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Players Mental Health?**

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ABSTRACT

Playing an Amateur Sport in a Professional Context: Good for Gaelic Players Mental Health?

Gaelic games are traditional Irish amateur sports, two of which are Gaelic football and hurling. Although the sports are amateur, the advances that have taken place in the games over the past decade have increased the commitments required of players, particularly those playing senior inter-county, the highest level that the games are played. The move towards professional standards in amateur games can potentially negatively impact various aspects of players lives, including their mental health. Using survey data captured from senior inter-county Gaelic footballers and hurlers, this paper contributes to the literature in this area by examining the impact that playing an amateur sport in a professional context can have on players' mental wellbeing. The paper focusses specifically on identifying the effects that their sports-related commitments, along with their sports environment, can have on their mental health. The methodologies used in the paper account for biases related to non-random selection.

JEL Classification: I10, I31, Z20, Z28

Keywords: Gaelic games, WHO-5 wellbeing index, depression, sports commitments, amateur sports, PSM

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I Introduction

Gaelic games are traditional Irish amateur sports, the two most prominent of which are Gaelic football and hurling. Although the sports are amateur, the advances that have taken place in the games over the past decade, and the adoption of professional standards, have increased the commitment levels required of players, particularly those playing at senior inter-county level, the highest level that the games are played. Kelly et al. (2018) found that, as a baseline measure, 2016 senior inter-county male players were spending on average 31 hours per week on their inter-county commitments during the championship period. This is almost equivalent to players having a second full-time job, one which they are not remunerated given the sport's amateur status.

The evolutions that have taken place in the senior inter-county game in Ireland have predominately been driven by developments in sports science, new technologies (e.g., GPS), education, use of data, and spill-overs from professional sports (e.g., sports conditioning from rugby/AFL, tactical skills from basketball). These advances, which also includes an increasing role for professional occupations in the games (physiotherapists, nutritionists, sports psychologists, sports conditioning coaches, etc.), have given rise to concerns that the demands that the modern games are placing on players are having negative effects on various aspects of their lives, including their mental health.

This paper uses data from a unique survey of senior inter-county male footballers and hurlers to assess the extent to which increased levels of commitment to their sport, measured by the number of years spent playing inter-country, has impacted both their mental health and risk of depression. It also examines if factors in the players sporting environment, specifically related to their team manager and grassroots club,¹ help to mitigate any negative impacts from the commitments required to play the game. There have been a number of studies examining injuries in Gaelic games players (e.g., Cromwell et al., 2000; Wilson et al., 2007; Blake et al., 2011; Roe et al., 2018; O'Connor et al., 2019; O'Connor et al., 2020; King et al., 2021), and physiological related matters (e.g., Watson, 1977; Florida-James and Reilly, 1995; Watson, 1995; McIntyre, 2005; McIntyre and Hall, 2005), but this appears to be the first in depth study examining their mental health² and, in particular, the impact of the high-performance playing environment that players are now playing in on their mental wellbeing.

¹ All inter-county players commence their playing career with their local GAA club, and continue to play with their grassroots club when they become inter-county players.

² Gouttebarga et al (2016) examined common mental health disorders among a small cohort (204) of Gaelic players, but their analysis of the factors giving rise to the common mental health disorders that they examined is limited.

In general, sport and physical activity are now recognised as being effective measures in preventing stress, depression, and anxiety (Bridle et al., 2012; Cooney et al., 2013; Josefsson et al., 2014; Kvam et al., 2016; Schuch et al., 2016b, Schuch et al., 2018; Eather et al., 2023; Singh et al., 2023; Heissel et al., 2023), and are often prescribed by doctors to deal with common mental disorders. Mental health, and safeguarding it, has always been a concern for individuals, medical practitioners, and policymakers, as it is a recognised risk factor for mortality and morbidity (Hamer et al., 2009).

However, in relation to elite competitors, there is also an awareness that playing sport at a high level can give rise to anxiety, depression, and other mental health difficulties (Gouttebauge et al., 2019; Rice et al., 2016; Junge and Feddermann-Demont, 2016; Markser, 2011, Schaal et al., 2011). This has led the International Olympic Committee (IOC) to develop a consensus statement on mental health among elite athletes (Reardon et al., 2019), and also some national governments to develop measures to support mental health at the community sport level (Vella et al., 2025). It is to this literature that the current study makes a unique contribution; in particular, by measuring the mental health impacts of increased commitment requirements in amateur sports that have many of the attributes typically associated with professional sports participation. The study provides unique insights into the mental health implications of the increased professionalisation of amateur sports, an area where there is a dearth of research. There is also a paucity of rigorous research on the mental health impacts of participation in semi-professional and elite sports, which have also respectively seen increases in the levels of professionalism and demands placed on their athletes.

II Data and Methods

The data used in this paper comes from the *Survey of Senior Inter-County Players 2016* (SSIC-2016), a unique once-off survey of senior inter-county male players that was undertaken between the 29 May and 25 August 2017. The full population of 2016 players were contacted to participate in the survey (1,947). One player chose not to participate. Of the remaining 1,946, 14 completed a pilot of the questionnaire, with the final version of the survey administered to the remaining 1,932 players. Of these, 993 completed the questionnaire in full and 44 partially, giving a total sample of 1,037 players and a response rate of 53.7 per cent.³ The representativeness of the sample was examined by creating a weight variable using 2016 Gaelic Player Association (GPA)⁴ player population data.⁵ This data check

³ A multimode approach was taken to the fieldwork, including the option to complete the survey online, by post or by telephone.

