

```
In [1]: import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
from collections import Counter

%matplotlib inline

import os

# Loop through all files in /kaggle/input
for dirname, _, filenames in os.walk('/kaggle/input'):
    for filename in filenames:
        print(os.path.join(dirname, filename))
```

```
In [2]: import warnings
warnings.filterwarnings('ignore')
```

```
In [3]: fifa= pd.read_csv(r'C:\Users\Twinkele\OneDrive\Desktop\FIFA.csv')
fifa
```

Out[3]:

	Unnamed: 0	ID	Name	Age	Photo
0	0	158023	L. Messi	31	https://cdn.sofifa.org/players/4/19/158023.png
1	1	20801	Cristiano Ronaldo	33	https://cdn.sofifa.org/players/4/19/20801.png
2	2	190871	Neymar Jr	26	https://cdn.sofifa.org/players/4/19/190871.png
3	3	193080	De Gea	27	https://cdn.sofifa.org/players/4/19/193080.png
4	4	192985	K. De Bruyne	27	https://cdn.sofifa.org/players/4/19/192985.png
...
18202	18202	238813	J. Lundstram	19	https://cdn.sofifa.org/players/4/19/238813.png
18203	18203	243165	N. Christoffersson	19	https://cdn.sofifa.org/players/4/19/243165.png
18204	18204	241638	B. Worman	16	https://cdn.sofifa.org/players/4/19/241638.png
18205	18205	246268	D. Walker-Rice	17	https://cdn.sofifa.org/players/4/19/246268.png
18206	18206	246269	G. Nugent	16	https://cdn.sofifa.org/players/4/19/246269.png

18207 rows × 89 columns

In [4]: `fifa.head()`

Out[4]:

	Unnamed: 0	ID	Name	Age	Photo	Nationali
0	0	158023	L. Messi	31	https://cdn.sofifa.org/players/4/19/158023.png	Argentin
1	1	20801	Cristiano Ronaldo	33	https://cdn.sofifa.org/players/4/19/20801.png	Portug
2	2	190871	Neymar Jr	26	https://cdn.sofifa.org/players/4/19/190871.png	Bra:
3	3	193080	De Gea	27	https://cdn.sofifa.org/players/4/19/193080.png	Spa
4	4	192985	K. De Bruyne	27	https://cdn.sofifa.org/players/4/19/192985.png	Belgiu

5 rows × 89 columns



In [5]: `fifa.info()`

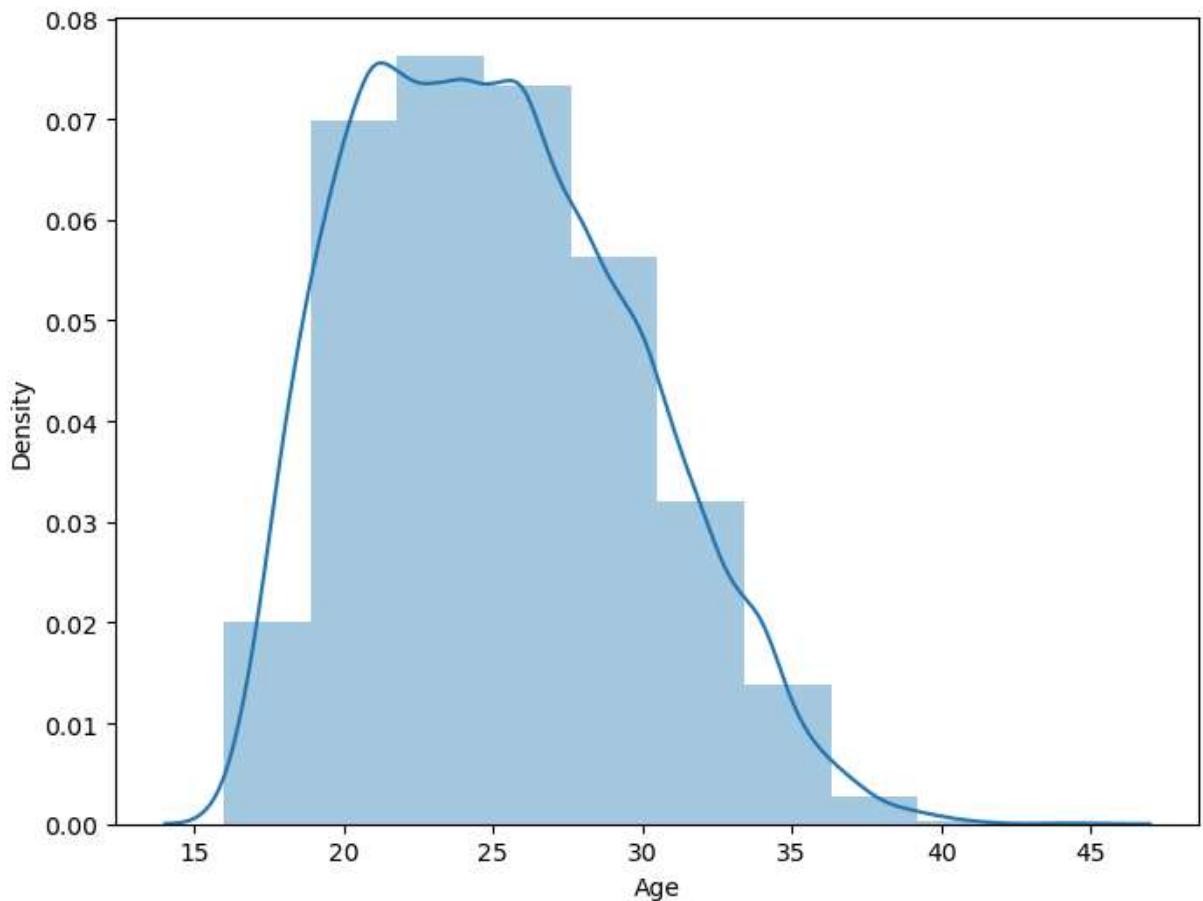
```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 18207 entries, 0 to 18206
Data columns (total 89 columns):
 #   Column           Non-Null Count Dtype
 ---  -----
 0   Unnamed: 0        18207 non-null  int64
 1   ID               18207 non-null  int64
 2   Name              18207 non-null  object
 3   Age               18207 non-null  int64
 4   Photo              18207 non-null  object
 5   Nationality       18207 non-null  object
 6   Flag               18207 non-null  object
 7   Overall            18207 non-null  int64
 8   Potential           18207 non-null  int64
 9   Club               17966 non-null  object
 10  Club Logo          18207 non-null  object
 11  Value              18207 non-null  object
 12  Wage               18207 non-null  object
 13  Special             18207 non-null  int64
 14  Preferred Foot     18159 non-null  object
 15  International Reputation 18159 non-null  float64
 16  Weak Foot          18159 non-null  float64
 17  Skill Moves         18159 non-null  float64
 18  Work Rate            18159 non-null  object
 19  Body Type            18159 non-null  object
 20  Real Face            18159 non-null  object
 21  Position              18147 non-null  object
 22  Jersey Number        18147 non-null  float64
 23  Joined              16654 non-null  object
 24  Loaned From          1264 non-null  object
 25  Contract Valid Until 17918 non-null  object
 26  Height              18159 non-null  object
 27  Weight              18159 non-null  object
 28  LS                  16122 non-null  object
 29  ST                  16122 non-null  object
 30  RS                  16122 non-null  object
 31  LW                  16122 non-null  object
 32  LF                  16122 non-null  object
 33  CF                  16122 non-null  object
 34  RF                  16122 non-null  object
 35  RW                  16122 non-null  object
 36  LAM                 16122 non-null  object
 37  CAM                 16122 non-null  object
 38  RAM                 16122 non-null  object
 39  LM                  16122 non-null  object
 40  LCM                 16122 non-null  object
 41  CM                  16122 non-null  object
 42  RCM                 16122 non-null  object
 43  RM                  16122 non-null  object
 44  LWB                 16122 non-null  object
 45  LDM                 16122 non-null  object
 46  CDM                 16122 non-null  object
 47  RDM                 16122 non-null  object
 48  RWB                 16122 non-null  object
 49  LB                  16122 non-null  object
 50  LCB                 16122 non-null  object
```

```
51 CB           16122 non-null object
52 RCB          16122 non-null object
53 RB           16122 non-null object
54 Crossing     18159 non-null float64
55 Finishing    18159 non-null float64
56 HeadingAccuracy 18159 non-null float64
57 ShortPassing 18159 non-null float64
58 Volleys      18159 non-null float64
59 Dribbling    18159 non-null float64
60 Curve         18159 non-null float64
61 FKAccuracy   18159 non-null float64
62 LongPassing   18159 non-null float64
63 BallControl   18159 non-null float64
64 Acceleration 18159 non-null float64
65 SprintSpeed   18159 non-null float64
66 Agility        18159 non-null float64
67 Reactions      18159 non-null float64
68 Balance        18159 non-null float64
69 ShotPower      18159 non-null float64
70 Jumping        18159 non-null float64
71 Stamina        18159 non-null float64
72 Strength        18159 non-null float64
73 LongShots      18159 non-null float64
74 Aggression     18159 non-null float64
75 Interceptions 18159 non-null float64
76 Positioning    18159 non-null float64
77 Vision          18159 non-null float64
78 Penalties       18159 non-null float64
79 Composure       18159 non-null float64
80 Marking         18159 non-null float64
81 StandingTackle 18159 non-null float64
82 SlidingTackle   18159 non-null float64
83 GKDiving        18159 non-null float64
84 GKHandling      18159 non-null float64
85 GKKicking        18159 non-null float64
86 GKPositioning   18159 non-null float64
87 GKReflexes      18159 non-null float64
88 Release Clause 16643 non-null object
dtypes: float64(38), int64(6), object(45)
memory usage: 12.4+ MB
```

```
In [6]: fifa['Body Type'].value_counts()
```

```
Out[6]: Body Type
Normal            10595
Lean              6417
Stocky             1140
Messi               1
C. Ronaldo         1
Neymar              1
Courtois             1
PLAYER_BODY_TYPE_25 1
Shaqiri              1
Akinfenwa            1
Name: count, dtype: int64
```

