coderspace

October 7, 2024

```
[1]: import warnings
     warnings.filterwarnings('ignore')
     import numpy as np
     import pandas as pd
     pd.set_option('display.max_columns', 60)
[2]: df_train=pd.read_csv("/kaggle/input/
     ⇔veri-bilimi-ve-yapay-zeka-okulu-kaggle-yarismasi/train.csv")
     df_test=pd.read_csv("/kaggle/input/
      ⇔veri-bilimi-ve-yapay-zeka-okulu-kaggle-yarismasi/test.csv")
     df_train.drop(columns=['id'],inplace=True)
     df_test.drop(columns=['id'],inplace=True)
[3]: df_train['Height']=df_train['Height'].astype(str).str.replace('CM','').
     ⇔astype(int)
     df_test['Height'] = df_test['Height'].astype(str).str.replace('CM','').astype(int)
     df_train['Weight'] = df_train['Weight'].astype(str).str.replace('KG','').
      →astype(int)
     df_test['Weight'] = df_test['Weight'].astype(str).str.replace('KG','').astype(int)
[4]: df_train[['Caps', 'Goals']] = df_train['Caps / Goals'].str.split(' / ',__
      ⇔expand=True)
     df_train['Caps'] = df_train['Caps'].notna().astype(int)
     df_train['Goals'] = df_train['Goals'].notna().astype(int)
     df_train = df_train.drop(columns=['Caps / Goals'])
     df_test[['Caps', 'Goals']] = df_test['Caps / Goals'].str.split(' / ',__
      ⇔expand=True)
     df_test['Caps'] = df_test['Caps'].notna().astype(int)
     df_test['Goals'] = df_test['Goals'].notna().astype(int)
```

```
df_test = df_test.drop(columns=['Caps / Goals'])
[5]: df train['Goals per Caps']=df train['Goals']/df train['Caps']
     df_test['Goals per Caps']=df_test['Goals']/df_test['Caps']
[6]: df_train['Goals per Caps'].fillna(0,inplace=True)
     df_test['Goals per Caps'].fillna(0,inplace=True)
     df_train.drop(columns=['Caps','Goals'],inplace=True)
     df_test.drop(columns=['Caps', 'Goals'],inplace=True)
[7]: df_train[df_train['Dribbling'].isna()]
[7]:
           value_increased
                             Ability
                                       Potential Positions
                                                                Foot
                                                                      Height
                                                                               Weight
                      False
                                 48.0
                                              NaN
                                                                          185
                                                                                    82
     1
                                                          GK
                                                               Right
     4
                      False
                                 47.0
                                              NaN
                                                          GK
                                                               Right
                                                                          193
                                                                                    73
                                              NaN
     18
                      False
                                 40.0
                                                          GK
                                                               Right
                                                                          190
                                                                                    74
     49
                      False
                                 53.0
                                              NaN
                                                          GK
                                                               Right
                                                                          185
                                                                                    78
     65
                      False
                                 53.0
                                              NaN
                                                          GK
                                                              Right
                                                                          187
                                                                                    71
     102
                      False
                                 69.0
                                             71.0
                                                          GK
                                                               Right
                                                                          183
                                                                                    84
     110
                      False
                                 45.0
                                              NaN
                                                          GK
                                                               Right
                                                                          185
                                                                                    75
     114
                      False
                                              NaN
                                                          GK
                                                               Right
                                                                                    89
                                 51.0
                                                                          194
     166
                      False
                                 53.0
                                              NaN
                                                          GK
                                                               Right
                                                                          193
                                                                                    82
     214
                      False
                                  0.0
                                             40.0
                                                          GK
                                                               Right
                                                                          187
                                                                                    78
     240
                      False
                                 40.0
                                              NaN
                                                          GK
                                                                Left
                                                                          192
                                                                                    97
     247
                      False
                                 36.0
                                              NaN
                                                          GK
                                                                          189
                                                                                    74
                                                               Right
     255
                      False
                                 57.0
                                              NaN
                                                          GK
                                                              Right
                                                                          187
                                                                                    73
     256
                      False
                                 41.0
                                              NaN
                                                          GK
                                                                                    85
                                                               Right
                                                                          191
     265
                      False
                                 62.0
                                             63.0
                                                          GK
                                                               Right
                                                                          187
                                                                                    70
     267
                      False
                                 42.0
                                              NaN
                                                          GK
                                                                Left
                                                                          191
                                                                                    80
     279
                      False
                                 50.0
                                              NaN
                                                          GK
                                                               Right
                                                                          177
                                                                                    72
     282
                                                                                    74
                      False
                                 40.0
                                              NaN
                                                          GK
                                                               Right
                                                                          184
     297
                      False
                                 53.0
                                              NaN
                                                          GK
                                                                          193
                                                                                    92
                                                               Right
     331
                      False
                                 38.0
                                              NaN
                                                          GK
                                                              Right
                                                                          190
                                                                                    75
     334
                      False
                                 52.0
                                              NaN
                                                          GK
                                                                          191
                                                                                    73
                                                               Right
     346
                                              NaN
                                                          GK
                      False
                                 53.0
                                                                Left
                                                                          193
                                                                                    88
     349
                                                                                    77
                      False
                                 29.0
                                              NaN
                                                          GK
                                                               Right
                                                                          191
     376
                                 41.0
                                                                                    79
                       True
                                              NaN
                                                          GK
                                                               Right
                                                                          193
     391
                       True
                                 49.0
                                              NaN
                                                          GK
                                                               Right
                                                                                    79
                                                                          189
     394
                      False
                                 40.0
                                              NaN
                                                          GK
                                                               Right
                                                                          194
                                                                                    84
     420
                      False
                                 45.0
                                              NaN
                                                          GK
                                                              Right
                                                                          176
                                                                                    60
     429
                       True
                                 49.0
                                              NaN
                                                          GK
                                                               Right
                                                                          194
                                                                                    80
     431
                      False
                                 70.0
                                             78.0
                                                          GK
                                                                Left
                                                                          196
                                                                                    74
     434
                                             68.0
                      False
                                 54.0
                                                          GK
                                                               Right
                                                                          188
                                                                                    84
```

NaN

NaN

GK

GK

Right

Right

78

70

185

182

445

449

False

True

41.0

38.0

	Aerial Re	ach Comm	and of	Area	Communica	tion Ecc	entricity	First Touch	\
1	5	5.0		60.0		70.0	65.0	45.0	
4	3	5.0		40.0		35.0	25.0	5.0	
18	6	0.0		55.0		35.0	65.0	25.0	
49	6	5.0		60.0		60.0	65.0	60.0	
65	6	0.0		60.0		45.0	45.0	50.0	
102	7	0.0		65.0		60.0	25.0	35.0	
110		5.0		55.0		40.0	25.0	5.0	
114		0.0		50.0		55.0	70.0	35.0	
166		5.0		50.0		60.0	25.0	25.0	
214		0.0		40.0		45.0	55.0	30.0	
240		5.0		20.0		50.0	25.0	25.0	
247		0.0		50.0		45.0	25.0	30.0	
255		5.0		60.0		65.0	35.0	35.0	
256		0.0		50.0		35.0	20.0	25.0	
265		0.0		65.0		70.0	30.0	30.0	
267		0.0		70.0		50.0	25.0	25.0	
279		0.0		55.0		55.0	30.0	55.0	
282		0.0		50.0		65.0	55.0	15.0	
297		0.0		60.0		60.0	40.0	30.0	
331		5.0		40.0		45.0	50.0	15.0	
334		5.0		60.0		55.0	25.0	45.0	
346		5.0		50.0		40.0	60.0	55.0	
349		0.0		15.0		30.0	25.0	15.0	
376		0.0		75.0		50.0	50.0	10.0	
391		5.0		45.0		45.0	25.0	20.0	
394		0.0		65.0		35.0	40.0	5.0	
420		0.0		65.0		40.0	25.0	5.0	
429		5.0		50.0		45.0	25.0	5.0	
431		5.0		65.0		60.0	50.0	60.0	
434		5.0		75.0		65.0	15.0	45.0	
445		5.0		45.0		50.0	25.0	20.0	
449	5	5.0		45.0		45.0	40.0	5.0	
	Handling	Kicking	One or	n Ones	Passing	Punching	(Tendency)	Reflexes	\
1	45.0	65.0		60.0	60.0		55.0	55.0	
4	70.0	50.0		50.0	50.0		50.0	70.0	
18	65.0	65.0		25.0	45.0		50.0	65.0	
49	70.0	55.0		70.0	60.0		35.0	70.0	
65	60.0	70.0		70.0	75.0		25.0	70.0	
102	50.0	55.0		60.0	60.0		55.0	70.0	
110	65.0	55.0		40.0	45.0		50.0	65.0	
114	60.0	55.0		60.0	40.0		55.0	75.0	
166	65.0	70.0		60.0	50.0		35.0	70.0	
214	40.0	65.0		35.0	35.0		70.0	70.0	
240	70.0	70.0		45.0	55.0		45.0	70.0	
247	50.0	45.0		45.0	55.0		35.0	65.0	

255	60.0	55.0	65.0	35.0	40.0	75.0
256	60.0	50.0	70.0	45.0	50.0	
265	80.0	60.0	55.0	30.0	45.0	
267	50.0	70.0	60.0	45.0	35.0	
279	55.0	60.0	55.0	55.0	50.0	
282	70.0	45.0	45.0	45.0	40.0	
297	70.0	55.0	55.0	45.0 65.0	45.0	
331	45.0	35.0	40.0	30.0	60.0	
334	60.0	50.0	75.0	60.0	60.0	
346	50.0	65.0	70.0	60.0	40.0	
349	65.0	25.0	40.0	30.0	25.0	
376	50.0	60.0	60.0	50.0	55.0	
391	65.0	40.0	55.0	25.0	75.0	
394	45.0	50.0	50.0	35.0	55.0	
420	65.0	65.0	35.0	55.0	25.0	
429	60.0	50.0	60.0	30.0	55.0	
431	70.0	65.0	65.0	60.0	45.0	
434	50.0	70.0	70.0	45.0	55.0	60.0
445	60.0	45.0	50.0	65.0	60.0	55.0
449	40.0	40.0	45.0	55.0	60.0	65.0
	Rushing Out	(Tendency)	Throwing	Aggression	Anticipation	Bravery \
1	G	65.0	65.0	60.0	55.0	55.0
4		25.0	45.0	45.0	65.0	60.0
18		80.0	35.0	55.0	25.0	75.0
49		40.0	50.0	60.0	55.0	55.0
65		50.0	55.0	55.0	50.0	50.0
102		55.0	65.0	40.0	70.0	75.0
110		40.0	40.0	40.0	50.0	75.0
114		55.0	55.0	50.0	60.0	60.0
166		60.0	65.0	30.0	30.0	75.0
214		60.0	25.0	55.0	25.0	45.0
240		35.0	45.0	45.0	25.0	55.0
247		25.0	55.0	40.0	40.0	75.0
255		65.0	40.0	50.0	75.0	55.0
256		55.0	55.0	35.0	55.0	50.0
265		40.0	50.0	55.0	55.0	50.0
267		30.0	35.0	40.0	35.0	45.0
279		75.0	55.0	40.0	50.0	60.0
282		25.0	55.0	55.0	55.0	75.0
297		75.0	60.0	40.0	35.0	60.0
331		40.0	40.0	50.0	50.0	60.0
334		50.0	70.0	25.0	50.0	55.0
346		80.0	70.0	45.0	55.0	55.0
349		70.0	15.0	40.0	25.0	65.0
376		40.0	55.0	40.0	50.0	60.0
391		30.0	45.0	55.0	50.0	75.0

394	1	25.0	45.0	35.0		30.0	60.0	
420)	35.0	20.0	60.0		55.0	70.0	
429	9	40.0	60.0	50.0		35.0	75.0	
431	1	55.0	65.0	60.0		80.0	70.0	
434	1	60.0	65.0	45.0		75.0	70.0	
445	5	40.0	50.0	60.0		40.0	45.0	
449	9	30.0	40.0	30.0		50.0	55.0	
	Composure	Concentration	Decisions	Determin	nation	Flair	Leadership	\
1	65.0	50.0	55.0		75.0	25.0	35.0	
4	40.0	50.0	60.0		60.0	5.0	25.0	
18	35.0	60.0	60.0		65.0	5.0	45.0	
49	35.0	50.0	55.0		70.0	50.0	65.0	
65	50.0	50.0	50.0		70.0	15.0	25.0	
102		70.0	60.0		90.0	10.0	55.0	
110		50.0	65.0		40.0	5.0	5.0	
114		50.0	45.0		65.0	40.0	40.0	
166		50.0	65.0		80.0	5.0	50.0	
214		50.0	35.0		75.0	10.0	65.0	
240		45.0	60.0		85.0	10.0	15.0	
247		30.0	55.0		65.0	10.0	35.0	
255		60.0	50.0		75.0	15.0	45.0	
256		60.0	50.0		65.0	25.0	40.0	
265		50.0	70.0		80.0	35.0	65.0	
267		50.0	70.0		65.0	5.0	25.0	
279		65.0	55.0		70.0	5.0	40.0	
282 297		60.0 60.0	70.0 70.0		75.0	5.0 10.0	5.0	
					90.0		55.0 60.0	
331 334		40.0 75.0	65.0 55.0		55.0 60.0	15.0 15.0	35.0	
346		45.0	50.0		60.0	5.0	40.0	
349		35.0	65.0		45.0	15.0	20.0	
376		50.0	60.0		30.0	10.0	55.0	
391		60.0	65.0		50.0	5.0	5.0	
394		40.0	70.0		55.0	5.0	45.0	
420		65.0	65.0		30.0	5.0	35.0	
429		70.0	70.0		70.0	5.0	30.0	
431		70.0	55.0		60.0	20.0	40.0	
434		55.0	50.0		60.0	15.0	65.0	
445		50.0	45.0		80.0	15.0	20.0	
449		45.0	65.0		20.0	15.0	35.0	
	00.0	10.0	00.0		20.0	10.0	00.0	
	Off the Bal	ll Positioning	Teamwork	Vision	Work R	ate Ac	celeration	\
1	10.	O		30.0		5.0	55.0	
4	15.			35.0		5.0	60.0	
18	15.			30.0		5.0	55.0	
49	10.			45.0		5.0	60.0	

65		5.0	45.0	50		.0	50.0		65.0
102		65.0	75.0	55	.0 60	.0	60.0		70.0
110		15.0	50.0	70	.0 35	.0	30.0		60.0
114		30.0	60.0	50	.0 40	.0	40.0		50.0
166		15.0	45.0	45	.0 40	.0	40.0		50.0
214		5.0	55.0	40	.0 25	.0	35.0		45.0
240		5.0	50.0	40	.0 35	.0	35.0		50.0
247		15.0	45.0	45	.0 40	.0	40.0		65.0
255		25.0	60.0	50		.0	55.0		55.0
256		30.0	50.0	40		.0	35.0		30.0
265		30.0	50.0	55		.0	50.0		60.0
267		10.0	65.0	40		.0	35.0		60.0
279		15.0	60.0	60		.0	70.0		60.0
282		5.0	40.0	40		.0	30.0		30.0
297		5.0	60.0	40		.0	25.0		55.0
						.0			
331		15.0	20.0	35			25.0		65.0
334		35.0	60.0	45		.0	60.0		40.0
346		10.0	35.0	70		.0	60.0		60.0
349		5.0	50.0	30		.0	25.0		55.0
376		10.0	50.0	50		.0	35.0		35.0
391		15.0	60.0	40		.0	35.0		55.0
394		10.0	60.0	40		.0	35.0		50.0
420		10.0	40.0	35	.0 20	.0	30.0		50.0
429		5.0	35.0	45	.0 40	.0	35.0		70.0
431		20.0	65.0	60	.0 50	.0	60.0		45.0
434		25.0	45.0	55	.0 40	.0	50.0		50.0
445		5.0	45.0	50	.0 45	.0	45.0		60.0
449		10.0	50.0	35	.0 30	.0	30.0		55.0
	Agility	Balance	Jumping	Reach	Natural	Fitness	Pace	Stamina	\
1	60.0	50.0		60.0		50.0	45.0	50.0	
4	75.0	25.0		60.0		65.0	65.0	10.0	
18	50.0	25.0		65.0		30.0	55.0	40.0	
49	65.0	45.0		70.0		70.0	45.0	35.0	
65	50.0	55.0		70.0		50.0	70.0	25.0	
102	60.0	55.0		65.0		60.0	70.0	60.0	
110	60.0	30.0		55.0		70.0	40.0	5.0	
114	70.0	50.0		70.0		60.0	50.0	50.0	
166	65.0	45.0		70.0		75.0	60.0	25.0	
214	65.0	40.0		50.0		70.0	45.0	10.0	
240	60.0	40.0		75.0		75.0	70.0	25.0	
247	35.0	45.0		45.0		65.0	60.0	20.0	
	75.0	40.0		45.0 75.0		80.0	65.0	65.0	
255									
256	60.0	70.0		90.0		55.0	40.0	50.0	
265	60.0	65.0		80.0		70.0	50.0	55.0	
267	45.0	20.0		65.0		60.0	50.0	20.0	
279	60.0	50.0		50.0		60.0	55.0	60.0	