⁴ The GPA is the players' representative body: its main role is player welfare.

⁵ The population data used for this sample representativeness check were: i) game code (hurling/football), ii) playing level (e.g., national league division), iii) geographic location, iv) principal economic status, and v) playing status.

revealed that the sample was representative of the 2016 player population and weighting the analyses made negligible difference to the results (Kelly et al., 2018).

The survey captured a rich array of information on players' inter-county playing experiences. Specifically, it consisted of a series of questions on 10 topics: i) senior inter-county playing information; ii) inter-county experiences; iii) education experiences; iv) employment experiences; v) health and well-being; vi) personal and family background; vii) grassroots club experiences; viii) time commitments; ix) other commitments; and x) opportunity for additional feedback.

Players' mental health was measured in the survey using the World Health Organisation-Five Well-Being Index (WHO-5). The WHO-5 is a widely used self-reported measure that captures an individual's psychological well-being over the previous two weeks. Given that the SSIC-2016 was administered between May and August 2017, the results presented in this paper relate to players' mental well-being in 2017. The various covariates examined in our regression analyses relate to 2016. Thus, any potential endogeneity bias is dealt with by having lagged covariate information.

The WHO-5 asks individuals to indicate the extent to which they have, over the previous two weeks: (i) felt cheerful and in good spirits, (ii) felt calm and relaxed, (iii) felt active and vigorous, (iv) woke up feeling fresh and rested, and (v) daily life has been filled with things that interest them. The response to each of the five statements goes from zero to five, with zero indicating 'at no time' and five 'all of the time'. The WHO-5 score derived from this information ranges from zero to 100, with higher scores indicating greater mental well-being.⁶

According to Topp et al. (2015), individuals with a WHO-5 score of 50 or lower are considered at risk of depression. When examining this issue in this paper, players in the at risk of depression range (50 or less) were compared to those with good mental health, which we define as players with scores between 51 and 69. This range was selected to be in line with the average WHO-5 score for the general population in Ireland in 2016, which was 70 (European Quality of Life Survey, 2016).⁷

⁶ The raw score, which is calculated by totalling the responses to the five WHO-5 statements, ranges from 0 to 25. To obtain a percentage score ranging from 0 to 100, the raw score is multiplied by four. A percentage score of 0 represents the worst possible quality of life, while a score of 100 indicates the best.

⁷ As a robustness check, we also compared those at risk of depression (WHO-5 scores of 50 or less) with those with 'very good mental' health, defined as those with WHO-5 scores of 72 and above. The results are broadly in line with those derived when using those with 'good mental' health (WHO-5 scores of 51 to 69) as the reference category. Results available from the authors on request.

In terms of methodology, we began by estimating the determinants of mental health using fractional probit models, with the dependant variable being individual WHO-5 scores.⁸ Post estimation marginal effects were then calculated to identify the size of the impact of the various covariates examined (including the key measure of, number of years on a senior inter-county panel) on our dependent variable.⁹ We estimated our risk of depression models using probit estimation, followed again by the calculation of marginal effects.¹⁰

A forward stepwise approach was taken to ensure model stability, beginning with a model that included personal and socio-economic characteristics (e.g., age, economic status) only. In specification 2 we added team information, specification 3 senior inter-county training commitment details, time-off from Gaelic games during the season was added in specification 4, manager supports in specification 5, and, finally, a range of grassroot club supports were added in specification 6.

III Results

WHO-5 Mental Health Score

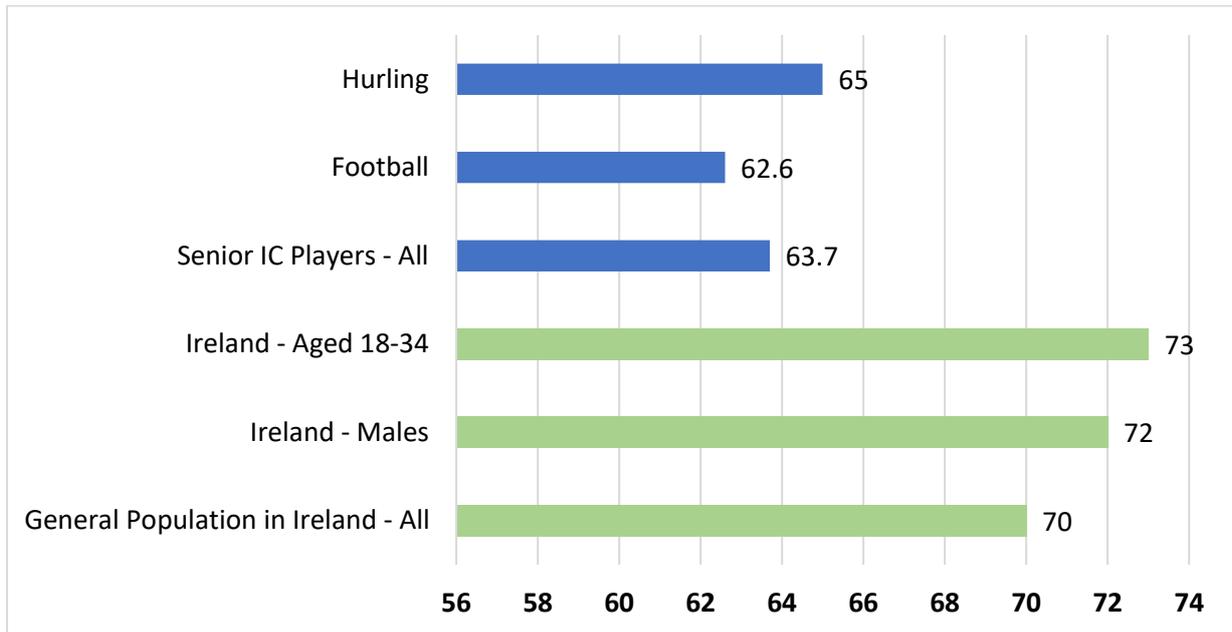
The average WHO-5 score for 2016 players was found to be 63.7 (Figure 1), which is above the threshold value of 50 that Topp et al. (2015) identified as the level at which individuals are at risk of depression. However, using the WHO-5 mental health information that is captured for Ireland in the 2016 *European Quality of Life Survey*, players have lower levels of mental health compared to the general population (70), and their WHO-5 score is almost 10 points lower than those of similar age (73). Hurlers were found to have slightly higher levels of mental health compared to footballers (65 compared to 62.6), but both codes still have lower levels of mental health compared to the general population in Ireland.