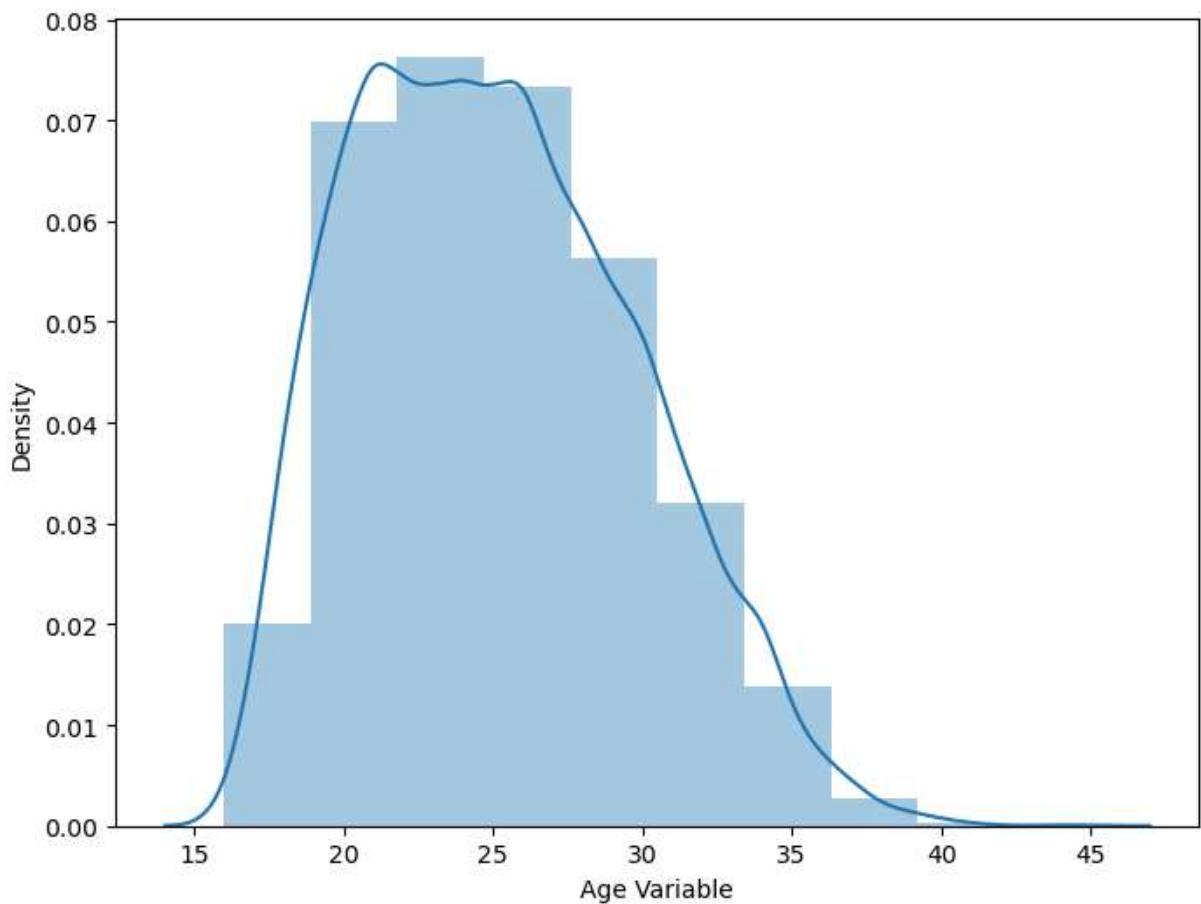
```
In [7]: f, ax = plt.subplots(figsize=(8,6))
x = fifa['Age']
ax = sns.distplot(x, bins=10)
plt.show()
```



```
In [8]: f, ax = plt.subplots(figsize=(8,6))

x = fifa['Age']
x = pd.Series(x, name="Age Variable")

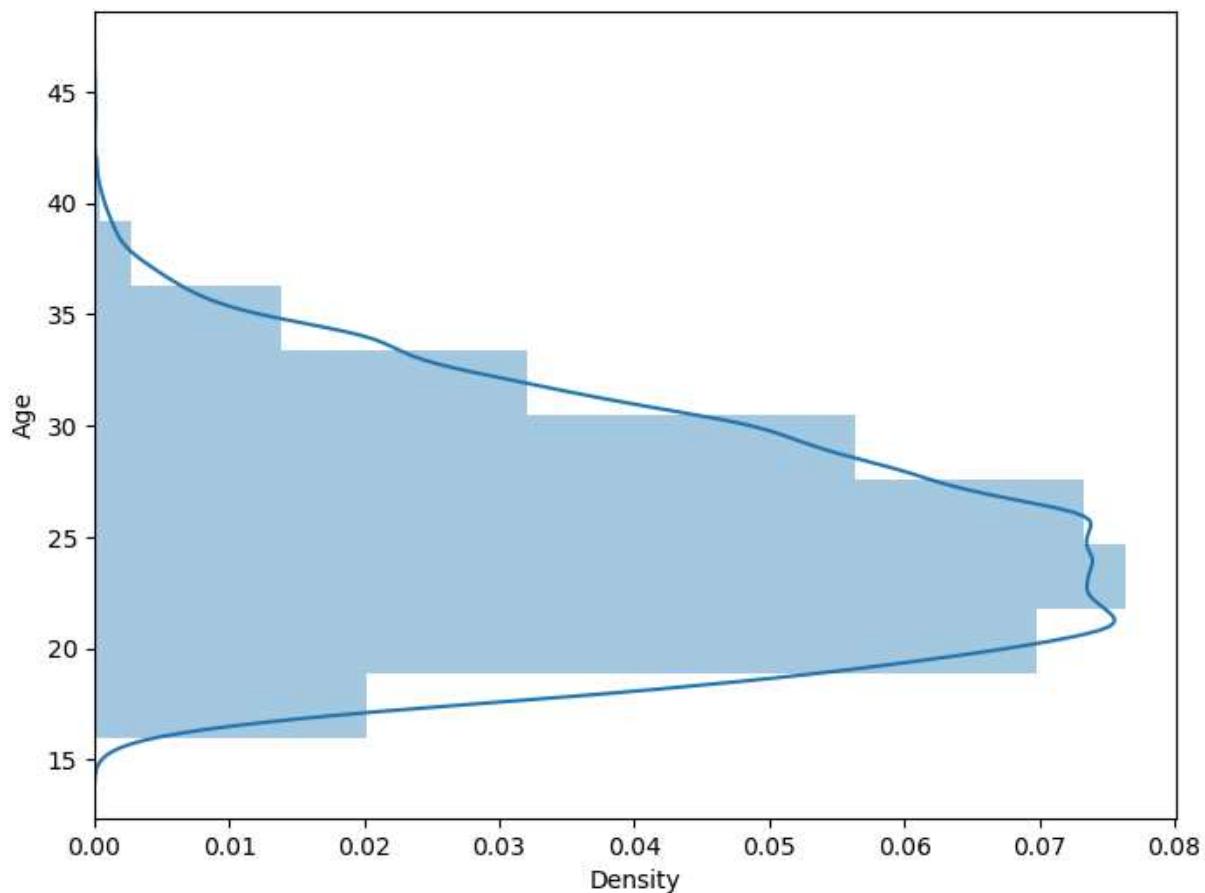
ax = sns.distplot(x, bins=10, kde=True)
plt.show()
```



```
In [9]: f, ax = plt.subplots(figsize=(8,6))

x = fifa['Age']

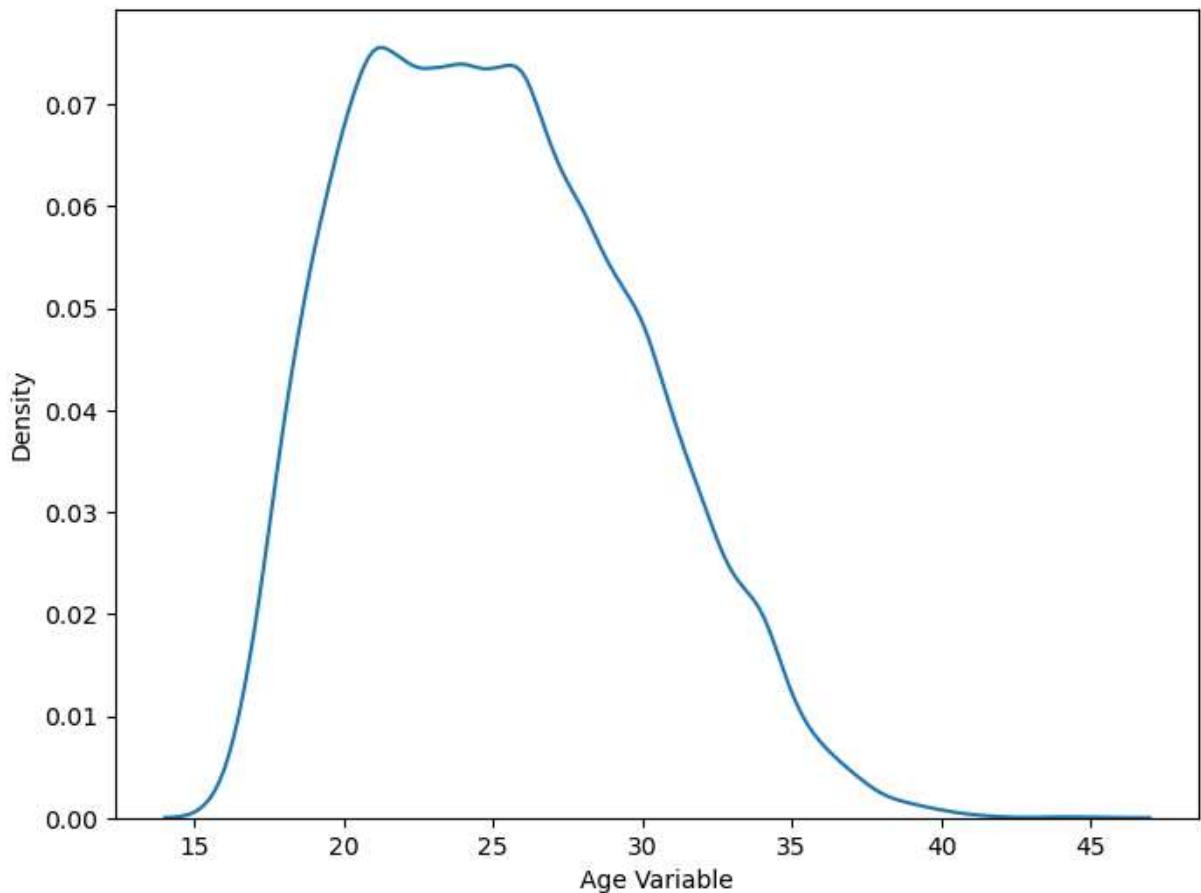
ax = sns.distplot(x, bins=10, vertical=True)
plt.show()
```



```
In [10]: f, ax = plt.subplots(figsize=(8,6))

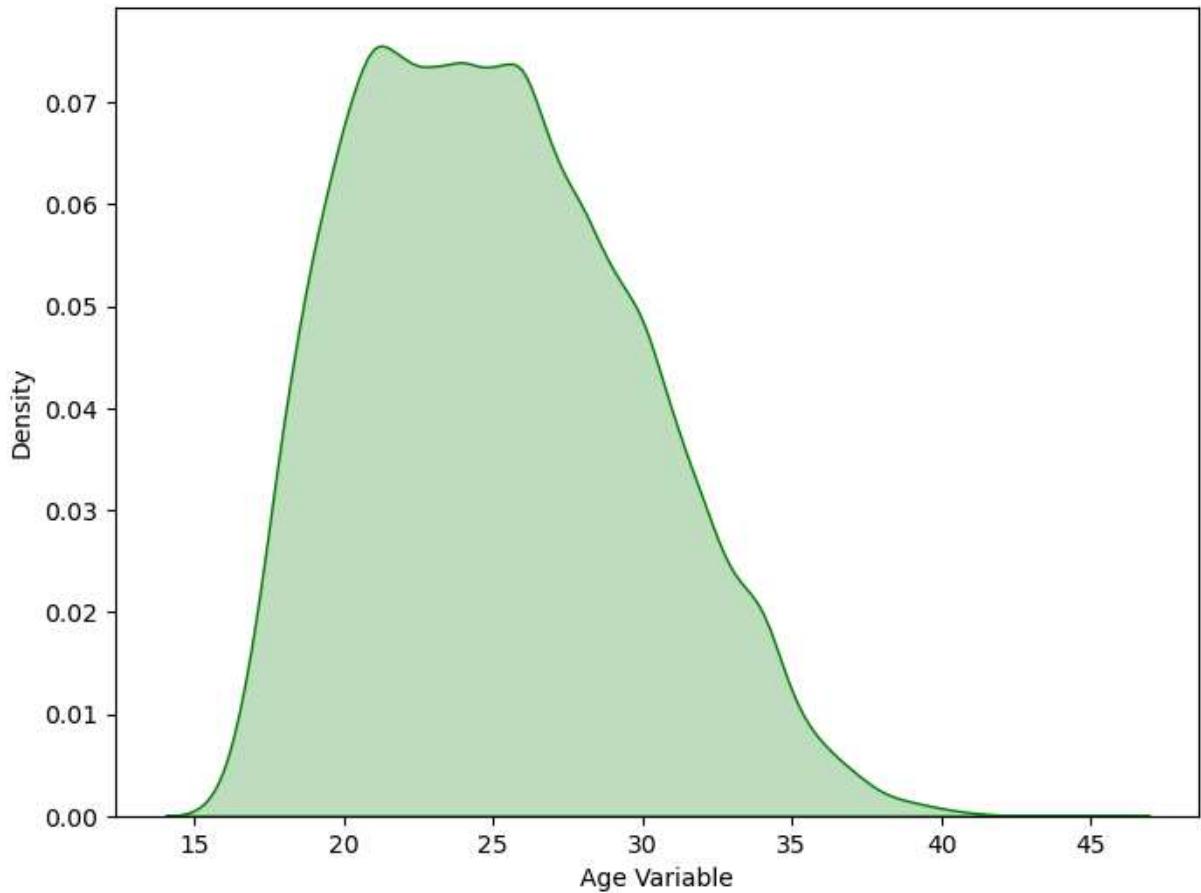
x = fifa['Age']
x = pd.Series(x, name="Age Variable")

ax = sns.kdeplot(x)
plt.show()
```

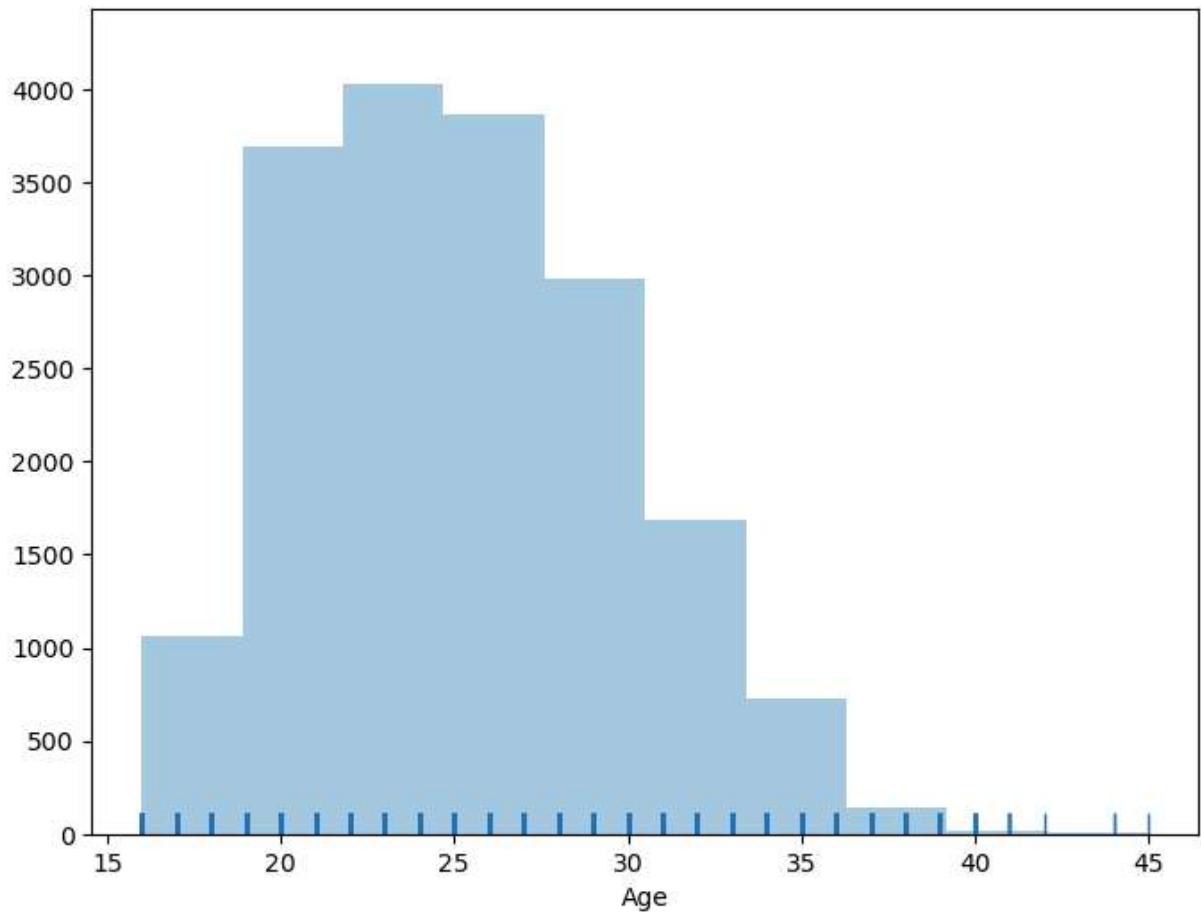


```
In [11]: f, ax = plt.subplots(figsize=(8,6))

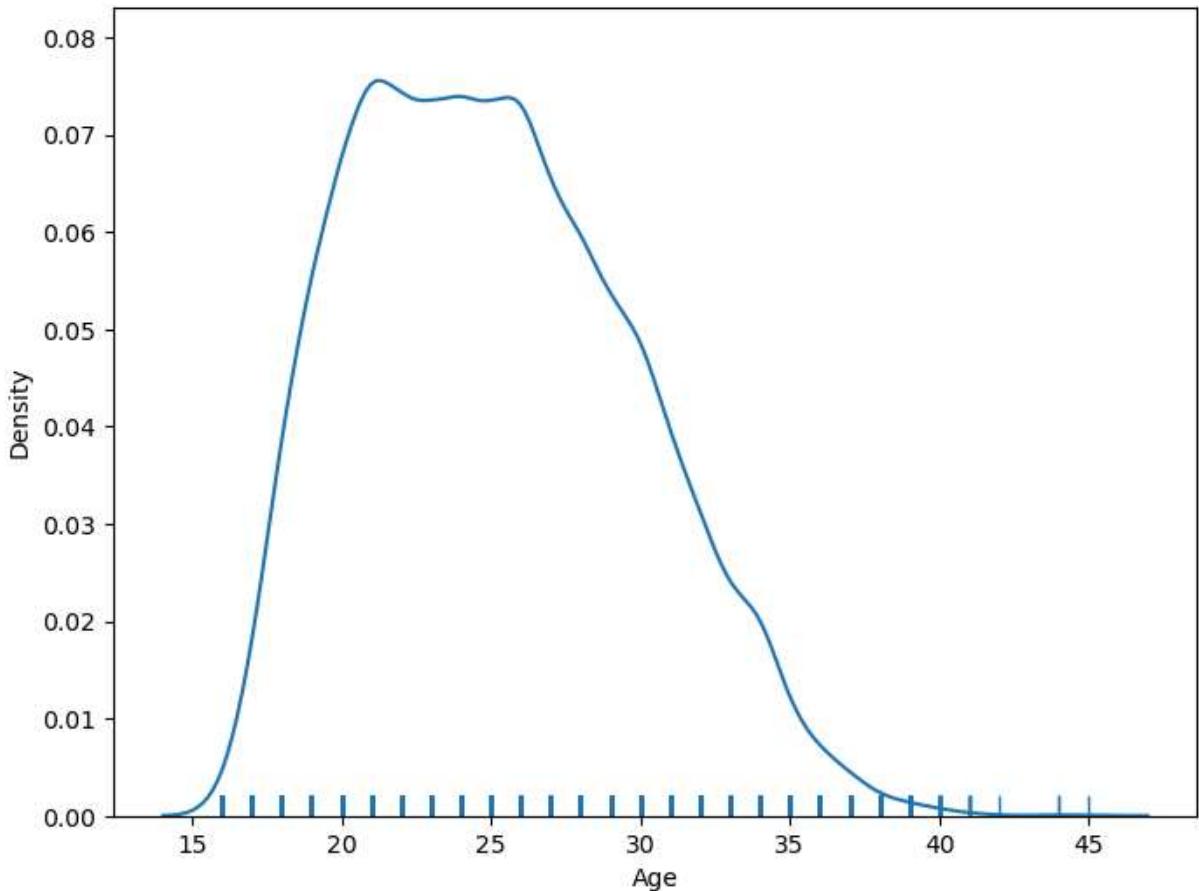
x = fifa['Age']
x = pd.Series(x, name="Age Variable")
ax = sns.kdeplot(x, shade=True, color='g')
plt.show()
```



```
In [12]: f, ax = plt.subplots(figsize=(8,6))
x = fifa['Age']
ax = sns.distplot(x, kde=False, rug=True, bins=10)
plt.show()
```



```
In [13]: f, ax = plt.subplots(figsize=(8,6))
x =fifa['Age']
ax = sns.distplot(x, hist= False, rug= True, bins=10)
plt.show()
```