282	45.0	40.0	4	0.0	65.0	55.0	5.0	
297	65.0	45.0		0.0	65.0	50.0	15.0	
331	80.0	35.0	7	0.0	65.0	45.0	5.0	
334	60.0	70.0	7	0.0	45.0	50.0	40.0	
346	75.0	50.0	7	5.0	60.0	50.0	50.0	
349	80.0	30.0	7	0.0	70.0	55.0	15.0	
376	45.0	50.0	7	0.0	55.0	60.0	25.0	
391	75.0	40.0	5	5.0	50.0	50.0	15.0	
394	60.0	40.0	6	5.0	60.0	45.0	15.0	
420	55.0	35.0	1	5.0	70.0	50.0	15.0	
429	65.0	30.0	7	5.0	85.0	65.0	10.0	
431	80.0	60.0	8	5.0	75.0	45.0	65.0	
434	60.0	40.0	6	0.0	50.0	45.0	40.0	
445	50.0	45.0		5.0	70.0		25.0	
449	75.0	35.0	5	0.0	75.0	60.0	10.0	
	Strength	Corners	Crossing	Dribbling	Finishing	Free	Kick Taking	\
1	50.0	NaN	NaN	NaN	NaN		35.0	
4	35.0	NaN	NaN	NaN	NaN		40.0	
18	20.0	NaN	NaN	NaN	NaN		25.0	
49	40.0	NaN	NaN	NaN	NaN		35.0	
65	45.0	NaN	NaN	NaN	NaN		20.0	
102	50.0	NaN	NaN	NaN	NaN		40.0	
110	25.0	NaN	NaN	NaN	NaN		35.0	
114	70.0	NaN	NaN	NaN	NaN		35.0	
166	40.0	NaN	NaN	NaN	NaN		25.0	
214	30.0	NaN	NaN	NaN	NaN		35.0	
240	35.0	NaN	NaN	NaN	NaN		35.0	
247	35.0	NaN	NaN	NaN	NaN		15.0	
255	70.0	NaN	NaN	NaN	NaN		5.0	
256	55.0	NaN	NaN	NaN	NaN		5.0	
265	80.0	NaN	NaN	NaN	NaN		30.0	
267	35.0	NaN	NaN	NaN	NaN		30.0	
279	50.0	NaN	NaN	NaN	NaN		35.0	
282	25.0	NaN N-N	NaN N-N	NaN N-N	NaN NaN		40.0	
297	35.0	NaN NaN	NaN NaN	NaN NaN	NaN NaN		30.0	
331 334	25.0	NaN NaN	NaN NaN	NaN NaN	NaN NaN		25.0 30.0	
346	45.0 55.0	NaN NaN	NaN NaN	NaN NaN	NaN NaN		30.0	
349	20.0	NaN	NaN NaN	NaN	NaN NaN		25.0	
376	35.0	NaN	NaN	NaN	NaN		20.0	
391	30.0	NaN	NaN	NaN	NaN		25.0	
394	35.0	NaN	NaN	NaN	NaN		30.0	
420	30.0	NaN	NaN	NaN	NaN		40.0	
429	30.0	NaN	NaN	NaN	NaN		40.0	
431	45.0	NaN	NaN	NaN	NaN		40.0	
434	50.0	NaN	NaN	NaN	NaN		55.0	

445	40.0	NaN	NaN	NaN	NaN	35.0	
449	20.0	NaN	NaN	NaN	NaN	25.0	
	Heading	Long Shots	Long Throws	Marking	Penalty Taking	Tackling \	\
1	NaN	NaN	NaN	NaN	15.0	NaN	
4	NaN	NaN	NaN	NaN	15.0	NaN	
18	NaN	NaN	NaN	NaN	5.0	NaN	
49	NaN	NaN	NaN	NaN	35.0	NaN	
65	NaN	NaN	NaN	NaN	15.0	NaN	
102	NaN	NaN	NaN	NaN	20.0	NaN	
110	NaN	NaN	NaN	NaN	5.0	NaN	
114	NaN	NaN	NaN	NaN	5.0	NaN	
166	NaN	NaN	NaN	NaN	10.0	NaN	
214	NaN	NaN	NaN	NaN	5.0	NaN	
240	NaN	NaN	NaN	NaN	5.0	NaN	
247	NaN	NaN	NaN	NaN	15.0	NaN	
255	NaN	NaN	NaN	NaN	5.0	NaN	
256	NaN	NaN	NaN	NaN	20.0	NaN	
265	NaN	NaN	NaN	NaN	15.0	NaN	
267	NaN	NaN	NaN	NaN	5.0	NaN	
279	NaN	NaN	NaN	NaN	20.0	NaN	
282	NaN	NaN	NaN	NaN	15.0	NaN	
297	NaN	NaN	NaN	NaN	15.0	NaN	
331	NaN	NaN	NaN	NaN	5.0	NaN	
334	NaN	NaN	NaN	NaN	20.0	NaN	
346	NaN	NaN	NaN	NaN	15.0	NaN	
349	NaN	NaN	NaN	NaN	15.0	NaN	
376	NaN	NaN	NaN	NaN	5.0	NaN	
391	NaN	NaN	NaN	NaN	15.0	NaN	
394	NaN	NaN	NaN	NaN	15.0	NaN	
420	NaN	NaN	NaN	NaN	10.0	NaN	
429	NaN	NaN	NaN	NaN	10.0	NaN	
431	NaN	NaN	NaN	NaN	10.0	NaN	
434	NaN N-N	NaN N-N	NaN	NaN N-N	10.0	NaN NaN	
445	NaN NaN	NaN NaN	NaN	NaN NaN	10.0	NaN NaN	
449	NaN	NaN	NaN	NaN	5.0	NaN	
	Tochniquo	Coola nom	Cong				
1	Technique 55.0	_	0.0				
4	15.0		0.0				
18	10.0		0.0				
49	55.0		0.0				
65	60.0		0.0				
102	30.0		1.0				
110	20.0		0.0				
114	40.0		0.0				
166	25.0		0.0				

```
214
            5.0
                             0.0
240
            5.0
                             0.0
247
           25.0
                             0.0
           35.0
255
                             0.0
256
           25.0
                             0.0
265
           25.0
                             1.0
                             0.0
267
            5.0
279
           55.0
                             0.0
282
                             0.0
           10.0
297
           55.0
                             0.0
331
           25.0
                             0.0
334
           45.0
                             0.0
346
                             0.0
           60.0
349
           10.0
                             0.0
376
           35.0
                             0.0
391
           25.0
                             0.0
394
                             0.0
            5.0
420
           15.0
                             0.0
429
                             0.0
           25.0
431
           60.0
                             0.0
434
           30.0
                             0.0
445
            5.0
                             0.0
449
           20.0
                             0.0
```

• All of them are goalkeepers. Therefore goalkeepers dont benefit from the following stats

```
[8]: gk_values={'Corners':0,'Crossing':0,'Dribbling':0,'Finishing':0,'Heading':

→0,'Long Shots':0,'Long Throws':0,'Marking':0,'Tackling':0}

df_train.fillna(value=gk_values,inplace=True)

df_train[df_train['Positions']=='GK']
```

[8]:		value_increased	Ability	Potential	Positions	Foot	Height	Weight	\
	1	False	48.0	NaN	GK	Right	185	82	
	4	False	47.0	NaN	GK	Right	193	73	
	18	False	40.0	NaN	GK	Right	190	74	
	49	False	53.0	NaN	GK	Right	185	78	
	65	False	53.0	NaN	GK	Right	187	71	
	102	False	69.0	71.0	GK	Right	183	84	
	110	False	45.0	NaN	GK	Right	185	75	
	114	False	51.0	NaN	GK	Right	194	89	
	166	False	53.0	NaN	GK	Right	193	82	
	214	False	0.0	40.0	GK	Right	187	78	
	240	False	40.0	NaN	GK	Left	192	97	
	247	False	36.0	NaN	GK	Right	189	74	
	255	False	57.0	NaN	GK	Right	187	73	
	256	False	41.0	NaN	GK	Right	191	85	
	265	False	62.0	63.0	GK	Right	187	70	

267	Fal	se 42.0		NaN	GK	Left	19	1	80	
279	Fal	se 50.0		NaN	GK	Right	17	7	72	
282	Fal	se 40.0		NaN	GK	Right	18	4	74	
297	Fal	se 53.0		NaN	GK	Right	19	3	92	
331	Fal	se 38.0		NaN	GK	Right	19	0	75	
334	Fal			NaN	GK	Right	19	1	73	
346	Fal			NaN	GK	Left	19		88	
349	Fal			NaN	GK	Right	19		77	
376	Tr			NaN	GK	Right	19		79	
391	Tr			NaN	GK	Right	18		79	
394	Fal			NaN	GK	Right	19		84	
420	Fal			NaN	GK	Right	17		60	
429	Tr			NaN	GK	Right	19		80	
431	Fal			78.0	GK	Left	19		74	
434	Fal:			68.0	GK	Right	18		84	
445	Fal			NaN	GK	Right	18		78	
449	Tr	ue 38.0		NaN	GK	Right	18	2	70	
	Assis Decah	C	۸	C	· + ·	F		Pi	ТЪ	,
1	Aerial Reach 55.0	Command of	60.0	Commun	ication 70.0	Eccentr	65.0	First	Touch 45.0	\
1 4	35.0		40.0		35.0		25.0		5.0	
4 18	60.0		55.0		35.0		65.0		25.0	
49	65.0		60.0		60.0		65.0		60.0	
45 65	60.0		60.0		45.0		45.0		50.0	
102	70.0		65.0		60.0		25.0		35.0	
110	45.0		55.0		40.0		25.0		5.0	
114	60.0		50.0		55.0		70.0		35.0	
166	65.0		50.0		60.0		25.0		25.0	
214	70.0		40.0		45.0		55.0		30.0	
240	65.0		20.0		50.0		25.0		25.0	
247	60.0		50.0		45.0		25.0		30.0	
255	65.0		60.0		65.0		35.0		35.0	
256	60.0		50.0		35.0		20.0		25.0	
265	80.0		65.0		70.0		30.0		30.0	
267	50.0		70.0		50.0		25.0		25.0	
279	40.0		55.0		55.0		30.0		55.0	
282	40.0		50.0		65.0		55.0		15.0	
297	60.0		60.0		60.0		40.0		30.0	
331	55.0		40.0		45.0		50.0		15.0	
334	65.0		60.0		55.0		25.0		45.0	
346	65.0		50.0		40.0		60.0		55.0	
349	40.0		15.0		30.0		25.0		15.0	
376	60.0		75.0		50.0		50.0		10.0	
391	65.0		45.0		45.0		25.0		20.0	
394	60.0		65.0		35.0		40.0		5.0	
420	30.0		65.0		40.0		25.0		5.0	
429	45.0		50.0		45.0		25.0		5.0	

431	8	5.0	65.0		60.0	50.0	60	0.0
434	5	5.0	75.0		65.0	15.0	45	5.0
445	5	5.0	45.0		50.0	25.0	20	0.0
449	5	5.0	45.0		45.0	40.0		5.0
	Handling	Kicking	One on Ones	Passing	Punching	(Tendency)) Reflexe	es \
1	45.0	65.0	60.0	60.0	· ·	55.0		
4	70.0	50.0	50.0	50.0		50.0	0 70	. 0
18	65.0	65.0	25.0	45.0		50.0	0 65	. 0
49	70.0	55.0	70.0	60.0		35.0	0 70	. 0
65	60.0	70.0	70.0	75.0		25.0	0 70	. 0
102	50.0	55.0	60.0	60.0		55.0	0 70	. 0
110	65.0	55.0	40.0	45.0		50.0	0 65	. 0
114	60.0	55.0	60.0	40.0		55.0	0 75	. 0
166	65.0	70.0	60.0	50.0		35.0	0 70	. 0
214	40.0	65.0	35.0	35.0		70.0	0 70	. 0
240	70.0	70.0	45.0	55.0		45.0	0 70	. 0
247	50.0	45.0	45.0	55.0		35.0	0 65	. 0
255	60.0	55.0	65.0	35.0		40.0	0 75	. 0
256	60.0	50.0	70.0	45.0		50.0	0 60	. 0
265	80.0	60.0	55.0	30.0		45.0	0 70	. 0
267	50.0	70.0	60.0	45.0		35.0	0 50	. 0
279	55.0	60.0	55.0	55.0		50.0	0 60	. 0
282	70.0	45.0	45.0	45.0		40.0	0 60	. 0
297	70.0	55.0	55.0	65.0		45.0	0 70	. 0
331	45.0	35.0	40.0	30.0		60.0	0 65	. 0
334	60.0	50.0	75.0	60.0		60.0	0 65	. 0
346	50.0	65.0	70.0	60.0		40.0	0 60	. 0
349	65.0	25.0	40.0	30.0		25.0	0 65	. 0
376	50.0	60.0	60.0	50.0		55.0	0 40	. 0
391	65.0	40.0	55.0	25.0		75.0	0 65	. 0
394	45.0	50.0	50.0	35.0		55.0	0 60	. 0
420	65.0	65.0	35.0	55.0		25.0	0 65	. 0
429	60.0	50.0	60.0	30.0		55.0	0 55	. 0
431	70.0	65.0	65.0	60.0		45.0	0 80	. 0
434	50.0	70.0	70.0	45.0		55.0	0 60	. 0
445	60.0	45.0	50.0	65.0		60.0	0 55	. 0
449	40.0	40.0	45.0	55.0		60.0	0 65	. 0
		. (5. 1	\				_	,
	Rushing O	ut (Tender	v			icipation	Bravery	\
1			35.0 65.		60.0	55.0	55.0	
4			25.0 45.		45.0	65.0	60.0	
18			30.0 35.		55.0	25.0	75.0	
49			10.0 50.		60.0	55.0	55.0	
65			50.0 55.		55.0	50.0	50.0	
102			55.0 65.		40.0	70.0	75.0	
110		4	10.0 40.	U	40.0	50.0	75.0	