⁸ We converted our WHO-5 scores from 0-100 to 0-1 to estimate these models.

⁹ The *margins* command in Stata was used to derive marginal effects.

¹⁰ Using the *dprobit* command in Stata.

Figure 1 WHO-5 Mental Well-Being Index Score for Gaelic Players (2017) compared to the General Population in Ireland (2016)



Source: Survey of Senior Inter-County Players 2016 (SSICP-2016) and European Quality of Life Survey (2016).

Mental Health Estimates

The full set of mental health results are presented in Appendix Table A1. In this section, however, we focus on our key variables of interest. Firstly, the number of years on a senior inter-county panel, which is taken to measure the increased levels of commitment that players are giving to their sport.

The results in Table 1 tell us that the more years that a player plays senior inter-county, the lower their mental health. This effect is highly significant ($p < 0.01$), and neither its statistical strength or magnitude are mitigated by the inclusion of subsequent controls for various playing environment supports (e.g., time-off, or managerial or grassroots club supports).

Other key factors found to reduce players' mental health included being involved with multiple teams at different levels¹¹ and being unable to socialise with grassroots club teammates.

More generally, players aged 22-25 were found to have the lowest levels of mental health, possibly due to this cohort being at a critical juncture in their life where they are trying to balance their sport's commitments with establishing themselves in their professional careers, and/or personal relationships.

¹¹ University Gaelic teams, grassroots club teams, or other age-level teams. This will mainly impact younger players.

Gaelic footballers were also found to have lower levels of mental health compared to hurlers (see Appendix Table A1). This may be related to well recognised differences in how the playing of both games have evolved in recent decades. Specifically, compared to hurlers, footballers ability to play independently has been curtailed and replaced with rote learning and executing defensive systems of play. New rules are currently being trialled to address these constraints and reduce the use of highly defensive structures. However, it remains to be seen if the new rules will give rise to changes in the nature of play that will result in any improvement in the mental health of Gaelic footballers.

Two other structural changes that have been made to Gaelic games since the data used in this paper were captured that could potentially influence mental health levels of Gaelic footballers, and the second change also for hurlers, are: i) the introduction of a second Gaelic football championship competition in 2022, which has given players in the lower divisions, the vast majority of whom have never won an inter-county competition, greater opportunity to win an All-Ireland title,¹² and, ii) the implementation of the split-season in 2022, where inter-county and club competitions are now played sequentially as opposed to simultaneously.¹³ However, more up-to-date data are needed to examine these changes on players' mental health.

Three ecosystem factors found to support players' mental health were: i) having a manager that actively promotes the best interests of the team; ii) having a team manager that actively encourages balance between inter-county, personal, social and professional lives; and playing environments iii) where a respectful understanding and good communication exist between club and inter-county management teams. Time off from the games are also found to be important for players' mental health, especially for players that don't have a manager with the aforementioned player welfare supporting traits.

Other factors found to buffer players mental health include being in a relationship and having higher levels of educational attainment (see Appendix Table A1).

¹² The Tailteann Cup is the name of the new championship competition. Prior to this, players in every country, regardless of their standing in the national league, contested for the one championship cup, the Sam Maguire Cup. On the other hand, there are five championship competitions in hurling: the McCarthy Cup, the Joe McDonagh Cup, the Christy Ring Cup, the Nicky Rackard Cup, and the Lory Meagher Cup

¹³ Since the introduction of the split-season, inter-county players now get to devote separate time to their club and county, as opposed to trying to keep both going simultaneously.

Table 1 Fractional Probit Models of Senior Inter-County Players' Mental Health (Marginal Effects)

	Personal Characteristics (1)	Broad IC Team Information (2)	IC Training Commitments (3)	Time-off from Gaelic Game (4)	Environment – Manager Supports (5)	Environment – Club Supports (6)
No. Years Senior IC Panel	-0.00645*** (0.0024)	-0.00623*** (0.0024)	-0.00637*** (0.0024)	-0.00634*** (0.0024)	-0.00716*** (0.0023)	-0.00669*** (0.0023)
Pseudo R2	0.0027	0.0044	0.0058	0.0063	0.0106	0.0147
N	999	999	983	983	983	979

Note: IC= Inter-County; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Risk of Depression Estimates

When we examined players' risk of depression, we derived similar results to our mental health models, albeit the signs are in the opposite direction, as expected (see Appendix Table A2). With regards to our key variable of interest, we found that the longer a player is on a senior inter-county panel, the higher their risk of depression (Table 2). Again, this effect is highly significant ($p < 0.01$), and is not reduced by the inclusion of controls for time-off (specification 4) or various team manager (specification 5) or grassroots club (specification 6) environmental supports.