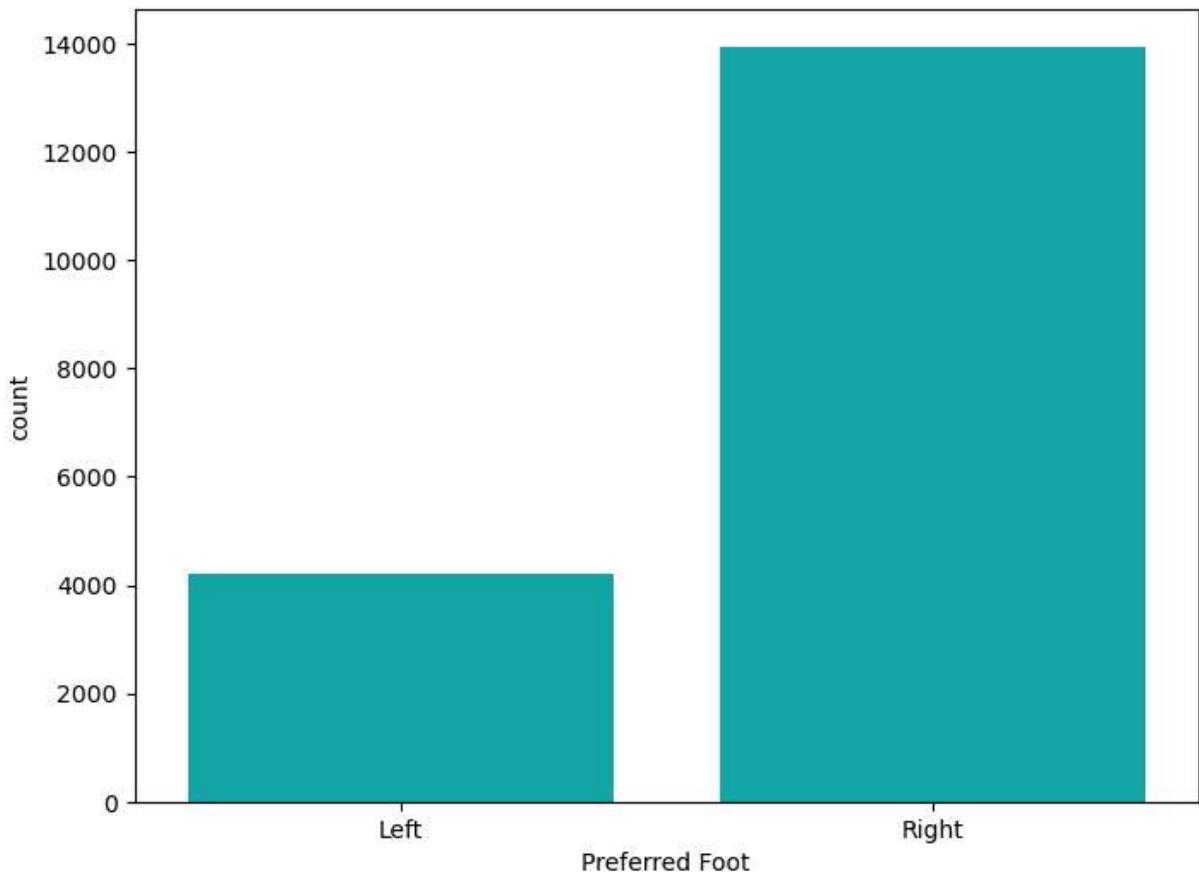
```
In [14]: fifa['Preferred Foot'].nunique()
```

```
Out[14]: 2
```

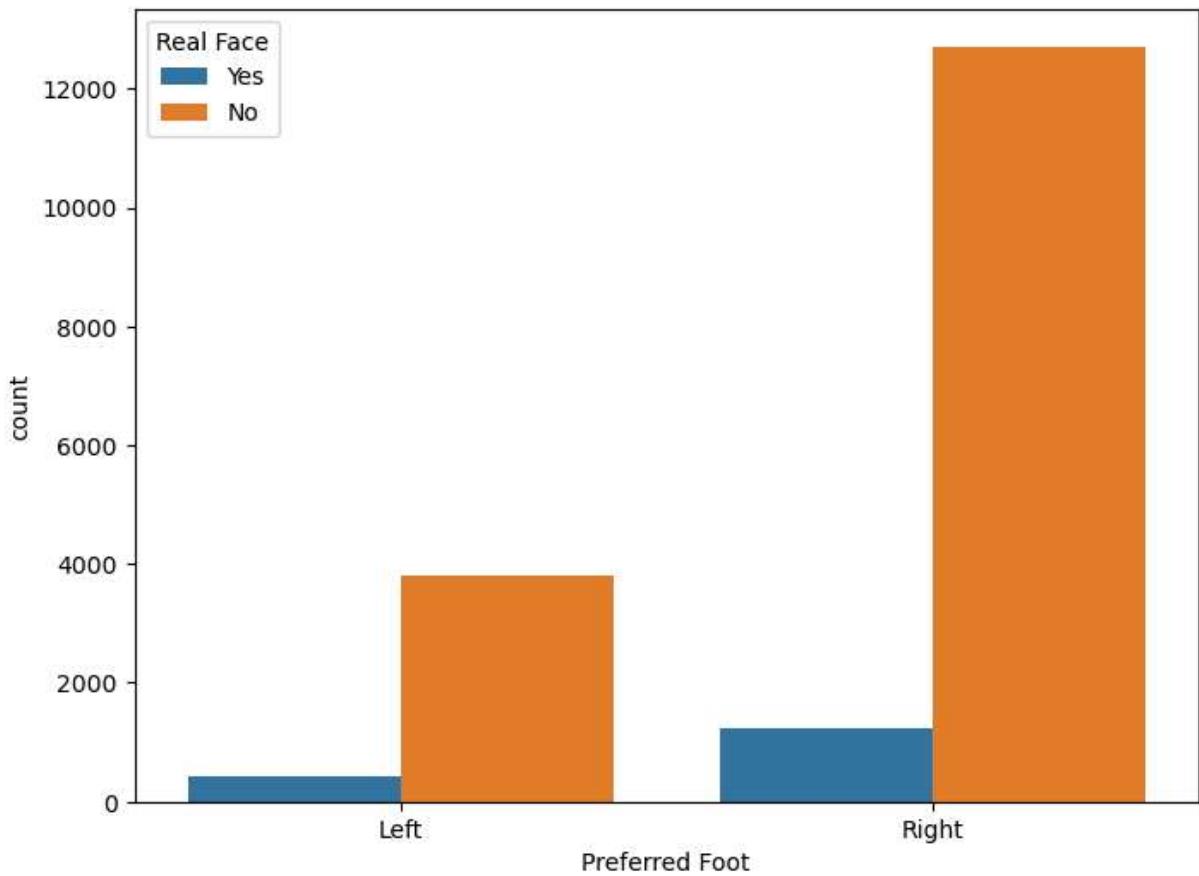
```
In [15]: fifa['Preferred Foot'].value_counts()
```

```
Out[15]: Preferred Foot
Right    13948
Left     4211
Name: count, dtype: int64
```

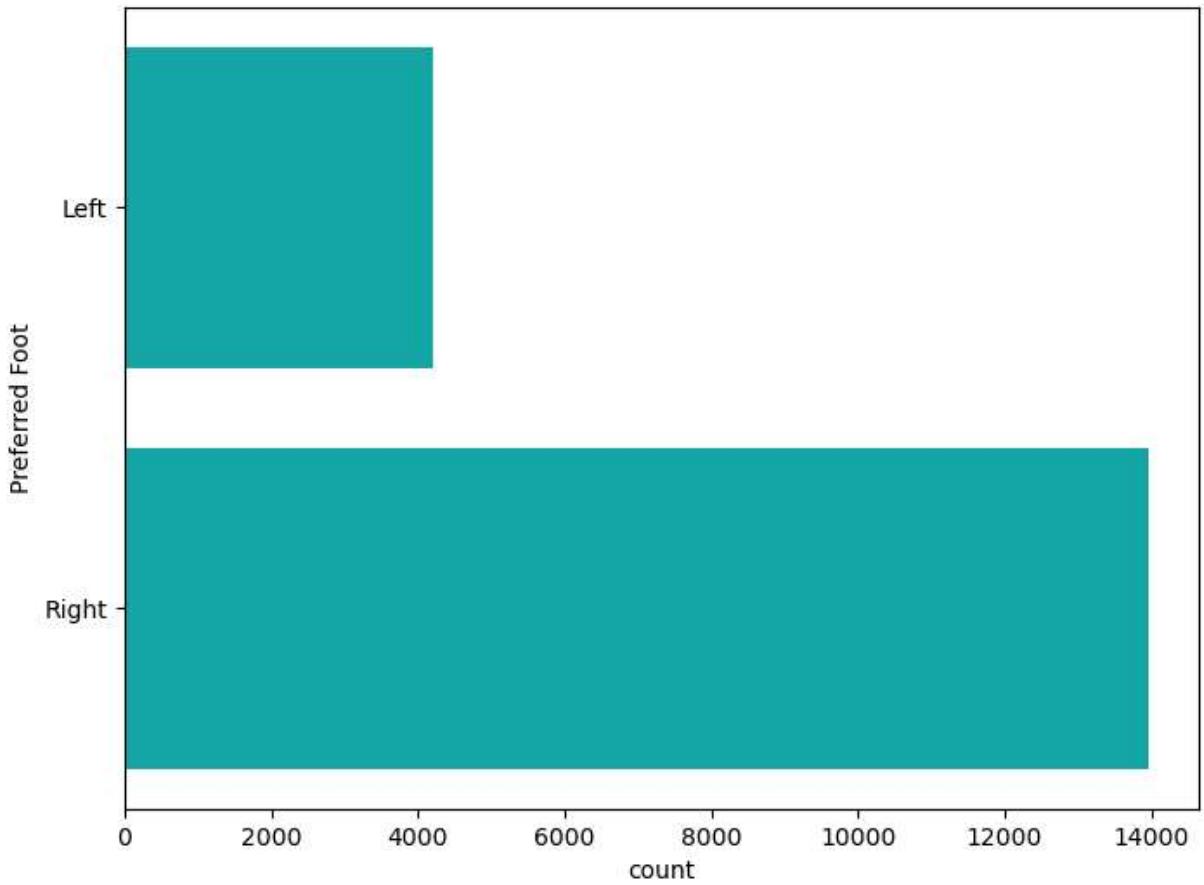
```
In [16]: f, ax = plt.subplots(figsize=(8, 6))
sns.countplot(x="Preferred Foot", data=fifa, color="c")
plt.show()
```



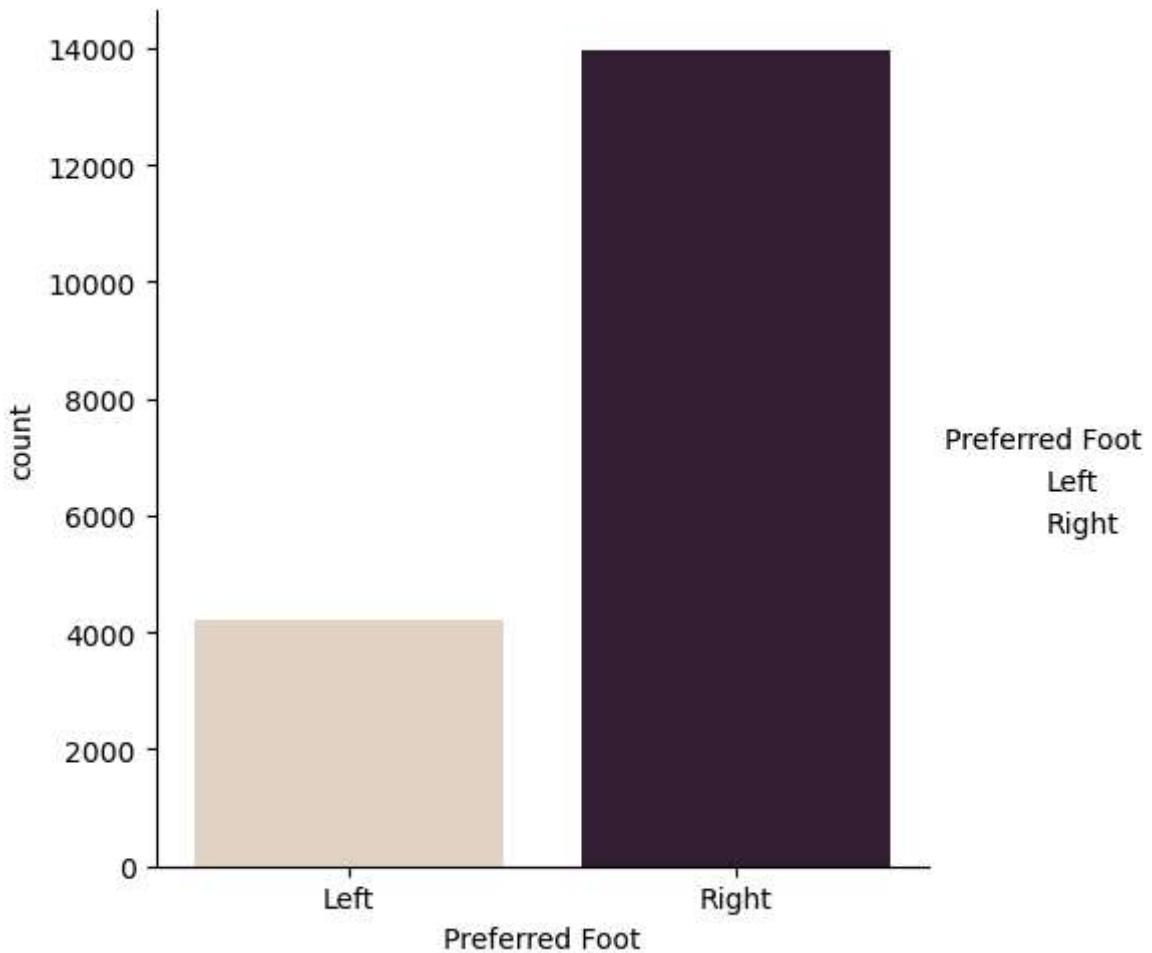
```
In [17]: f, ax = plt.subplots(figsize=(8,6))
sns.countplot(x="Preferred Foot", hue="Real Face", data=fifa)
plt.show()
```



```
In [18]: f, ax = plt.subplots(figsize=(8,6))
sns.countplot(y="Preferred Foot", color="c", data=fifa)
plt.show()
```



```
In [19]: g = sns.catplot(x="Preferred Foot", kind="count", palette="ch:.25", data=fifa)  
plt.show()
```



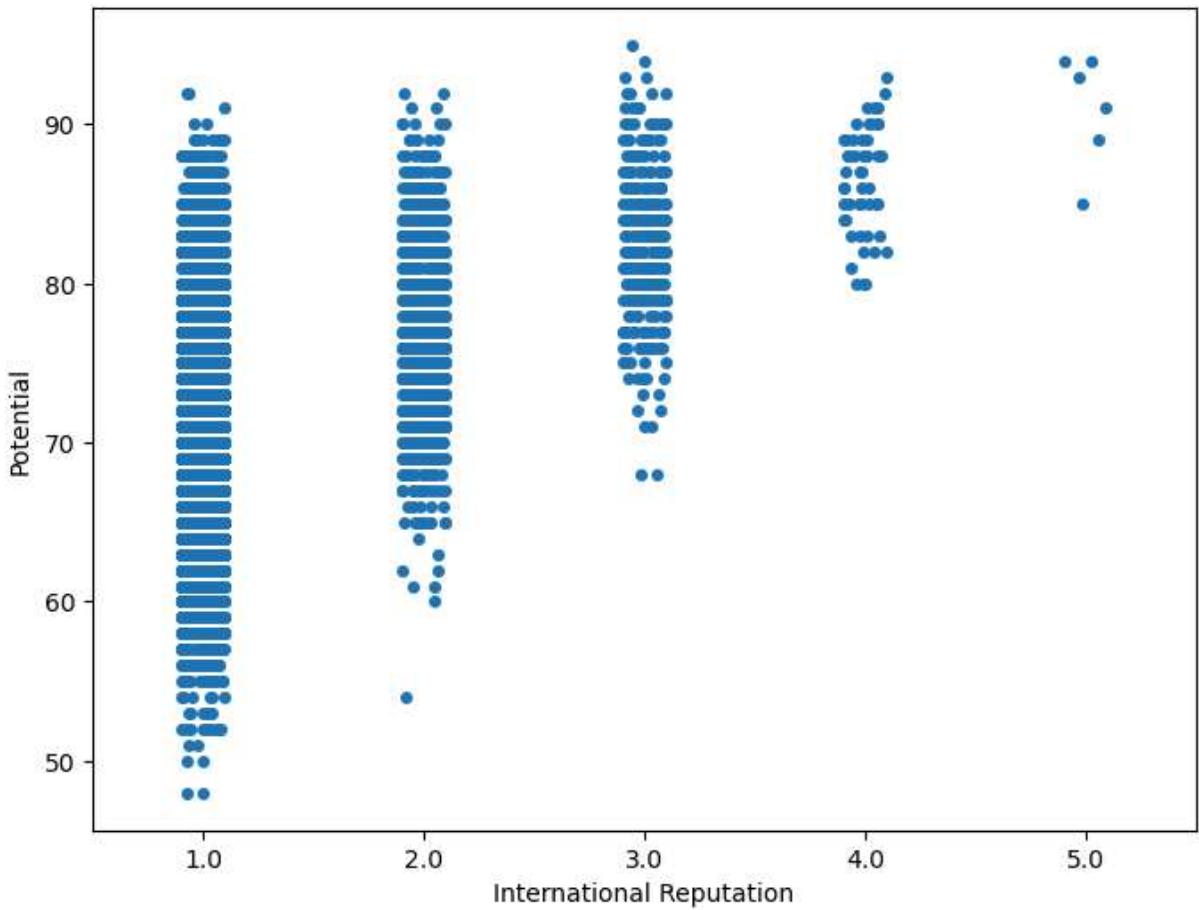
```
In [20]: fifa['International Reputation'].nunique()
```

```
Out[20]: 5
```

```
In [21]: fifa['International Reputation'].value_counts()
```

```
Out[21]: International Reputation
1.0    16532
2.0    1261
3.0     309
4.0      51
5.0      6
Name: count, dtype: int64
```

```
In [22]: f, ax = plt.subplots(figsize=(8,6))
sns.stripplot(x="International Reputation", y="Potential", data=fifa)
plt.show()
```