114		55.0	55.0	50.0	60.0	60.0
166		60.0	65.0	30.0	30.0	
214		60.0	25.0	55.0	25.0	
240		35.0	45.0	45.0	25.0	55.0
247		25.0	55.0	40.0	40.0	75.0
255		65.0	40.0	50.0	75.0	55.0
256		55.0	55.0	35.0	55.0	
265		40.0	50.0	55.0	55.0	
267		30.0	35.0	40.0	35.0	45.0
279		75.0	55.0	40.0	50.0	60.0
282		25.0	55.0	55.0	55.0	75.0
297		75.0	60.0	40.0	35.0	60.0
331		40.0	40.0	50.0	50.0	60.0
334		50.0	70.0	25.0	50.0	55.0
346		80.0	70.0	45.0	55.0	55.0
349		70.0	15.0	40.0	25.0	65.0
376		40.0	55.0	40.0	50.0	60.0
391		30.0	45.0	55.0	50.0	75.0
394		25.0	45.0	35.0	30.0	60.0
420		35.0	20.0	60.0	55.0	70.0
429		40.0	60.0	50.0	35.0	75.0
431		55.0	65.0	60.0	80.0	70.0
434		60.0	65.0	45.0	75.0	70.0
445		40.0	50.0	60.0	40.0	45.0
						20.0
449		30.0	40.0	30.0	50.0	
449	Composure					
1	Composure 65.0	30.0	40.0	30.0	50.0	55.0
1 4	65.0 40.0	30.0 Concentration 50.0 50.0	40.0 Decisions 55.0 60.0	30.0 Determination 75.0 60.0	50.0 Flair 25.0 5.0	55.0 Leadership 35.0 25.0
1 4 18	65.0 40.0 35.0	30.0 Concentration 50.0 50.0 60.0	40.0 Decisions 55.0 60.0 60.0	30.0 Determination 75.0 60.0 65.0	50.0 Flair 25.0 5.0 5.0	55.0 Leadership 35.0 25.0 45.0
1 4 18 49	65.0 40.0 35.0 35.0	30.0 Concentration 50.0 50.0 60.0 50.0	40.0 Decisions 55.0 60.0 60.0 55.0	30.0 Determination 75.0 60.0 65.0 70.0	50.0 Flair 25.0 5.0 5.0 50.0	55.0 Leadership 35.0 25.0 45.0 65.0
1 4 18 49 65	65.0 40.0 35.0 35.0 50.0	30.0 Concentration 50.0 50.0 60.0 50.0 50.0	40.0 Decisions 55.0 60.0 60.0 55.0 50.0	30.0 Determination 75.0 60.0 65.0 70.0 70.0	50.0 Flair 25.0 5.0 5.0 50.0 15.0	55.0 Leadership 35.0 25.0 45.0 65.0 25.0
1 4 18 49 65 102	65.0 40.0 35.0 35.0 50.0 70.0	30.0 Concentration 50.0 50.0 60.0 50.0 70.0	40.0 Decisions 55.0 60.0 60.0 55.0 50.0 60.0	30.0 Determination 75.0 60.0 65.0 70.0 70.0 90.0	50.0 Flair 25.0 5.0 5.0 50.0 15.0	55.0 Leadership 35.0 25.0 45.0 65.0 25.0 55.0
1 4 18 49 65 102 110	65.0 40.0 35.0 35.0 50.0 70.0 40.0	30.0 Concentration 50.0 50.0 60.0 50.0 70.0 50.0	40.0 Decisions 55.0 60.0 60.0 55.0 50.0 60.0 65.0	30.0 Determination 75.0 60.0 65.0 70.0 70.0 90.0 40.0	50.0 Flair 25.0 5.0 5.0 50.0 15.0 10.0 5.0	55.0 Leadership 35.0 25.0 45.0 65.0 25.0 55.0
1 4 18 49 65 102 110 114	65.0 40.0 35.0 35.0 50.0 70.0 40.0	30.0 Concentration 50.0 50.0 60.0 50.0 70.0 50.0 50.0	40.0 Decisions 55.0 60.0 60.0 55.0 50.0 60.0 65.0 45.0	30.0 Determination 75.0 60.0 65.0 70.0 70.0 90.0 40.0 65.0	50.0 Flair 25.0 5.0 5.0 50.0 15.0 10.0 5.0 40.0	55.0 Leadership 35.0 25.0 45.0 65.0 25.0 55.0 5.0 40.0
1 4 18 49 65 102 110 114 166	65.0 40.0 35.0 35.0 50.0 70.0 40.0 40.0 30.0	30.0 Concentration 50.0 50.0 60.0 50.0 70.0 50.0 50.0 50.0	40.0 Decisions 55.0 60.0 60.0 55.0 50.0 60.0 45.0 65.0	30.0 Determination 75.0 60.0 65.0 70.0 70.0 90.0 40.0 65.0 80.0	50.0 Flair 25.0 5.0 5.0 50.0 15.0 10.0 5.0 40.0	55.0 Leadership 35.0 25.0 45.0 65.0 25.0 55.0 5.0 40.0 50.0
1 4 18 49 65 102 110 114 166 214	65.0 40.0 35.0 35.0 50.0 70.0 40.0 40.0 30.0	30.0 Concentration 50.0 50.0 60.0 50.0 70.0 50.0 50.0 50.0 50.0	40.0 Decisions 55.0 60.0 60.0 55.0 50.0 60.0 65.0 45.0 65.0 35.0	30.0 Determination 75.0 60.0 65.0 70.0 90.0 40.0 65.0 80.0 75.0	50.0 Flair 25.0 5.0 5.0 15.0 10.0 5.0 40.0 5.0	55.0 Leadership 35.0 25.0 45.0 65.0 25.0 55.0 50.0 60.0
1 4 18 49 65 102 110 114 166 214 240	65.0 40.0 35.0 35.0 50.0 70.0 40.0 40.0 30.0 30.0	30.0 Concentration 50.0 50.0 60.0 50.0 70.0 50.0 50.0 50.0 50.0 45.0	40.0 Decisions 55.0 60.0 60.0 55.0 50.0 65.0 45.0 65.0 35.0 60.0	30.0 Determination 75.0 60.0 65.0 70.0 70.0 90.0 40.0 65.0 80.0 75.0 85.0	50.0 Flair 25.0 5.0 5.0 10.0 10.0 5.0 40.0 5.0 10.0	55.0 Leadership 35.0 25.0 45.0 65.0 25.0 55.0 5.0 40.0 65.0 15.0
1 4 18 49 65 102 110 114 166 214 240 247	65.0 40.0 35.0 35.0 50.0 70.0 40.0 30.0 30.0 40.0 35.0	30.0 Concentration 50.0 50.0 60.0 50.0 70.0 50.0 50.0 50.0 50.0 45.0 30.0	40.0 Decisions 55.0 60.0 60.0 55.0 50.0 65.0 45.0 65.0 35.0 60.0 55.0	30.0 Determination 75.0 60.0 65.0 70.0 70.0 90.0 40.0 65.0 80.0 75.0 85.0 65.0	50.0 Flair 25.0 5.0 5.0 50.0 10.0 5.0 40.0 5.0 10.0 10.0	55.0 Leadership 35.0 25.0 45.0 65.0 25.0 50.0 60.0 60.0 65.0 15.0 35.0
1 4 18 49 65 102 110 114 166 214 240 247 255	65.0 40.0 35.0 35.0 70.0 40.0 30.0 30.0 40.0 35.0 70.0	30.0 Concentration 50.0 50.0 60.0 50.0 70.0 50.0 50.0 50.0 50.0 30.0 60.0	40.0 Decisions 55.0 60.0 60.0 55.0 50.0 65.0 45.0 65.0 35.0 60.0 55.0 50.0	30.0 Determination 75.0 60.0 65.0 70.0 70.0 90.0 40.0 65.0 80.0 75.0 85.0 65.0 75.0	50.0 Flair 25.0 5.0 50.0 15.0 10.0 5.0 10.0 10.0 10.	55.0 Leadership 35.0 25.0 45.0 65.0 25.0 55.0 50.0 40.0 50.0 65.0 15.0 35.0 45.0
1 4 18 49 65 102 110 114 166 214 240 247 255 256	65.0 40.0 35.0 35.0 50.0 70.0 40.0 30.0 30.0 40.0 35.0 70.0 55.0	30.0 Concentration 50.0 50.0 60.0 50.0 70.0 50.0 50.0 50.0 50.0 30.0 60.0 60.0	40.0 Decisions 55.0 60.0 60.0 55.0 50.0 65.0 45.0 65.0 35.0 60.0 55.0 50.0	30.0 Determination 75.0 60.0 65.0 70.0 70.0 90.0 40.0 65.0 80.0 75.0 85.0 65.0 75.0 65.0	50.0 Flair 25.0 5.0 5.0 10.0 10.0 10.0 10.0 15.0 25.0	55.0 Leadership 35.0 25.0 45.0 65.0 25.0 55.0 5.0 40.0 65.0 15.0 35.0 45.0 40.0
1 4 18 49 65 102 110 114 166 214 240 247 255 256 265	65.0 40.0 35.0 35.0 50.0 70.0 40.0 30.0 30.0 40.0 35.0 70.0 55.0 35.0	30.0 Concentration 50.0 50.0 60.0 50.0 70.0 50.0 50.0 50.0 50.0 60.0 60.0 60.0	40.0 Decisions 55.0 60.0 60.0 55.0 50.0 65.0 45.0 65.0 35.0 60.0 55.0 50.0 70.0	30.0 Determination 75.0 60.0 65.0 70.0 70.0 90.0 40.0 65.0 80.0 75.0 85.0 65.0 75.0 85.0 80.0	50.0 Flair 25.0 5.0 5.0 10.0 10.0 10.0 10.0 10.0 15.0 25.0 35.0	55.0 Leadership 35.0 25.0 45.0 65.0 25.0 55.0 5.0 40.0 65.0 15.0 35.0 45.0 40.0 65.0
1 4 18 49 65 102 110 114 166 214 240 247 255 256 265 267	65.0 40.0 35.0 35.0 50.0 70.0 40.0 30.0 30.0 40.0 35.0 70.0 55.0 35.0 25.0	30.0 Concentration 50.0 50.0 60.0 50.0 70.0 50.0 50.0 50.0 45.0 30.0 60.0 60.0 50.0 50.0	40.0 Decisions 55.0 60.0 60.0 55.0 50.0 60.0 65.0 45.0 65.0 35.0 60.0 55.0 70.0 70.0	30.0 Determination 75.0 60.0 65.0 70.0 70.0 90.0 40.0 65.0 80.0 75.0 85.0 65.0 80.0 65.0	50.0 Flair 25.0 5.0 5.0 15.0 10.0 5.0 40.0 5.0 10.0 10.0 15.0 25.0 35.0	55.0 Leadership 35.0 25.0 45.0 65.0 25.0 50.0 50.0 40.0 50.0 65.0 45.0 40.0 50.0 65.0 45.0 45.0 45.0
1 4 18 49 65 102 110 114 166 214 240 247 255 256 265 267 279	65.0 40.0 35.0 35.0 50.0 70.0 40.0 30.0 30.0 40.0 35.0 70.0 55.0 35.0 25.0	30.0 Concentration 50.0 50.0 60.0 50.0 70.0 50.0 50.0 50.0 50.0 60.0 60.0 60.0 50.0 5	40.0 Decisions 55.0 60.0 60.0 55.0 50.0 65.0 45.0 65.0 35.0 60.0 55.0 50.0 70.0 70.0 55.0	30.0 Determination 75.0 60.0 65.0 70.0 70.0 90.0 40.0 65.0 80.0 75.0 85.0 65.0 75.0 65.0 80.0 75.0	50.0 Flair 25.0 5.0 5.0 50.0 10.0 10.0 10.0 10.0 15.0 25.0 35.0 5.0	55.0 Leadership 35.0 25.0 45.0 65.0 25.0 55.0 5.0 40.0 65.0 15.0 35.0 45.0 40.0 65.0 40.0
1 4 18 49 65 102 110 114 166 214 247 255 256 265 267 279 282	65.0 40.0 35.0 35.0 50.0 70.0 40.0 30.0 30.0 40.0 35.0 70.0 55.0 35.0 25.0 30.0	30.0 Concentration 50.0 50.0 60.0 50.0 70.0 50.0 50.0 50.0 50.0 60.0 60.0 60.0 6	40.0 Decisions 55.0 60.0 60.0 55.0 50.0 65.0 45.0 65.0 35.0 60.0 55.0 50.0 70.0 70.0 70.0 70.0	30.0 Determination 75.0 60.0 65.0 70.0 70.0 90.0 40.0 65.0 80.0 75.0 85.0 65.0 75.0 65.0 70.0 70.0	50.0 Flair 25.0 5.0 5.0 50.0 15.0 10.0 5.0 10.0 10.0	55.0 Leadership 35.0 25.0 45.0 65.0 25.0 50.0 60.0 60.0 60.0 60.0 60.0 60.0 6
1 4 18 49 65 102 110 114 166 214 240 247 255 256 265 267 279	65.0 40.0 35.0 35.0 50.0 70.0 40.0 30.0 30.0 40.0 35.0 70.0 55.0 35.0 25.0	30.0 Concentration 50.0 50.0 60.0 50.0 70.0 50.0 50.0 50.0 50.0 60.0 60.0 60.0 50.0 5	40.0 Decisions 55.0 60.0 60.0 55.0 50.0 65.0 45.0 65.0 35.0 60.0 55.0 50.0 70.0 70.0 55.0	30.0 Determination 75.0 60.0 65.0 70.0 70.0 90.0 40.0 65.0 80.0 75.0 85.0 65.0 75.0 65.0 80.0 75.0	50.0 Flair 25.0 5.0 5.0 50.0 10.0 10.0 10.0 10.0 15.0 25.0 35.0 5.0	55.0 Leadership 35.0 25.0 45.0 65.0 25.0 55.0 5.0 40.0 65.0 15.0 35.0 45.0 40.0 65.0 40.0

334	60.0	75.0	55.0		60.0	15.	0 35.0
346	75.0	45.0	50.0		60.0	5.	0 40.0
349	25.0	35.0	65.0		45.0	15.	0 20.0
376	40.0	50.0	60.0		30.0	10.	0 55.0
391	40.0	60.0	65.0		50.0	5.	0 5.0
394	40.0	40.0	70.0		55.0	5.	0 45.0
420	25.0	65.0	65.0		30.0	5.	0 35.0
429	40.0	70.0	70.0		70.0	5.	0 30.0
431	65.0	70.0	55.0		60.0	20.	0 40.0
434	55.0	55.0	50.0		60.0	15.	0 65.0
445	35.0	50.0	45.0		80.0	15.	0 20.0
449	35.0	45.0	65.0		20.0	15.	0 35.0
	Off the Ball	Positioning	Teamwork	Vision	Work Ra	ate	Acceleration \
1	10.0	35.0	50.0	30.0	55	5.0	55.0
4	15.0	50.0	30.0	35.0	35	5.0	60.0
18	15.0	30.0	35.0	30.0	55	5.0	55.0
49	10.0	60.0	35.0	45.0	35	5.0	60.0
65	5.0	45.0	50.0	40.0	50	0.0	65.0
102	65.0	75.0	55.0	60.0	60	0.0	70.0
110	15.0	50.0	70.0	35.0	30	0.0	60.0
114	30.0	60.0	50.0	40.0	40	0.0	50.0
166	15.0	45.0	45.0	40.0	40	0.0	50.0
214	5.0	55.0	40.0	25.0		5.0	45.0
240	5.0	50.0	40.0	35.0		5.0	50.0
247	15.0	45.0	45.0	40.0		0.0	65.0
255	25.0	60.0	50.0	35.0	55	5.0	55.0
256	30.0	50.0	40.0	30.0	35	5.0	30.0
265	30.0	50.0	55.0	25.0		0.0	60.0
267	10.0	65.0	40.0	35.0		5.0	60.0
279	15.0	60.0	60.0	45.0		0.0	60.0
282	5.0	40.0	40.0	35.0		0.0	30.0
297	5.0	60.0	40.0	40.0	25	5.0	55.0
331	15.0	20.0	35.0	30.0	25	5.0	65.0
334	35.0	60.0	45.0	40.0	60	0.0	40.0
346	10.0	35.0	70.0	45.0	60	0.0	60.0
349	5.0	50.0	30.0	20.0		5.0	55.0
376	10.0	50.0	50.0	45.0		5.0	35.0
391	15.0	60.0	40.0	35.0		5.0	55.0
394	10.0	60.0	40.0	35.0		5.0	50.0
420	10.0	40.0	35.0	20.0		0.0	50.0
429	5.0	35.0	45.0	40.0		5.0	70.0
431	20.0	65.0	60.0	50.0		0.0	45.0
434	25.0	45.0	55.0	40.0		0.0	50.0
445	5.0	45.0	50.0	45.0		5.0	60.0
449	10.0	50.0	35.0	30.0		0.0	55.0
110	10.0	00.0	00.0	50.0	00		00.0

	Agility	Balance	Jumping Re	ach Natura	al Fitness	Pace	Stamina \	
1	60.0	50.0	6	0.0	50.0	45.0	50.0	
4	75.0	25.0	6	0.0	65.0	65.0	10.0	
18	50.0	25.0	6	5.0	30.0	55.0	40.0	
49	65.0	45.0	7	0.0	70.0	45.0	35.0	
65	50.0	55.0	7	0.0	50.0	70.0	25.0	
102	60.0	55.0	6	5.0	60.0	70.0	60.0	
110	60.0	30.0	5	5.0	70.0	40.0	5.0	
114	70.0	50.0		0.0	60.0	50.0	50.0	
166	65.0	45.0		0.0	75.0	60.0	25.0	
214	65.0	40.0		0.0	70.0		10.0	
240	60.0	40.0		5.0	75.0	70.0	25.0	
247	35.0	45.0		5.0	65.0	60.0	20.0	
255	75.0	40.0		5.0	80.0	65.0	65.0	
256	60.0	70.0		0.0	55.0	40.0	50.0	
265	60.0	65.0		0.0	70.0	50.0	55.0	
267	45.0	20.0		5.0	60.0	50.0	20.0	
279	60.0	50.0		0.0	60.0		60.0	
282	45.0	40.0		0.0	65.0		5.0	
297	65.0	45.0		0.0	65.0	50.0	15.0	
331	80.0	35.0		0.0	65.0	45.0	5.0	
334	60.0	70.0		0.0	45.0	50.0	40.0	
346	75.0	50.0		5.0	60.0	50.0	50.0	
349	80.0	30.0		0.0	70.0	55.0	15.0	
376	45.0	50.0		0.0	55.0	60.0	25.0	
391	75.0	40.0		5.0	50.0		15.0	
394	60.0	40.0		5.0	60.0		15.0	
420	55.0	35.0		5.0	70.0	50.0	15.0	
429	65.0	30.0		5.0	85.0	65.0	10.0	
431	80.0	60.0		5.0	75.0	45.0	65.0	
434 445	60.0 50.0	40.0		0.0 5.0	50.0 70.0	45.0	40.0	
445	75.0	45.0 35.0		0.0	70.0 75.0	65.0 60.0	25.0 10.0	
449	75.0	35.0	5	0.0	75.0	00.0	10.0	
	Strength	Corners	Crossing	Dribbling	•	Free	Kick Taking	_
1	50.0	0.0	0.0	0.0	0.0		35.0	
4	35.0	0.0	0.0	0.0	0.0		40.0	
18	20.0	0.0	0.0	0.0	0.0		25.0	
49	40.0	0.0	0.0	0.0	0.0		35.0	
65	45.0	0.0	0.0	0.0	0.0		20.0	
102	50.0	0.0	0.0	0.0	0.0		40.0	
110	25.0	0.0	0.0	0.0	0.0		35.0	
114	70.0	0.0	0.0	0.0	0.0		35.0	
166	40.0	0.0	0.0	0.0	0.0		25.0	
214	30.0	0.0	0.0	0.0	0.0		35.0	
240	35.0	0.0	0.0	0.0	0.0		35.0	
247	35.0	0.0	0.0	0.0	0.0		15.0	J

