Hayes et al., unpublished  
111 data). MVPA was calculated by summing the time spent in MPA and VPA. A sports day was  
112 defined as any day that the participants took part in an organized Gaelic football practice  
113 session or game, as recorded in the coach's diary. In addition, the start and finish times of each  
114 practice session and game were identified within the output files and the PA variables (MPA,  
115 VPA and MVPA) during these periods were also quantified. To control for the variation in the  
116 amount of time spent in practice sessions and games, the PA variables during these Gaelic  
117 football sessions were defined as minutes per hour (min/hr). This was achieved by dividing the  
118 amount of time spent in each PA variable by the duration of each practice session or game and  
119 then multiplying by 60.

#### 120 **Statistical Analysis:**

121 Variables were tested for the assumption of normality using the Kolmogorov-Smirnov test.  
122 Descriptive statistics for the study sample are presented as means and standard deviations (SD).  
123 The homogeneity of variance of data was investigated using the Levene's test. A one-way  
124 ANOVA was conducted to examine the main effect of the time of the season (T1 and T2) on  
125 each PA intensity across the total sample. Bonferroni post-hoc analysis was completed to  
126 identify where differences were observed across the groups. Differences in the means of each  
127 PA intensity (MPA, VPA and MVPA) between males and females, and sport days and non-  
128 sport days at T1 and T2 were established using independent samples t-tests. Statistical analyses



129 were performed using IBM SPSS 26.0 (SPSS, Inc; Chicago, IL) and the level of statistical  
130 significance was set at  $p < 0.05$ .

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131 **Results**

132 **Daily Physical Activity Levels**

133 Descriptive characteristics and overall daily PA data of the participants are presented in Table  
134 1. Eight participants were excluded from the analysis due to failure to achieve the minimum  
135 number of valid days at both time points. The final sample included 130 participants (65 male,  
136 65 female; mean age 15.3±1.5yrs). Over time, females significantly increased the amount of  
137 daily time spent in MPA ( $t(136)=-4.809$ ;  $p<0.001$ ;  $d=0.81$ ), VPA ( $t(136)=-4.574$ ;  $p<0.001$ ;  
138  $d=0.79$ ), and MVPA ( $t(136)=-5.559$ ;  $p<0.001$ ;  $d=0.95$ ). A statistically significant effect for  
139 gender was observed at T1, with males spending significantly more time than their female  
140 counterparts in MPA ( $F_{1,132}=37.018$ ;  $p<0.001$ ;  $\eta^2=0.219$ ), VPA ( $F_{1,132}=60.228$ ;  $p<0.001$ ;  
141  $\eta^2=0.313$ ) and MVPA ( $F_{1,132}=67.050$ ;  $p<0.001$ ;  $\eta^2=0.337$ ). At T2, no statistically  
142 significant differences were observed between males and females for daily time spent in each  
143 PA intensity ( $p>0.05$ ).

144 Insert Table 1 here

145 **Sport Days and Non-Sports Days Physical Activity Levels**

146 Table 2. describes participants' waking time spent in MPA, VPA and MVPA during sports  
147 days and non-sports days. Over time, MVPA on non-sports days increased significantly in the  
148 overall sample ( $t(993)=-1.984$ ;  $p=0.048$ ;  $d=0.12$ ), primarily due to significant increases among  
149 females in time spent in MPA ( $t(552)=-4.023$ ;  $p<0.001$ ;  $d=0.34$ ), VPA ( $t(552)=-4.655$ ;  
150  $p<0.001$ ;  $d=0.40$ ), and MVPA ( $t(552)=-5.021$ ;  $p<0.001$ ;  $d=0.43$ ) on non-sports days.  
151 Additionally, between T1 and T2, females significantly increased time spent in VPA ( $t(197)=-$   
152  $2.185$ ;  $p=0.031$ ;  $d=0.31$ ) and MVPA ( $t(197)=-2.108$ ;  $p=0.036$ ;  $d=0.30$ ) on sports days. On both  
153 sports days and non-sports days during T1, males accumulated significantly more time in MPA  
154 (Sports Day:  $p=0.004$ ;  $d=0.42$ ; Non-Sports Day:  $p<0.001$ ;  $d=0.56$ ), VPA (Sports Day:  $p<0.001$ ;  
155  $d=0.72$ ; Non-Sports Day:  $p<0.001$ ;  $d=0.70$ ), and MVPA (Sports Day:  $p<0.001$ ;  $d=0.72$ ; Non-

156 Sports Day:  $p < 0.001$ ;  $d = 0.71$ ) than their female counterparts. At T2, no statistically significant  
157 gender differences were observed for time spent in each PA intensity on sports days or non-  
158 sports days ( $p > 0.05$ ).