Playing with five or more teams was also found to increase a player's risk of depression (see Appendix Table A2), as does when inter-county commitments prevent players from socialising with their grassroots club teammates. In addition, players that have a manager that does not actively encourage balance between inter-county, personal, social, and professional lives are at greater risk of depression.

This time, players aged 22-25 and aged 26-30 are at greater risk of depression. This is something that managers need to be cognisant of before loading players with various inter-county commitments.

Time off from their game during the season reduces players risk of depression, but when they have a supporting manager, namely a manager that actively promotes the best interests of the team, this factor is no longer important. Higher levels of education were also found to reduce players risk of depression.

Table 2 Probit Models of Senior Inter-County Players' Risk of Depression (Marginal Effects)

	Personal Characteristics	Broad Inter-County/Team	IC Training Commitments	Time-off from Gaelic Game	Environment – Manager Support	Environment – Club Support
No. Years Senior IC Panel	0.0226** (0.0089)	0.0233** (0.0091)	0.0253*** (0.0093)	0.0256*** (0.0093)	0.0260*** (0.0095)	0.0259*** (0.0097)
Pseudo R2	0.0352	0.0560	0.0758	0.0836	0.1278	0.1495
N	563	563	554	554	554	554

Note: IC= Inter-County; Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Sensitivity Checks

We used propensity score matching (PSM) to check the robustness of our key variable of interest result - number of years on senior inter-county panel, and its significant impact on players mental health and risk of depression. This methodology accounts for potential selection effects, in this case, the number of years a player is on a senior inter-county panel, by matching treatment and control group individuals on key observable characteristics. We used individuals that were on a senior inter-county panel for four years or less as our control group, with our treatment groups defined as those greater than four years, five years, six years, or seven years on a senior inter-county panel.

PSM is a two-step non-parametric technique that is designed to address the non-random selection that exists in treatment groups. In step one, each individual's probability (or propensity score) of receiving the treatment, in this case being on a senior inter-county panel for more than four years, is assessed conditional on a set of explanatory variables (e.g., age, educational attainment, playing code, number of teams played with). Treatment and control group individuals are then matched on the basis of their propensity scores, which is equivalent to matching on the key characteristics of the treatment group. In the second step, the average outcome measures of the treatment and control groups are compared. In this case, mental health and risk of depression.

The results from this sensitivity check (Table 3) show that the negative impact that number of years playing senior inter-county has on players mental health, and the positive impact that it has on their risk of depression, hold when we test for sample selection bias.

Table 3 PSM Models of Senior Inter-County Players' Mental Health and Risk of Depression

	Mental Health	Risk of Depression
No. Years on IC Panel:		
> 4	-0.0277* (0.0173)	0.128** (0.0740)
> 5	-0.0408** (0.0233)	0.177** (0.0955)
> 6	-0.0734*** (0.0273)	0.197** (0.1162)

Notes: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

To test the validity of our PSM results, we undertook the "pctest" diagnostic test in Stata. This test examines the extent to which individuals in the treatment group were matched with individuals in the

control group across a range of observable characteristics i.e., that the data are balanced. The results (Table 4) show that the data are perfectly balanced, both in terms of the mean difference between observable characteristics across the treatment and control groups post matching, and the failure of observable characteristics to explain entry to the treatment post-matching.

Table 4 PSM Mental Health and Risk of Depression Models: Post Diagnostic Test for Balanced Data

		Mental Health				
	Sample	Pseudo R2	LR chi2	p>chi2	Mean Bias	Median Bias
No. Years on IC Panel:						
> 4	Unmatched	0.350	469.38	0.000	14.2	7.2
	Matched	0.036	45.22	0.736	4.9	3.3
> 5	Unmatched	0.432	521.14	0.000	16.2	7.6
	Matched	0.060	60.61	0.193	6.2	3.5
> 6	Unmatched	0.513	553.59	0.000	17.6	8.1
	Matched	0.084	62.87	0.123	8.0	6.7
		Risk of Depression				
	Sample	Pseudo R2	LR chi2	p>chi2	Mean Bias	Median Bias
No. Years on IC Panel:						
> 4	Unmatched	0.385	289.92	0.000	14.4	6.8
	Matched	0.102	62.58	0.149	8.2	5.5
> 5	Unmatched	0.485	328.81	0.000	16.7	8.7
	Matched	0.128	54.78	0.370	11.0	8.4
> 6	Unmatched	0.579	353.01	0.000	18.7	9.1
	Matched	0.149	39.41	0.881	10.1	6.9

V Conclusions

In this paper we found that the number of years playing on a senior inter-county panel reduces players' mental health and increases their risk of depression, which is extremely worrying from an amateur sport perspective.

The question then is, what could be giving rise to these results? An obvious explanation is that players are experiencing increased fatigue the longer their involvement with the inter-county sport set-up (physical toll, routine, boredom, etc.). Alternatively, the opportunity costs associated with their sport

commitments may be cumulative in nature, in terms of their professional career, education goals and/or personal relationships, which impacts their mental well-being.

For footballers, as mentioned already, the continuous engagement with a highly defensive sport that inhibits freedom of expression may be resulting in lower levels of mental health compared to hurlers who are able to express their talents more freely. In addition, the vast majority of Gaelic footballers never have an opportunity to win an All-Ireland title, whereas hurlers, based on their hurling ability, can contest to win one of five different championship competitions.