255	70.0	0.0	0.0	0.0	0.0		5.0	
256	55.0	0.0	0.0	0.0	0.0		5.0	
265	80.0	0.0	0.0	0.0	0.0		30.0	
267	35.0	0.0	0.0	0.0	0.0		30.0	
279	50.0	0.0	0.0	0.0	0.0		35.0	
282	25.0	0.0	0.0	0.0	0.0		40.0	
297	35.0	0.0	0.0	0.0	0.0		30.0	
331	25.0	0.0	0.0	0.0	0.0		25.0	
334	45.0	0.0	0.0	0.0	0.0		30.0	
346	55.0	0.0	0.0	0.0	0.0		30.0	
349	20.0	0.0	0.0	0.0	0.0		25.0	
376	35.0	0.0	0.0	0.0	0.0		20.0	
391	30.0	0.0	0.0	0.0	0.0		25.0	
394	35.0	0.0	0.0	0.0	0.0		30.0	
420	30.0	0.0	0.0	0.0	0.0		40.0	
429	30.0	0.0	0.0	0.0	0.0		40.0	
431	45.0 50.0	0.0	0.0	0.0	0.0		40.0	
434 445	40.0	0.0 0.0	0.0 0.0	0.0	0.0 0.0		55.0 35.0	
449	20.0	0.0	0.0	0.0	0.0		25.0	
443	20.0	0.0	0.0	0.0	0.0		25.0	
	Heading	Long Shots	Long Throws	Marking	Penalty	Taking	Tackling	\
1	0.0	0.0	0.0	0.0		15.0	0.0	
4	0.0	0.0	0.0	0.0		15.0	0.0	
18	0.0	0.0	0.0	0.0		5.0	0.0	
49	0.0	0.0	0.0	0.0		35.0	0.0	
65	0.0	0.0	0.0	0.0		15.0	0.0	
102	0.0	0.0	0.0	0.0		20.0	0.0	
110	0.0	0.0	0.0	0.0		5.0	0.0	
114	0.0	0.0	0.0	0.0		5.0	0.0	
166	0.0	0.0	0.0	0.0		10.0	0.0	
214	0.0	0.0	0.0	0.0		5.0 5.0	0.0	
240 247	0.0	0.0	0.0	0.0		15.0	0.0	
255	0.0	0.0	0.0	0.0		5.0	0.0	
256	0.0	0.0	0.0	0.0		20.0	0.0	
265	0.0	0.0	0.0	0.0		15.0	0.0	
267	0.0	0.0	0.0	0.0		5.0	0.0	
279	0.0	0.0	0.0	0.0		20.0	0.0	
282	0.0	0.0	0.0	0.0		15.0	0.0	
297	0.0	0.0	0.0	0.0		15.0	0.0	
331	0.0	0.0	0.0	0.0		5.0	0.0	
334	0.0	0.0	0.0	0.0		20.0	0.0	
346	0.0	0.0	0.0	0.0		15.0	0.0	
349	0.0	0.0	0.0	0.0		15.0	0.0	
376	0.0	0.0	0.0	0.0		5.0	0.0	
391	0.0	0.0	0.0	0.0		15.0	0.0	

```
0.0
                                    0.0
                                              0.0
                                                                          0.0
394
                      0.0
                                                              15.0
420
         0.0
                      0.0
                                    0.0
                                              0.0
                                                              10.0
                                                                          0.0
429
         0.0
                                    0.0
                                              0.0
                      0.0
                                                              10.0
                                                                          0.0
431
         0.0
                      0.0
                                    0.0
                                              0.0
                                                              10.0
                                                                          0.0
434
         0.0
                      0.0
                                    0.0
                                              0.0
                                                              10.0
                                                                          0.0
445
         0.0
                      0.0
                                    0.0
                                              0.0
                                                              10.0
                                                                          0.0
449
         0.0
                      0.0
                                    0.0
                                              0.0
                                                               5.0
                                                                          0.0
```

```
Technique Goals per Caps
1
          55.0
                             0.0
4
          15.0
                             0.0
                             0.0
18
          10.0
49
          55.0
                             0.0
65
          60.0
                             0.0
102
           30.0
                             1.0
110
           20.0
                             0.0
114
          40.0
                             0.0
           25.0
                             0.0
166
214
           5.0
                             0.0
240
           5.0
                             0.0
247
           25.0
                             0.0
255
           35.0
                             0.0
256
          25.0
                             0.0
265
           25.0
                             1.0
267
           5.0
                             0.0
                             0.0
279
          55.0
282
                             0.0
           10.0
297
           55.0
                             0.0
331
           25.0
                             0.0
334
          45.0
                             0.0
346
          60.0
                             0.0
349
           10.0
                             0.0
376
           35.0
                             0.0
391
           25.0
                             0.0
                             0.0
394
           5.0
420
           15.0
                             0.0
429
          25.0
                             0.0
                             0.0
431
          60.0
434
           30.0
                             0.0
445
                             0.0
           5.0
449
          20.0
                             0.0
```

```
[9]: df_test.fillna(value=gk_values,inplace=True)
df_test[df_test['Positions']=='GK']
```

[9]: Ability Potential Positions Foot Height Weight Aerial Reach \ 3 39.0 NaN GK Right 187 74 55.0

50										
	46.0		NaN	GK F	Right	190	80		40.0	
66	41.0		NaN		Right	183	76		65.0	
90	49.0		NaN		Right	189	79		65.0	
					_					
129	56.0		NaN		Right	192	80		70.0	
132	38.0		NaN		Right	192	79		65.0	
141	45.0		NaN		Right	185	77		60.0	
158	30.0		NaN	GK F	Right	189	79		55.0	
174	40.0		NaN	GK F	Right	191	81		60.0	
246	51.0		NaN	GK F	Right	188	85		60.0	
251	37.0		NaN	GK	Left	188	74		50.0	
254	50.0		NaN	GK F	Right	194	83		50.0	
				-	0					
	Command	of Ar	os Commi	mication	Eccentr	ici+w	Firet	Touch	Handling	\
2	Command				Eccentri	•	TILDU		_	`
3		40		30.0		25.0		15.0	70.0	
50		45		50.0		25.0		5.0	65.0	
66		55		55.0		30.0		30.0	70.0	
90		60	.0	70.0		20.0		50.0	65.0	
129		65	.0	60.0		65.0		45.0	60.0	
132		45	.0	55.0		25.0		5.0	65.0	
141		40	.0	50.0		25.0		5.0	70.0	
158		65		40.0		25.0		25.0	45.0	
174		70		35.0		25.0		20.0	40.0	
246		55		60.0		40.0		30.0	55.0	
251		50	.0	35.0		25.0		15.0	60.0	
		4 -	^	40.0		05 0		00 0	70.0	
254		45	.0	40.0		25.0		20.0	70.0	
254										
	Kicking		on Ones	Passing	Punching		•	Reflex	es \	
254 3	Kicking 50.0				Punching		ency) 25.0		es \	
	•		on Ones	Passing	Punching		•	Reflex	es \ .0	
3	50.0		on Ones 35.0	Passing 45.0	Punching		25.0	Reflexe	es \ .0 .0	
3 50	50.0 50.0		on Ones 35.0 35.0	Passing 45.0 50.0	Punching		25.0 25.0	Reflex 70 65	es \ .0 .0	
3 50 66 90	50.0 50.0 50.0		on Ones 35.0 35.0 65.0	Passing 45.0 50.0 40.0 50.0	Punching		25.0 25.0 50.0 55.0	Reflex 70 65 65 70	es \ .0 .0 .0 .0	
3 50 66 90 129	50.0 50.0 50.0 60.0 50.0		on Ones 35.0 35.0 65.0 60.0	Passing 45.0 50.0 40.0 50.0 45.0	Punching		25.0 25.0 50.0 55.0 60.0	Reflex 70 65 65 70	es \ .0 .0 .0 .0 .0	
3 50 66 90 129 132	50.0 50.0 50.0 60.0 50.0 40.0		on Ones 35.0 35.0 65.0 60.0 60.0	Passing 45.0 50.0 40.0 50.0 45.0 30.0	Punching		25.0 25.0 50.0 55.0 60.0 45.0	Reflex 70 65 65 70 70	es \ .0 .0 .0 .0 .0 .0 .0	
3 50 66 90 129 132 141	50.0 50.0 50.0 60.0 50.0 40.0 70.0		on Ones 35.0 35.0 65.0 60.0 60.0 50.0 40.0	Passing 45.0 50.0 40.0 50.0 45.0 30.0 25.0	Punching		25.0 25.0 50.0 55.0 60.0 45.0 75.0	Reflex: 70 65 65 70 70 60 70	es \ .0 .0 .0 .0 .0 .0 .0 .0	
3 50 66 90 129 132 141 158	50.0 50.0 50.0 60.0 50.0 40.0 70.0 60.0		on Ones 35.0 35.0 65.0 60.0 60.0 50.0 40.0 30.0	Passing 45.0 50.0 40.0 50.0 45.0 30.0 25.0 20.0	Punching		25.0 25.0 50.0 55.0 60.0 45.0 75.0 55.0	Reflexe 70 65 65 70 70 60 70 45	es \ .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0	
3 50 66 90 129 132 141 158 174	50.0 50.0 50.0 60.0 50.0 40.0 70.0 60.0 40.0		on Ones 35.0 35.0 65.0 60.0 50.0 40.0 30.0 50.0	Passing 45.0 50.0 40.0 50.0 45.0 30.0 25.0 20.0 45.0	Punching		25.0 25.0 50.0 55.0 60.0 45.0 75.0 55.0 25.0	Reflex 70 65 65 70 70 60 70 45 70	es \ .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0	
3 50 66 90 129 132 141 158 174 246	50.0 50.0 50.0 60.0 50.0 40.0 70.0 60.0 40.0		on Ones 35.0 35.0 65.0 60.0 50.0 40.0 30.0 50.0	Passing 45.0 50.0 40.0 50.0 45.0 25.0 20.0 45.0 30.0	Punching		25.0 25.0 50.0 55.0 60.0 45.0 75.0 55.0 25.0	Reflex: 70 65 65 70 70 60 70 45 70	es \ .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0	
3 50 66 90 129 132 141 158 174 246 251	50.0 50.0 50.0 60.0 50.0 40.0 70.0 60.0 40.0 50.0 45.0		on Ones 35.0 35.0 65.0 60.0 60.0 50.0 40.0 50.0 60.0	Passing 45.0 50.0 40.0 50.0 45.0 25.0 20.0 45.0 30.0 50.0	Punching		25.0 25.0 50.0 55.0 60.0 45.0 75.0 55.0 25.0 45.0 35.0	Reflex 70 65 65 70 70 60 70 45 70 60 45	es \ .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0	
3 50 66 90 129 132 141 158 174 246	50.0 50.0 50.0 60.0 50.0 40.0 70.0 60.0 40.0		on Ones 35.0 35.0 65.0 60.0 50.0 40.0 30.0 50.0	Passing 45.0 50.0 40.0 50.0 45.0 25.0 20.0 45.0 30.0	Punching		25.0 25.0 50.0 55.0 60.0 45.0 75.0 55.0 25.0	Reflex: 70 65 65 70 70 60 70 45 70	es \ .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0	
3 50 66 90 129 132 141 158 174 246 251	50.0 50.0 50.0 60.0 40.0 70.0 60.0 40.0 50.0 45.0 50.0	One	on Ones 35.0 35.0 65.0 60.0 60.0 50.0 40.0 30.0 50.0 40.0 55.0	Passing 45.0 50.0 40.0 50.0 45.0 20.0 45.0 30.0 50.0 40.0		(Tend	25.0 25.0 50.0 55.0 60.0 45.0 75.0 25.0 45.0 35.0	Reflex 70 65 65 70 70 60 70 45 70 60 45 55	es \ .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0	
3 50 66 90 129 132 141 158 174 246 251	50.0 50.0 50.0 60.0 40.0 70.0 60.0 40.0 50.0 45.0 50.0	One	on Ones 35.0 35.0 65.0 60.0 60.0 50.0 40.0 30.0 50.0 40.0 55.0	Passing 45.0 50.0 40.0 50.0 45.0 30.0 25.0 20.0 45.0 30.0 50.0 40.0	ng Aggre	(Tend	25.0 25.0 50.0 55.0 60.0 45.0 75.0 25.0 45.0 35.0	Reflex 70 65 65 70 70 60 70 45 70 60 45 55	es \ .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0	\
3 50 66 90 129 132 141 158 174 246 251	50.0 50.0 50.0 60.0 40.0 70.0 60.0 40.0 50.0 45.0 50.0	One	on Ones 35.0 35.0 65.0 60.0 60.0 50.0 40.0 30.0 50.0 40.0 55.0	Passing 45.0 50.0 40.0 50.0 45.0 30.0 25.0 20.0 45.0 30.0 50.0 40.0	ng Aggre	(Tend	25.0 25.0 50.0 55.0 60.0 45.0 75.0 25.0 45.0 35.0	Reflex 70 65 65 70 70 60 70 45 70 60 45 55	es \ .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0	\
3 50 66 90 129 132 141 158 174 246 251 254	50.0 50.0 50.0 60.0 40.0 70.0 60.0 40.0 50.0 45.0 50.0	One	on Ones 35.0 35.0 65.0 60.0 60.0 40.0 30.0 50.0 40.0 55.0	Passing 45.0 50.0 40.0 50.0 45.0 30.0 25.0 20.0 45.0 30.0 50.0 40.0	ng Aggres	(Tend	25.0 25.0 50.0 55.0 60.0 45.0 75.0 25.0 45.0 35.0	Reflex 70 65 65 70 70 60 70 45 70 60 45 55	es \ .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0	\
3 50 66 90 129 132 141 158 174 246 251 254	50.0 50.0 50.0 60.0 40.0 70.0 60.0 40.0 50.0 45.0 50.0	One	on Ones 35.0 35.0 65.0 60.0 60.0 50.0 40.0 50.0 60.0 Tendency)	Passing 45.0 50.0 40.0 50.0 45.0 30.0 25.0 20.0 45.0 30.0 50.0 40.0 Throwin 35.0	ng Aggres	(Tend	25.0 25.0 50.0 55.0 60.0 45.0 75.0 25.0 45.0 35.0	Reflex 70 65 65 70 70 60 70 45 70 60 45 55	es \ .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0	\
3 50 66 90 129 132 141 158 174 246 251 254	50.0 50.0 50.0 60.0 40.0 70.0 60.0 40.0 50.0 45.0 50.0	One	on Ones 35.0 35.0 65.0 60.0 60.0 50.0 40.0 30.0 55.0 Tendency) 55.0 70.0	Passing 45.0 50.0 40.0 50.0 45.0 30.0 25.0 20.0 45.0 30.0 50.0 40.0 Throwing 10 35.0 10 40.0	ng Aggres .0 .0	(Tend ssion 25.0 25.0 60.0	25.0 25.0 50.0 55.0 60.0 45.0 75.0 25.0 45.0 35.0	Reflex. 70 65 65 70 70 60 45 70 45 55	es \ .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0	\
3 50 66 90 129 132 141 158 174 246 251 254 3 50 66 90	50.0 50.0 50.0 60.0 40.0 70.0 60.0 40.0 50.0 45.0 50.0	One	on Ones 35.0 35.0 65.0 60.0 60.0 50.0 40.0 50.0 60.0 40.0 55.0 Tendency) 55.0 40.0 40.0	Passing 45.0 50.0 40.0 50.0 45.0 30.0 25.0 20.0 45.0 30.0 50.0 40.0 Throwin 40.0 55.0	ng Aggres .0 .0 .0	Ssion 25.0 25.0 60.0 40.0	25.0 25.0 50.0 55.0 60.0 45.0 75.0 25.0 45.0 35.0	Reflex 70 65 65 70 70 60 70 45 70 60 45 55 ipation 40.0 45.0 55.0	es \ .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0	\
3 50 66 90 129 132 141 158 174 246 251 254	50.0 50.0 50.0 60.0 40.0 70.0 60.0 40.0 50.0 45.0 50.0	One	on Ones 35.0 35.0 65.0 60.0 60.0 50.0 40.0 30.0 55.0 Tendency) 55.0 70.0	Passing 45.0 50.0 40.0 50.0 45.0 30.0 25.0 20.0 45.0 30.0 50.0 40.0 Throwin 40.0 55.0 60.55.0	ng Aggres .0 .0 .0	(Tend ssion 25.0 25.0 60.0	25.0 25.0 50.0 55.0 60.0 45.0 75.0 25.0 45.0 35.0	Reflex. 70 65 65 70 70 60 45 70 45 55	es \ .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0	\

141			60.0	55.0)	5	5.0		5	50.0	6	5.0	
158			25.0	25.0			5.0			50.0		5.0	
174			40.0	30.0			5.0			55.0		5.0	
246			55.0	50.0			0.0			55.0		0.0	
251			35.0	40.0			5.0			35.0		0.0	
254			30.0	45.0			0.0			15.0		5.0	
201			00.0	10.0		Ū			·	10.0	•	0.0	
	Composur	e Concer	tration	Decisi	ons	Dete	rmi	nation	ı Fla	air	Leade	rship	\
3	30.		50.0		0.0			75.0		5.0		55.0	•
50	35.		55.0		5.0			50.0		0.0		30.0	
66	40.		50.0		5.0			70.0		5.0		20.0	
90	50.		40.0		0.0			75.0		5.0		25.0	
129	50.		65.0		0.0			70.0		5.0		50.0	
132	30.		55.0		5.0			30.0		0.0		60.0	
141	30.		65.0		0.0			50.0		5.0		30.0	
158	30.		40.0		5.0			55.0		0.0		30.0	
174	30.		35.0		5.0			35.0		0.0		25.0	
246	50.		65.0		5.0			60.0		0.0		55.0	
251	40.		40.0		0.0			45.0		0.0		55.0	
254	45.		60.0		0.0			70.0		5.0		60.0	
201	10.	•	00.0	,	0.0			70.	, 10			00.0	
	Off the	Rall Pos	sitioning	Teamw	iork	Visi	on	Work	Rate	Δςς	elera	tion	\
3		15.0	55.0		0.0	35		WOIN	35.0	noc		55.0	`
50		5.0	50.0		5.0	35			30.0			65.0	
66		20.0	55.0		0.0	30			40.0			30.0	
90		60.0	60.0		0.0	60			55.0			60.0	
129		35.0	55.0		5.0	40			65.0			50.0	
132		5.0	55.0		35.0		.0		25.0			50.0	
141		15.0	55.0		0.0	35			15.0			65.0	
158		5.0	35.0		30.0	25			25.0			55.0	
174		15.0	70.0		5.0	40			35.0			50.0	
246		40.0	65.0		30.0	55			55.0			55.0	
251		40.0 15.0	40.0		35.0	30			25.0			65.0	
254		5.0	50.0			25						55.0	
204		5.0	50.0	4	5.0	20	.0		35.0			55.0	
	Agility	Balance	Jumping	Roach	Ma+	ural	Fi+	nacc	Pace	Q+ 5	mina	\	
3	50.0	40.0	Jumping	45.0	Nat	urar		90.0	55.0	DUO	35.0	`	
5 50	70.0	30.0		55.0				60.0	50.0		10.0		
66								70.0					
	60.0	40.0		65.0					30.0		50.0		
90	60.0	50.0		65.0				70.0	60.0		65.0		
129	60.0	65.0		75.0				65.0 50.0	50.0		75.0		
132	50.0	35.0		50.0					40.0		5.0		
141	35.0	40.0		45.0				45.0	60.0		20.0		
158	35.0	5.0		55.0				70.0	50.0		10.0		
174	55.0	20.0		70.0				50.0	40.0		10.0		
246	60.0	50.0		65.0				50.0	60.0		55.0		
251	75.0	35.0		60.0				75.0	65.0		10.0		

