IGOID GROUP

FIFA RESEARCH INSTITUTE

DBU PROJECT
PLAYER EVALUATION OF DANISH ARTIFICIAL TURF PITCHES
CONSULTING WORK AND DATA ANALYSIS

ANNEX I. DETALIED TABLES

WORKING DOCUMENT

21-august-2025

INDEX

PART 1. Descriptive Analysis

Table 1. Descriptive statistics – sample characteristics

	N	Mean	SD	Min	Max
Gender					
Men	3,614	.8433868	.363486	0	1
Women	3,614	.1566132	.363486	0	1
Age Group					
Kids (U12-14)	3,614	.3406198	.4739832	0	1
Youth (U16-19)	3,614	.3500277	.4770443	0	1
Senior	3,614	.2374101	.4255545	0	1
M+ and K+	3,614	.0719424	.2584283	0	1
Pitch Infill					
Cork	3,614	.2036525	.4027692	0	1
Cork/Olive	3,614	.0536801	.2254166	0	1
Non infill	3,614	.0146652	.1202253	0	1
SBR	3,614	.4216934	.4938983	0	1
Sand	3,614	.3063088	.4610234	0	1
Footwear					
Græs (FG)	3,614	.3539015	.4782452	0	1
Kunst (AG)	3,614	.2888766	.4533032	0	1
Multi (AG, FG)	3,614	.3572219	.4792473	0	1
Match result					
Draw	3,614	.1192584	.3241372	0	1
Win	3,614	.4667958	.4989653	0	1
Loss	3,614	.4139458	.4926072	0	1
Precipitation (mm)	3,610	.0135272	.059343	0	.461111

Table 2. Descriptive statistics – variables of interest

	N	Mean	SD	Min	Max
Experience	3,613	2.209244	1.331305	0	4
Ball Bounce	3,614	1.013005	.6212379	0	2
Running	3,613	1.145585	.6883427	0	2
Rolling Passes	3,614	1.291644	.6601645	0	2
Abrasion	3,614	.5066408	.5000251	0	1
Direction Change	3,613	.6036535	.4892057	0	1
Injuries	3,614	.3754842	.4843147	0	1

Figure 1. Graph bar: Experience by type of infill

Variable definition: 0 "Very bad" 1 "Bad" 2 "Normal" 3 "Good" 4 "Very good"

Note: CI 95% lines

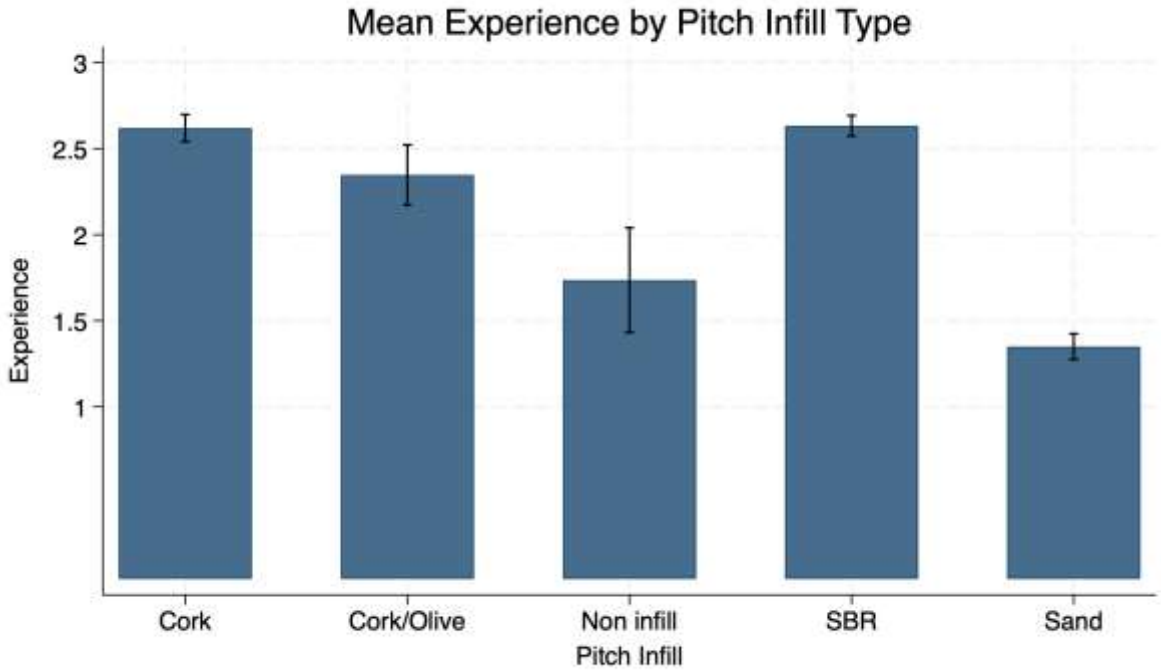


Figure 2. Graph bar: Ball Bounce by type of infill

Variable definition: 0 "Low" 1 "Normal" 2 "High"

Note: CI 95% lines

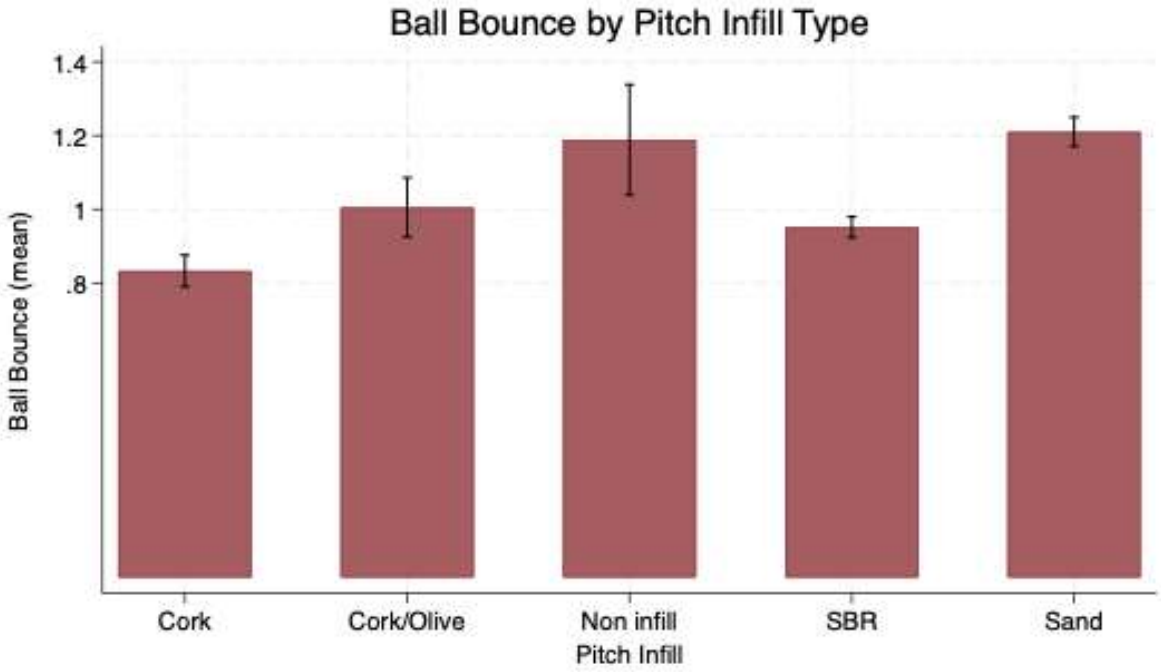


Figure 3. Graph bar: Running by type of infill

Variable definition: 0 "Soft" 1 "Normal" 2 "Hard"