Some of the findings from Kelly et al. (2018) point towards the commitments associated with playing inter-county potentially acting as stress factors for players: i) over half indicated time commitments involved were too much, ii) 82 per cent agreed to some extent too much effort was demanded of them; iii) 87 per cent indicated they had to watch their behaviour in public; iv) 77 per cent identified the main downside as getting to spend less time with family/partner/friends.

The results from this paper question the sustainability of longer term participation in an amateur sport that is effectively operated in a professional environment. Furthermore, while this paper has focused on the effects of this on players' mental health, long term participation will also likely adversely impact physical health (i.e., sustaining injuries and the effects of this on players' professional lives). In addition, long term engagement is likely to exacerbate previously identified trade-offs between intercountry participation and education and professional career related decisions (Kelly et al., 2019).

More broadly, the current model of professionalism raises questions around the Gaelic Athletic Association's (GAA's), the governing body for Gaelic games, core values of player welfare, amateurism and volunteering, and if this professional environment that it is now operating in is facilitating it to live by those core values or is gradually driving it away from them.

As already mentioned, participation in sport and physical activity are now prescribed for physical/mental health issues. Senior inter-county players are amateurs, so, in theory, playing their sport should be good for their mental health and well-being. We know, though, that these players are competitive individuals, so there will be a certain level of pressure and stress associated with playing their game. Nevertheless, amateur sport should be an outlet for life stressors and not another source, as the results in this paper are indicating that the senior inter-county game is becoming for players.

The impacts of the introduction of initiatives designed to support player welfare on mental health, such as the split-season or the Tailteann Cup competition for Gaelic footballers in 2022, remain to be seen. The same applies to the recently introduced new Gaelic football rules. More up-to-date data are needed to examine the effects of these changes to the games on players' wellbeing.

'Everyone' involved in Gaelic games - from the players and managers to the various bodies that are in place as gatekeepers to safeguard the GAA's core values (county-boards, provincial councils, central council, Congress, Management and the GPA) - have a role to play in protecting players' welfare. Given the findings from this paper, this is an issue that warrants further research and action, as the Association, and all those involved in the games, need to realise that there is no guarantee that future generations of players will give, or want to, the same levels of commitment as current or past players. If this transpired, this would have serious implications for Gaelic games and, more broadly, the GAA.

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Appendix Table 1 **Fractional Probit Models of Senior Inter-County Players' Mental Health (Marginal Effects)**

	Personal Characteristics	Broad Inter-County/Team	IC Training Commitments	Time-off from Gaelic Game	Environment – Manager Support	Environment – Club Support
Age (18-21)						
Age 22-25	-0.0403** (0.0181)	-0.0435** (0.0195)	-0.0493** (0.0197)	-0.0476** (0.0198)	-0.0445** (0.0189)	-0.0391** (0.0189)
Age 26-30	-0.0364* (0.0208)	-0.0311 (0.0246)	-0.0390 (0.0247)	-0.0400 (0.0247)	-0.0306 (0.0239)	-0.0235 (0.0234)
Age 31 and above	-0.0391 (0.0268)	-0.00892 (0.0340)	-0.0161 (0.0337)	-0.0169 (0.0338)	-0.00706 (0.0333)	-0.00393 (0.0328)
Educational Attainment (Lower Secondary or Less)						
Upper Secondary	0.0254 (0.0289)	0.0179 (0.0287)	0.0140 (0.0289)	0.0121 (0.0290)	0.00976 (0.0283)	0.00598 (0.0279)
Post Secondary	0.0567* (0.0315)	0.0575* (0.0313)	0.0660** (0.0310)	0.0640** (0.0305)	0.0590** (0.0296)	0.0539* (0.0288)
Cert, Dip, Ord Degree	0.0254 (0.0163)	0.0281* (0.0160)	0.0355** (0.0164)	0.0344** (0.0164)	0.0381** (0.0158)	0.0337** (0.0158)
Degree Higher	0.0280 (0.0184)	0.0307* (0.0182)	0.0360* (0.0185)	0.0342* (0.0186)	0.0371** (0.0176)	0.0328* (0.0174)
Education other	0.0399 (0.0376)	0.0362 (0.0386)	0.0331 (0.0403)	0.0338 (0.0411)	0.0386 (0.0412)	0.0351 (0.0406)
Marital Status (Single)						
Couple	0.0153 (0.0128)	0.0185 (0.0128)	0.0185 (0.0126)	0.0189 (0.0127)	0.0199 (0.0123)	0.0215* (0.0119)
Other	-0.0778*** (0.0228)	-0.0381 (0.0370)	-0.0375 (0.0422)	-0.0303 (0.0489)	-0.0219 (0.0386)	-0.0455 (0.0372)
Economic Status (Student)						
Employed	-0.0142 (0.0165)	-0.0171 (0.0163)	-0.0162 (0.0165)	-0.0166 (0.0165)	-0.0181 (0.0159)	-0.0151 (0.0159)
Unemployed	-0.0462* (0.0274)	-0.0462* (0.0273)	-0.0430 (0.0275)	-0.0429 (0.0270)	-0.0452* (0.0264)	-0.0501* (0.0257)
Other	-0.0384 (0.0359)	-0.0420 (0.0361)	-0.0404 (0.0365)	-0.0397 (0.0362)	-0.0425 (0.0343)	-0.0418 (0.0332)