2	54	70.0	45.0	7	5.0		30.0	60.0	10.0	
		Strength	Corners	Crossing	Drib	bling 1	Finishing	Free K	ick Taking	\
3		35.0	0.0	0.0		0.0	0.0		10.0	
50	0	30.0	0.0	0.0		0.0	0.0		30.0	
60	6	30.0	0.0	0.0		0.0	0.0		30.0	
90	0	55.0	0.0	0.0		0.0	0.0		20.0	
1:	29	65.0	0.0	0.0		0.0	0.0		40.0	
13	32	25.0	0.0	0.0		0.0	0.0		30.0	
14	41	30.0	0.0	0.0		0.0	0.0		45.0	
1	58	30.0	0.0	0.0		0.0	0.0		30.0	
1	74	30.0	0.0	0.0		0.0	0.0		30.0	
24	46	50.0	0.0	0.0		0.0	0.0		30.0	
	51	20.0	0.0	0.0		0.0	0.0		20.0	
2	54	35.0	0.0	0.0		0.0	0.0		25.0	
		Heading	Long Shots	_			g Penalty	_	_	\
3		0.0	0.0		0.0	0.0		10.0	0.0	
50		0.0	0.0		0.0	0.0		10.0	0.0	
60		0.0	0.0		0.0	0.0		15.0	0.0	
90		0.0	0.0		0.0	0.0		5.0	0.0	
	29	0.0	0.0		0.0	0.0		5.0	0.0	
	32	0.0	0.0		0.0	0.0		10.0	0.0	
	41 50	0.0	0.0		0.0	0.0		10.0	0.0	
	58 74	0.0 0.0	0.0		0.0	0.0		15.0 15.0	0.0	
	74 46	0.0	0.0		0.0	0.0		10.0	0.0	
	4 0 51	0.0	0.0		0.0	0.0		5.0	0.0	
	54	0.0	0.0		0.0	0.0		15.0	0.0	
2.	01	0.0	0.0	,	0.0	0.	O	10.0	0.0	
		Technique	_	_						
3		25.0		0.0						
50		10.0		0.0						
60		30.0		0.0						
90		40.0		0.0						
	29	40.0		0.0						
	32	10.0		0.0						
	41	25.0		0.0						
	58 74	10.0		0.0						
	74 16	10.0		0.0						
	46 51	35.0		0.0						
	51 54	5.0 25.0		0.0 0.0						
[10] : d	f_tı	rain[df_tı	rain['Throv	ing'].not	na()]					

[10]:		value :	increas	sed	Ability	Potential	Positions	Foot	Height	Weight	\
	1	_	Fa]		48.0	NaN	GK		185	_	•
	4		Fa]		47.0	NaN	GK	Right	193		
	18		Fa]		40.0	NaN	GK	Right	190		
	49		Fa]		53.0	NaN	GK	Right	185		
	65		Fa]		53.0	NaN	GK	Right	187		
	102		Fa]		69.0	71.0	GK	_	183		
	110		Fa]		45.0	NaN	GK	_	185		
	114		Fa]		51.0	NaN	GK	Right	194		
	166		Fa]		53.0	NaN	GK	Right	193		
	214		Fa]		0.0	40.0	GK	Right	187		
	240		Fa]		40.0	NaN	GK	Left	192		
	247		Fa]		36.0	NaN	GK	Right	189		
	255		Fa]		57.0	NaN	GK	Right	187		
	256		Fa]		41.0	NaN	GK	_	191		
	265		Fa]	se	62.0	63.0	GK	Right	187	70	
	267		Fa]	se	42.0	NaN	GK	Left	191	80	
	279		Fa]	Lse	50.0	NaN	GK	Right	177		
	282		Fa]		40.0	NaN	GK	_	184	74	
	297		Fa]	Lse	53.0	NaN	GK	Right	193	92	
	331		Fa]	se	38.0	NaN	GK	Right	190	75	
	334		Fa]	se	52.0	NaN	GK	_	191	73	
	346		Fa]	se	53.0	NaN	GK	_	193	88	
	349		Fa]	Lse	29.0	NaN	GK	Right	191	77	
	376		Tr	rue	41.0	NaN	GK	Right	193	79	
	391		Tr	rue	49.0	NaN	GK	Right	189	79	
	394		Fa]	se	40.0	NaN	GK	Right	194	84	
	420		Fa]	se	45.0	NaN	GK	Right	176	60	
	429		Tr	rue	49.0	NaN	GK	Right	194	80	
	431		Fa]	se	70.0	78.0	GK	Left	196	74	
	434		Fa]	se	54.0	68.0	GK	Right	188	84	
	445		Fa]	se	41.0	NaN	GK	Right	185	78	
	449		Tı	rue	38.0	NaN	GK	Right	182	70	
		Aerial	Reach	Co	mmand of	Area Commi	unication	Eccentr	ricity	First To	uch \
	1		55.0			60.0	70.0		65.0	4!	5.0
	4		35.0			40.0	35.0		25.0	,	5.0
	18		60.0			55.0	35.0		65.0	25	5.0
	49		65.0			60.0	60.0		65.0	60	0.0
	65		60.0			60.0	45.0		45.0	50	0.0
	102		70.0			65.0	60.0		25.0	3!	5.0
	110		45.0			55.0	40.0		25.0		5.0
	114		60.0			50.0	55.0		70.0	3!	5.0
	166		65.0			50.0	60.0		25.0	2	5.0
	214		70.0			40.0	45.0		55.0	30	0.0
	240		65.0			20.0	50.0		25.0	2	5.0
	247		60.0			50.0	45.0		25.0	30	0.0

255	6	5.0	60.0		65.0	35.0	35.0
256	6	0.0	50.0		35.0	20.0	25.0
265	8	0.0	65.0		70.0	30.0	30.0
267	5	0.0	70.0		50.0	25.0	25.0
279	4	0.0	55.0		55.0	30.0	55.0
282	4	0.0	50.0		65.0	55.0	15.0
297	6	0.0	60.0		60.0	40.0	30.0
331	5	5.0	40.0		45.0	50.0	15.0
334	6	5.0	60.0		55.0	25.0	45.0
346	6	5.0	50.0		40.0	60.0	55.0
349		0.0	15.0		30.0	25.0	15.0
376		0.0	75.0		50.0	50.0	10.0
391		5.0	45.0		45.0	25.0	20.0
394		0.0	65.0		35.0	40.0	5.0
420		0.0	65.0		40.0	25.0	5.0
429		5.0	50.0		45.0	25.0	5.0
431		5.0	65.0		60.0	50.0	60.0
434		5.0	75.0		65.0	15.0	45.0
445		5.0	45.0		50.0	25.0	20.0
449	5	5.0	45.0		45.0	40.0	5.0
	Handling	Kicking	One on Ones	Passing	Punching	(Tendency)	Reflexes \
1	45.0	65.0	60.0	60.0	1 4110111116	55.0	55.0
4	70.0	50.0	50.0	50.0		50.0	70.0
18	65.0	65.0	25.0	45.0		50.0	65.0
49	70.0	55.0	70.0	60.0		35.0	70.0
65	60.0	70.0	70.0	75.0		25.0	70.0
102	50.0	55.0	60.0	60.0		55.0	70.0
110	65.0	55.0	40.0	45.0		50.0	65.0
114	60.0	55.0	60.0	40.0		55.0	75.0
166	65.0	70.0	60.0	50.0		35.0	70.0
214	40.0	65.0	35.0	35.0		70.0	70.0
240	70.0	70.0	45.0	55.0		45.0	70.0
247	50.0	45.0	45.0	55.0		35.0	65.0
255	60.0	55.0	65.0	35.0		40.0	75.0
256	60.0	50.0	70.0	45.0		50.0	60.0
265	80.0	60.0	55.0	30.0		45.0	70.0
267	50.0	70.0	60.0	45.0		35.0	50.0
279	55.0	60.0	55.0	55.0		50.0	60.0
282	70.0	45.0	45.0	45.0		40.0	60.0
297	70.0	55.0	55.0	65.0		45.0	70.0
331	45.0	35.0	40.0	30.0		60.0	65.0
334	60.0	50.0	75.0	60.0		60.0	65.0
346	50.0	65.0	70.0	60.0		40.0	60.0
349	65.0	25.0	40.0	30.0		25.0	65.0
276							
376 391	50.0 65.0	60.0 40.0	60.0 55.0	50.0 25.0		55.0 75.0	40.0 65.0

394	45.0	50.0	50.0	35.0	55	.0 60.0	
420	65.0	65.0	35.0	55.0	25	.0 65.0	
429	60.0	50.0	60.0	30.0	55	.0 55.0	
431	70.0	65.0	65.0	60.0	45	.0 80.0	
434	50.0	70.0	70.0	45.0	55	.0 60.0	
445	60.0	45.0	50.0	65.0	60	.0 55.0	
449	40.0	40.0	45.0	55.0	60	.0 65.0	
4	Rushing Ou	t (Tendency)	_		_		
1 4		65.0 25.0	65.0	60.0	55.0	55.0	
4 18		80.0	45.0 35.0	45.0 55.0	65.0	60.0 75.0	
10 49		40.0	50.0	60.0	25.0 55.0	75.0 55.0	
49 65		50.0		55.0		50.0	
		55.0	55.0		50.0		
102 110		40.0	65.0 40.0	40.0 40.0	70.0 50.0	75.0 75.0	
114		55.0					
166		60.0	55.0	50.0	60.0	60.0	
			65.0	30.0	30.0	75.0	
214		60.0 35.0	25.0	55.0	25.0	45.0	
240			45.0 55.0	45.0	25.0	55.0	
247		25.0		40.0	40.0	75.0	
255		65.0	40.0	50.0	75.0	55.0	
256		55.0	55.0	35.0	55.0	50.0	
265		40.0	50.0	55.0	55.0	50.0	
267		30.0	35.0	40.0	35.0	45.0	
279		75.0	55.0	40.0	50.0	60.0	
282		25.0	55.0	55.0	55.0	75.0	
297		75.0	60.0	40.0	35.0	60.0	
331		40.0	40.0	50.0	50.0	60.0	
334		50.0	70.0	25.0	50.0	55.0	
346		80.0	70.0	45.0	55.0	55.0	
349		70.0	15.0	40.0	25.0	65.0	
376		40.0	55.0	40.0	50.0	60.0	
391		30.0	45.0	55.0	50.0	75.0	
394		25.0	45.0	35.0	30.0	60.0	
420		35.0	20.0	60.0	55.0	70.0	
429		40.0	60.0	50.0	35.0	75.0	
431		55.0	65.0	60.0	80.0	70.0	
434		60.0	65.0	45.0	75.0	70.0	
445		40.0	50.0	60.0	40.0	45.0	
449		30.0	40.0	30.0	50.0	55.0	
	Composure	Concentration	Decisions	Determinat	cion Flair	Leadership	\
1	65.0	50.0	55.0	7	75.0 25.0	35.0	
4	40.0	50.0	60.0	6	50.0 5.0	25.0	
18	35.0	60.0	60.0	6	55.0 5.0	45.0	
49	35.0	50.0	55.0	7	70.0 50.0	65.0	

65	50.0	50.0	50.0		70.0	15.0	25.0
102	70.0	70.0	60.0		90.0	10.0	
110	40.0	50.0	65.0		40.0	5.0	
114	40.0	50.0	45.0		65.0	40.0	
166	30.0	50.0	65.0		80.0	5.0	
214	30.0	50.0	35.0		75.0	10.0	
240	40.0	45.0	60.0		85.0	10.0	
247	35.0	30.0	55.0		65.0	10.0	
255	70.0	60.0	50.0		75.0	15.0	
256	55.0	60.0	50.0		65.0	25.0	
265	35.0	50.0	70.0		80.0	35.0	
267	25.0	50.0	70.0		65.0	5.0	25.0
279	55.0	65.0	55.0		70.0	5.0	40.0
282	30.0	60.0	70.0		75.0	5.0	5.0
297	25.0	60.0	70.0		90.0	10.0	55.0
331	35.0	40.0	65.0		55.0	15.0	60.0
334	60.0	75.0	55.0		60.0	15.0	35.0
346	75.0	45.0	50.0		60.0	5.0	40.0
349	25.0	35.0	65.0		45.0	15.0	20.0
376	40.0	50.0	60.0		30.0	10.0	
391	40.0	60.0	65.0		50.0	5.0	
394	40.0	40.0	70.0		55.0	5.0	
420	25.0	65.0	65.0		30.0	5.0	
429	40.0	70.0	70.0		70.0	5.0	
431	65.0	70.0	55.0		60.0	20.0	
434	55.0	55.0	50.0		60.0	15.0	
445	35.0	50.0	45.0		80.0	15.0	
449	35.0	45.0	65.0		20.0	15.0	
113	33.0	40.0	00.0		20.0	10.	30.0
	Off the Ball	Positioning	Teamwork	Vision	Work Ra	ate .	Acceleration \
1	10.0	35.0	50.0	30.0	55	5.0	55.0
4	15.0	50.0	30.0	35.0	35	5.0	60.0
18	15.0	30.0	35.0	30.0	55	5.0	55.0
49	10.0	60.0	35.0	45.0	35	5.0	60.0
65	5.0	45.0	50.0	40.0	50	0.0	65.0
102	65.0	75.0	55.0	60.0	60	0.0	70.0
110	15.0	50.0	70.0	35.0	30	0.0	60.0
114	30.0	60.0	50.0	40.0		0.0	50.0
166	15.0	45.0	45.0	40.0		0.0	50.0
214	5.0	55.0	40.0	25.0		5.0	45.0
240	5.0	50.0	40.0	35.0		5.0	50.0
247	15.0	45.0	45.0	40.0		0.0	65.0
255	25.0	60.0	50.0	35.0		5.0	55.0
256	30.0	50.0	40.0	30.0		5.0	30.0
265	30.0	50.0	55.0	25.0		0.0	60.0
267	10.0	65.0	40.0	35.0		5.0	60.0
279	15.0	60.0	60.0	45.0		0.0	60.0
213	15.0	00.0	00.0	-5.0	7.0	,.0	00.0

282		5.0	40.0	40	0.0 3	5.0	30.0		30.0
297		5.0	60.0			0.0	25.0		55.0
331		15.0	20.0			0.0	25.0		65.0
334		35.0	60.0			0.0	60.0		40.0
346		10.0	35.0			5.0	60.0		60.0
349		5.0	50.0			0.0	25.0		55.0
376		10.0	50.0			5.0	35.0		35.0
391		15.0	60.0			5.0	35.0		55.0
		10.0							
394			60.0			5.0	35.0		50.0
420		10.0	40.0			0.0	30.0		50.0
429		5.0	35.0			0.0	35.0		70.0
431		20.0	65.0			0.0	60.0		45.0
434		25.0	45.0			0.0	50.0		50.0
445		5.0	45.0			5.0	45.0		60.0
449		10.0	50.0	35	5.0 3	0.0	30.0		55.0
	Agility	Balance	Jumping l	Reach	Natural	Fitness	Pace	Stamina	\
1	60.0	50.0	Jumping 1	60.0	Naturar	50.0	45.0	50.0	`
4	75.0	25.0		60.0		65.0	65.0	10.0	
18	50.0	25.0		65.0		30.0	55.0	40.0	
49	65.0	45.0		70.0		70.0	45.0	35.0	
65	50.0	55.0		70.0		50.0	70.0	25.0	
102	60.0	55.0		65.0		60.0	70.0	60.0	
110	60.0	30.0		55.0		70.0	40.0	5.0	
114	70.0	50.0		70.0		60.0	50.0	50.0	
166	65.0	45.0		70.0		75.0	60.0	25.0	
214	65.0	40.0		50.0		70.0	45.0	10.0	
240	60.0	40.0		75.0		75.0	70.0	25.0	
247	35.0	45.0		45.0		65.0	60.0	20.0	
255	75.0	40.0		75.0		80.0	65.0	65.0	
256	60.0	70.0		90.0		55.0	40.0	50.0	
265	60.0	65.0		80.0		70.0	50.0	55.0	
267	45.0	20.0		65.0		60.0	50.0	20.0	
279	60.0	50.0		50.0		60.0	55.0	60.0	
282	45.0	40.0		40.0		65.0	55.0	5.0	
297	65.0	45.0		80.0		65.0	50.0	15.0	
331	80.0	35.0		70.0		65.0	45.0	5.0	
334	60.0	70.0		70.0		45.0	50.0	40.0	
346	75.0	50.0		75.0		60.0	50.0	50.0	
349	80.0	30.0		70.0		70.0	55.0	15.0	
376	45.0	50.0		70.0		55.0	60.0	25.0	
391	75.0	40.0		55.0		50.0	50.0	15.0	
394	60.0	40.0		65.0		60.0	45.0	15.0	
420	55.0	35.0		15.0		70.0	50.0	15.0	
429	65.0	30.0		75.0		85.0	65.0	10.0	
431	80.0	60.0		85.0		75.0	45.0	65.0	
434	60.0	40.0		60.0		50.0	45.0	40.0	