Insert Table 2 here

### Physical Activity Levels During Gaelic Football Participation

Figure 1 presents the distribution of time spent in MPA, VPA and MVPA during Gaelic football participation for the participants across both T1 and T2. Overall, total participants accumulated significantly more time in MPA ( $t(419) = -4.602$ ,  $p < 0.001$ ,  $d = 0.44$ ), VPA ( $t(419) = -3.276$ ,  $p = 0.001$ ,  $d = 0.31$ ) and MVPA ( $t(419) = -5.099$ ,  $p < 0.001$ ,  $d = 0.50$ ) at T2. Females significantly increased the amount of time spent in MPA ( $t(189) = -3.658$ ,  $p < 0.001$ ,  $d = 0.55$ ), VPA ( $t(189) = -5.561$ ,  $p < 0.001$ ,  $d = 0.84$ ) and MVPA ( $t(189) = -5.689$ ,  $p < 0.001$ ,  $d = 0.90$ ) during Gaelic football participation between T1 and T2. In contrast, for males, no significant differences were observed for time spent in each PA intensity during Gaelic football participation ( $p > 0.05$ ) over time. Furthermore, during Gaelic football participation at T1, males accumulated significantly more time in MPA ( $t(172) = 2.799$ ,  $p = 0.006$ ,  $d = 0.44$ ), VPA ( $t(172) = 6.117$ ,  $p < 0.001$ ,  $d = 0.96$ ) and MVPA ( $t(172) = 7.300$ ,  $p < 0.001$ ,  $d = 0.97$ ) than females. At T2, no significant differences were observed between males and females for time spent in each PA intensity during Gaelic football participation ( $p > 0.05$ ).

Insert Figure. 1 here

### Discussion

To the author's knowledge, this is the first study to quantify changes in the PA levels attained during OS participation across two time points of a competitive season and to determine the effect of these changes on the overall daily PA levels of the participants. Findings revealed that female participants demonstrated a significant increase in time spent in MVPA during Gaelic

180 football participation and on both sports days and non-sports days between T1 and T2, resulting  
181 in a significant increase in overall daily PA levels. Consequently, gender differences in daily  
182 PA levels and PA levels during Gaelic football, which were apparent at T1, did not persist at  
183 T2.

184 A gender disparity in adolescent PA levels has consistently been demonstrated within the  
185 literature, whereby both OS participating and non-OS participating females accumulate  
186 significantly less MVPA daily than their male counterparts (Marques et al., 2016; Telford et  
187 al., 2016). The daily MVPA levels of female participants in this analysis increased across the  
188 time points, resulting in no significant differences being observed between genders for daily  
189 time spent in MVPA at T2. This increase in overall daily MVPA levels achieved by females  
190 may be explained by the significant increase in MVPA attained on both sports days and non-  
191 sports days across the time points. The influences on PA participation during adolescence are  
192 multifactorial, while there is some indication of gender differences between these factors  
193 (Telford, et al., 2016). Female adolescents cite many school-related barriers to their  
194 participation (Edwardson et al., 2015), including increased importance of education, parental  
195 expectations, negative physical education (PE) experiences, unsupportive PE teachers and  
196 negative peer influence (Corr et al., 2019). Given that T2 of data collection in this study was  
197 recorded during the summer months, the removal of these school-related barriers to PA  
198 participation during the summer holidays may, in part, explain the increase in female  
199 participants PA levels on sports days and non-sports days over time. Indeed, research has  
200 concluded that increased levels of PA in youth during spring and summer months were  
201 explained by greater discretionary time, resulting in increased time spent in leisure activities,  
202 out-of-home play or involvement in additional OS (Goodman et al., 2012; Staiano et al., 2015).  
203 This study has quantified PA during OS participation in a novel setting, and in this instance, in  
204 a novel context across seasonal timepoints. Research consistently shows that males are more