Note: CI 95% lines

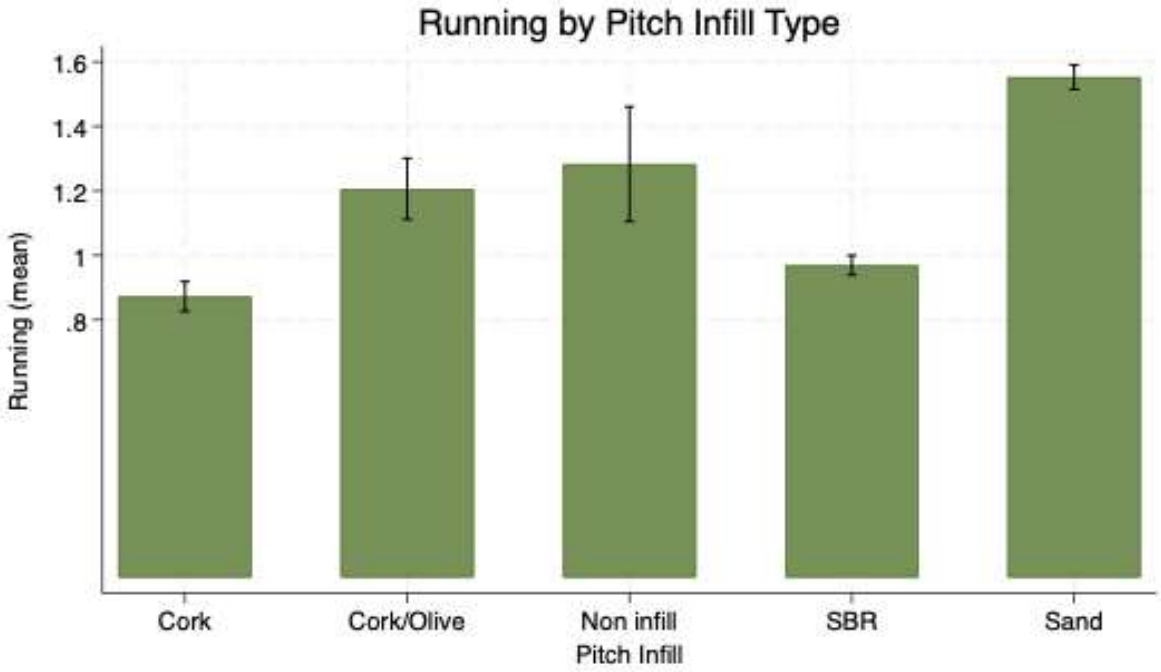


Figure 4. Graph bar: Rolling Passes by type of infill

Variable definition: Rolling Passes 0 "Slow" 1 "Normal" 2 "Fast"

Note: CI 95% lines

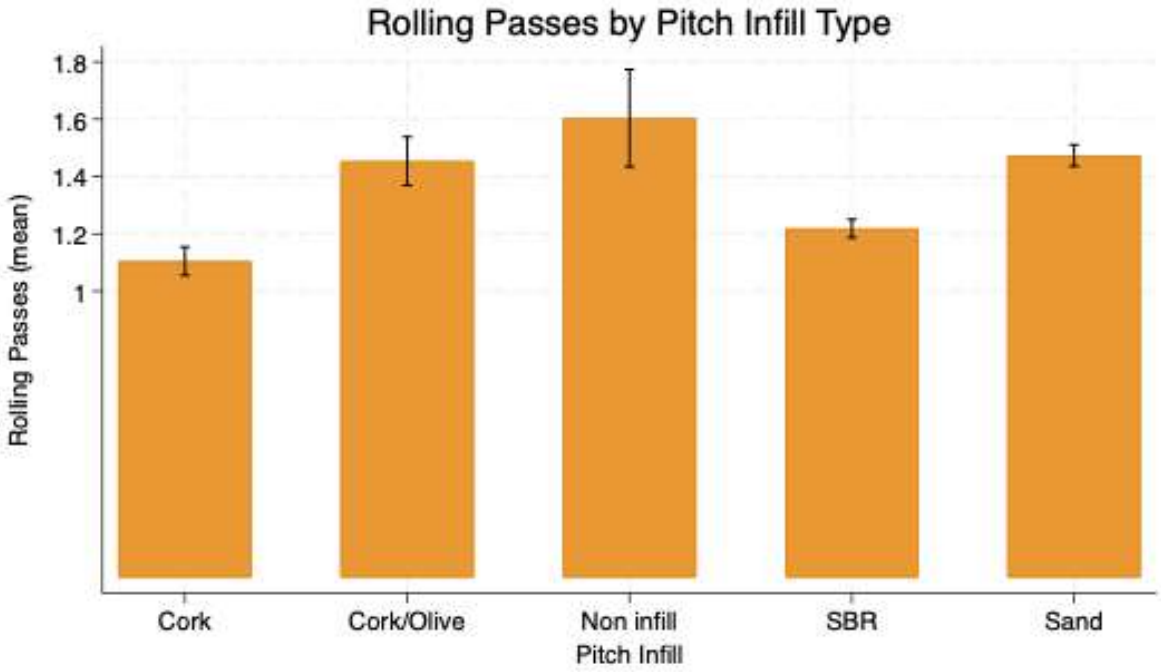


Figure 5. Graph bar: Direction Change by type of infill

Variable definition: Direction Change 0 "Liso" 1 "Normal" (Meaning unclear)

Note: CI 95% lines

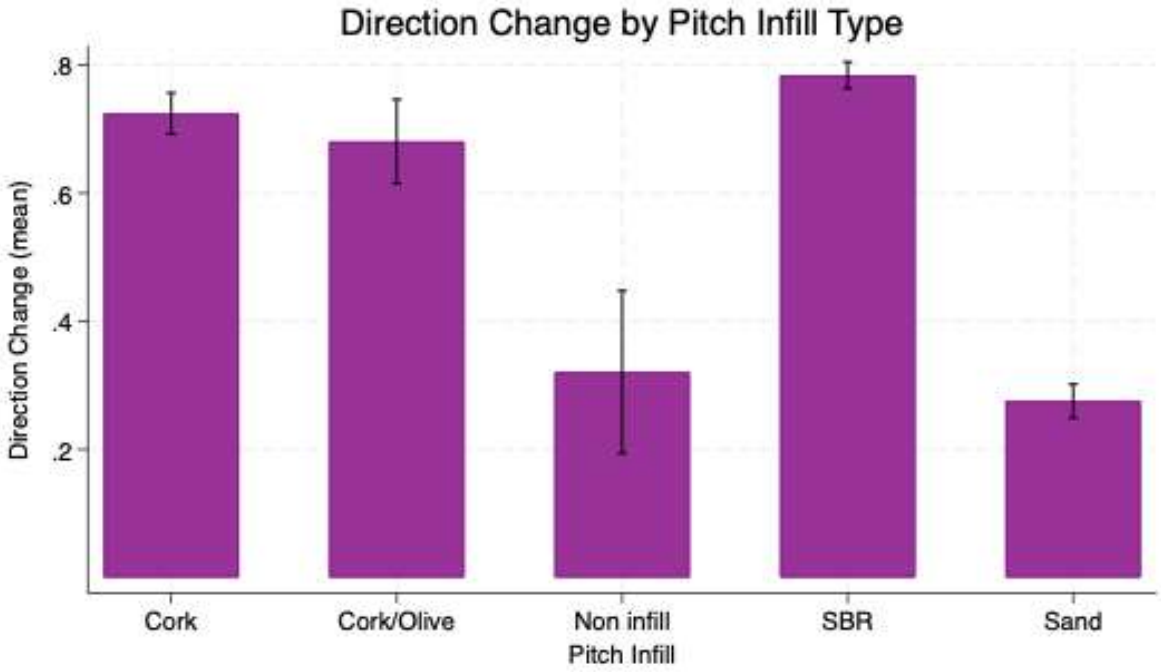


Figure 6. Graph bar: Abrasion by type of infill

Variable definition: Abrasion 0 "No" 1 "Yes"