Appendix Table 1

Continued

	Personal Characteristics	Broad Inter-County/Team	IC Training Commitments	Time-off from Gaelic Game	Environment – Manager Support	Environment – Club Support
Gaelic Game (Football)						
Hurling		0.0308*** (0.0112)	0.0271** (0.0113)	0.0265** (0.0113)	0.0251** (0.0110)	0.0218** (0.0108)
No. Years Senior IC Panel		-0.00623*** (0.00236)	-0.00637*** (0.00236)	-0.00634*** (0.00235)	-0.00716*** (0.00229)	-0.00669*** (0.00225)
No. Gaelic Teams (Two)						
Teams - 3		-0.0322** (0.0137)	-0.0363*** (0.0137)	-0.0359*** (0.0137)	-0.0325** (0.0134)	-0.0296** (0.0132)
Teams - 4		-0.0387** (0.0177)	-0.0429** (0.0181)	-0.0403** (0.0183)	-0.0410** (0.0176)	-0.0429** (0.0174)
Teams – 5 And Above		-0.0546** (0.0228)	-0.0636*** (0.0233)	-0.0608*** (0.0233)	-0.0690*** (0.0224)	-0.0632*** (0.0223)
Injury During 2016		-0.0174 (0.0111)	-0.0163 (0.0112)	-0.0151 (0.0112)	-0.0114 (0.0110)	-0.00388 (0.0110)
No. Training Sessions						
<i>Match Week:</i>						
IC Field			-0.00187 (0.00670)	-0.000974 (0.00668)	-0.000285 (0.00669)	-4.42e-05 (0.00667)
IC Sports Conditioning			-0.00967 (0.00918)	-0.00968 (0.00916)	-0.0107 (0.00876)	-0.00933 (0.00858)
Individually Instigated			0.0228** (0.0107)	0.0223** (0.0108)	0.0232** (0.0102)	0.0249** (0.0101)
Other Gaelic Team(s)			-0.0105 (0.00869)	-0.0104 (0.00868)	-0.0136* (0.00823)	-0.0128 (0.00818)
<i>Non-Match Week:</i>						
IC Field			-0.00258 (0.0107)	-0.00232 (0.0107)	-0.00131 (0.0103)	0.00346 (0.0102)
IC Sports Conditioning			0.0116 (0.00898)	0.0125 (0.00903)	0.00861 (0.00870)	0.00907 (0.00867)

Appendix Table 1

Continued

	Personal Characteristics	Broad Inter-County/Team	IC Training Commitments	Time-off from Gaelic Game	Environment – Manager Support	Environment – Club Support
No. Training Sessions						
<i>Non-Match Week:</i>						
Individually Instigated			-0.0170* (0.00891)	-0.0171* (0.00892)	-0.0171** (0.00857)	-0.0181** (0.00850)
Other Gaelic Team(s)			0.0119 (0.00836)	0.0118 (0.00840)	0.0147* (0.00797)	0.0149* (0.00781)
Training Session Duration (Hours)						
<i>Match Week:</i>						
IC Sports Conditioning			-0.00446 (0.00462)	-0.00442 (0.00458)	-0.00347 (0.00456)	-0.00342 (0.00472)
Individually Instigated			-0.0147* (0.00776)	-0.0138* (0.00773)	-0.0155** (0.00751)	-0.0160** (0.00774)
Other Gaelic Team(s)			0.00752 (0.00599)	0.00821 (0.00605)	0.00831 (0.00600)	0.00772 (0.00598)
<i>Non-Match Week</i>						
IC Sports Conditioning			0.00291 (0.00388)	0.00298 (0.00385)	0.00283 (0.00392)	0.00273 (0.00403)
Individually Instigated			0.0129* (0.00658)	0.0122* (0.00656)	0.0128** (0.00630)	0.0133** (0.00653)
Other Gaelic Team(s)			-0.00348 (0.00534)	-0.00342 (0.00544)	-0.00424 (0.00536)	-0.00396 (0.00529)
Gaelic Game – Time Off				0.0252** (0.0119)	0.0129 (0.0117)	0.00285 (0.0115)
Inter-County Manager (Somewhat Agree/Disagree)						
<i>1. Actively promoted best interests of team</i>						
Strongly Agree/Agree					0.0310** (0.0130)	0.0237* (0.0127)
Strong Disagree/Disagree					0.0238 (0.0283)	0.0237 (0.0276)

Appendix Table 1 Continued

	Personal Characteristics	Broad Inter- County/Team	IC Training Commitments	Time-off from Gaelic Game	Environment – Manager Support	Environment – Club Support
Inter-County Manager (Somewhat Agree/Disagree)						
<i>2. Only interested in players' ability to perform</i>						
Strongly Agree/Agree					-0.0138 (0.0135)	-0.0107 (0.0134)
Strong Disagree/Disagree					-0.0108 (0.0143)	-0.00734 (0.0141)
<i>3. Actively encouraged balance between IC, personal, social, professional lives</i>						
Strongly Agree/Agree					0.0577*** (0.0127)	0.0509*** (0.0127)
Strong Disagree/Disagree					-0.0165 (0.0178)	-0.00824 (0.0172)
<i>4. Dictated all aspects of players lives, on and off the pitch</i>						
Strongly Agree/Agree					-0.0155 (0.0176)	-0.0147 (0.0172)
Strong Disagree/Disagree					-0.00441 (0.0125)	-0.00799 (0.0122)
Club Environment (Somewhat Agree/Disagree)						
<i>1. Club Manager/Management Team expect too much from me</i>						
Strongly Agree/Agree						0.00614 (0.0136)
Strong Disagree/Disagree						0.0112 (0.0151)
<i>2. Club Teammates are resentful towards me when I return to Club from IC</i>						
Strongly Agree/Agree						-0.0150 (0.0179)
Strong Disagree/Disagree						0.0164 (0.0126)