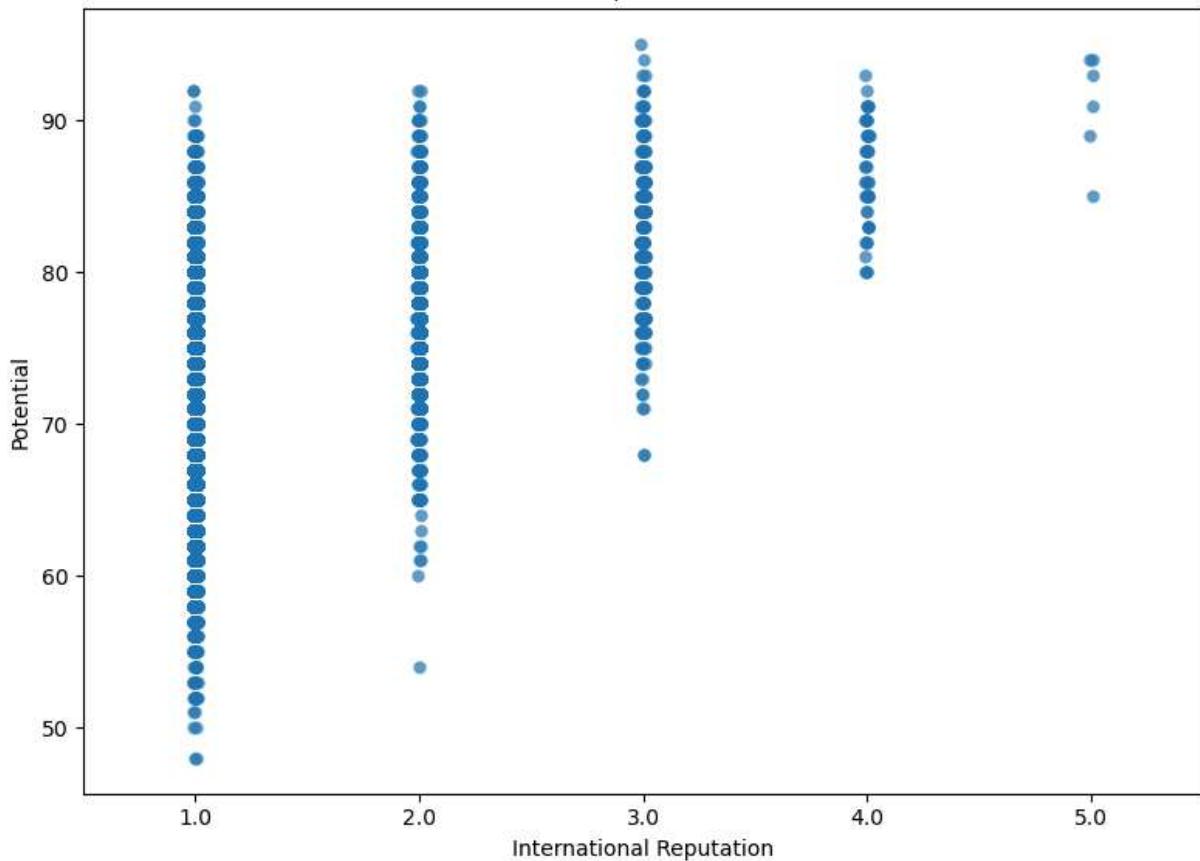


```
In [23]: import matplotlib.pyplot as plt
import seaborn as sns

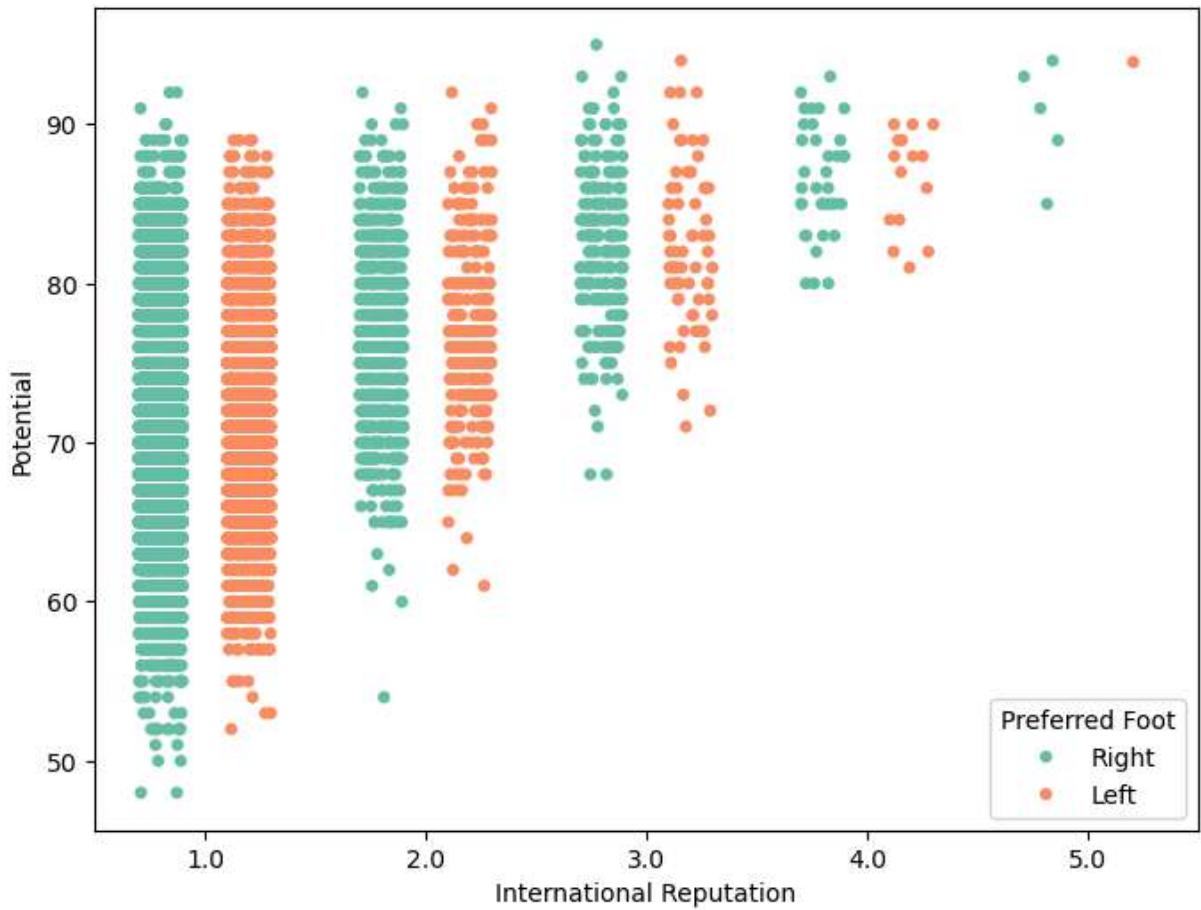
f, ax = plt.subplots(figsize=(8,6))
sns.stripplot(x="International Reputation",
               y="Potential",
               data=fifa,
               jitter=0.01,
               alpha=0.7,
               size=6,
               ax=ax)

ax.set_title("International Reputation vs Potential")
plt.tight_layout()
plt.show()
```

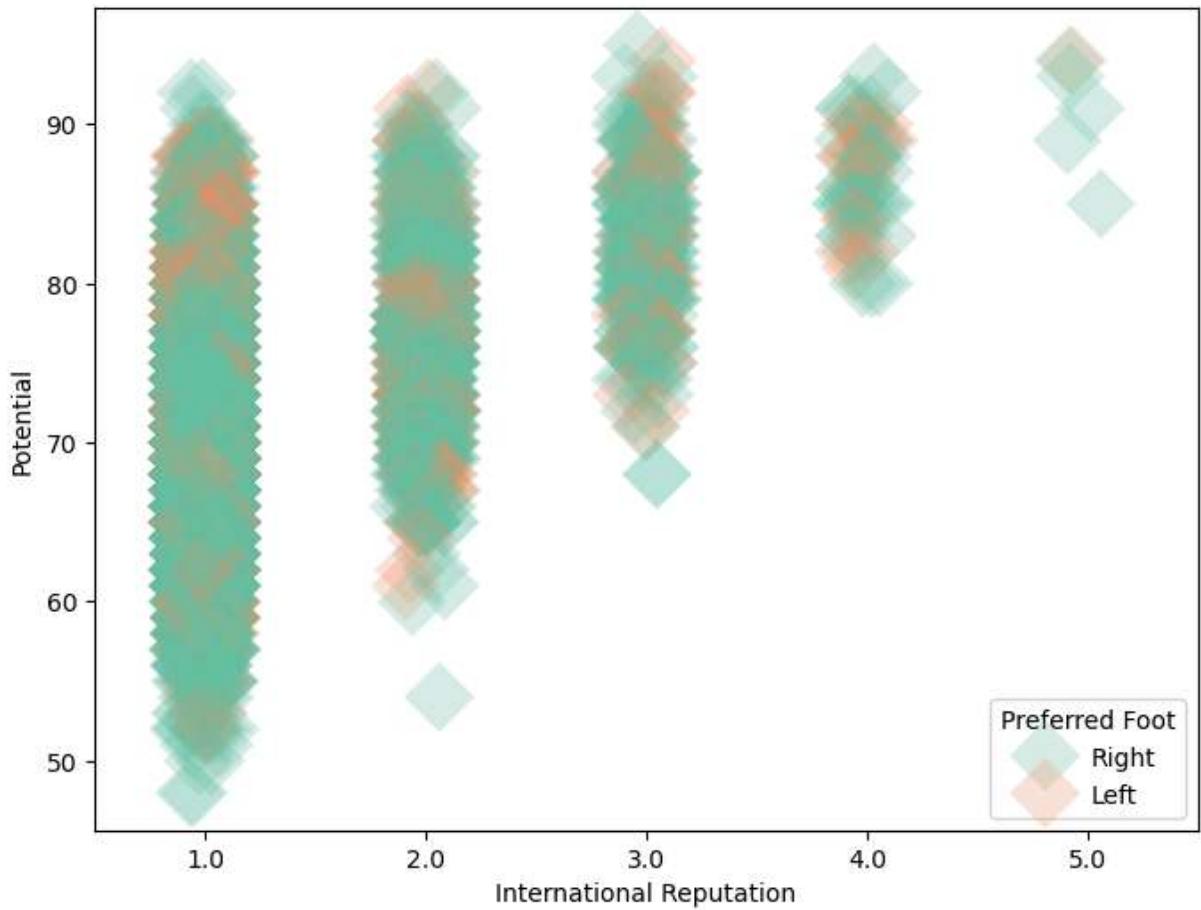
International Reputation vs Potential



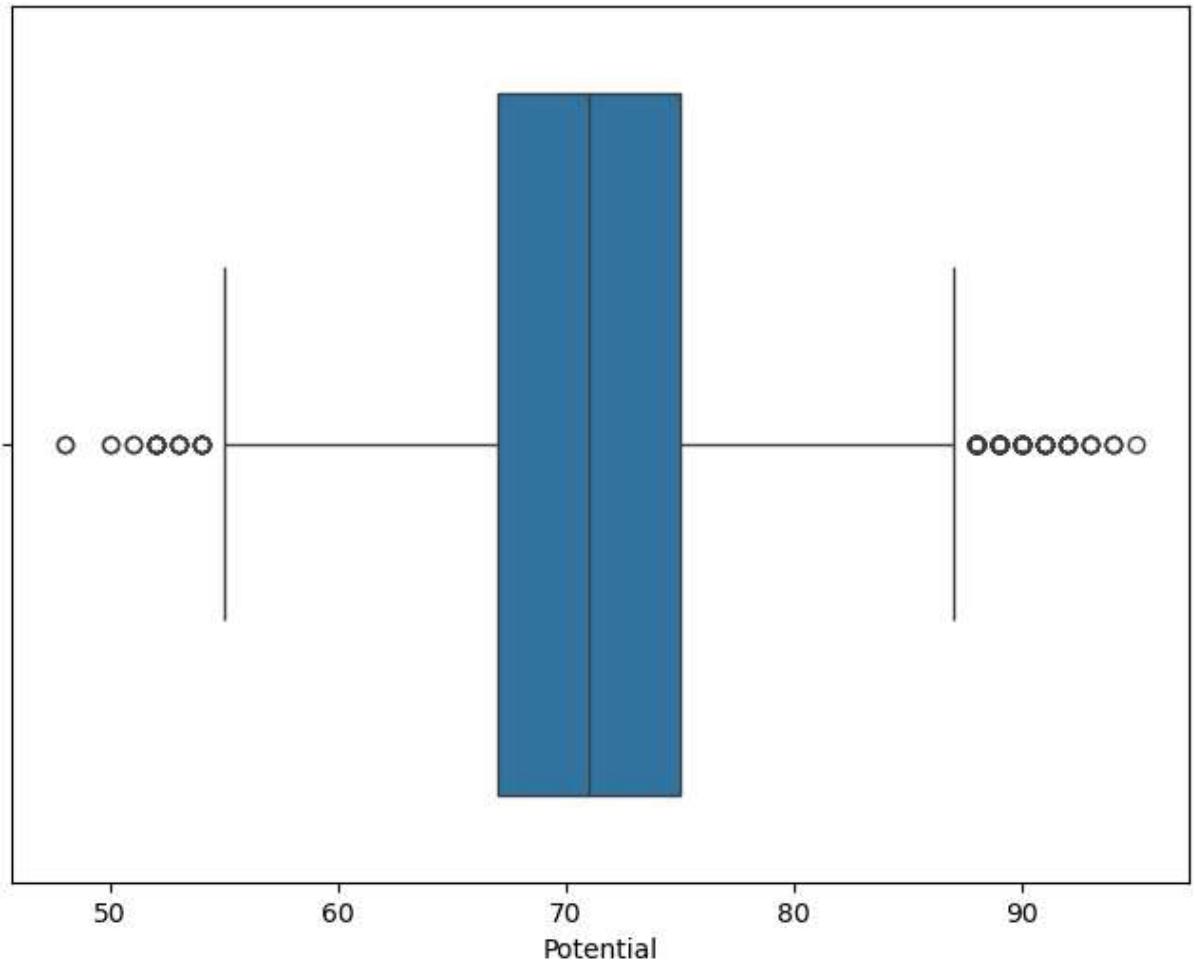
```
In [24]: f, ax = plt.subplots(figsize=(8, 6))
sns.stripplot(x="International Reputation", y="Potential", hue="Preferred Foot",
               data=fifa, jitter=0.2, palette="Set2", dodge=True)
plt.show()
```