445 449	50.0 75.0	45.0 35.0		5.0 0.0		70.0 75.0	65.0 60.0	25.0 10.0		
	Strength	Corners	Crossing	Dribbl:	ina F	inishing	Free	Kick Ta	kina	\
1	50.0	0.0	0.0		0.0	0.0	1166		35.0	`
4	35.0	0.0	0.0		0.0	0.0			40.0	
18	20.0	0.0	0.0		0.0	0.0			25.0	
49	40.0	0.0	0.0		0.0	0.0			35.0	
65	45.0	0.0	0.0		0.0	0.0			20.0	
102	50.0	0.0	0.0		0.0	0.0			40.0	
110	25.0	0.0	0.0		0.0	0.0			35.0	
114	70.0	0.0	0.0		0.0	0.0			35.0	
166	40.0	0.0	0.0	(0.0	0.0			25.0	
214	30.0	0.0	0.0	(0.0	0.0			35.0	
240	35.0	0.0	0.0	(0.0	0.0			35.0	
247	35.0	0.0	0.0	(0.0	0.0			15.0	
255	70.0	0.0	0.0	(0.0	0.0			5.0	
256	55.0	0.0	0.0	(0.0	0.0			5.0	
265	80.0	0.0	0.0		0.0	0.0			30.0	
267	35.0	0.0	0.0		0.0	0.0			30.0	
279	50.0	0.0	0.0		0.0	0.0			35.0	
282	25.0	0.0	0.0		0.0	0.0			40.0	
297	35.0	0.0	0.0		0.0	0.0			30.0	
331	25.0	0.0	0.0		0.0	0.0			25.0	
334	45.0	0.0	0.0		0.0	0.0			30.0	
346	55.0	0.0	0.0		0.0	0.0			30.0	
349	20.0	0.0	0.0		0.0	0.0			25.0	
376	35.0	0.0	0.0		0.0	0.0			20.0	
391 394	30.0	0.0 0.0	0.0		0.0	0.0			25.0	
420	35.0 30.0	0.0	0.0		0.0	0.0			30.0 40.0	
429	30.0	0.0	0.0		0.0	0.0			40.0	
431	45.0	0.0	0.0		0.0	0.0			40.0	
434	50.0	0.0	0.0		0.0	0.0			55.0	
445	40.0	0.0	0.0		0.0	0.0			35.0	
449	20.0	0.0	0.0		0.0	0.0			25.0	
	Uooding	Iona Chota	Iona Th	roug Mr	nleina	Donol+r	. Taleir	og Toels	ling	\
1	Heading 0.0	Long Shots 0.0	_	.rows Ma	0.0	Penalty	15.	•	0.0	\
4	0.0	0.0		0.0	0.0		15		0.0	
4 18	0.0	0.0		0.0	0.0		5.		0.0	
49	0.0	0.0		0.0	0.0		35		0.0	
65	0.0	0.0		0.0	0.0		15		0.0	
102	0.0	0.0		0.0	0.0		20		0.0	
110	0.0	0.0		0.0	0.0		5.		0.0	
114	0.0	0.0		0.0	0.0		5		0.0	
166	0.0	0.0		0.0	0.0		10		0.0	

214	0 0	0.0	0.0	0.0	5.0	0.0
	0.0					
240	0.0	0.0	0.0	0.0	5.0	0.0
247	0.0	0.0	0.0	0.0	15.0	0.0
255	0.0	0.0	0.0	0.0	5.0	0.0
256	0.0	0.0	0.0	0.0	20.0	0.0
265	0.0	0.0	0.0	0.0	15.0	0.0
267	0.0	0.0	0.0	0.0	5.0	0.0
279	0.0	0.0	0.0	0.0	20.0	0.0
282	0.0	0.0	0.0	0.0	15.0	0.0
297	0.0	0.0	0.0	0.0	15.0	0.0
331	0.0	0.0	0.0	0.0	5.0	0.0
334	0.0	0.0	0.0	0.0	20.0	0.0
346	0.0	0.0	0.0	0.0	15.0	0.0
349	0.0	0.0	0.0	0.0	15.0	0.0
376	0.0	0.0	0.0	0.0	5.0	0.0
391	0.0	0.0	0.0	0.0	15.0	0.0
394	0.0	0.0	0.0	0.0	15.0	0.0
420	0.0	0.0	0.0	0.0	10.0	0.0
429	0.0	0.0	0.0	0.0	10.0	0.0
431	0.0	0.0	0.0	0.0	10.0	0.0
434	0.0	0.0	0.0	0.0	10.0	0.0
445	0.0	0.0	0.0	0.0	10.0	0.0
449	0.0	0.0	0.0	0.0	5.0	0.0

	Technique	Goals	per	Caps
1	55.0		•	0.0
4	15.0			0.0
18	10.0			0.0
49	55.0			0.0
65	60.0			0.0
102	30.0			1.0
110	20.0			0.0
114	40.0			0.0
166	25.0			0.0
214	5.0			0.0
240	5.0			0.0
247	25.0			0.0
255	35.0			0.0
256	25.0			0.0
265	25.0			1.0
267	5.0			0.0
279	55.0			0.0
282	10.0			0.0
297	55.0			0.0
331	25.0			0.0
334	45.0			0.0
346	60.0			0.0

```
349
          10.0
                            0.0
376
          35.0
                             0.0
391
          25.0
                             0.0
394
           5.0
                            0.0
420
          15.0
                            0.0
429
          25.0
                            0.0
          60.0
                            0.0
431
434
          30.0
                            0.0
445
                            0.0
           5.0
449
          20.0
                             0.0
```

• All of them are goalkeepers too. Therefore non goalkeepers dont benefit from the following

```
[11]: non_gk_values={'Aerial Reach':0,'Command of Area':0,'Communication':
       ⇔0, 'Eccentricity':0, 'Handling':0, 'Kicking':0, 'One on Ones':0, 'Punching
       ⇔(Tendency)':0,'Reflexes':0,'Rushing Out (Tendency)':0,'Throwing':0}
      df_train.fillna(value=non_gk_values,inplace=True)
      df_train[df_train['Positions']!='GK']
```

[11]:		value_i	ncreased	Ability	Potential	Po	ositions	Foot	Height	\
	0		False	46.0	NaN		AMC	Right	178	
	2		False	58.0	NaN		DL DC	Left	185	
	3		True	38.0	NaN		DC	Right	185	
	5		True	56.0	69.0		ST	Right	185	
	6		False	43.0	NaN		MC	Left	183	
			•••	•••	•••		•••	•••		
	460		False	54.0	NaN		MC AMC	Right	181	
	461		False	53.0	NaN		AML	Right	176	
	462		True	35.0	NaN		DM	Left	180	
	463		False	43.0	NaN		MR AMR	Right	178	
	464		False	46.0	NaN	MR ML	AMR AML	Right	168	
		Weight	Aerial R	each Cor	nmand of Are	a Comr	${\tt nunicatio}$	n Ecce	ntricity	\
	0	72		0.0	0.	0	0.	0	0.0	
	2	80		0.0	0.	0	0.	0	0.0	
	3	74		0.0	0.	0	0.	0	0.0	
	5	75		0.0	0.	0	0.	0	0.0	
	6	73		0.0	0.	0	0.	0	0.0	
		•••	•••		•••			•••		
	460	74		0.0	0.	0	0.	0	0.0	
	461	72		0.0	0.	0	0.	0	0.0	
	462	73		0.0	0.	0	0.	0	0.0	
	463	65		0.0	0.	0	0.	0	0.0	
	464	68		0.0	0.	_	0.	•	0.0	

First Touch Handling Kicking One on Ones Passing \

0	55.0	0.0	0.0	0.0	55.0		
2	55.0	0.0	0.0	0.0	60.0		
3	35.0	0.0	0.0	0.0	30.0		
5	60.0	0.0	0.0	0.0	50.0		
6	50.0	0.0	0.0	0.0	50.0		
					60.0		
460	65.0	0.0	0.0	0.0	60.0		
461	60.0	0.0	0.0	0.0	60.0		
462	65.0	0.0	0.0	0.0	60.0		
463	65.0	0.0	0.0	0.0	60.0		
464	55.0	0.0	0.0	0.0	40.0		
	Punching (Te	endency) I	Reflexes Ru	shing Out (T	endency) Thro	wing \	
0		0.0	0.0	-	0.0	0.0	
2		0.0	0.0		0.0	0.0	
3		0.0	0.0		0.0	0.0	
5		0.0	0.0		0.0	0.0	
6		0.0	0.0		0.0	0.0	
		•••	•••				
460		0.0	0.0		0.0	0.0	
461		0.0	0.0		0.0	0.0	
462		0.0	0.0		0.0	0.0	
463		0.0	0.0		0.0	0.0	
464		0.0	0.0		0.0	0.0	
	A mmma a a i a n	Anticinati	on Description	Composimo	Concentration	Docisions	. 、
^	Aggression 45.0	Anticipat	•	45.0	Concentration 50.0		
0							
2	55.0		0.0 65.0	70.0	55.0		
3	40.0).0 45.0	30.0	40.0		
5	55.0).0 55.0	55.0	55.0		
6	55.0	00).0 55.0	50.0	60.0	65.0	,
460	 75.0	 51	 5.0 50.0	 45.0	50.0	55.0	١
461	35.0).0 55.0	50.0	55.0		
462	70.0).0 35.0	35.0	40.0		
463	50.0		5.0 55.0	45.0	50.0		
464	30.0).0 45.0	40.0	45.0		
404	30.0	20	7.0 45.0	40.0	40.0	30.0	,
	Determination	n Flair	Leadership	Off the Bal	l Positioning	Teamwork	\
0	70.	0 45.0	50.0	55.	0 50.0	65.0	
2	65.		50.0	35.	0 60.0	65.0	
3	10.	0 35.0	20.0	20.	0 70.0	35.0	
5	65.	0 65.0	35.0	65.	0 35.0	50.0	
6	70.	0 35.0	40.0	30.	0 45.0	70.0	
	•••	•••	•••	•••	•••		
460	50.	0 60.0	35.0	60.	0 35.0	60.0	
461	50.		30.0	60.			

462		75.0	25.0	55.0)	35.0	35.0	35.0	
463		60.0	55.0	30.0)	60.0	35.0	60.0	
464		75.0	55.0	60.0)	60.0	25.0	50.0	
							Jumping Re		
0	55.0	60.		55.0				15.0	
2	30.0	55.	. 0	55.0	50.0	50.0	(35.0	
3	30.0	40.	. 0	55.0	55.0	40.0	į	50.0	
5	65.0	55.	. 0	75.0	60.0	55.0	(35.0	
6	40.0	55.	. 0	55.0	55.0	50.0	į	55.0	
	•••	•••					•••		
460	65.0	60.	. 0	70.0	55.0	45.0	2	25.0	
461	50.0	55.	. 0	65.0	65.0	50.0	4	1 5.0	
462	60.0	55.	. 0	40.0	35.0	40.0	3	35.0	
463	60.0	60.		65.0				10.0	
464	35.0	45.		75.0				10.0	
101	00.0	10.		10.0	00.0	00.0	-	10.0	
	Natural F	Fitness	Pace	Stamina	Strength	Corners	Crossing	Dribbling	\
0		50.0	55.0	60.0	40.0	40.0	40.0	45.0	
2		60.0	55.0	60.0	75.0	30.0	60.0	40.0	
3		65.0	50.0	25.0	25.0			15.0	
5		60.0	70.0	55.0	60.0	30.0			
6		55.0		60.0	40.0			35.0	
								55.0	
460			60.0	55.0	30.0		55.0	60.0	
461		55.0	70.0	60.0	55.0		50.0	60.0	
462		65.0	40.0	30.0	35.0		25.0	10.0	
463		65.0		55.0				65.0	
464		70.0	70.0	25.0	70.0	50.0	60.0	70.0	
	Finishing	r Free	Kick T	aking He	ading Lo	ng Shots	Long Throws	s Marking	\
0	35.0	-		35.0		35.0	40.0	_	•
2	30.0			15.0	65.0	35.0	50.0		
3	10.0			20.0	70.0	10.0	35.0		
5	65.0			40.0	55.0	55.0	25.0		
6	30.0)		35.0	40.0	35.0	40.0	40.0	
460	 60 (`				60.0		20.0	
460	60.0			50.0	20.0	60.0	35.0		
461	60.0			30.0	50.0	50.0	30.0		
462	25.0			30.0	30.0	30.0	15.0		
463	40.0			40.0	40.0	55.0	35.0		
464	35.0)		40.0	10.0	35.0	40.0	30.0	
	Dono1+ "	Colrin-	То α1-1 -	ne Tosker	iano de-	la non de-	29		
^	renaity l	_		ng Techn:	-	ls per Cap			
0		25.0			50.0	0.			
2		55.0			45.0	0.			
3		20.0	55	5.0	10.0	0 .	.0		

5	60.0	30.0	60.0	1.0
6	40.0	55.0	50.0	0.0
	•••	•••	•••	
460	20.0	25.0	65.0	0.0
461	25.0	20.0	60.0	0.0
462	15.0	65.0	40.0	0.0
463	45.0	30.0	65.0	0.0
464	15.0	25.0	60.0	0.0

[433 rows x 55 columns]

```
[12]: df_test.fillna(value=non_gk_values,inplace=True) df_test[df_test['Positions']!='GK']
```

[12]:		Ability	Potential	Positions	Foot	Height	Weight .	Aerial Reach	\
	0	40.0	NaN	DR	Right	165	60	0.0	
	1	42.0	NaN	DC	Right	191	79	0.0	
	2	40.0	NaN	DM	Left	182	74	0.0	
	4	38.0	NaN	AMC	Left	179	67	0.0	
	5	40.0	NaN	DL	Left	179	69	0.0	
		•••	•••		•••	•••	•••		
	305	45.0	NaN	AML	Left	173	65	0.0	
	306	52.0	NaN	DC	Right	184	74	0.0	
	307	70.0	NaN	AMR AML AMC	Right	177	75	0.0	
	308	36.0	NaN	AML	Right	172	64	0.0	
	309	62.0	85.0	DC	Right	190	76	0.0	
					_				
	_	Command		mmunication	Eccentr	•		•	\
	0		0.0	0.0		0.0	35.		
	1		0.0	0.0		0.0	40.		
	2		0.0	0.0		0.0	45.		
	4		0.0	0.0		0.0	65.		
	5		0.0	0.0		0.0	65.		
	205				•••	0 0			
	305 306		0.0	0.0		0.0	60. 50.		
	307		0.0	0.0		0.0	75.		
	308		0.0	0.0		0.0	55.		
	309		0.0	0.0		0.0	65.		
	303		0.0	0.0		0.0	00.	0.0	
		Kicking	One on One	es Passing 1	Punching	(Tenden	cy) Refl	exes \	
	0	0.0	0.	•	Ü		0.0	0.0	
	1	0.0	0.	.0 35.0			0.0	0.0	
	2	0.0	0.				0.0	0.0	
	4	0.0	0.				0.0	0.0	
	5	0.0	0.	.0 50.0			0.0	0.0	

305 306 307 308 309	0.0 0.0 0.0 0.0		0.0 0.0 0.0 0.0 0.0	70.0 55.0 55.0 40.0 60.0			0.0 0.0 0.0 0.0	0. 0. 0. 0.	. 0 . 0 . 0	
	Rushing	Out (Tendency)	Throwing		ession		-	•	\
0			0.0	0.0		50.0		55.0	45.0	
1			0.0	0.0		25.0		50.0	45.0	
2			0.0	0.0		65.0		30.0	40.0	
4			0.0	0.0		30.0		35.0	45.0	
5 			0.0	0.0)	75.0		40.0	50.0	
305			0.0	0.0)	30.0	•••	30.0	45.0	
306			0.0	0.0)	55.0		60.0	70.0	
307			0.0	0.0)	35.0		50.0	30.0	
308			0.0	0.0)	40.0		35.0	35.0	
309			0.0	0.0)	50.0		55.0	65.0	
	Composur	e Co:	ncentratio	n Decisi	ions I	etermi:	nation	Flair	Leadershij	p \
0	30.		30.		35.0		45.0	35.0	20.0	
1	35.		35.		35.0		75.0	25.0	45.0	
2	25.	0	40.	0 6	55.0		25.0	30.0	30.0	0
4	50.	0	50.	0 3	35.0		50.0	70.0	10.0	О
5	30.	0	40.	0 6	30.0		80.0	25.0	20.0	О
	•••		•••	•••		•••	•••	•••		
305	55.		50.		35.0		90.0	60.0	35.0	
306	60.		45.		30.0		70.0	25.0	35.0	
307	60.		55.		35.0		50.0	75.0	65.0	
308	40.		35.		25.0		75.0	70.0	25.0	
309	60.	0	60.	0 6	50.0		60.0	50.0	50.0	0
	Off the	Ball	Positioni	ng Teamv	vork V	ision	Work R	ate Acc	celeration	\
0		55.0	45	.0 3	30.0	40.0	4	5.0	80.0	
1		30.0	65	.0 3	30.0	10.0	4	0.0	55.0	
2		25.0	65	.0 3	35.0	30.0	5	5.0	65.0	
4		40.0	30	.0 3	35.0	60.0	4	0.0	70.0	
5		40.0	30	.0 3	35.0	30.0	4	5.0	75.0	
• •		•••	•••	•••	•••	•••		•••		
305		70.0	40		50.0	50.0		0.0	70.0	
306		35.0	55		50.0	50.0		5.0	55.0	
307		75.0	45		15.0	70.0		5.0	80.0	
308		45.0			10.0	40.0		5.0	70.0	
309		60.0	60	.0 5	55.0	60.0	6	5.0	60.0	
	Agility	Bala	nce Jumpi	ng Reach	Natur	al Fit:	ness P	ace Sta	amina \	
0	80.0		5.0	30.0				0.0	50.0	