Appendix Table 1

Continued

	Personal Characteristics	Broad Inter- County/Team	IC Training Commitments	Time-off from Gaelic Game	Environment – Manager Support	Environment – Club Support
Club Environment (Somewhat Agree/Disagree)						
<i>3. Club is proud I represent Club on Inter-County Team</i>						
Strongly Agree/Agree						0.0149 (0.0133)
Strong Disagree/Disagree						-0.0185 (0.0339)
<i>4. IC commitments prevent me from socialising with my Club teammates</i>						
Strongly Agree/Agree						-0.0313** (0.0133)
Strong Disagree/Disagree						0.0220 (0.0281)
<i>5. Club Management Team is understanding of my IC commitments</i>						
Strongly Agree/Agree						0.00291 (0.0134)
Strong Disagree/Disagree						-0.0374 (0.0298)
<i>6. Respectful understanding and good communication exist between Club and IC Management Teams</i>						
Strongly Agree/Agree						0.0332** (0.0129)
Strong Disagree/Disagree						-0.00885 (0.0158)
Observations	999	999	983	983	983	979

Note: IC= Inter-County; Standard errors in parentheses; Significant Levels: *** p<0.01, ** p<0.05, * p<0.1.

Appendix Table 2

Probit Models of Senior Inter-County Players' Risk of Depression (Marginal Effects)

	Personal Characteristics	Broad Inter-County/Team	IC Training Commitments	Time-off from Gaelic Game	Environment – Manager Support	Environment – Club Support
Age (18-21)						
Age 22-25	0.147** (0.0680)	0.220*** (0.0806)	0.232*** (0.0823)	0.233*** (0.0830)	0.224*** (0.0852)	0.227*** (0.0847)
Age 26-30	0.221*** (0.0771)	0.254** (0.0990)	0.264*** (0.100)	0.277*** (0.101)	0.267** (0.105)	0.266** (0.105)
Age 31 and above	0.0663 (0.101)	-0.0228 (0.137)	-0.0143 (0.139)	-0.0128 (0.141)	-0.0283 (0.142)	-0.0325 (0.142)
Educational Attainment (Lower Secondary or Less)						
Upper Secondary	-0.0823 (0.0992)	-0.0460 (0.107)	-0.0475 (0.108)	-0.0296 (0.110)	-0.0356 (0.111)	-0.0183 (0.115)
Post Secondary	0.00455 (0.103)	0.0171 (0.105)	-0.0145 (0.102)	-0.0249 (0.102)	0.000834 (0.108)	-8.06e-05 (0.108)
Cert, Dip, Ord Degree	-0.0430 (0.0611)	-0.0385 (0.0621)	-0.0708 (0.0652)	-0.0698 (0.0660)	-0.103 (0.0663)	-0.116* (0.0670)
Degree Higher	-0.159*** (0.0618)	-0.158** (0.0631)	-0.184*** (0.0638)	-0.175*** (0.0649)	-0.195*** (0.0633)	-0.203*** (0.0631)
Education other	-0.249*** (0.0954)	-0.231** (0.102)	-0.225** (0.103)	-0.229** (0.104)	-0.256*** (0.0912)	-0.269*** (0.0871)
Marital Status (Single)						
Couple	-0.0474 (0.0472)	-0.0542 (0.0481)	-0.0458 (0.0493)	-0.0417 (0.0496)	-0.0569 (0.0498)	-0.0576 (0.0507)
Economic Status (Student)						
Employed	-0.00192 (0.0627)	-0.0122 (0.0644)	-0.00393 (0.0668)	-0.00447 (0.0676)	-0.000721 (0.0688)	-0.0151 (0.0692)
Unemployed	0.00608 (0.0993)	-0.0105 (0.0996)	-0.0135 (0.102)	-0.0270 (0.0997)	-7.70e-05 (0.104)	0.00445 (0.104)
Other	0.0840 (0.122)	0.0931 (0.129)	0.0806 (0.129)	0.0795 (0.128)	0.0460 (0.129)	0.0286 (0.129)

Appendix Table 2

Continued

	Personal Characteristics	Broad Inter-County/Team	IC Training Commitments	Time-off from Gaelic Game	Environment – Manager Support	Environment – Club Support
Gaelic Game (Football)						
Hurling		-0.0518 (0.0431)	-0.0438 (0.0450)	-0.0411 (0.0454)	-0.0544 (0.0458)	-0.0425 (0.0468)
No. Years Senior IC Panel		0.0233** (0.00906)	0.0253*** (0.00925)	0.0256*** (0.00926)	0.0260*** (0.00946)	0.0259*** (0.00965)
No. Gaelic Teams (Two)						
Teams - 3		0.0658 (0.0534)	0.0828 (0.0543)	0.0829 (0.0546)	0.0856 (0.0555)	0.0835 (0.0558)
Teams - 4		0.0285 (0.0685)	0.0600 (0.0719)	0.0505 (0.0719)	0.0597 (0.0723)	0.0772 (0.0725)
Teams – 5 and Above		0.318*** (0.0873)	0.345*** (0.0877)	0.341*** (0.0884)	0.361*** (0.0896)	0.379*** (0.0887)
Injury During 2016		-0.0278 (0.0429)	-0.0427 (0.0439)	-0.0473 (0.0443)	-0.0542 (0.0454)	-0.0816* (0.0474)
No. Training Sessions						
<i>Match Week:</i>						
IC Field			-0.0150 (0.0350)	-0.0201 (0.0351)	-0.00522 (0.0359)	-0.00598 (0.0363)
IC Sports Conditioning			0.0750** (0.0365)	0.0759** (0.0370)	0.0789** (0.0377)	0.0704* (0.0385)
Individually Instigated			-0.0377 (0.0403)	-0.0349 (0.0407)	-0.0504 (0.0407)	-0.0554 (0.0414)
Other Gaelic Team(s)			0.0618* (0.0334)	0.0623* (0.0333)	0.0634* (0.0338)	0.0554 (0.0348)
<i>Non-Match Week:</i>						
IC Field			-0.00329 (0.0394)	-0.00772 (0.0392)	-0.0202 (0.0397)	-0.0446 (0.0412)
IC Sports Conditioning			-0.0454 (0.0357)	-0.0518 (0.0363)	-0.0373 (0.0376)	-0.0306 (0.0379)