Note: CI 95% lines

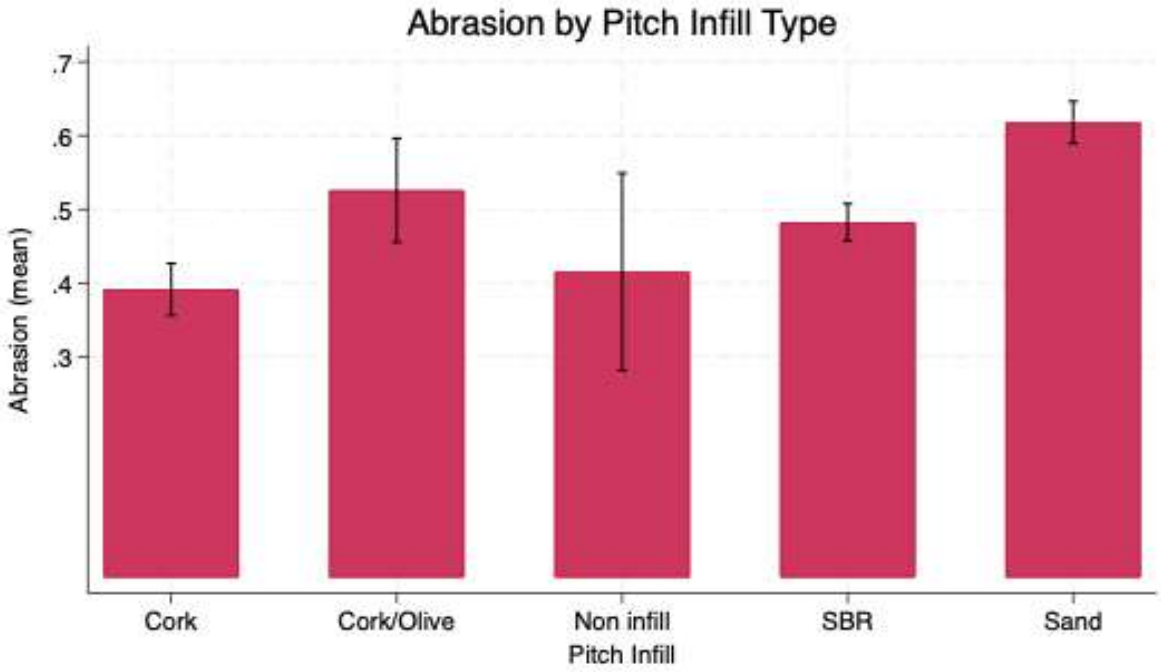
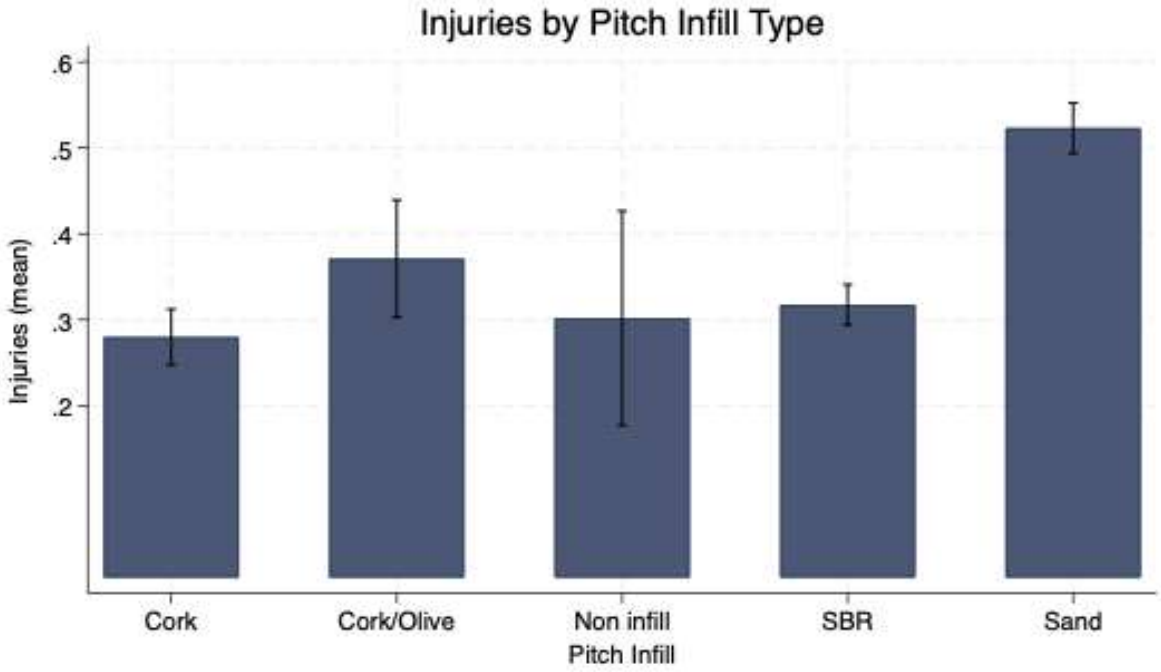


Figure 7. Graph bar: Injuries by type of infill

Variable definition: Injuries 0 "No" 1 "Yes"

Note: CI 95% lines



PART 2. Main Analysis (logits)

In this section, we present the results of the full logit models, including all control variables and robust standard errors (Tables 1.1, 2.1, and 3.1). We follow a stepwise regression approach to show the influence of other control variables and how they may affect the relationship (Models 1-6). Model 1 is a naive model, and Model 6 is the full model with all the control variables. Model 7 is the full model that addresses within-pitch correlation using clustered standard errors (26 pitches -relatively low N). Coefficients can be interpreted directly as the positive or negative probability of answering yes in the three dependent variables: abrasion, direction change, and injuries.

Additionally, we display graphs to easily visualize the influence of the infill type on the probability of answering yes in the three dependent variables: abrasion, direction change, and injuries. The results of the graphs are derived from Model 7 in the respective table, which are robust to the inclusion of player characteristics (gender, age), match conditions (result, precipitation), and equipment (footwear type).