1 205 physically active than their female counterparts during OS participation, accumulating between  
2 206 6-9% more time in MVPA (Leek, et al., 2011; Mooses and Kull, 2019). In this analysis, female  
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4 207 participants significantly increased the amount of time spent in MVPA during Gaelic football  
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7 208 participation over time (12% or 7min/hr; see Fig 1.), resulting in no significant differences  
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9 209 being observed between genders for time spent in MVPA during Gaelic football participation  
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11 210 at T2. The impact of increased PA during Gaelic football participation contributes to increased  
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13 211 PA levels on sports days, as females accumulated an additional 9 minutes of MVPA on these  
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15 212 days at T2, which removed the gender disparity in MVPA on sports days. Therefore, the change  
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17 213 in female participants overall daily PA levels is a direct consequence of the significant increase  
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19 214 in MVPA on sports days between the time points, resulting from the increase in time spent in  
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21 215 MVPA during Gaelic football participation.  
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27 216 Coaches have been recognised as one of the primary factors influencing the intensity of PA  
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29 217 attained during OS participation (Howie, et al., 2020). A possible explanation for the variation  
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31 218 in PA attained by female participants during Gaelic football may be due to different coaching  
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33 219 strategies being implemented, as it has been previously highlighted that the structure, content  
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35 220 and focus of OS practice sessions may vary across a season (Emmonds et al., 2020; Harvey, et  
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37 221 al., 2013). Within the coaching literature of field-based sports, two coaching strategies are most  
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39 222 frequently implemented; a traditional approach and a GBA (Kinnerk, et al., 2019). In Gaelic  
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41 223 football practice sessions, coaches typically use a traditional approach in preseason, before  
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43 224 implementing a more GBA during the regular season (Kinnerk, et al., 2019). Research has  
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45 225 demonstrated that MVPA levels attained during an OS practice session were significantly  
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47 226 greater when coaches implemented a GBA (Cohen, et al., 2014; Miller, et al., 2017), due to  
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49 227 larger amounts of time spent in playing form activities which replicate the technical, tactical  
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51 228 and physical demands of match-play (Ford et al., 2010). Furthermore, longitudinal research  
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53 229 examining the seasonal changes in the physical performance of youth female soccer players  
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230 demonstrated that players experience improvements in speed, change of direction and aerobic  
231 capacity across a season (Emmonds, et al., 2020). It is logical that female participants in this  
232 analysis experienced similar physical improvements across the season, allowing coaches to  
233 implement more high-intensity, physically demanding activities, resulting in increased time  
234 spent in MVPA. Thus, changes in coaching strategies may have played a role in the resulting  
235 change in the female participant's MVPA during the T2 data collection.

236 This study had a number of strengths. Firstly, to the author's knowledge, this is the first study  
237 to measure PA data in an OS setting across two distinct time points of a competitive season,  
238 which provides a more complete analysis of both the daily PA levels and PA levels attained  
239 during OS participation. Secondly, the use of an objective, device-based measure permitted for  
240 accurate assessment of the PA levels of Irish OS participating adolescents, where data was  
241 previously limited. However, there are limitations to this study. Firstly, due to poor adherence  
242 of the coaches to outline the activities performed during practice sessions within the provided  
243 journal, it was not possible to clearly indicate if coaching strategies had changed across the  
244 season. Secondly, this study did not require the participants to record if/when they were  
245 physically active within other settings outside of Gaelic football, such as other OS, which may  
246 have impacted PA levels on non-sports days. Finally, the convenience sampling method used,  
247 and the small number of Gaelic football teams investigated means that these findings may not  
248 be generalisable across all youth that participate in Gaelic football.