Appendix Table 2

Continued

	Personal Characteristics	Broad Inter- County/Team	IC Training Commitments	Time-off from Gaelic Game	Environment – Manager Support	Environment – Club Support
No. Training Sessions						
<i>Non-Match Week:</i>						
Individually Instigated			0.0527 (0.0357)	0.0540 (0.0358)	0.0703* (0.0361)	0.0759** (0.0368)
Other Gaelic Team(s)			-0.0596** (0.0295)	-0.0589** (0.0296)	-0.0663** (0.0302)	-0.0613** (0.0312)
Training Session Duration (Hours)						
<i>Match Week:</i>						
IC Sports Conditioning			-0.00279 (0.0195)	-0.00412 (0.0197)	-0.0106 (0.0202)	-0.00727 (0.0204)
Individually Instigated			0.00110 (0.0341)	-0.00413 (0.0336)	0.00825 (0.0332)	0.0184 (0.0349)
Other Gaelic Team(s)			-0.0113 (0.0273)	-0.0142 (0.0277)	-0.0153 (0.0287)	-0.0120 (0.0295)
<i>Non-Match Week</i>						
IC Sports Conditioning			-0.00169 (0.0169)	-0.00119 (0.0169)	0.00292 (0.0174)	-0.000196 (0.0176)
Individually Instigated			-0.0174 (0.0324)	-0.0135 (0.0317)	-0.0227 (0.0314)	-0.0302 (0.0339)
Other Gaelic Team(s)			-0.00103 (0.0234)	-0.00141 (0.0240)	0.000211 (0.0253)	-0.00236 (0.0265)
Gaelic Game – Time Off				-0.107** (0.0459)	-0.0656 (0.0473)	-0.0333 (0.0485)
Inter-County Manager (Somewhat Agree/Disagree)						
<i>1. Actively promoted best interests of team</i>						
Strongly Agree/Agree					-0.147*** (0.0530)	-0.156*** (0.0545)
Strong Disagree/Disagree					-0.0805 (0.0870)	-0.0784 (0.0890)

Appendix Table 2

Continued

	Personal Characteristics	Broad Inter- County/Team	IC Training Commitments	Time-off from Gaelic Game	Environment – Manager Support	Environment – Club Support
Inter-County Manager (Somewhat Agree/Disagree)						
<i>2. Only interested in players' ability to perform</i>						
Strongly Agree/Agree					0.0984*	0.0886
					(0.0559)	(0.0563)
Strong Disagree/Disagree					0.0820	0.0749
					(0.0605)	(0.0607)
<i>3. Actively encouraged balance between IC, personal, social, professional lives</i>						
Strongly Agree/Agree					-0.0247	-0.0184
					(0.0567)	(0.0575)
Strong Disagree/Disagree					0.198***	0.180***
					(0.0631)	(0.0647)
<i>4. Dictated all aspects of players lives, on and off the pitch</i>						
Strongly Agree/Agree					0.0107	0.00337
					(0.0673)	(0.0681)
Strong Disagree/Disagree					0.0678	0.0803
					(0.0519)	(0.0530)
Club Environment (Somewhat Agree/Disagree)						
<i>1. Club Manager/Management Team expect too much from me</i>						
Strongly Agree/Agree						0.0505
						(0.0551)
Strong Disagree/Disagree						0.0572
						(0.0663)
<i>2. Club Teammates are resentful towards me when I return to Club from IC</i>						
Strongly Agree/Agree						-0.0617
						(0.0632)
Strong Disagree/Disagree						-0.0495
						(0.0538)

Appendix Table 2

Continued

	Personal Characteristics	Broad Inter- County/Team	IC Training Commitments	Time-off from Gaelic Game	Environment – Manager Support	Environment – Club Support
Club Environment (Somewhat Agree/Disagree)						
<i>3. Club is proud I represent Club on Inter-County Team</i>						
Strongly Agree/Agree						-0.0411 (0.0528)
Strong Disagree/Disagree						0.101 (0.116)
<i>4. IC commitments prevent me from socialising with my Club teammates</i>						
Strongly Agree/Agree						0.149*** (0.0526)
Strong Disagree/Disagree						-0.0330 (0.166)
<i>5. Club Management Team is understanding of my IC commitments</i>						
Strongly Agree/Agree						0.000661 (0.0544)
Strong Disagree/Disagree						0.0819 (0.104)
<i>6. Respectful understanding and good communication exist between Club and IC Management Teams</i>						
Strongly Agree/Agree						-0.0541 (0.0542)
Strong Disagree/Disagree						-0.0121 (0.0577)
Observations	563	563	554	554	554	554

Note: IC= Inter-County; Robust standard errors in parentheses; Significant Levels: *** p<0.01, ** p<0.05, * p<0.1.