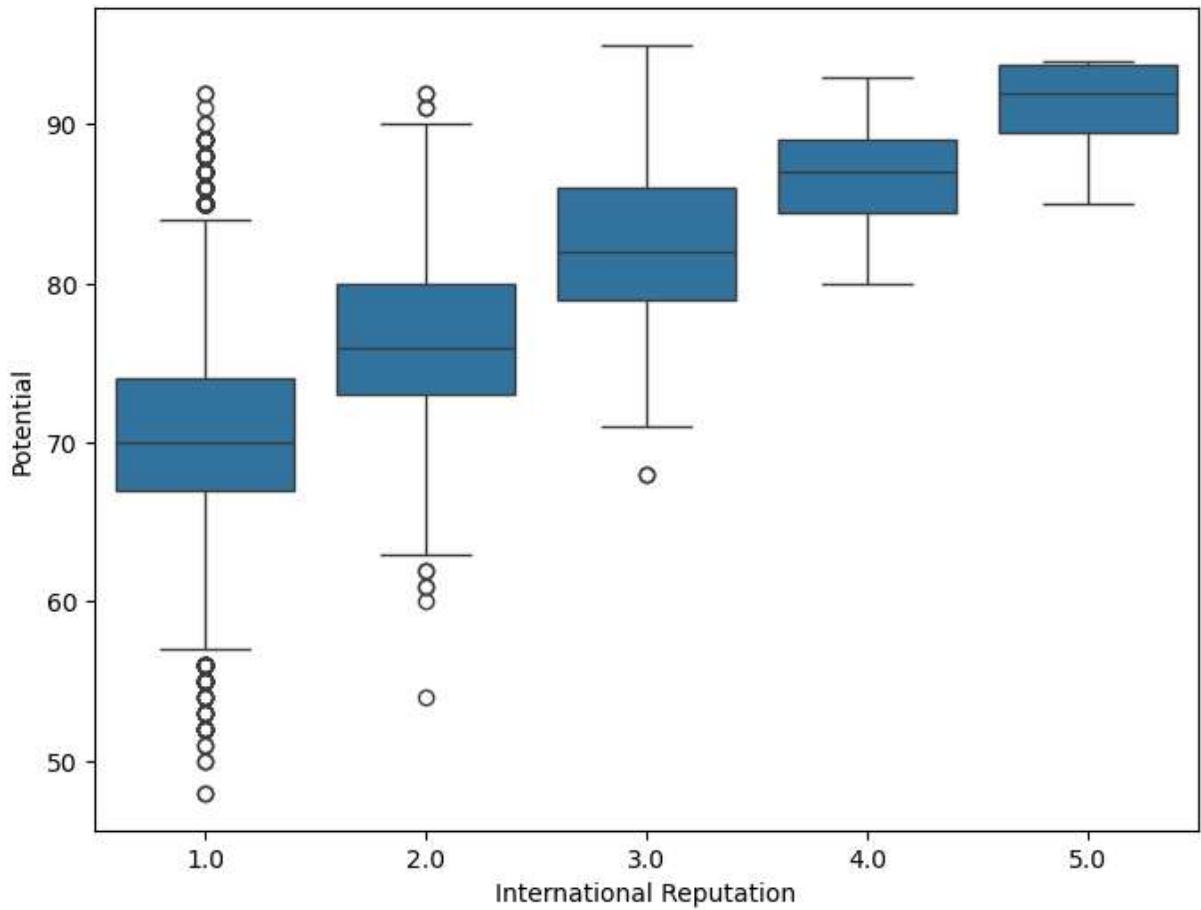
```
In [25]: f, ax = plt.subplots(figsize=(8, 6))
sns.stripplot(x="International Reputation", y="Potential", hue="Preferred Foot",
              data=fifa, palette="Set2", size=20, marker="D",
              edgecolor="gray", alpha=.25)
plt.show()
```



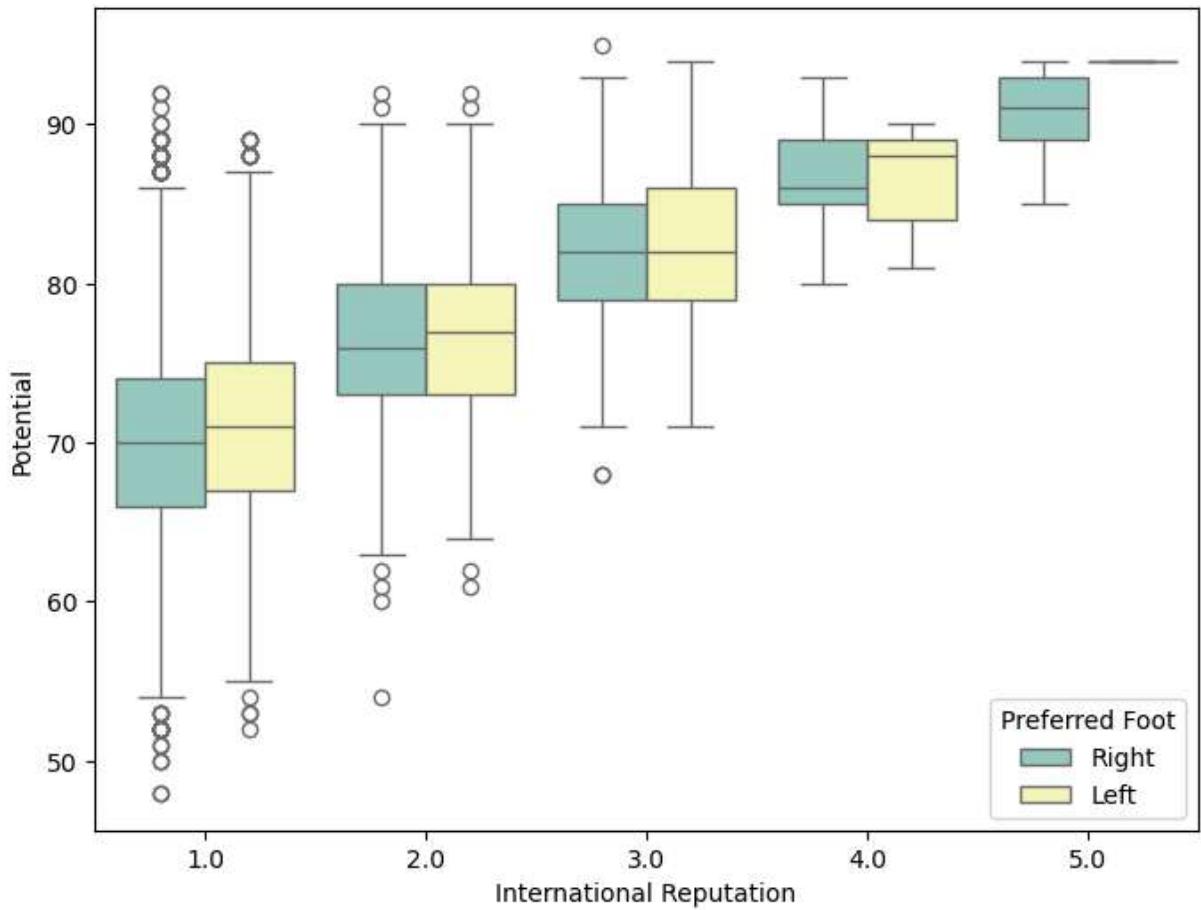
```
In [26]: f, ax = plt.subplots(figsize=(8, 6))
sns.boxplot(x=fifa["Potential"])
plt.show()
```



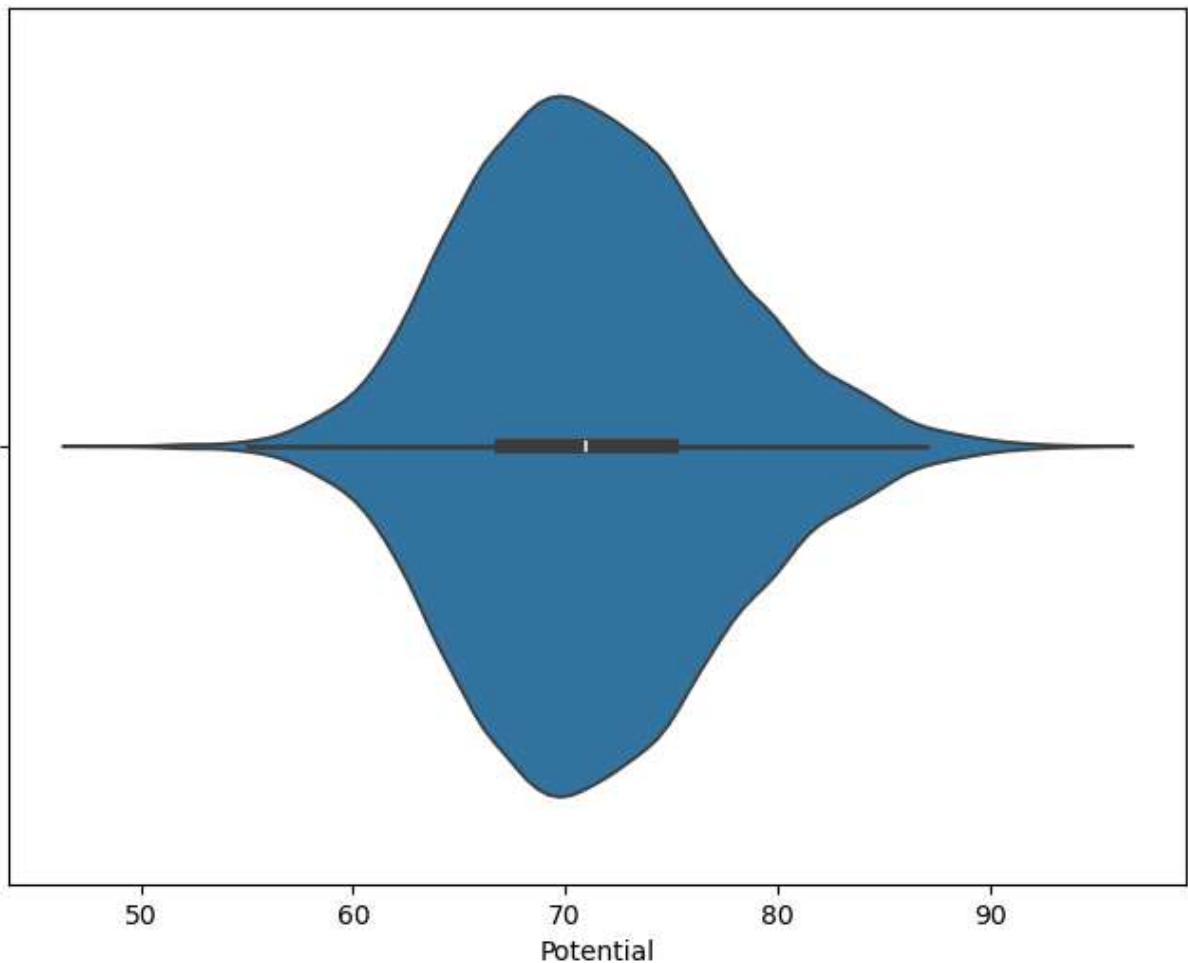
```
In [27]: f, ax = plt.subplots(figsize=(8, 6))
sns.boxplot(x="International Reputation", y="Potential", data=fifa)
plt.show()
```



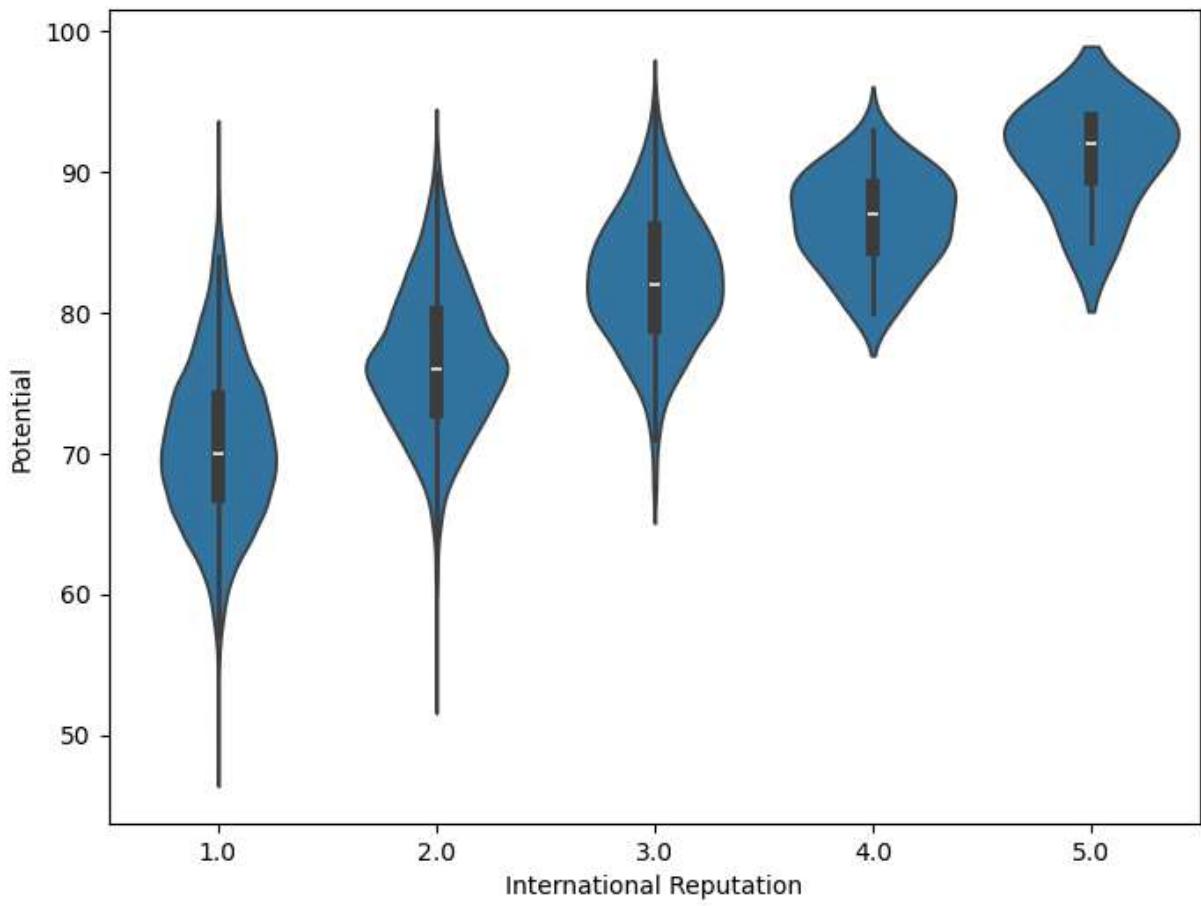
```
In [28]: f, ax = plt.subplots(figsize=(8, 6))
sns.boxplot(x="International Reputation", y="Potential", hue="Preferred Foot", data=players)
plt.show()
```



```
In [29]: f, ax = plt.subplots(figsize=(8, 6))
sns.violinplot(x=fifa["Potential"])
plt.show()
```



```
In [30]: f, ax = plt.subplots(figsize=(8,6))
sns.violinplot(x="International Reputation", y="Potential", data=fifa)
plt.show()
```