1. Abrasion

Table 1.1: Marginal Effects from Logit Model – Abrasion (0 "No" 1 "Yes")

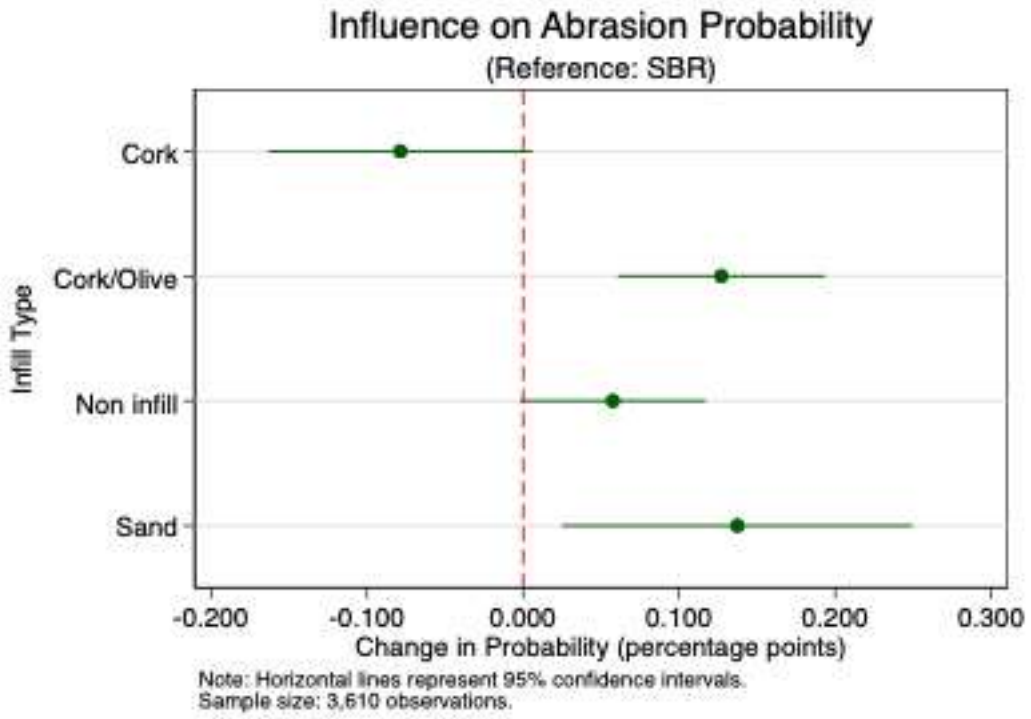
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
SBR	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Cork	-0.091***	-0.097***	-0.107***	-0.081***	-0.078***	-0.079***	-0.079*
	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.043)
Cork/Olive	0.043	0.061	0.068*	0.128***	0.127***	0.127***	0.127***
	(0.038)	(0.038)	(0.037)	(0.036)	(0.036)	(0.036)	(0.034)
Non infill	-0.067	-0.050	0.004	0.057	0.057	0.058	0.058*
	(0.069)	(0.067)	(0.070)	(0.073)	(0.072)	(0.072)	(0.030)
Sand	0.136***	0.133***	0.131***	0.137***	0.139***	0.137***	0.137**
	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.057)
Græs (FG)		Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Kunst (AG)		0.172***	0.169***	0.167***	0.165***	0.163***	0.163***
		(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.032)
Multi (AG, FG)		0.095***	0.099***	0.105***	0.104***	0.103***	0.103***
		(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.026)
Men			Ref.	Ref.	Ref.	Ref.	Ref.
Women			-0.106***	-0.105***	-0.102***	-0.102***	-0.102***
			(0.023)	(0.023)	(0.023)	(0.023)	(0.036)
Senior				Ref.	Ref.	Ref.	Ref.
Kids (U12-14)				-0.126***	-0.126***	-0.126***	-0.126***
				(0.022)	(0.022)	(0.022)	(0.044)
Youth (U16-19)				0.001	-0.001	-0.000	-0.000
				(0.022)	(0.022)	(0.022)	(0.037)
M+ and K+				-0.042	-0.035	-0.035	-0.035
				(0.034)	(0.034)	(0.034)	(0.075)
Win					Ref.	Ref.	Ref.
Draw					0.046*	0.046*	0.046
					(0.026)	(0.026)	(0.035)
Loss					0.066***	0.068***	0.068***
					(0.017)	(0.017)	(0.021)
Precipitation (mm)						0.085	0.085
						(0.142)	(0.134)
Observations	3614	3614	3614	3614	3614	3610	3610
Log likelihood	-2454.46	-2418.89	-2408.13	-2383.78	-2376.25	-2373.42	-2373.42
Pseudo R^2	0.020	0.034	0.038	0.048	0.051	0.051	0.051

Robust Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: a. We follow a step-wise regression approach to show the influence of other control variables and how they may affect the relationship. b. Model 1 is a naive model, Model 6 is a full model with all the control variables, and Model 7 includes clustered standard errors at the pitch level.

Results: The coefficients show the marginal effects as the change in probability of experiencing abrasion compared to SBR infill (reference category). For example, compared to SBR, Cork decreases perceived abrasion probability by 7.9 percent, but only significant at the 10% level (model 7).

Simple graphs for a broader audience are possible with logits (the results below account for the influence of all control variables in Model 7, Table 1.1):



2. Direction Change

Table 2.1: Marginal Effects from Logit Model – Direction Change (0 "No" 1 "Yes")

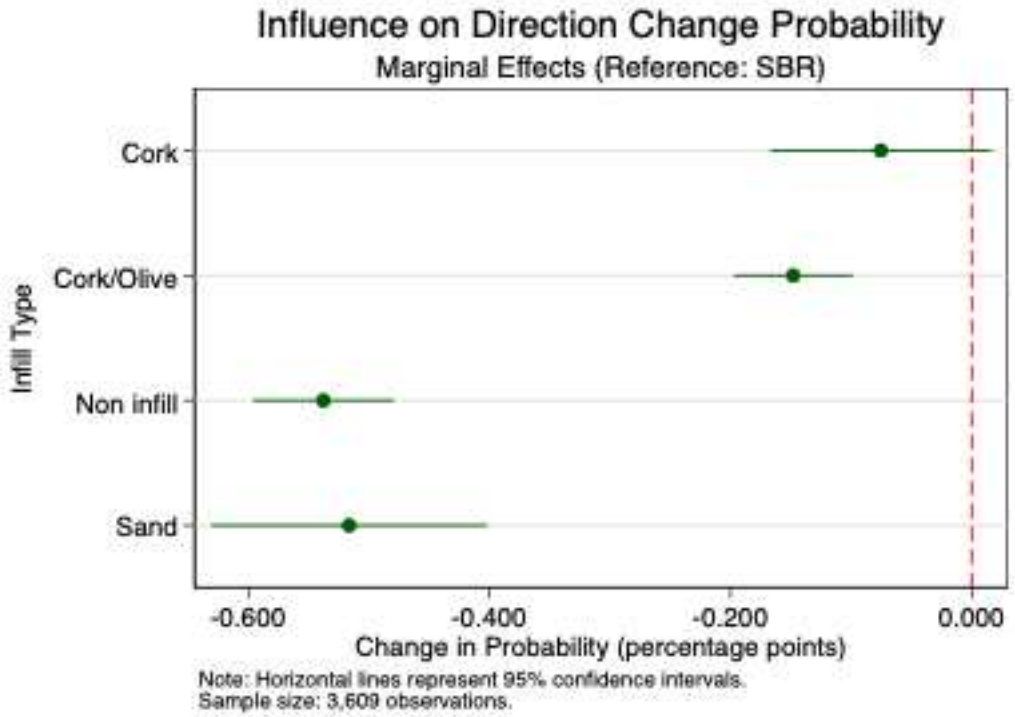
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
SBR	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Cork	-0.060***	-0.056***	-0.052***	-0.067***	-0.073***	-0.075***	-0.075
	(0.020)	(0.020)	(0.019)	(0.020)	(0.020)	(0.020)	(0.047)
Cork/Olive	-0.104***	-0.114***	-0.118***	-0.141***	-0.144***	-0.148***	-0.148***
	(0.035)	(0.035)	(0.035)	(0.037)	(0.037)	(0.037)	(0.025)
Non infill	-0.463***	-0.475***	-0.502***	-0.535***	-0.537***	-0.538***	-0.538***
	(0.065)	(0.064)	(0.062)	(0.059)	(0.059)	(0.059)	(0.030)
Sand	-0.508***	-0.508***	-0.507***	-0.517***	-0.517***	-0.516***	-0.516***
	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.058)
Græs (FG)		Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Kunst (AG)		-0.087***	-0.085***	-0.067***	-0.066***	-0.065***	-0.065**
		(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.029)
Multi (AG, FG)		-0.027	-0.028*	-0.014	-0.014	-0.014	-0.014
		(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.022)
Men			Ref.	Ref.	Ref.	Ref.	Ref.
Women			0.047**	0.047**	0.044**	0.040**	0.040*
			(0.021)	(0.020)	(0.020)	(0.021)	(0.023)
Senior				Ref.	Ref.	Ref.	Ref.
Kids (U12-14)				-0.047**	-0.044**	-0.044**	-0.044
				(0.019)	(0.019)	(0.019)	(0.049)
Youth (U16-19)				-0.127***	-0.124***	-0.119***	-0.119**
				(0.020)	(0.020)	(0.020)	(0.051)
M+ and K+				-0.022	-0.024	-0.025	-0.025
				(0.029)	(0.029)	(0.029)	(0.095)
Win					Ref.	Ref.	Ref.
Draw					-0.000	0.000	0.000
					(0.023)	(0.023)	(0.027)
Loss					-0.068***	-0.068***	-0.068***
					(0.015)	(0.015)	(0.019)
Precipitation (mm)						-0.290***	-0.290**
						(0.108)	(0.132)
Observations	3613	3613	3613	3613	3613	3609	3609
Log likelihood	-2034.68	-2022.87	-2020.22	-1996.82	-1985.89	-1979.79	-1979.79
Pseudo R^2	0.161	0.166	0.167	0.177	0.181	0.183	0.183