1	65.0	35.0	5	55.0			65.0	60.0	20.0	
2	55.0	35.0		0.0				65.0	30.0	
4	65.0	25.0		35.0				65.0	45.0	
5	65.0	45.0		0.0				70.0	55.0	
			4	.0.0					55.0	
			•••	- 0		•••			50.0	
305	70.0	50.0		.5.0				70.0	50.0	
306	45.0	60.0		0.0				55.0	60.0	
307	75.0	55.0		35.0				75.0	60.0	
308	55.0	35.0	4	0.0			50.0	70.0	45.0	
309	65.0	50.0	7	5.0			70.0	60.0	70.0	
	a	~	~ .		٠.					
	Strength		_	Drib	_	Fir	_	Free K	ick Taking	\
0	35.0	35.0	25.0		45.0		20.0		35.0	
1	35.0	20.0	30.0		10.0		25.0		30.0	
2	35.0	10.0	15.0		25.0		20.0		25.0	
4	25.0	40.0	50.0		50.0		60.0		60.0	
5	40.0	30.0	45.0		40.0		15.0		10.0	
	•••	•••	•••	•••	•••			•••		
305	30.0	50.0	60.0		60.0		50.0		40.0	
306	65.0	30.0	15.0		35.0		25.0		10.0	
307	45.0	50.0	65.0		75.0		50.0		60.0	
308	35.0	45.0	45.0		55.0		45.0		45.0	
	60.0				50.0		35.0			
3114										
309	00.0	30.0	25.0		30.0		33.0		20.0	
309				ırows		ng		Taking		\
	Heading I	Long Shots	Long Th		Marki	_		Taking	Tackling	\
0	Heading I	Long Shots	Long Th	35.0	Marki 55	.0		30.0	Tackling 40.0	\
0 1	Heading I 30.0 40.0	Long Shots 20.0 25.0	Long Th	35.0 5.0	Marki 55 55	.0		30.0 5.0	Tackling 40.0 65.0	\
0 1 2	Heading I 30.0 40.0 40.0	Long Shots 20.0 25.0 30.0	Long Th	35.0 5.0 5.0	Marki 55 55 60	.0		30.0 5.0 5.0	Tackling 40.0 65.0 60.0	\
0 1 2 4	Heading I 30.0 40.0 40.0 55.0	Long Shots 20.0 25.0 30.0 50.0	Long Th	35.0 5.0 5.0 15.0	Marki 55 55 60 35	.0		30.0 5.0 5.0 35.0	Tackling 40.0 65.0 60.0 25.0	\
0 1 2 4 5	Heading I 30.0 40.0 40.0 55.0 20.0	Long Shots 20.0 25.0 30.0	Long Th	35.0 5.0 5.0 15.0 25.0	Marki 55 55 60	.0		30.0 5.0 5.0 35.0 10.0	Tackling 40.0 65.0 60.0 25.0	\
0 1 2 4 5	Heading I 30.0 40.0 40.0 55.0 20.0	20.0 25.0 30.0 50.0 40.0	Long Th	35.0 5.0 5.0 15.0 25.0	Marki 55 55 60 35 35	.0		30.0 5.0 5.0 35.0 10.0	Tackling 40.0 65.0 60.0 25.0 60.0	\
0 1 2 4 5 	Heading I 30.0 40.0 40.0 55.0 20.0 40.0	20.0 25.0 30.0 50.0 40.0 	Long Th	35.0 5.0 5.0 15.0 25.0 	Marki 55 55 60 35 35	.0		30.0 5.0 5.0 35.0 10.0 25.0	Tackling 40.0 65.0 60.0 25.0 60.0	\
0 1 2 4 5 305 306	Heading I 30.0 40.0 40.0 55.0 20.0 40.0 70.0	20.0 25.0 30.0 50.0 40.0 35.0 35.0	Long Th	35.0 5.0 5.0 15.0 25.0 40.0 25.0	Marki 55 55 60 35 35 35	.0		30.0 5.0 5.0 35.0 10.0 25.0 20.0	Tackling 40.0 65.0 60.0 25.0 60.0	\
0 1 2 4 5 305 306 307	Heading I 30.0 40.0 40.0 55.0 20.0 40.0 70.0 35.0	20.0 25.0 30.0 50.0 40.0 35.0 35.0 40.0	Long Th	35.0 5.0 5.0 15.0 25.0 40.0 25.0 35.0	Marki 55 55 60 35 35 35 60 25	.0		30.0 5.0 5.0 35.0 10.0 25.0 20.0 15.0	Tackling 40.0 65.0 60.0 25.0 60.0 50.0 60.0 25.0	\
0 1 2 4 5 305 306 307 308	Heading I 30.0 40.0 40.0 55.0 20.0 40.0 70.0 35.0 30.0	20.0 25.0 30.0 50.0 40.0 35.0 40.0 40.0	Long Th	35.0 5.0 5.0 15.0 25.0 40.0 25.0 35.0	Marki 55 55 60 35 35 35 60 25 15	.0		30.0 5.0 5.0 35.0 10.0 25.0 20.0 15.0	Tackling 40.0 65.0 60.0 25.0 60.0 50.0 25.0 15.0	\
0 1 2 4 5 305 306 307	Heading I 30.0 40.0 40.0 55.0 20.0 40.0 70.0 35.0	20.0 25.0 30.0 50.0 40.0 35.0 35.0 40.0	Long Th	35.0 5.0 5.0 15.0 25.0 40.0 25.0 35.0	Marki 55 55 60 35 35 35 60 25	.0		30.0 5.0 5.0 35.0 10.0 25.0 20.0 15.0	Tackling 40.0 65.0 60.0 25.0 60.0 50.0 60.0 25.0	\
0 1 2 4 5 305 306 307 308	Heading I 30.0 40.0 40.0 55.0 20.0 40.0 70.0 35.0 30.0 65.0	20.0 25.0 30.0 50.0 40.0 35.0 40.0 40.0 50.0	Long Th	35.0 5.0 5.0 15.0 25.0 40.0 25.0 35.0	Marki 55 55 60 35 35 35 60 25 15	.0		30.0 5.0 5.0 35.0 10.0 25.0 20.0 15.0	Tackling 40.0 65.0 60.0 25.0 60.0 50.0 25.0 15.0	\
0 1 2 4 5 305 306 307 308 309	Heading I 30.0 40.0 40.0 55.0 20.0 40.0 70.0 35.0 30.0 65.0 Technique	20.0 25.0 30.0 50.0 40.0 35.0 40.0 40.0	Long Th 	35.0 5.0 5.0 15.0 25.0 40.0 25.0 35.0	Marki 55 55 60 35 35 35 60 25 15	.0		30.0 5.0 5.0 35.0 10.0 25.0 20.0 15.0	Tackling 40.0 65.0 60.0 25.0 60.0 50.0 25.0 15.0	\
0 1 2 4 5 305 306 307 308 309	Heading I 30.0 40.0 40.0 55.0 20.0 40.0 70.0 35.0 30.0 65.0	20.0 25.0 30.0 50.0 40.0 35.0 40.0 40.0 50.0	Long Th	35.0 5.0 5.0 15.0 25.0 40.0 25.0 35.0	Marki 55 55 60 35 35 35 60 25 15	.0		30.0 5.0 5.0 35.0 10.0 25.0 20.0 15.0	Tackling 40.0 65.0 60.0 25.0 60.0 50.0 25.0 15.0	\
0 1 2 4 5 305 306 307 308 309	Heading I 30.0 40.0 40.0 55.0 20.0 40.0 70.0 35.0 30.0 65.0 Technique 30.0 20.0	20.0 25.0 30.0 50.0 40.0 35.0 40.0 40.0 50.0	Long Th	35.0 5.0 5.0 15.0 25.0 40.0 25.0 35.0	Marki 55 55 60 35 35 35 60 25 15	.0		30.0 5.0 5.0 35.0 10.0 25.0 20.0 15.0	Tackling 40.0 65.0 60.0 25.0 60.0 50.0 25.0 15.0	\
0 1 2 4 5 305 306 307 308 309	Heading I 30.0 40.0 40.0 55.0 20.0 40.0 70.0 35.0 30.0 65.0 Technique 30.0 20.0 40.0	20.0 25.0 30.0 50.0 40.0 35.0 40.0 40.0 50.0	Long Th	35.0 5.0 5.0 15.0 25.0 40.0 25.0 35.0	Marki 55 55 60 35 35 35 60 25 15	.0		30.0 5.0 5.0 35.0 10.0 25.0 20.0 15.0	Tackling 40.0 65.0 60.0 25.0 60.0 50.0 25.0 15.0	\
0 1 2 4 5 305 306 307 308 309	Heading I 30.0 40.0 40.0 55.0 20.0 40.0 70.0 35.0 30.0 65.0 Technique 30.0 20.0 40.0 65.0	20.0 25.0 30.0 50.0 40.0 35.0 40.0 40.0 50.0	Long Th	35.0 5.0 5.0 15.0 25.0 40.0 25.0 35.0	Marki 55 55 60 35 35 35 60 25 15	.0		30.0 5.0 5.0 35.0 10.0 25.0 20.0 15.0	Tackling 40.0 65.0 60.0 25.0 60.0 50.0 25.0 15.0	\
0 1 2 4 5 305 306 307 308 309	Heading I 30.0 40.0 40.0 55.0 20.0 40.0 70.0 35.0 30.0 65.0 Technique 30.0 20.0 40.0	20.0 25.0 30.0 50.0 40.0 35.0 40.0 40.0 50.0	Long Th	35.0 5.0 5.0 15.0 25.0 40.0 25.0 35.0	Marki 55 55 60 35 35 35 60 25 15	.0		30.0 5.0 5.0 35.0 10.0 25.0 20.0 15.0	Tackling 40.0 65.0 60.0 25.0 60.0 50.0 25.0 15.0	
0 1 2 4 5 305 306 307 308 309	Heading I 30.0 40.0 40.0 55.0 20.0 40.0 70.0 35.0 30.0 65.0 Technique 30.0 20.0 40.0 65.0	20.0 25.0 30.0 50.0 40.0 35.0 40.0 40.0 50.0	Long Th	35.0 5.0 5.0 15.0 25.0 40.0 25.0 35.0	Marki 55 55 60 35 35 35 60 25 15	.0		30.0 5.0 5.0 35.0 10.0 25.0 20.0 15.0	Tackling 40.0 65.0 60.0 25.0 60.0 50.0 25.0 15.0	\
0 1 2 4 5 305 306 307 308 309	Heading I 30.0 40.0 40.0 55.0 20.0 40.0 70.0 35.0 30.0 65.0 Technique 30.0 40.0 65.0 50.0	20.0 25.0 30.0 50.0 40.0 35.0 40.0 40.0 50.0	Long Th	35.0 5.0 5.0 15.0 25.0 40.0 25.0 35.0	Marki 55 55 60 35 35 35 60 25 15	.0		30.0 5.0 5.0 35.0 10.0 25.0 20.0 15.0	Tackling 40.0 65.0 60.0 25.0 60.0 50.0 25.0 15.0	\
0 1 2 4 5 305 306 307 308 309	Heading I 30.0 40.0 40.0 55.0 20.0 40.0 70.0 35.0 30.0 65.0 Technique 30.0 20.0 40.0 65.0	20.0 25.0 30.0 50.0 40.0 35.0 40.0 40.0 50.0	Long Th	35.0 5.0 5.0 15.0 25.0 40.0 25.0 35.0	Marki 55 55 60 35 35 35 60 25 15	.0		30.0 5.0 5.0 35.0 10.0 25.0 20.0 15.0	Tackling 40.0 65.0 60.0 25.0 60.0 50.0 25.0 15.0	

308	55.0	0.0
309	60.0	0.0

[298 rows x 54 columns]

- GK Stats:
 - Aerial Reach
 - Command of Area
 - Communication
 - Eccentricity
 - Handling
 - Kicking
 - One on Ones
 - Punching Tendency
 - Reflexes
 - Rushing out Tendency
 - Throwing
- Non GK Stats:
 - Corners
 - Crossing
 - Dribbling
 - Finishing
 - Heading
 - Long Shots
 - Long Throws
 - Marking
 - Tackling
- Common Stats:
 - Ability
 - Passing
 - Aggression
 - Anticipation
 - Bravery
 - Composure
 - Concentration
 - Decisions
 - Determination
 - Flair
 - Leadership
 - Off the Ball
 - Positioning
 - Teamwork
 - Vision
 - Work Rate
 - Acceleration
 - Agility
 - Balance

```
- Jumping Reach
```

- Natural Fitness
- Pace
- Stamina
- Strength
- Technique

```
[13]: gk_stats = ['Aerial Reach', 'Command of Area', 'Communication', 'Eccentricity', |
      'One on Ones', 'Punching (Tendency)', 'Reflexes', 'Rushing Out_{\!\sqcup}
      non_gk_stats = ['Corners', 'Crossing', 'Dribbling', 'Finishing', 'Heading', |
      'Marking', 'Tackling']
     common_stats = ['Aggression', 'Anticipation', 'Bravery', 'Composure', __
      ⇔'Concentration', 'Decisions',
                    'Determination', 'Flair', 'Leadership', 'Off the Ball', __
      ⇔'Positioning', 'Teamwork',
                    'Vision', 'Work Rate', 'Acceleration', 'Agility', 'Balance', 
      'Natural Fitness', 'Pace', 'Stamina', 'Strength', 'Technique']
     def calculate_potential(df):
         if df['Positions'] == 'GK':
             relevant_stats = df[(gk_stats + common_stats)].mean()
         else:
             relevant_stats = df[(non_gk_stats + common_stats)].mean()
         return relevant_stats
     df_train['Potential'] = df_train['Potential'].fillna(df_train.
      →apply(calculate_potential, axis=1))
     df_test['Potential'] = df_test['Potential'].fillna(df_test.
      →apply(calculate_potential, axis=1))
```

```
[15]: from sklearn.linear_model import LogisticRegression from sklearn.model_selection import train_test_split
```

	precision	recall	f1-score	support
False True	0.94 0.18	0.90 0.29	0.92 0.22	86 7
accuracy macro avg	0.56	0.59	0.85 0.57	93 93
weighted avg	0.88	0.85	0.86	93

```
[16]: import optuna
      from sklearn.linear_model import LogisticRegression
      from sklearn.model_selection import train_test_split, cross_val_score
      from sklearn.preprocessing import StandardScaler
      from sklearn.pipeline import Pipeline
      def objective(trial):
          X = df_train.drop(columns=['value_increased'])
          y = df_train['value_increased']
          X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2,_
       →random_state=42)
          solver = trial.suggest_categorical('solver', ['newton-cg', 'lbfgs',__

¬'liblinear', 'sag', 'saga'])
          penalty = trial.suggest_categorical('penalty', ['l1', 'l2', 'elasticnet', __

¬'none'])
          C = trial.suggest_float('C', 1e-6, 1e2, log=True)
          11_ratio = None
          if penalty == 'elasticnet':
              if solver == 'saga':
                  l1_ratio = trial.suggest_float('l1_ratio', 0.0, 1.0)
              else:
```

```
return float('nan')
    if solver in ['newton-cg', 'lbfgs', 'sag'] and penalty != '12':
        return float('nan')
    if solver == 'liblinear' and penalty not in ['11', '12']:
        return float('nan')
    if solver == 'saga' and penalty == 'none':
        penalty = None
    model = LogisticRegression(solver=solver, penalty=penalty, C=C,__
  →max_iter=1000, l1_ratio=l1_ratio)
    pipe = Pipeline([('scaler', StandardScaler()), ('lr', model)])
    score = cross_val_score(pipe, X_train, y_train, cv=5, scoring='f1',_
 ⇔error_score='raise').mean()
    return score
study = optuna.create_study(direction='maximize')
study.optimize(objective, n_trials=50)
print("Best trial:")
trial = study.best_trial
print(f"Value: {trial.value}")
print("Best hyperparameters:", trial.params)
[I 2024-10-07 06:45:05,700] A new study created in memory with name: no-
name-69da1374-26a9-4997-af33-556ca9a08ba6
[I 2024-10-07 06:45:06,147] Trial 0 finished with value: 0.04852941176470588 and
parameters: {'solver': 'newton-cg', 'penalty': '12', 'C': 0.7016426472079761}.
Best is trial 0 with value: 0.04852941176470588.
[I 2024-10-07 06:45:06,302] Trial 1 finished with value: 0.0533333333333333344
and parameters: {'solver': 'liblinear', 'penalty': '12', 'C':
0.075230089229997}. Best is trial 1 with value: 0.053333333333333344.
[W 2024-10-07 06:45:06,308] Trial 2 failed with parameters: {'solver': 'lbfgs',
'penalty': '11', 'C': 0.0026572303093363187} because of the following error: The
value nan is not acceptable.
[W 2024-10-07 06:45:06,309] Trial 2 failed with value nan.
[W 2024-10-07 06:45:06,316] Trial 3 failed with parameters: {'solver': 'sag',
'penalty': 'none', 'C': 4.338562222382993e-06} because of the following error:
The value nan is not acceptable.
[W 2024-10-07 06:45:06,318] Trial 3 failed with value nan.
[W 2024-10-07 06:45:06,324] Trial 4 failed with parameters: {'solver': 'sag',
```