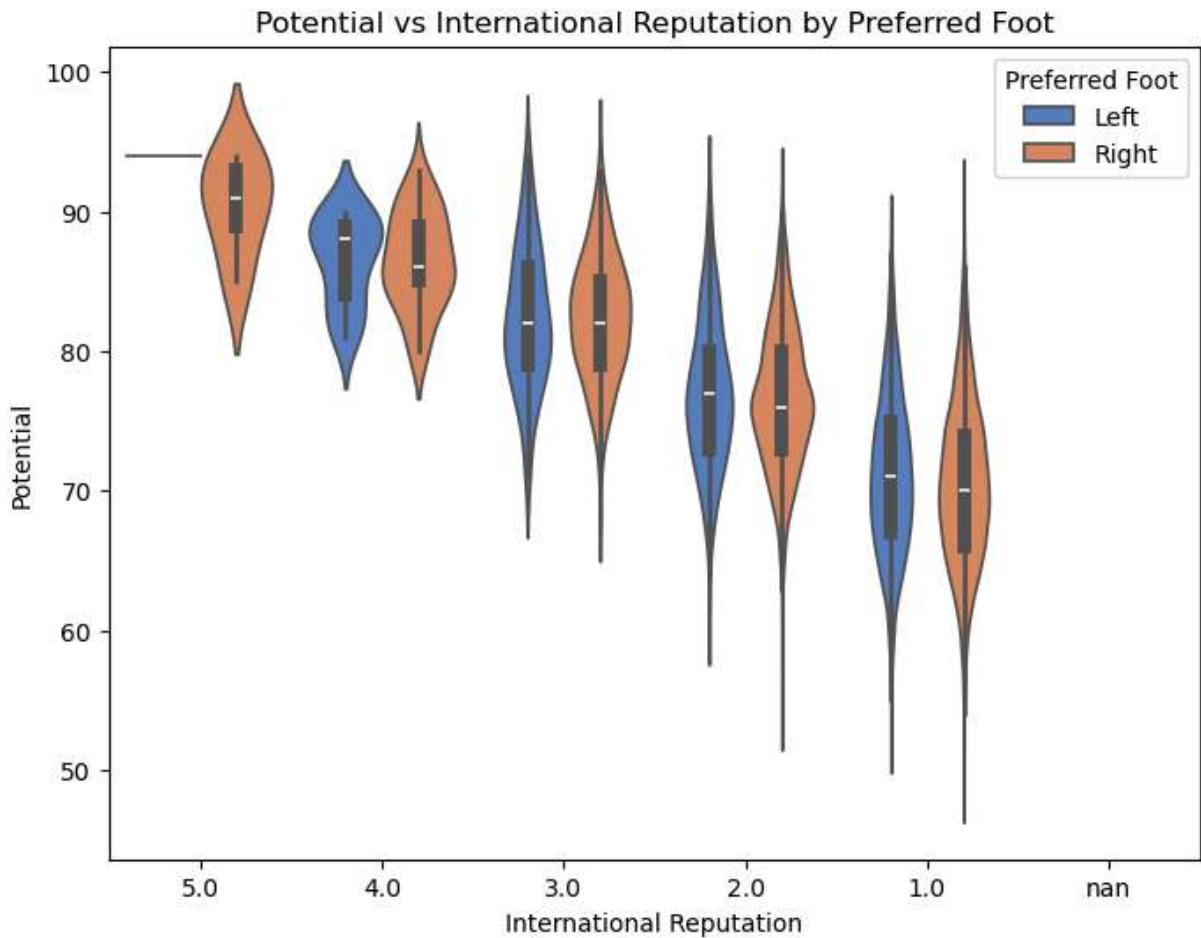


```
In [31]: fifa["International Reputation"] = fifa["International Reputation"].astype(str)

f, ax = plt.subplots(figsize=(8, 6))

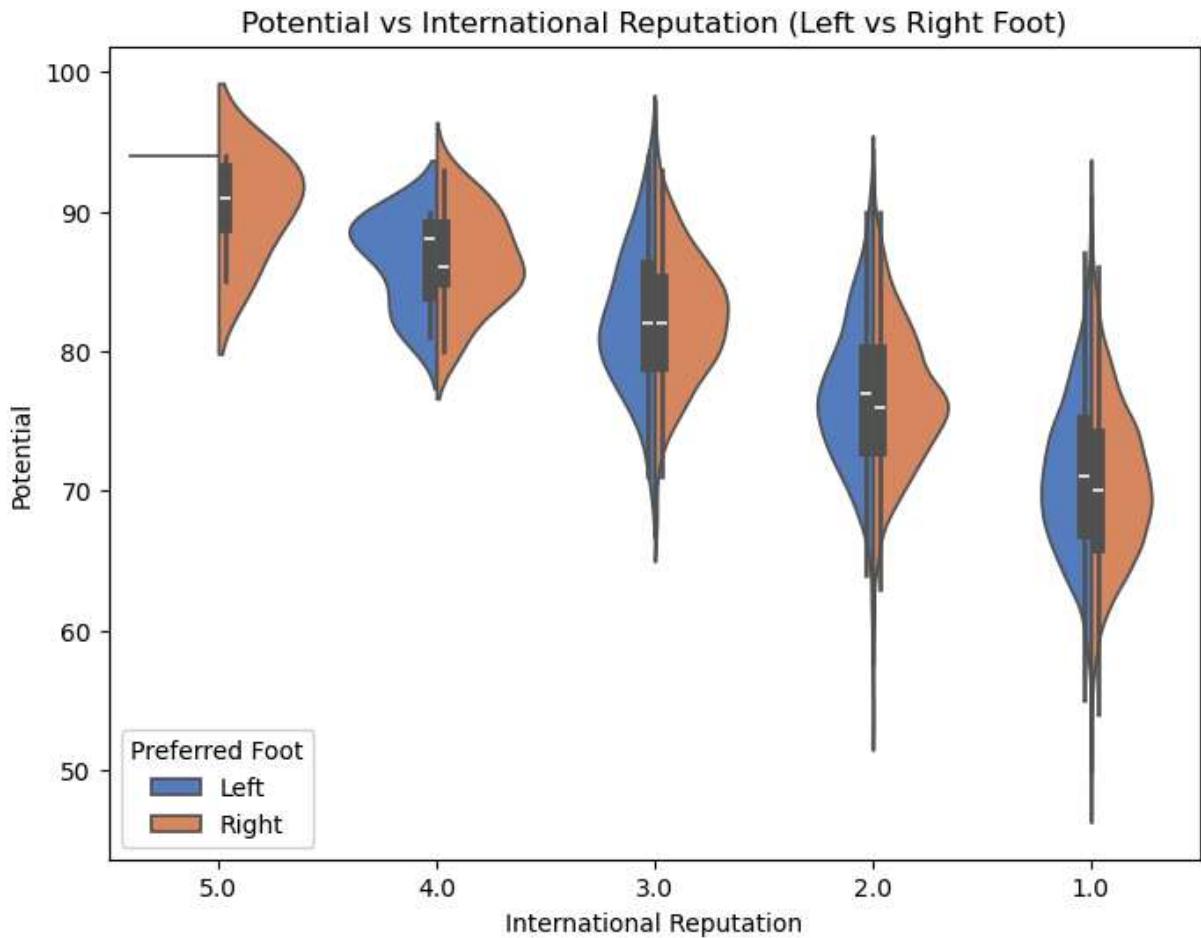
sns.violinplot(
    x="International Reputation",
    y="Potential",
    hue="Preferred Foot",
    data=fifa,
    palette="muted"
)

plt.title("Potential vs International Reputation by Preferred Foot")
plt.show()
```

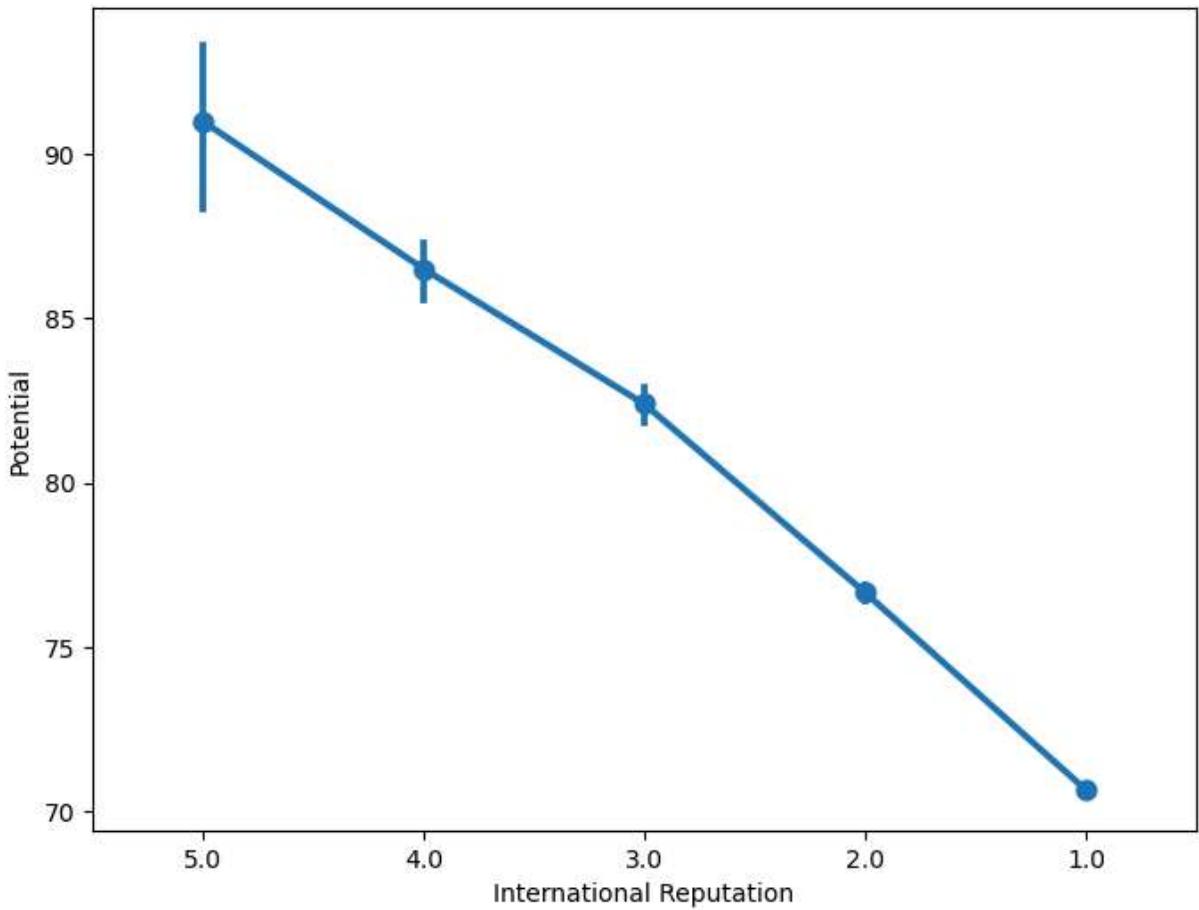


```
In [32]: fifa["International Reputation"] = fifa["International Reputation"].astype(str)
fifa = fifa[fifa["Preferred Foot"].isin(["Right", "Left"])]
f, ax = plt.subplots(figsize=(8, 6))
sns.violinplot(
    x="International Reputation",
    y="Potential",
    hue="Preferred Foot",
    data=fifa,
    palette="muted",
    split=True)

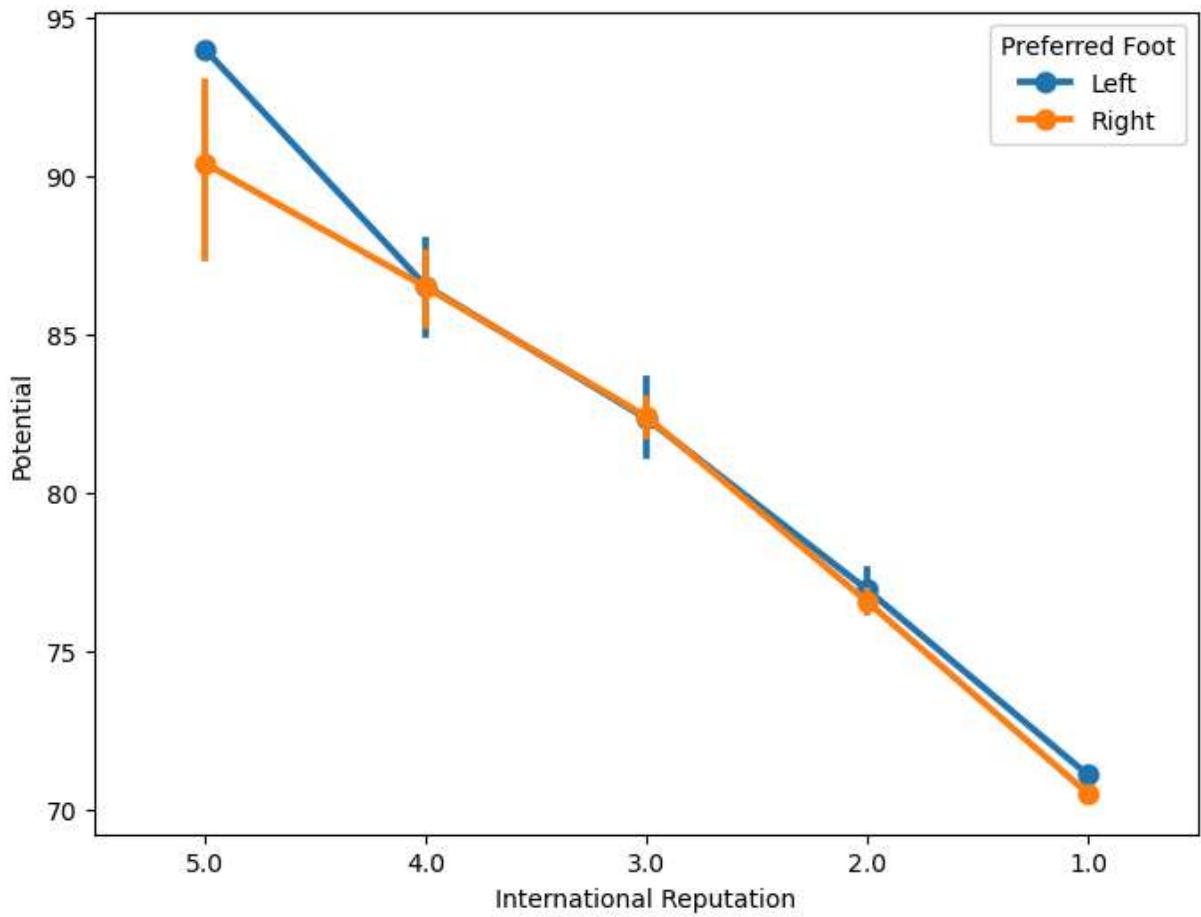
plt.title("Potential vs International Reputation (Left vs Right Foot)")
plt.show()
```



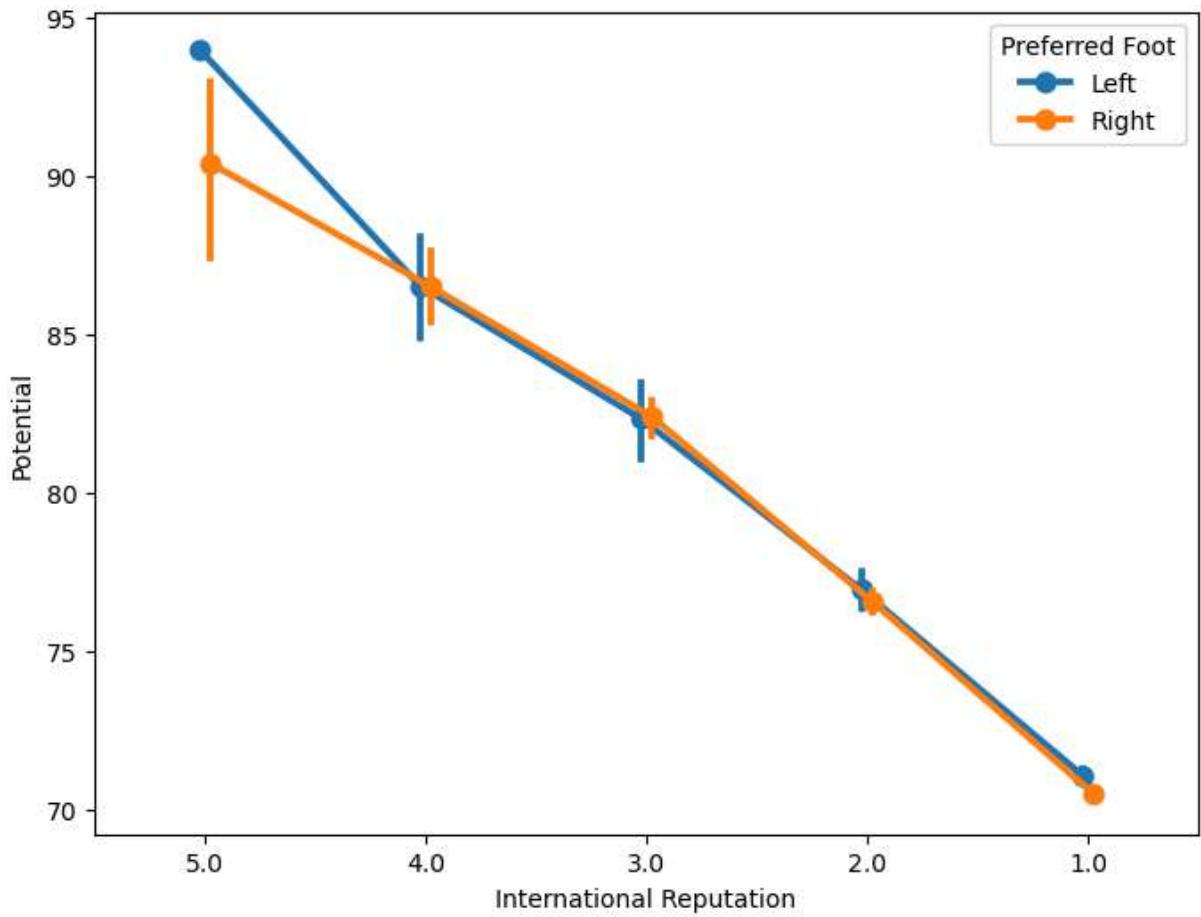
```
In [33]: f, ax = plt.subplots(figsize=(8, 6))
sns.pointplot(x="International Reputation",y="Potential",data=fifa)
plt.show()
```