Robust standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: a. We follow a step-wise regression approach to show the influence of other control variables and how they may affect the relationship. b. Model 1 is a naive model, Model 6 is a full model with all the control variables, and Model 7 includes clustered standard errors at the pitch level.

Main result: The marginal effects show the change in probability of experiencing direction change compared to SBR infill (reference category). All alternative infill types significantly decrease direction change, except for Cork where differences follow same direction, but are not significant. For example, compared to SBR, Cork/Olive decreases direction change probability by 14.8 percent, while Sand and Non infill decrease the probability by more than 50 percent (model 7).

The results of the graph below account for the influence of all control variables in Model 7, Table 2.1):



3. Injuries

Table 3.1: Marginal Effects from Logit Model – Injuries (0 "No" 1 "Yes")

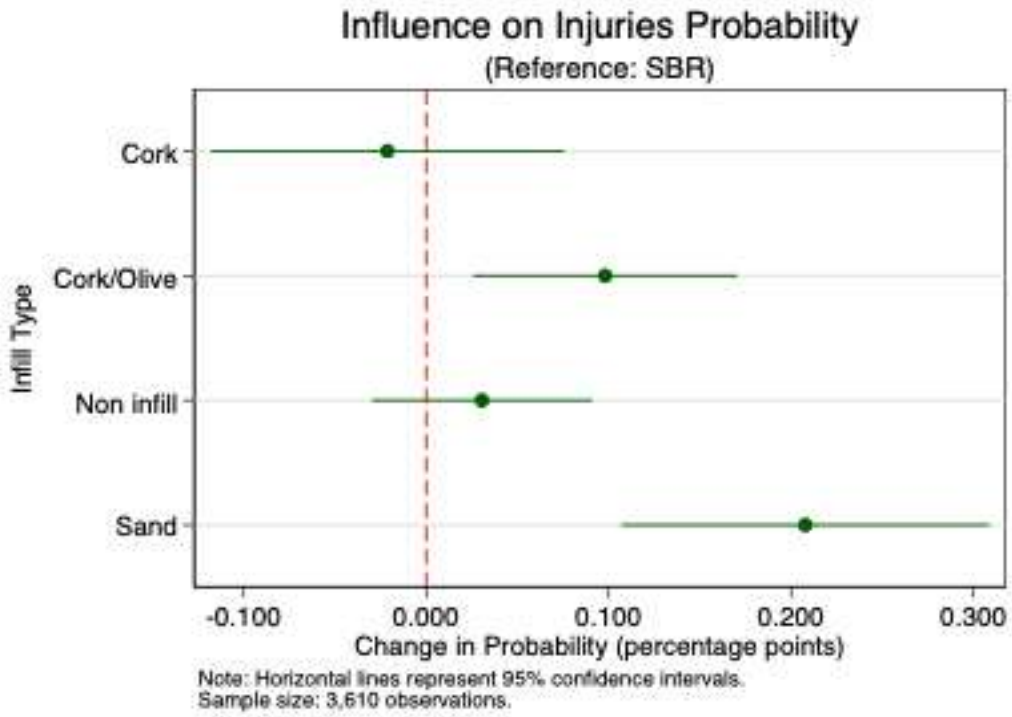
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
SBR	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Cork	-0.038*	-0.041**	-0.041**	-0.026	-0.021	-0.021	-0.021
	(0.020)	(0.020)	(0.020)	(0.021)	(0.021)	(0.021)	(0.049)
Cork/Olive	0.054	0.062*	0.063*	0.098**	0.099***	0.098**	0.098***
	(0.037)	(0.037)	(0.037)	(0.038)	(0.038)	(0.038)	(0.037)
Non infill	-0.016	-0.005	-0.004	0.029	0.031	0.031	0.031
	(0.064)	(0.064)	(0.066)	(0.070)	(0.068)	(0.068)	(0.031)
Sand	0.205***	0.205***	0.205***	0.207***	0.208***	0.208***	0.208***
	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.051)
Græs (FG)		Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Kunst (AG)		0.086***	0.086***	0.081***	0.079***	0.079***	0.079**
		(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.032)
Multi (AG, FG)		0.019	0.019	0.021	0.020	0.020	0.020
		(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.024)
Men			Ref.	Ref.	Ref.	Ref.	Ref.
Women			-0.002	0.000	0.005	0.004	0.004
			(0.022)	(0.022)	(0.022)	(0.022)	(0.023)
Senior				Ref.	Ref.	Ref.	Ref.
Kids (U12-14)				-0.055**	-0.057***	-0.057***	-0.057**
				(0.021)	(0.021)	(0.021)	(0.029)
Youth (U16-19)				0.022	0.018	0.020	0.020
				(0.022)	(0.022)	(0.022)	(0.034)
M+ and K+				0.011	0.018	0.018	0.018
				(0.033)	(0.034)	(0.034)	(0.076)
Win					Ref.	Ref.	Ref.
Draw					0.037	0.038	0.038
					(0.025)	(0.025)	(0.032)
Loss					0.104***	0.104***	0.104***
					(0.017)	(0.017)	(0.022)
Precipitation (mm)						-0.072	-0.072
						(0.132)	(0.118)
Observations	3614	3614	3614	3614	3614	3610	3610
Log likelihood	-2315.44	-2305.36	-2305.36	-2297.20	-2278.11	-2275.59	-2275.59
Pseudo R^2	0.032	0.036	0.036	0.039	0.047	0.048	0.048

Robust standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: a. We follow a step-wise regression approach to show the influence of other control variables and how they may affect the relationship. b. Model 1 is a naive model, Model 6 is a full model with all the control variables, and Model 7 includes clustered standard errors at the pitch level.