- 'penalty': 'none', 'C': 0.1507586528931401} because of the following error: The value nan is not acceptable.
- [W 2024-10-07 06:45:06,325] Trial 4 failed with value nan.
- [W 2024-10-07 06:45:06,331] Trial 5 failed with parameters: {'solver': 'newtoncg', 'penalty': 'l1', 'C': 0.12455352132887647} because of the following error: The value nan is not acceptable.
- [W 2024-10-07 06:45:06,332] Trial 5 failed with value nan.
- [I 2024-10-07 06:45:06,494] Trial 6 finished with value: 0.0 and parameters:
- {'solver': 'newton-cg', 'penalty': '12', 'C': 2.6324558480427784e-05}. Best is trial 1 with value: 0.053333333333333344.
- [W 2024-10-07 06:45:06,503] Trial 7 failed with parameters: {'solver':
- 'liblinear', 'penalty': 'elasticnet', 'C': 0.0042526679423706025} because of the following error: The value nan is not acceptable.
- [W 2024-10-07 06:45:06,505] Trial 7 failed with value nan.
- [W 2024-10-07 06:45:06,513] Trial 8 failed with parameters: {'solver': 'lbfgs',
- 'penalty': 'elasticnet', 'C': 0.004631057152466885} because of the following error: The value nan is not acceptable.
- [W 2024-10-07 06:45:06,515] Trial 8 failed with value nan.
- [I 2024-10-07 06:45:06,710] Trial 9 finished with value: 0.0 and parameters:
- {'solver': 'saga', 'penalty': '12', 'C': 0.004031254863914883}. Best is trial 1 with value: 0.05333333333333344.
- [W 2024-10-07 06:45:06,716] Trial 10 failed with parameters: {'solver': 'sag', 'penalty': 'l1', 'C': 1.7761975810977837e-05} because of the following error: The value nan is not acceptable.
- [W 2024-10-07 06:45:06,716] Trial 10 failed with value nan.
- [I 2024-10-07 06:45:06,878] Trial 11 finished with value: 0.0 and parameters: {'solver': 'lbfgs', 'penalty': 'l2', 'C': 0.006472726405598051}. Best is trial 1 with value: 0.053333333333333344.
- [I 2024-10-07 06:45:07,665] Trial 12 finished with value: 0.05523809523809524 and parameters: {'solver': 'saga', 'penalty': 'elasticnet', 'C':
- 0.426668181540445, 'l1_ratio': 0.7245095213941797}. Best is trial 12 with value: 0.05523809523809524.
- [W 2024-10-07 06:45:07,671] Trial 13 failed with parameters: {'solver': 'newtoncg', 'penalty': 'elasticnet', 'C': 2.075626842150456e-06} because of the following error: The value nan is not acceptable.
- [W 2024-10-07 06:45:07,672] Trial 13 failed with value nan.
- [W 2024-10-07 06:45:07,678] Trial 14 failed with parameters: {'solver':
- 'liblinear', 'penalty': 'none', 'C': 1.0204542380597963e-06} because of the following error: The value nan is not acceptable.
- [W 2024-10-07 06:45:07,679] Trial 14 failed with value nan.
- [W 2024-10-07 06:45:07,685] Trial 15 failed with parameters: {'solver': 'newtoncg', 'penalty': 'elasticnet', 'C': 0.0771865609782329} because of the following error: The value nan is not acceptable.
- [W 2024-10-07 06:45:07,686] Trial 15 failed with value nan.
- [I 2024-10-07 06:45:08,579] Trial 16 finished with value: 0.12528104575163398 and parameters: {'solver': 'liblinear', 'penalty': 'l1', 'C':
- 38.719871400783866}. Best is trial 16 with value: 0.12528104575163398.
- [I 2024-10-07 06:45:08,656] Trial 17 finished with value: 0.0 and parameters:

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{'solver': 'saga', 'penalty': 'elasticnet', 'C': 0.0002582816118243611,
'l1_ratio': 0.27410738990844496}. Best is trial 16 with value:
0.12528104575163398.
[W 2024-10-07 06:45:08,662] Trial 18 failed with parameters: {'solver': 'sag',
'penalty': '11', 'C': 0.0552003398385968} because of the following error: The
value nan is not acceptable.
[W 2024-10-07 06:45:08,663] Trial 18 failed with value nan.
[W 2024-10-07 06:45:08,669] Trial 19 failed with parameters: {'solver': 'lbfgs',
'penalty': 'elasticnet', 'C': 5.1827891457729436e-05} because of the following
error: The value nan is not acceptable.
[W 2024-10-07 06:45:08,670] Trial 19 failed with value nan.
[W 2024-10-07 06:45:08,677] Trial 20 failed with parameters: {'solver': 'newton-
cg', 'penalty': 'none', 'C': 1.021215045230389e-05} because of the following
error: The value nan is not acceptable.
[W 2024-10-07 06:45:08,678] Trial 20 failed with value nan.
[W 2024-10-07 06:45:08,684] Trial 21 failed with parameters: {'solver': 'sag',
'penalty': '11', 'C': 0.004834575566524379} because of the following error: The
value nan is not acceptable.
[W 2024-10-07 06:45:08,685] Trial 21 failed with value nan.
[I 2024-10-07 06:45:10,462] Trial 22 finished with value: 0.10772498167840742
and parameters: {'solver': 'saga', 'penalty': 'elasticnet', 'C':
57.12559917140922, 'l1 ratio': 0.6407795814656521}. Best is trial 16 with value:
0.12528104575163398.
[I 2024-10-07 06:45:10,641] Trial 23 finished with value: 0.0 and parameters:
{'solver': 'saga', 'penalty': '12', 'C': 9.116531181605843e-05}. Best is trial
16 with value: 0.12528104575163398.
[I 2024-10-07 06:45:11,637] Trial 24 finished with value: 0.12528104575163398
and parameters: {'solver': 'liblinear', 'penalty': 'l1', 'C':
68.74691127353597}. Best is trial 16 with value: 0.12528104575163398.
[I 2024-10-07 06:45:12,670] Trial 25 finished with value: 0.12528104575163398
and parameters: {'solver': 'liblinear', 'penalty': 'l1', 'C':
43.378479514713206}. Best is trial 16 with value: 0.12528104575163398.
[I 2024-10-07 06:45:12,979] Trial 26 finished with value: 0.13083075335397315
and parameters: {'solver': 'liblinear', 'penalty': 'l1', 'C':
6.856747722386633}. Best is trial 26 with value: 0.13083075335397315.
[W 2024-10-07 06:45:12,993] Trial 27 failed with parameters: {'solver': 'sag',
'penalty': '11', 'C': 3.408585956097477} because of the following error: The
value nan is not acceptable.
[W 2024-10-07 06:45:12,994] Trial 27 failed with value nan.
[W 2024-10-07 06:45:13,008] Trial 28 failed with parameters: {'solver': 'sag',
'penalty': '11', 'C': 1.1789033018755467e-06} because of the following error:
The value nan is not acceptable.
[W 2024-10-07 06:45:13,009] Trial 28 failed with value nan.
[W 2024-10-07 06:45:13,024] Trial 29 failed with parameters: {'solver': 'sag',
'penalty': '11', 'C': 1.2954279386675166e-06} because of the following error:
The value nan is not acceptable.
```

[W 2024-10-07 06:45:13,040] Trial 30 failed with parameters: {'solver': 'sag',

[W 2024-10-07 06:45:13,025] Trial 29 failed with value nan.

- 'penalty': '11', 'C': 4.0789168315005595} because of the following error: The value nan is not acceptable.
- [W 2024-10-07 06:45:13,041] Trial 30 failed with value nan.
- [W 2024-10-07 06:45:13,055] Trial 31 failed with parameters: {'solver': 'sag', 'penalty': 'l1', 'C': 3.454572824662281} because of the following error: The value nan is not acceptable.
- [W 2024-10-07 06:45:13,056] Trial 31 failed with value nan.
- [W 2024-10-07 06:45:13,070] Trial 32 failed with parameters: {'solver': 'sag', 'penalty': 'l1', 'C': 2.858034091756987} because of the following error: The value nan is not acceptable.
- [W 2024-10-07 06:45:13,071] Trial 32 failed with value nan.
- [W 2024-10-07 06:45:13,085] Trial 33 failed with parameters: {'solver': 'sag', 'penalty': 'l1', 'C': 3.3188072352479097} because of the following error: The value nan is not acceptable.
- [W 2024-10-07 06:45:13,086] Trial 33 failed with value nan.
- [W 2024-10-07 06:45:13,100] Trial 34 failed with parameters: {'solver': 'sag', 'penalty': 'l1', 'C': 1.1970512239858173e-06} because of the following error: The value nan is not acceptable.
- [W 2024-10-07 06:45:13,101] Trial 34 failed with value nan.
- [W 2024-10-07 06:45:13,116] Trial 35 failed with parameters: {'solver': 'sag', 'penalty': 'l1', 'C': 1.2607681207645673e-06} because of the following error: The value nan is not acceptable.
- [W 2024-10-07 06:45:13,117] Trial 35 failed with value nan.
- [W 2024-10-07 06:45:13,132] Trial 36 failed with parameters: {'solver': 'sag', 'penalty': 'l1', 'C': 3.1449743089607103} because of the following error: The value nan is not acceptable.
- [W 2024-10-07 06:45:13,133] Trial 36 failed with value nan.
- [W 2024-10-07 06:45:13,148] Trial 37 failed with parameters: {'solver': 'sag', 'penalty': 'l1', 'C': 2.9957866788018763} because of the following error: The value nan is not acceptable.
- [W 2024-10-07 06:45:13,149] Trial 37 failed with value nan.
- [W 2024-10-07 06:45:13,163] Trial 38 failed with parameters: {'solver': 'sag', 'penalty': 'l1', 'C': 2.685806660088758} because of the following error: The value nan is not acceptable.
- [W 2024-10-07 06:45:13,165] Trial 38 failed with value nan.
- [W 2024-10-07 06:45:13,179] Trial 39 failed with parameters: {'solver': 'sag', 'penalty': 'l1', 'C': 5.6913588336016305} because of the following error: The value nan is not acceptable.
- [W 2024-10-07 06:45:13,180] Trial 39 failed with value nan.
- [W 2024-10-07 06:45:13,194] Trial 40 failed with parameters: {'solver': 'sag', 'penalty': 'l1', 'C': 6.742480666159453} because of the following error: The value nan is not acceptable.
- [W 2024-10-07 06:45:13,195] Trial 40 failed with value nan.
- [W 2024-10-07 06:45:13,209] Trial 41 failed with parameters: {'solver': 'sag', 'penalty': 'l1', 'C': 3.857143295415424} because of the following error: The value nan is not acceptable.
- [W 2024-10-07 06:45:13,210] Trial 41 failed with value nan.
- [W 2024-10-07 06:45:13,225] Trial 42 failed with parameters: {'solver': 'sag',

```
value nan is not acceptable.
     [W 2024-10-07 06:45:13,227] Trial 42 failed with value nan.
     [W 2024-10-07 06:45:13,241] Trial 43 failed with parameters: {'solver': 'sag',
     'penalty': '11', 'C': 3.312826755374832} because of the following error: The
     value nan is not acceptable.
     [W 2024-10-07 06:45:13,242] Trial 43 failed with value nan.
     [W 2024-10-07 06:45:13,257] Trial 44 failed with parameters: {'solver': 'sag',
     'penalty': '11', 'C': 2.512677586105959} because of the following error: The
     value nan is not acceptable.
     [W 2024-10-07 06:45:13,259] Trial 44 failed with value nan.
     [W 2024-10-07 06:45:13,273] Trial 45 failed with parameters: {'solver': 'sag',
     'penalty': '11', 'C': 2.9293718160600024} because of the following error: The
     value nan is not acceptable.
     [W 2024-10-07 06:45:13,274] Trial 45 failed with value nan.
     [W 2024-10-07 06:45:13,288] Trial 46 failed with parameters: {'solver': 'sag',
     'penalty': '11', 'C': 1.0453189468296348e-06} because of the following error:
     The value nan is not acceptable.
     [W 2024-10-07 06:45:13,289] Trial 46 failed with value nan.
     [W 2024-10-07 06:45:13,303] Trial 47 failed with parameters: {'solver': 'sag',
     'penalty': '11', 'C': 3.5019999018402865} because of the following error: The
     value nan is not acceptable.
     [W 2024-10-07 06:45:13,304] Trial 47 failed with value nan.
     [W 2024-10-07 06:45:13,319] Trial 48 failed with parameters: {'solver': 'sag',
     'penalty': '11', 'C': 4.6311555799138455} because of the following error: The
     value nan is not acceptable.
     [W 2024-10-07 06:45:13,320] Trial 48 failed with value nan.
     [W 2024-10-07 06:45:13,334] Trial 49 failed with parameters: {'solver': 'sag',
     'penalty': '11', 'C': 4.488994915842671} because of the following error: The
     value nan is not acceptable.
     [W 2024-10-07 06:45:13,335] Trial 49 failed with value nan.
     Best trial:
     Value: 0.13083075335397315
     Best hyperparameters: {'solver': 'liblinear', 'penalty': 'l1', 'C':
     6.856747722386633}
[17]: from sklearn.linear_model import LogisticRegression
      log_reg = LogisticRegression(**trial.params,class_weight='balanced',_
       →random_state=42)
      log_reg.fit(X_train, y_train)
      y_pred_log = log_reg.predict(X_test)
      from sklearn.metrics import classification_report
      print(classification_report(y_test, y_pred_log))
```

'penalty': '11', 'C': 3.620564430378719} because of the following error: The

```
precision
                              recall f1-score
                                                   support
                     0.91
                                0.77
                                            0.83
                                                         82
       False
                     0.21
                                            0.29
                                0.45
                                                         11
         True
    accuracy
                                            0.73
                                                         93
                     0.56
                                0.61
                                            0.56
                                                         93
   macro avg
weighted avg
                     0.83
                                0.73
                                            0.77
                                                         93
```

```
[18]: test_pred=log_reg.predict(df_test)
test_pred
```

```
[18]: array([False, False, False, False, True, True, True, False, False,
           False, False, False, False, False, False, False, False,
                   True, False, False, False, False, False, False,
           False,
            True,
                   True, False, False, True, False, False, False, False,
           False,
                   True, False, False, False, False, False,
           False, False, True, False, False, False, False, False,
                   True, False, False, True, False, True, False, False,
           False,
           False, False, False, False, False, False, False, False,
                   True, False, False, True, False, False, False, False,
           False,
            True, False, False, False, False, False, False, False,
            True, False, True, False, True, False, True, False,
           False, False, False, False, False, True, False, False,
           False, False, False, False, True, False, True,
           False, True, False, False, False, True, False,
                                                               True,
           False, False, False, False, True, False, True,
           False,
                   True, False, False, True, False, True,
                                                         True, False,
            True, False, False, True, False, False, True, False, False,
           False, False, True, False, True, False,
                                                         True, False,
            True, False, False, False, True, False, False,
                                                         True,
           False,
                         True, False, False, False, False,
                         True, False, False, False, False, False,
           False,
                   True,
            True, False,
                         True, False, False, False, False, False,
            True, False, False, True, True, False, False, False,
           False, True, False, False, False, False, False, False,
                                                                True,
            True, False, False, False, False, True, True,
           False, False, False, False, True, False, True, False,
           False, False, False, False, False, False, False, False,
            True, False, False, False, False, False, False, False,
           False, False, False, True, False, True, False, False,
                        True, False, False, True, True, False,
           False,
                   True,
           False, False, True, False, True, False, False, False,
           False, False, False, False, False, False, False, False, False,
           False, False, False, False, False, False, False, False,
           False, False, False, True, False, True, True,
```

```
[19]: p=pd.Series(test_pred)
[20]: print(p.value_counts())
     False
              228
     True
               82
     Name: count, dtype: int64
[21]: df_sub=pd.read_csv("/kaggle/input/
      overi-bilimi-ve-yapay-zeka-okulu-kaggle-yarismasi/sample_submission.csv")
      df_sub
[21]:
              id value_increased
      0
           13436
                               NaN
      1
           49790
                               NaN
      2
           73335
                               NaN
      3
           15949
                               NaN
      4
           26364
                               NaN
      305 54262
                               NaN
      306 88859
                               NaN
      307 79479
                               NaN
      308 38016
                               NaN
      309 61663
                               NaN
      [310 rows x 2 columns]
[22]: p.replace({0:False,1:True},inplace=True)
[23]: df_sub['value_increased'].fillna(p,inplace=True)
      df_sub.set_index('id',inplace=True)
[24]: df sub
[24]:
             value_increased
      id
                       False
      13436
      49790
                       False
      73335
                       False
      15949
                       False
      26364
                        True
      54262
                        True
                       False
      88859
      79479
                        True
```

False, True, True, False])

```
38016 True
61663 False
[310 rows x 1 columns]
[25]: df_sub.to_csv('submission.csv')
```