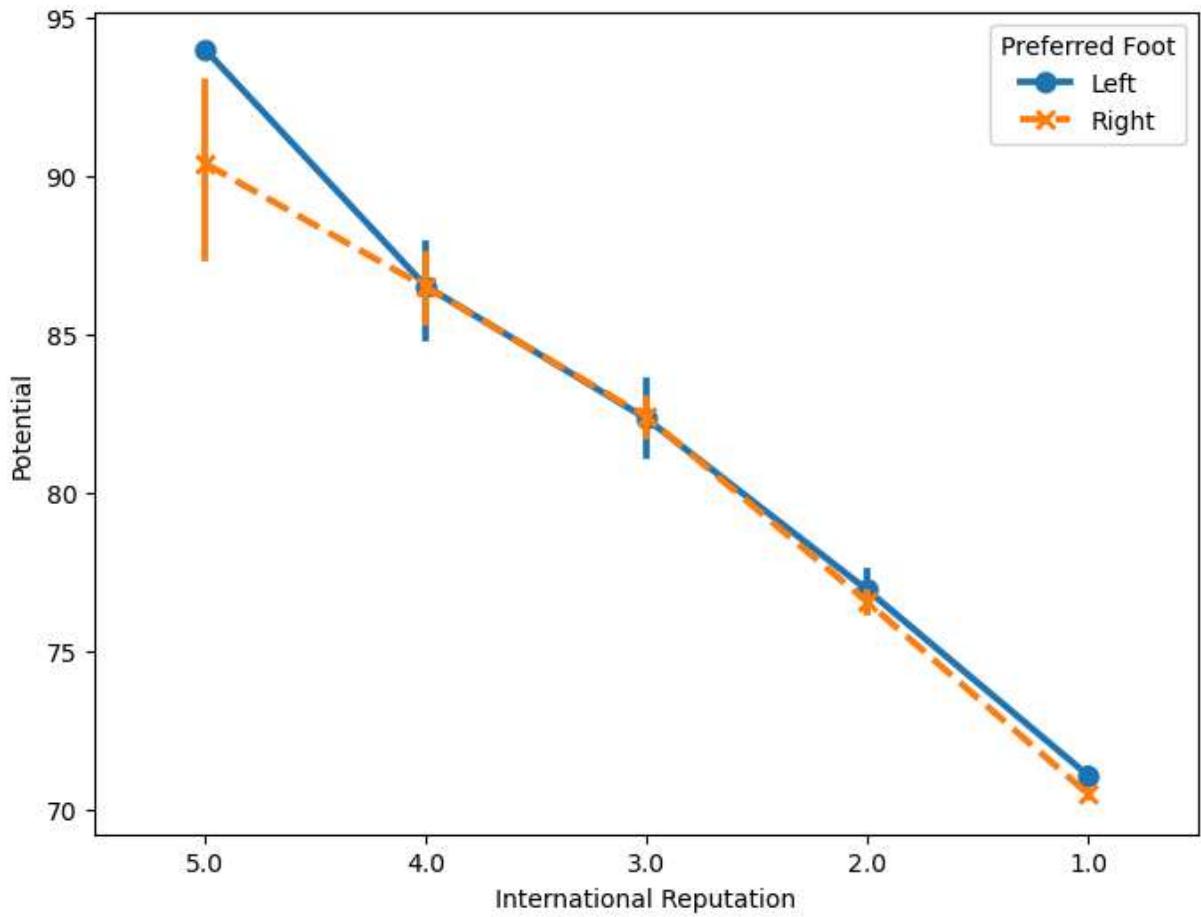
```
In [34]: f, ax = plt.subplots(figsize=(8, 6))
sns.pointplot(x="International Reputation", y="Potential", hue="Preferred Foot", data=da)
plt.show()
```



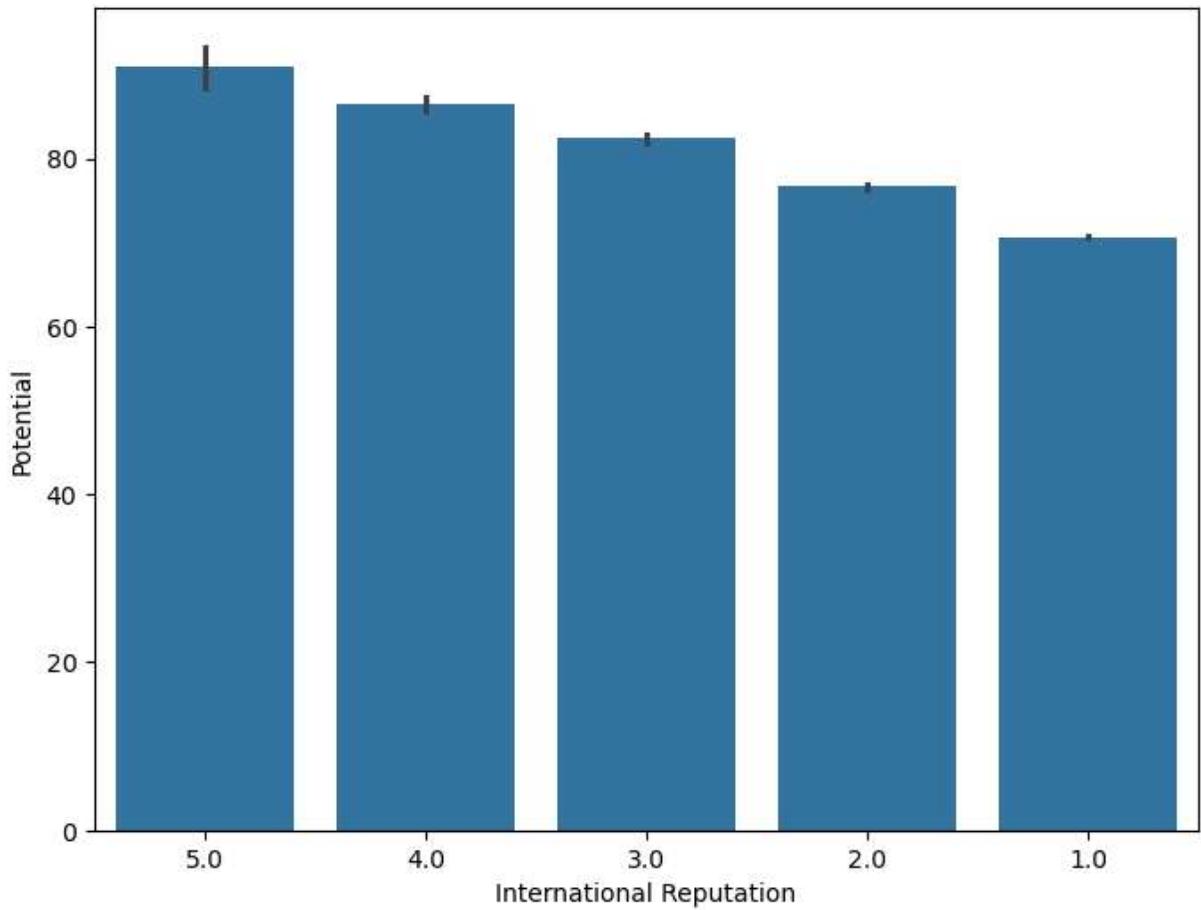
```
In [35]: f, ax = plt.subplots(figsize=(8, 6))
sns.pointplot(x="International Reputation", y="Potential", hue="Preferred Foot", data=da)
plt.show()
```



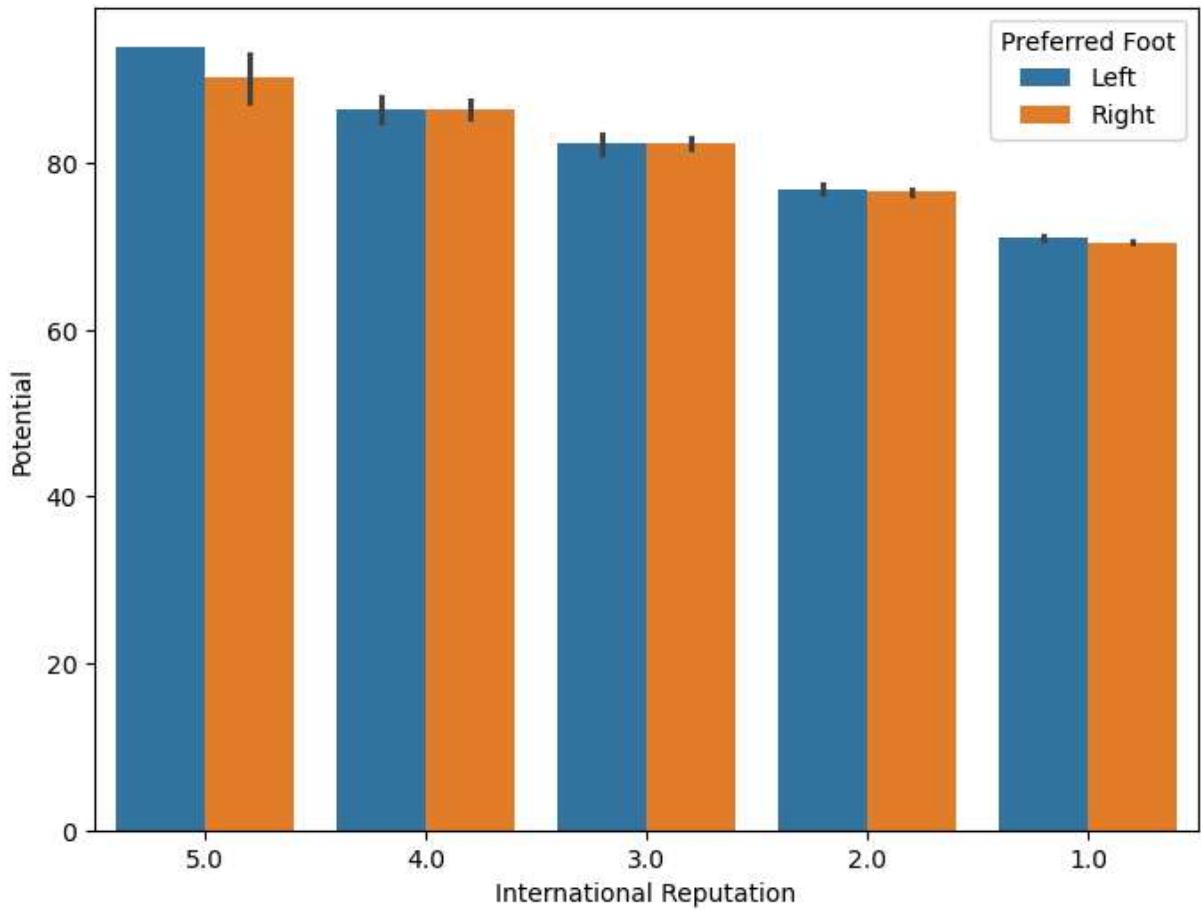
```
In [36]: f, ax = plt.subplots(figsize=(8, 6))
sns.pointplot(x="International Reputation", y="Potential", hue="Preferred Foot", data=da)
plt.show()
```



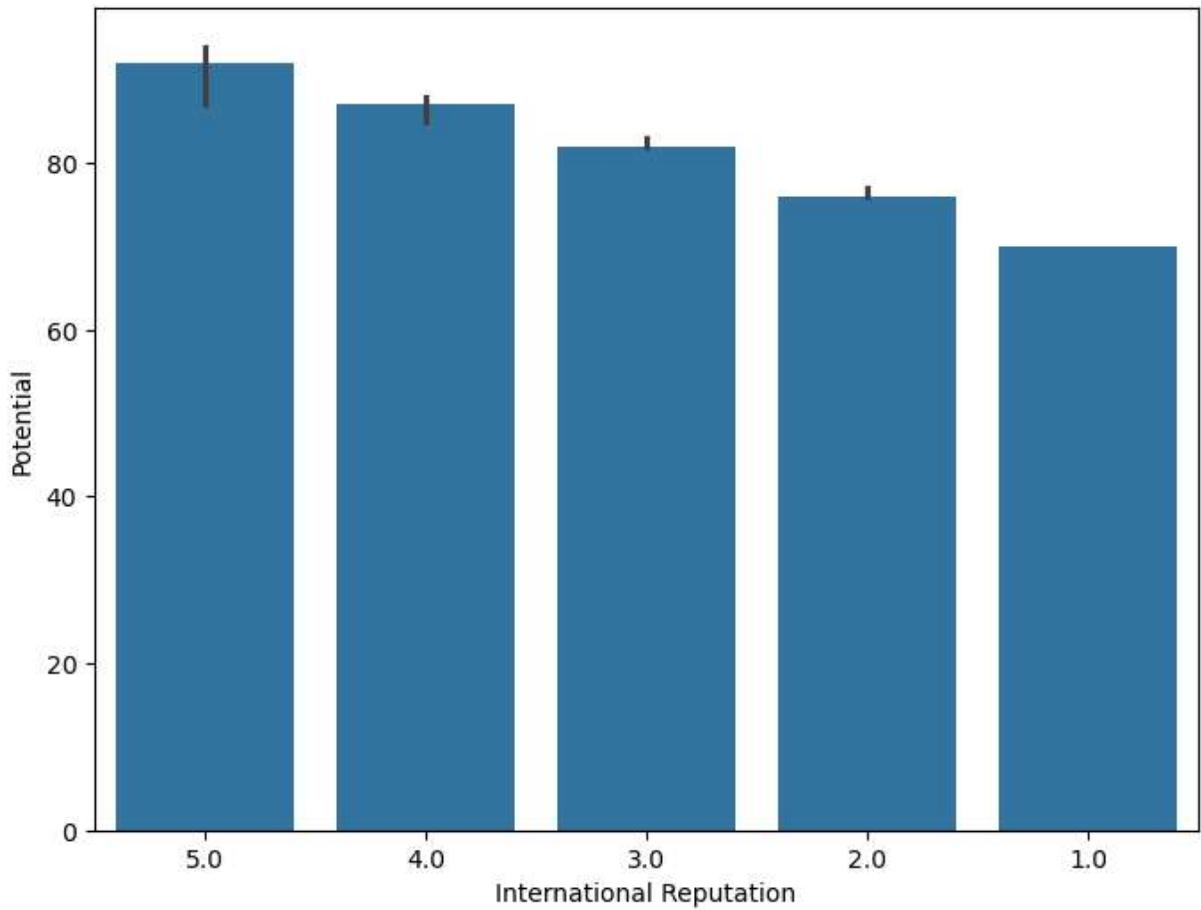
```
In [37]: f, ax = plt.subplots(figsize=(8, 6))
sns.barplot(x="International Reputation", y="Potential", data=fifa)
plt.show()
```