Main result: The marginal effects show the change in probability of experiencing injuries compared to SBR infill (reference category). Compared to SBR, only Cork/Olive and Sand significantly increase the probability of injuries (model 7).

The results of the graph below account for the influence of all control variables in Model 7, Table 3.1):



PART 3. Main Analysis (Ordered logits)

In this section, we present the results of the full ordered logit models, including all control variables and robust standard errors (Tables 1.1, 2.1, 3.1, and 4.1). We follow a stepwise regression approach to show the influence of other control variables and how they may affect the relationship (Models 1-6). Model 1 is a naive model, and Model 6 is the full model with all the control variables. Model 7 is the full model that addresses within-pitch correlation using clustered standard errors (26 pitches -relatively low N). Coefficients cannot be interpreted directly. The results of infill type are robust to the inclusion of player characteristics (gender, age), match conditions (result, precipitation), and equipment (footwear type).

Additionally, we present marginal effects tables for each dependent variable (Tables 1.2, 2.2, 3.2, and 4.2). These results can be interpreted directly as the change in probability of being in each respective category (0-4 for experience, and 0-2 for the rest of the dependent variables).

The above-mentioned analyses include four dependent variables: experience, ball bounce, running, and rolling passes.

4. Experience

Table 1.1: Ordered Logit Coefficients – Experience (0 "Very bad", 4 "Very good")

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
SBR	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Cork	-0.085	-0.060	-0.011	-0.121	-0.147*	-0.149*	-0.149
	(0.075)	(0.077)	(0.078)	(0.080)	(0.080)	(0.080)	(0.343)
Cork/Olive	-0.452***	-0.490***	-0.526***	-0.765***	-0.772***	-0.773***	-0.773***
	(0.142)	(0.139)	(0.137)	(0.138)	(0.136)	(0.136)	(0.274)
Non infill	-1.334***	-1.411***	-1.646***	-1.899***	-1.891***	-1.891***	-1.891***
	(0.200)	(0.203)	(0.221)	(0.222)	(0.227)	(0.227)	(0.272)
Sand	-1.905***	-1.913***	-1.915***	-1.952***	-1.985***	-1.982***	-1.982***
	(0.081)	(0.081)	(0.081)	(0.081)	(0.082)	(0.082)	(0.438)
Græs (FG)		Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Kunst (AG)		-0.481***	-0.473***	-0.439***	-0.437***	-0.436***	-0.436***
		(0.077)	(0.077)	(0.078)	(0.078)	(0.078)	(0.149)
Multi (AG, FG)		-0.087	-0.107	-0.115*	-0.112	-0.112	-0.112
		(0.069)	(0.069)	(0.069)	(0.070)	(0.070)	(0.127)
Men			Ref.	Ref.	Ref.	Ref.	Ref.
Women			0.414***	0.406***	0.385***	0.380***	0.380**
			(0.078)	(0.079)	(0.079)	(0.079)	(0.176)
Senior				Ref.	Ref.	Ref.	Ref.
Kids (U12-14)				0.376***	0.389***	0.389***	0.389*
				(0.083)	(0.084)	(0.084)	(0.218)
Youth (U16-19)				-0.168**	-0.147*	-0.142*	-0.142
				(0.085)	(0.085)	(0.085)	(0.214)
M+ and K+				-0.129	-0.170	-0.172	-0.172
				(0.131)	(0.135)	(0.135)	(0.439)
Win					Ref.	Ref.	Ref.
Draw					-0.283***	-0.282***	-0.282*
					(0.098)	(0.098)	(0.151)
Loss					-0.551***	-0.551***	-0.551***
					(0.064)	(0.064)	(0.082)
Precipitation (mm)						-0.338	-0.338
						(0.499)	(0.600)
Observations	3613	3613	3613	3613	3613	3609	3609
Log likelihood	-5299.48	-5277.49	-5265.10	-5236.48	-5199.99	-5194.81	-5194.81
Pseudo R^2	0.065	0.069	0.071	0.076	0.082	0.082	0.082

Robust standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Main infill result (full model): Compared to SBR, players have lower odds of rating the experience as high quality in all types of infill, except in Cork. The differences between SBR and Cork are only significant at 10%. Interestingly, this difference is only significant when we include the match result and disappears in the most conservative model with clustered standard errors. In general, players who lose their games are more likely to have a worse perceived experience.

Table 1.2: Marginal Effects from Ordered Logit– Experience (0 "Very bad", 4 "Very good")

Variable	0	1	2	3	4
SBR	Ref.	Ref.	Ref.	Ref.	Ref.
Cork	0.010	0.011	0.012	-0.007	-0.027
	(0.022)	(0.026)	(0.029)	(0.015)	(0.062)
Cork/Olive	0.067***	0.065***	0.049*	-0.064***	-0.117**
	(0.014)	(0.020)	(0.028)	(0.012)	(0.050)
Non infill	0.248***	0.140***	0.028	-0.209***	-0.206***
	(0.022)	(0.025)	(0.036)	(0.020)	(0.049)
Sand	0.267***	0.142***	0.021	-0.220***	-0.210***
	(0.058)	(0.029)	(0.033)	(0.043)	(0.054)
Græs FG	Ref.	Ref.	Ref.	Ref.	Ref.
Kunst (AG)	0.051***	0.025**	0.013**	-0.033**	-0.057***
	(0.018)	(0.012)	(0.006)	(0.014)	(0.021)
Multi (AG, FG)	0.012	0.007	0.004	-0.007	-0.016
	(0.014)	(0.008)	(0.005)	(0.009)	(0.018)
Men	Ref.	Ref.	Ref.	Ref.	Ref.
Women	-0.041**	-0.023**	-0.014**	0.023*	0.054**
	(0.021)	(0.011)	(0.006)	(0.013)	(0.024)
Senior	Ref.	Ref.	Ref.	Ref.	Ref.
Kids (U12-14)	-0.042	-0.024*	-0.014**	0.025	0.055**
	(0.027)	(0.014)	(0.006)	(0.020)	(0.027)
Youth (U16-19)	0.018	0.008	0.004	-0.012	-0.018
	(0.026)	(0.013)	(0.006)	(0.017)	(0.028)
M+ and K+	0.021	0.010	0.004	-0.015	-0.021
	(0.056)	(0.025)	(0.010)	(0.038)	(0.053)
Win	Ref.	Ref.	Ref.	Ref.	Ref.
Draw	0.030*	0.017*	0.011**	-0.018	-0.040**
	(0.018)	(0.010)	(0.005)	(0.014)	(0.020)
Loss	0.064***	0.032***	0.017***	-0.040***	-0.073***
	(0.008)	(0.008)	(0.006)	(0.009)	(0.014)
Precipitation (mm)	0.039	0.020	0.011	-0.024	-0.045
	(0.067)	(0.035)	(0.020)	(0.042)	(0.081)
Number of Obs.			3,609		

Robust standard errors clustered at the pitch level in parentheses * p < 0.10, ** p < 0.05, *** p < 0.01

Notes: a. These are the marginal effects from the full model in Table 1.1 (Model 7).