## 249 **Conclusion**

250 Across a competitive season, significant changes in the amount of time spent in MVPA on  
251 sports days, non-sports days and during Gaelic football participation were observed for  
252 females. This had a positive effect on the overall daily PA levels of female participants,  
253 accumulating equivalent amounts of MVPA daily to their male counterparts. Findings suggest  
254 that these positive changes may be a result of the implementation of different coaching

1 255 strategies and reduced barriers to PA over time. Further research should explore how coaching  
2 256 approaches could improve female PA levels during Gaelic football participation throughout a  
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5 257 season and assist in reducing the deficit in overall PA accumulated by females.  
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8 **258 Geolocation Information**  
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10 259 The research was conducted in Westmeath, Ireland. Participants were recruited from the  
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12 260 midlands and western regions of Ireland.  
13

14 **261 Acknowledgements**  
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17 262 The authors wish to thank the participating Gaelic football clubs, coaches and adolescents.  
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19 **263 Disclosure Statement**  
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21  
22 264 No potential conflict of interest was reported by the authors  
23

24 **265 Funding**  
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26  
27 266 Athlone Institute of Technology President's Doctoral Scholarship  
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**Tables:**

**Table 1.** Participant characteristics and daily physical activity measures.

<b>Measure</b>	<b>Total</b>		<b>Males</b>		<b>Females</b>	
<b>Participants (n)</b>	130		65		65	
<b>Age (years)</b>	15.3 (1.5)		15.4 (1.5)		15.2 (1.7)	
<b>Height (cm)</b>	165.0 (9.1)		168.4 (8.2)		161.6 (6.5)	
<b>Weight (kg)</b>	58.1 (8.7)		60.5 (9.4)		55.6 (7.3)	
<b>Total Daily PA (min/day)</b>	<b>T1</b>	<b>T2</b>	<b>T1</b>	<b>T2</b>	<b>T1</b>	<b>T2</b>
<b>MPA</b>	36.9 (13.7)	39.1 (13.8)	<b>42.8 (13.9)<sup>†</sup></b>	38.3 (16.1)	<b>31.0 (10.6)<sup>†</sup></b>	<b>39.9 (11.2)<sup>*</sup></b>
<b>VPA</b>	21.2 (12.0)	24.0 (13.6)	<b>27.2 (12.4)<sup>†</sup></b>	25.3 (15.8)	<b>15.2 (8.1)<sup>†</sup></b>	<b>22.8 (11.0)<sup>*</sup></b>
<b>MVPA</b>	58.1 (23.0)	63.1 (23.7)	<b>70.0 (22.4)<sup>†</sup></b>	63.6 (28.5)	<b>46.2 (16.7)<sup>†</sup></b>	<b>62.7 (18.0)<sup>*</sup></b>

Values are mean (SD), \* Significant difference between T1 and T2 (p < 0.05) † Significant difference between genders (p < 0.05)