Result interpretation. Compared to SBR, Sand, Cork/Olive, and Non infill increase the probability of low experience ratings (0-2) and decrease the probability of high experience ratings (3-4). Specifically, Sand increases the probability of responding experience 0 by 26.6 percent and decreases the probability of responding experience 4 by 20.9 percent. Women tend to report higher experience quality and Loss results are associated with poorer experience ratings

5. Ball Bounce

Table 2.1: Ordered Logit Coefficients – Ball Bounce (0 "Low", 1 "Normal", 2 "High")

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
SBR	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Cork	-0.395***	-0.392***	-0.345***	-0.360***	-0.360***	-0.358***	-0.358*
	(0.086)	(0.086)	(0.087)	(0.089)	(0.089)	(0.089)	(0.199)
Cork/Olive	0.175	0.168	0.141	0.113	0.115	0.116	0.116
	(0.142)	(0.143)	(0.142)	(0.146)	(0.146)	(0.146)	(0.113)
Non infill	0.766***	0.756***	0.556**	0.534**	0.535**	0.535**	0.535***
	(0.249)	(0.249)	(0.241)	(0.244)	(0.244)	(0.244)	(0.123)
Sand	0.897***	0.897***	0.909***	0.891***	0.891***	0.890***	0.890***
	(0.086)	(0.087)	(0.087)	(0.087)	(0.087)	(0.087)	(0.257)
Græs (FG)		Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Kunst (AG)		-0.082	-0.072	-0.074	-0.073	-0.072	-0.072
		(0.085)	(0.085)	(0.086)	(0.086)	(0.086)	(0.105)
Multi (AG, FG)		-0.013	-0.033	-0.029	-0.028	-0.028	-0.028
		(0.077)	(0.078)	(0.079)	(0.079)	(0.079)	(0.088)
Men			Ref.	Ref.	Ref.	Ref.	Ref.
Women			0.440***	0.456***	0.454***	0.456***	0.456***
			(0.092)	(0.093)	(0.093)	(0.093)	(0.154)
Senior				Ref.	Ref.	Ref.	Ref.
Kids (U12-14)				0.080	0.078	0.078	0.078
				(0.090)	(0.091)	(0.090)	(0.154)
Youth (U16-19)				0.018	0.017	0.014	0.014
				(0.091)	(0.092)	(0.092)	(0.171)
M+ and K+				0.249*	0.245	0.245	0.245
				(0.151)	(0.151)	(0.151)	(0.451)
Win					Ref.	Ref.	Ref.
Draw					-0.039	-0.039	-0.039
					(0.106)	(0.106)	(0.146)
Loss					-0.029	-0.029	-0.029
					(0.072)	(0.072)	(0.070)
Precipitation (mm)						0.151	0.151
						(0.705)	(0.820)
Observations	3614	3614	3614	3614	3614	3610	3610
Log likelihood	-3274.20	-3273.67	-3262.77	-3261.00	-3260.89	-3259.02	-3259.02
Pseudo R^2	0.030	0.030	0.034	0.034	0.034	0.034	0.034

Robust standard errors in parentheses* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Main infill result: Compared to SBR, players have lower odds of reporting higher ball bounce in Cork (significant only at the 10% level). The difference is highly significant in Sand and Non infill, in which participants are more likely to report higher ball bounce compared to SBR. The type of footwear has no effect. Women are more likely to report higher levels of ball bounce than men.

Table 2.2: Marginal Effects from OLogit – BallBounce (0 "Low", 1 "Normal", 2 "High")

Variable	0	1	2
SBR	Ref.	Ref.	Ref.
Cork	0.064*	-0.022	-0.042*
	(0.035)	(0.014)	(0.023)
Cork/Olive	-0.018	0.002	0.016
	(0.019)	(0.004)	(0.015)
Non infill	-0.074***	-0.011	0.085***
	(0.020)	(0.010)	(0.020)
Sand	-0.110***	-0.046	0.156***
	(0.031)	(0.031)	(0.054)
Græs (FG)	Ref.	Ref.	Ref.
Kunst (AG)	0.011	0.001	-0.011
	(0.016)	(0.001)	(0.016)
Multi (AG, FG)	0.004	0.000	-0.004
	(0.013)	(0.001)	(0.014)
Men	Ref.	Ref.	Ref.
Women	-0.060***	-0.016	0.076***
	(0.019)	(0.010)	(0.027)
Senior	Ref.	Ref.	Ref.
Kids (U12-14)	-0.011	-0.000	0.012
	(0.023)	(0.001)	(0.023)
Youth (U16-19)	-0.002	-0.000	0.002
	(0.026)	(0.000)	(0.026)
M+ and K+	-0.034	-0.005	0.039
	(0.060)	(0.017)	(0.076)
Win	Ref.	Ref.	Ref.
Draw	0.006	0.000	-0.006
	(0.022)	(0.001)	(0.022)
Loss	0.004	0.000	-0.004
	(0.010)	(0.000)	(0.011)
Precipitation (mm)	-0.022	-0.001	0.023
	(0.120)	(0.005)	(0.125)
Number of Obs.		3,610	

Robust standard errors clustered at the pitch level in parentheses * p < 0.10, ** p < 0.05, *** p < 0.01

6. Running

Table 3.1: Ordered Logit Coefficients – Running (0 "Soft", 1 "Normal", 2 "Hard")

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
SBR	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Cork	-0.294***	-0.302***	-0.330***	-0.291***	-0.282***	-0.283***	-0.283
	(0.084)	(0.085)	(0.085)	(0.087)	(0.087)	(0.087)	(0.292)
Cork/Olive	0.731***	0.764***	0.783***	0.893***	0.899***	0.900***	0.900***
	(0.156)	(0.156)	(0.155)	(0.160)	(0.160)	(0.160)	(0.202)
Non infill	0.962***	0.990***	1.112***	1.198***	1.198***	1.200***	1.200***
	(0.280)	(0.281)	(0.285)	(0.288)	(0.290)	(0.290)	(0.191)
Sand	1.914***	1.913***	1.911***	1.899***	1.904***	1.904***	1.904***
	(0.089)	(0.088)	(0.088)	(0.089)	(0.089)	(0.089)	(0.535)
Græs (FG)		Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Kunst (AG)		0.301***	0.296***	0.302***	0.300***	0.297***	0.297**
		(0.084)	(0.083)	(0.084)	(0.084)	(0.084)	(0.122)
Multi (AG, FG)		0.179**	0.191**	0.222***	0.221***	0.218***	0.218**
		(0.076)	(0.076)	(0.077)	(0.077)	(0.077)	(0.104)
Men			Ref.	Ref.	Ref.	Ref.	Ref.
Women			-0.246***	-0.227***	-0.218**	-0.217**	-0.217*
			(0.085)	(0.086)	(0.086)	(0.086)	(0.115)
Senior				Ref.	Ref.	Ref.	Ref.
Kids (U12-14)				-0.262***	-0.269***	-0.269***	-0.269
				(0.090)	(0.091)	(0.091)	(0.251)
Youth (U16-19)				-0.066	-0.075	-0.074	-0.074
				(0.094)	(0.094)	(0.094)	(0.209)
M+ and K+				0.216	0.226	0.227	0.227
				(0.144)	(0.146)	(0.146)	(0.464)
Win					Ref.	Ref.	Ref.
Draw					0.079	0.079	0.079
					(0.106)	(0.106)	(0.151)
Loss					0.180**	0.182***	0.182**
					(0.071)	(0.071)	(0.078)
Precipitation (mm)						0.122	0.122
						(0.554)	(0.841)
Observations	3613	3613	3613	3613	3613	3609	3609
Log likelihood	-3306.69	-3299.91	-3296.29	-3288.19	-3284.96	-3279.75	-3279.75
Pseudo R^2	0.098	0.100	0.101	0.103	0.104	0.104	0.104

Robust standard errors in parentheses* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Main infill result: Individuals are more likely to report hardiness in running in all the other types of infill compared to SBR, except in Cork, in which no significant differences are found. The models examining the running variable have one of the highest Pseudo R2 so far.

Table 3.2: Marginal Effects from OLogit – Running (0 "Soft", 1 "Normal", 2 "Hard")

Variable	0	1	2
SBR	Ref.	Ref.	Ref.
Cork	0.052	-0.012	-0.040
	(0.056)	(0.016)	(0.042)
Cork/Olive	-0.118***	-0.058***	0.176***
	(0.028)	(0.010)	(0.027)
Non infill	-0.144***	-0.104***	0.247***
	(0.026)	(0.016)	(0.027)
Sand	-0.183***	-0.236**	0.419***
	(0.032)	(0.094)	(0.114)
Græs (FG)	Ref.	Ref.	Ref.
Kunst (AG)	-0.039**	-0.013*	0.053**
	(0.018)	(0.008)	(0.023)
Multi (AG, FG)	-0.030*	-0.009*	0.038**
	(0.016)	(0.005)	(0.020)
Men	Ref.	Ref.	Ref.
Women	0.030*	0.008	-0.038*
	(0.016)	(0.006)	(0.021)
Senior	Ref.	Ref.	Ref.
Kids (U12-14)	0.036	0.012	-0.048
	(0.031)	(0.015)	(0.045)
Youth (U16-19)	0.009	0.004	-0.014
	(0.026)	(0.012)	(0.038)
M+ and K+	-0.026	-0.017	0.043
	(0.053)	(0.036)	(0.089)
Win	Ref.	Ref.	Ref.
Draw	-0.011	-0.003	0.014
	(0.020)	(0.007)	(0.027)
Loss	-0.024**	-0.009*	0.033**
	(0.010)	(0.005)	(0.014)
Precipitation (mm)	-0.016	-0.006	0.022
	(0.111)	(0.039)	(0.150)
Number of Obs.		3,609	

Robust standard errors clustered at the pitch level in parentheses * p < 0.10, ** p < 0.05, *** p < 0.01

7. Rolling Passes

Table 4.1: Ordered Logit Coefficients – Rolling Passes (0 "Slow", 1 "Normal", 2 "Fast")

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
SBR	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Cork	-0.314***	-0.306***	-0.308***	-0.283***	-0.288***	-0.288***	-0.288
	(0.088)	(0.088)	(0.089)	(0.090)	(0.090)	(0.090)	(0.262)
Cork/Olive	0.704***	0.688***	0.689***	0.734***	0.736***	0.736***	0.736***
	(0.144)	(0.144)	(0.144)	(0.148)	(0.147)	(0.147)	(0.096)
Non infill	1.328***	1.315***	1.320***	1.381***	1.382***	1.382***	1.382***
	(0.315)	(0.315)	(0.317)	(0.319)	(0.318)	(0.318)	(0.109)
Sand	0.812***	0.816***	0.816***	0.816***	0.815***	0.814***	0.814***
	(0.078)	(0.078)	(0.078)	(0.079)	(0.079)	(0.079)	(0.281)
Græs (FG)		Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Kunst (AG)		-0.170**	-0.170**	-0.194**	-0.193**	-0.193**	-0.193
		(0.084)	(0.084)	(0.085)	(0.085)	(0.085)	(0.120)
Multi (AG, FG)		-0.110	-0.110	-0.118	-0.116	-0.116	-0.116
		(0.074)	(0.074)	(0.075)	(0.075)	(0.075)	(0.101)
Men			Ref.	Ref.	Ref.	Ref.	Ref.
Women			-0.012	-0.001	-0.008	-0.008	-0.008
			(0.087)	(0.088)	(0.088)	(0.088)	(0.135)
Senior				Ref.	Ref.	Ref.	Ref.
Kids (U12-14)				0.029	0.030	0.030	0.030
				(0.089)	(0.090)	(0.090)	(0.235)
Youth (U16-19)				0.159*	0.163*	0.163*	0.163
				(0.091)	(0.092)	(0.092)	(0.220)
M+ and K+				0.212	0.201	0.201	0.201
				(0.144)	(0.145)	(0.145)	(0.433)
Win					Ref.	Ref.	Ref.
Draw					-0.083	-0.083	-0.083
					(0.108)	(0.108)	(0.120)
Loss					-0.120*	-0.120*	-0.120
					(0.069)	(0.069)	(0.081)
Precipitation (mm)						0.023	0.023
						(0.508)	(0.747)
Observations	3614	3614	3614	3614	3614	3610	3610
Log likelihood	-3392.52	-3390.22	-3390.21	-3387.59	-3386.03	-3383.02	-3383.02
Pseudo R^2	0.029	0.030	0.030	0.030	0.031	0.031	0.031

Robust standard errors in parentheses* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Main infill result: Compared to SBR, players have higher odds of reporting faster passes in all the other types of infill except in Cork, where the sign is negative and it loses significance in Model 7.

Table 4.2: Marginal Effects from Ordered Logit – Rolling Passes (0 "Slow", 1 "Normal", 2 "Fast")

Variable	0	1	2
SBR	Ref.	Ref.	Ref.
Cork	0.037	0.025	-0.062
	(0.036)	(0.018)	(0.054)
Cork/Olive	-0.065***	-0.113***	0.178***
	(0.011)	(0.013)	(0.022)
Non infill	-0.096***	-0.235***	0.331***
	(0.012)	(0.019)	(0.024)
Sand	-0.069***	-0.128**	0.197***
	(0.019)	(0.052)	(0.069)
Græs (FG)	Ref.	Ref.	Ref.
Kunst (AG)	0.019*	0.025	-0.044
	(0.011)	(0.016)	(0.027)
Multi (AG, FG)	0.011	0.016	-0.027
	(0.010)	(0.014)	(0.023)
Men	Ref.	Ref.	Ref.
Women	0.001	0.001	-0.002
	(0.014)	(0.017)	(0.031)
Senior	Ref.	Ref.	Ref.
Kids (U12-14)	-0.003	-0.004	0.007
	(0.025)	(0.028)	(0.053)
Youth (U16-19)	-0.020	-0.026	0.046
	(0.041)	(0.060)	(0.100)
M+ and K+	-0.016	-0.021	0.037
	(0.024)	(0.027)	(0.050)
Win	Ref.	Ref.	Ref.
Draw	0.008	0.011	-0.019
	(0.012)	(0.016)	(0.027)
Loss	0.012	0.015	-0.027
	(0.008)	(0.010)	(0.018)
Precipitation (mm)	-0.002	-0.003	0.005
	(0.074)	(0.096)	(0.171)
Number of Obs.		3,610	

Robust standard errors clustered at the pitch level in parentheses * p < 0.10, ** p < 0.05, *** p < 0.01