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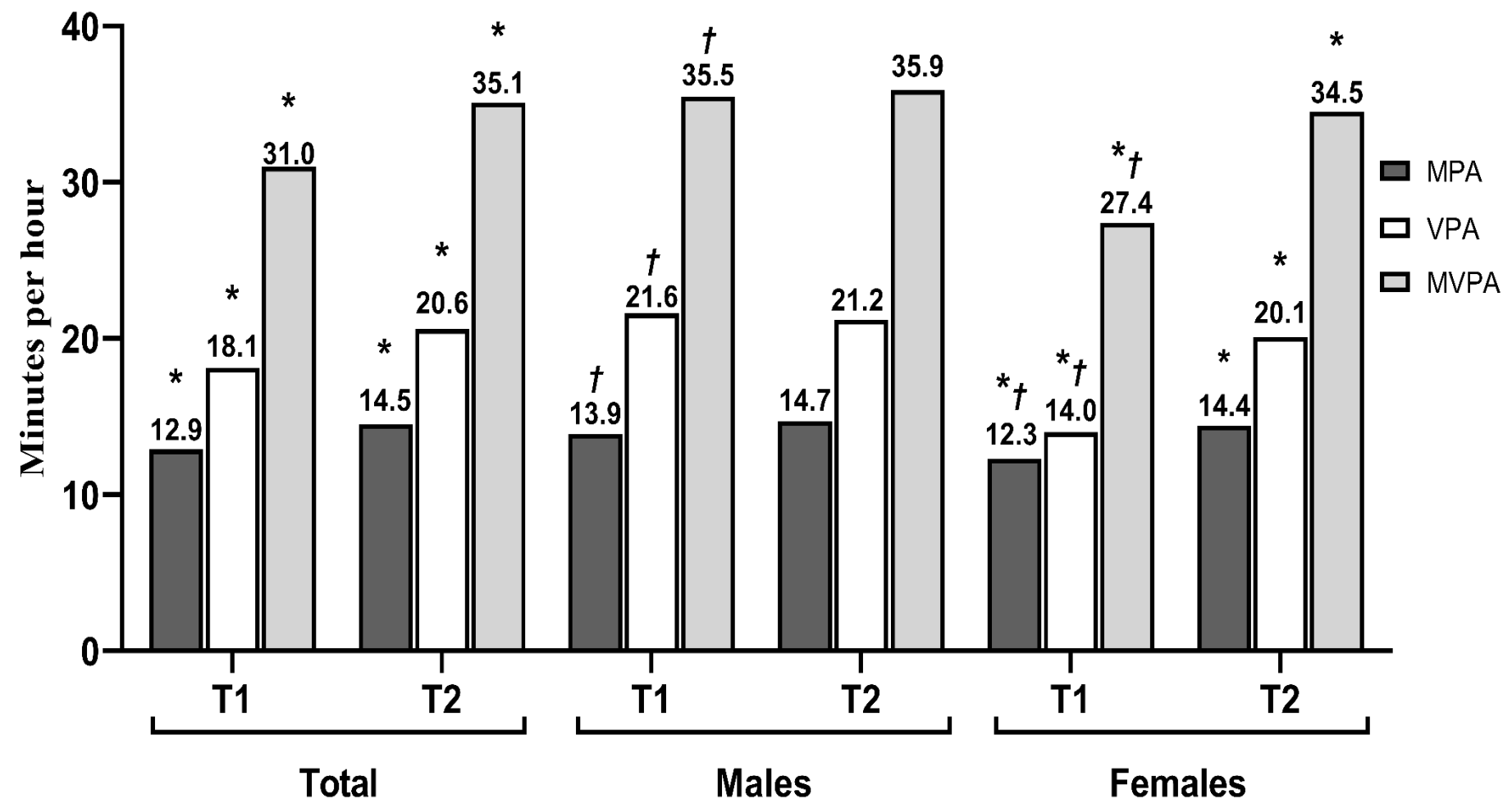
**Table 2.** Physical activity intensity (minutes) during sports day and non-sports day for the total population and across gender.

Measure	Total		Males		Females	
	T1	T2	T1	T2	T1	T2
<b>Sports Day PA (min/day)</b>						
MPA	40.4 (19.3)	41.6 (23.5)	<b>44.7 (17.3)<sup>†</sup></b>	42.4 (23.6)	<b>36.8 (20.1)<sup>†</sup></b>	40.8 (22.1)
VPA	28.5 (21.3)	29.3 (21.5)	<b>36.4 (24.4)<sup>†</sup></b>	32.5 (23.3)	<b>21.7 (15.4)<sup>†</sup></b>	<b>27.0 (19.0)<sup>*</sup></b>
MVPA	68.9 (33.0)	70.5 (37.6)	<b>81.1 (33.3)<sup>†</sup></b>	74.9 (40.3)	<b>58.5 (29.0)<sup>†</sup></b>	<b>67.8 (33.8)<sup>*</sup></b>
<b>Non-Sports Day PA (min/day)</b>						
MPA	35.8 (18.8)	37.9 (20.8)	<b>41.5 (21.1)<sup>†</sup></b>	38.6 (21.6)	<b>31.2 (15.2)<sup>†</sup></b>	<b>37.3 (20.5)<sup>*</sup></b>
VPA	19.4 (17.8)	21.6 (19.9)	<b>26.0 (21.0)<sup>†</sup></b>	23.6 (21.8)	<b>13.9 (12.4)<sup>†</sup></b>	<b>20.1 (18.3)<sup>*</sup></b>
MVPA	55.2 (32.8)	<b>59.5 (35.1)<sup>*</sup></b>	<b>67.5 (37.3)<sup>†</sup></b>	62.2 (37.8)	<b>45.1 (24.4)<sup>†</sup></b>	<b>57.4 (32.8)<sup>*</sup></b>

Values are mean (SD), \* Significant difference between T1 and T2 ( $p < 0.05$ ); <sup>†</sup> Significant difference between genders ( $p < 0.05$ )

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**Figure Captions:**

**Figure. 1.** Physical activity intensity (minutes per hour) during Gaelic football participation for the total population and across sex.

\* Significant difference between T1 and T2 ( $p < 0.05$ ) † Significant difference between genders ( $p < 0.05$ )