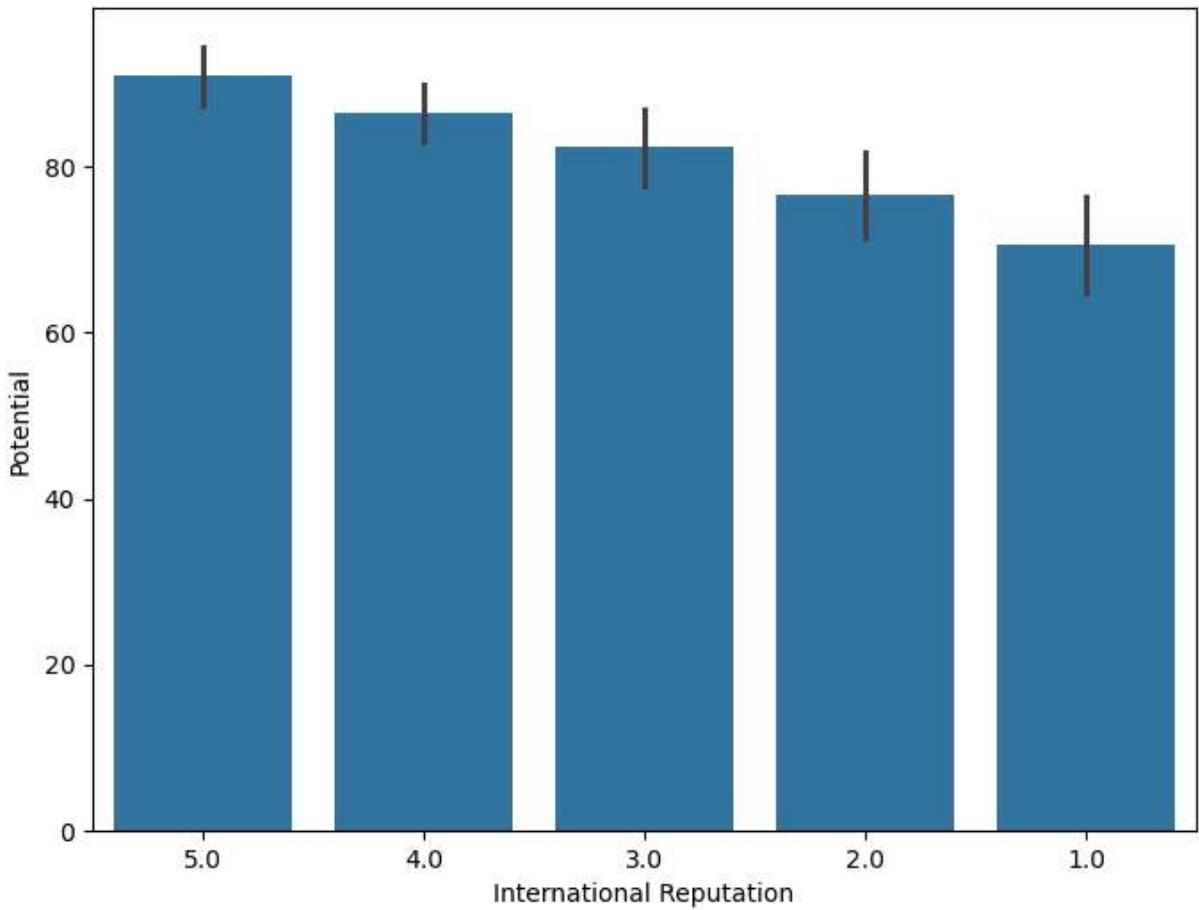
```
In [38]: f, ax = plt.subplots(figsize=(8, 6))
sns.barplot(x="International Reputation", y="Potential", hue="Preferred Foot", data=players)
plt.show()
```



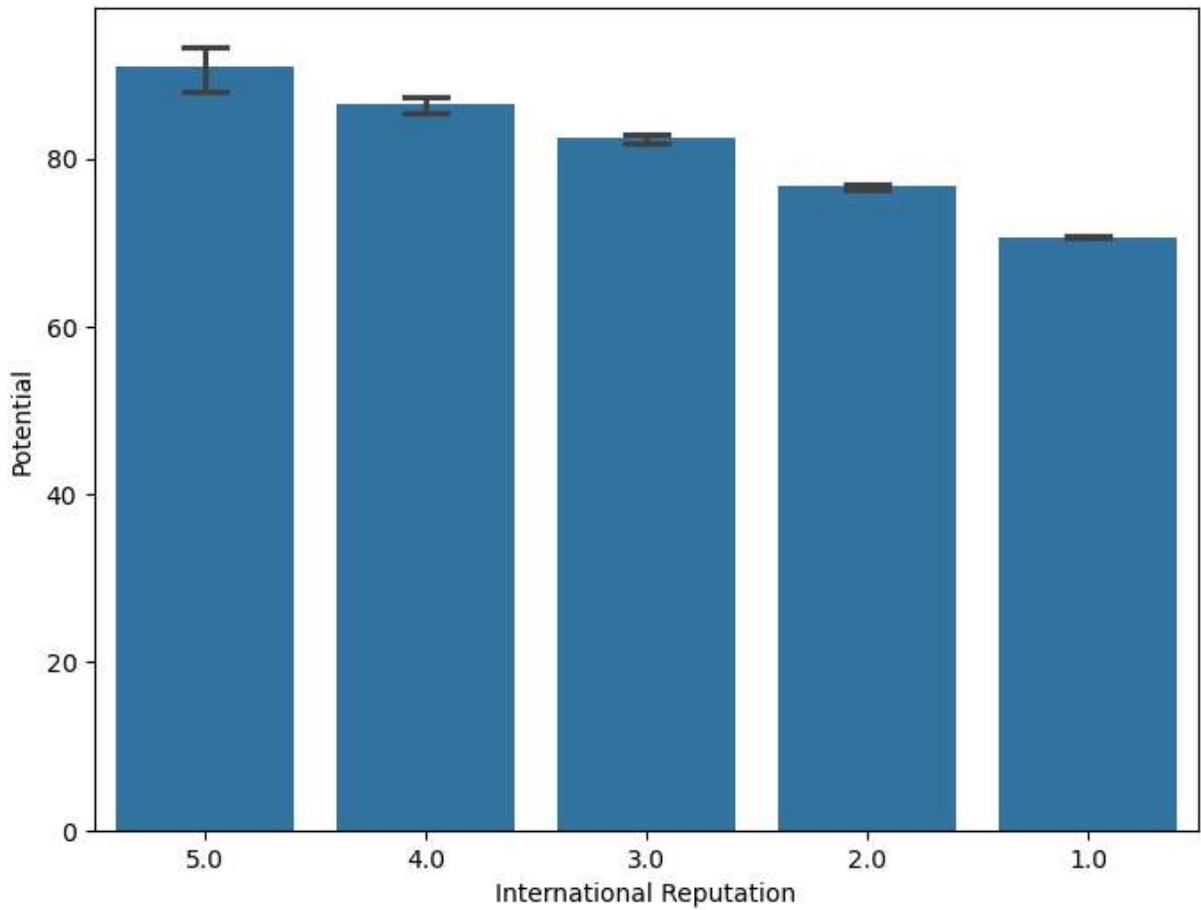
```
In [39]: from numpy import median
f, ax=plt.subplots(figsize=(8,6))
sns.barplot(x='International Reputation', y='Potential', data=fifa, estimator=median
plt.show()
```



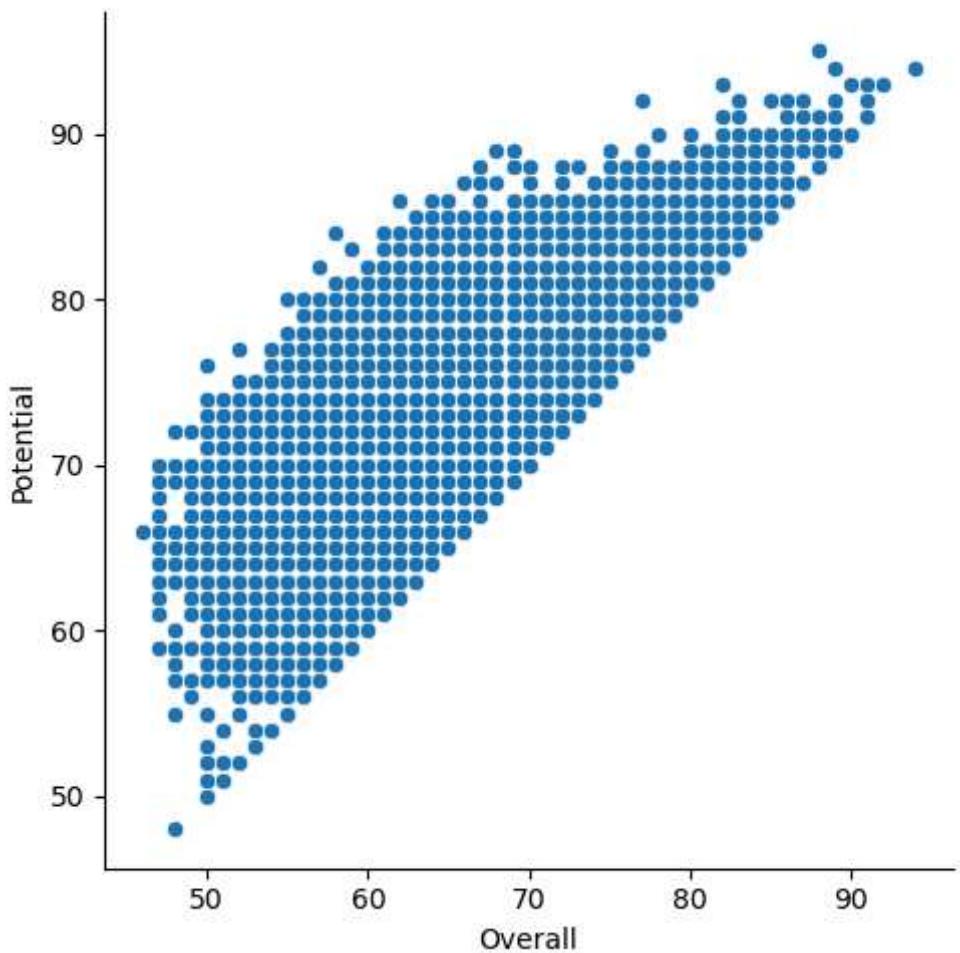
```
In [40]: f, ax = plt.subplots(figsize=(8, 6))
sns.barplot(x="International Reputation", y="Potential", data=fifa, ci="sd")
plt.show()
```



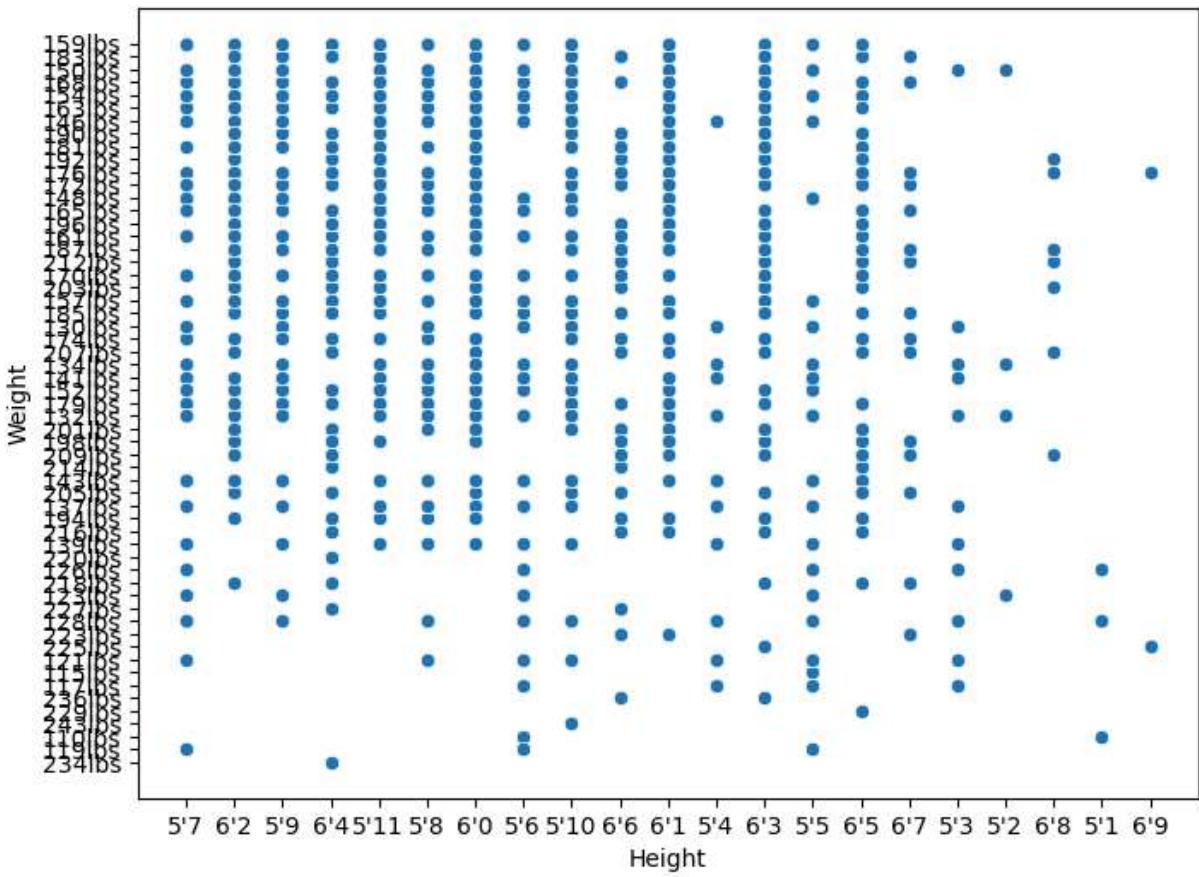
```
In [41]: f, ax = plt.subplots(figsize=(8, 6))
sns.barplot(x="International Reputation", y="Potential", data=fifa, capsize=0.2)
plt.show()
```



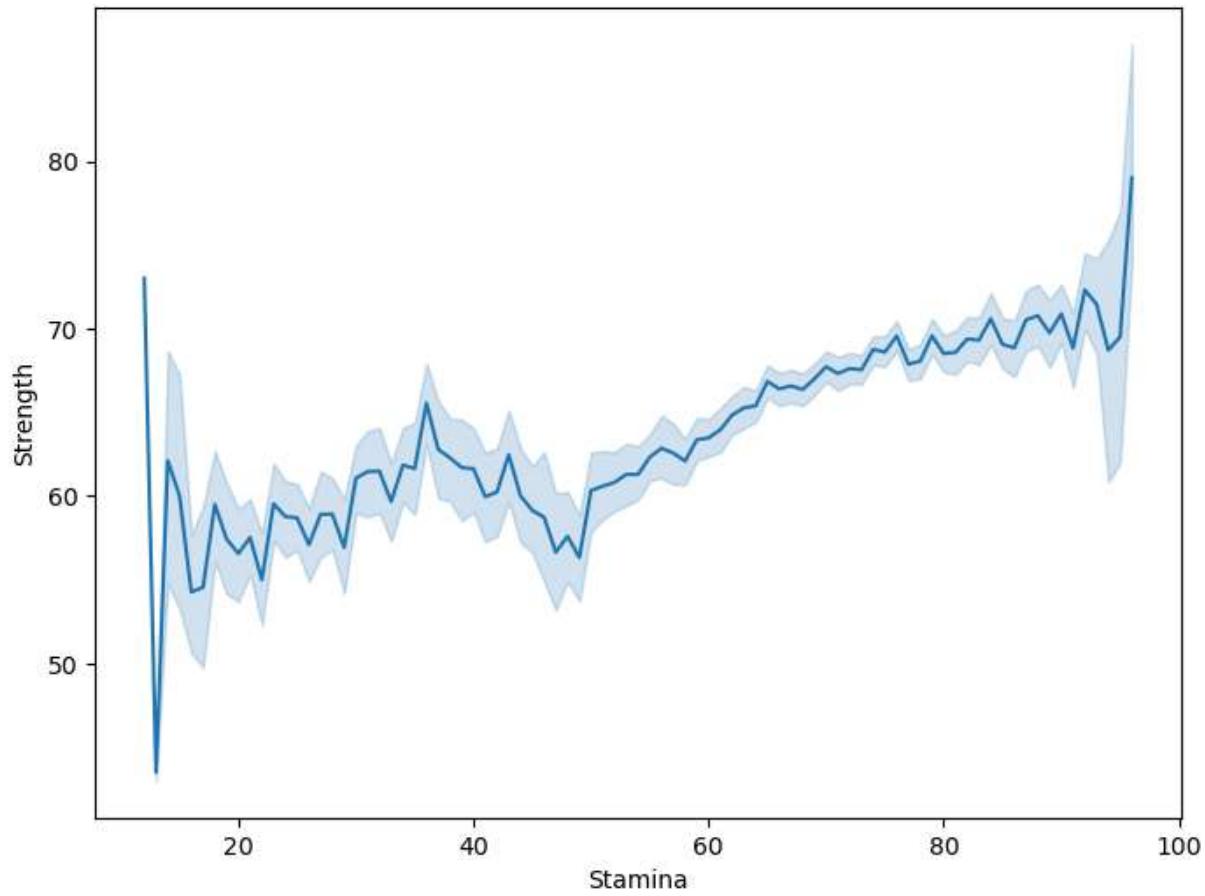
```
In [42]: g = sns.relplot(x="Overall", y="Potential", data=fifa)
plt.show()
```



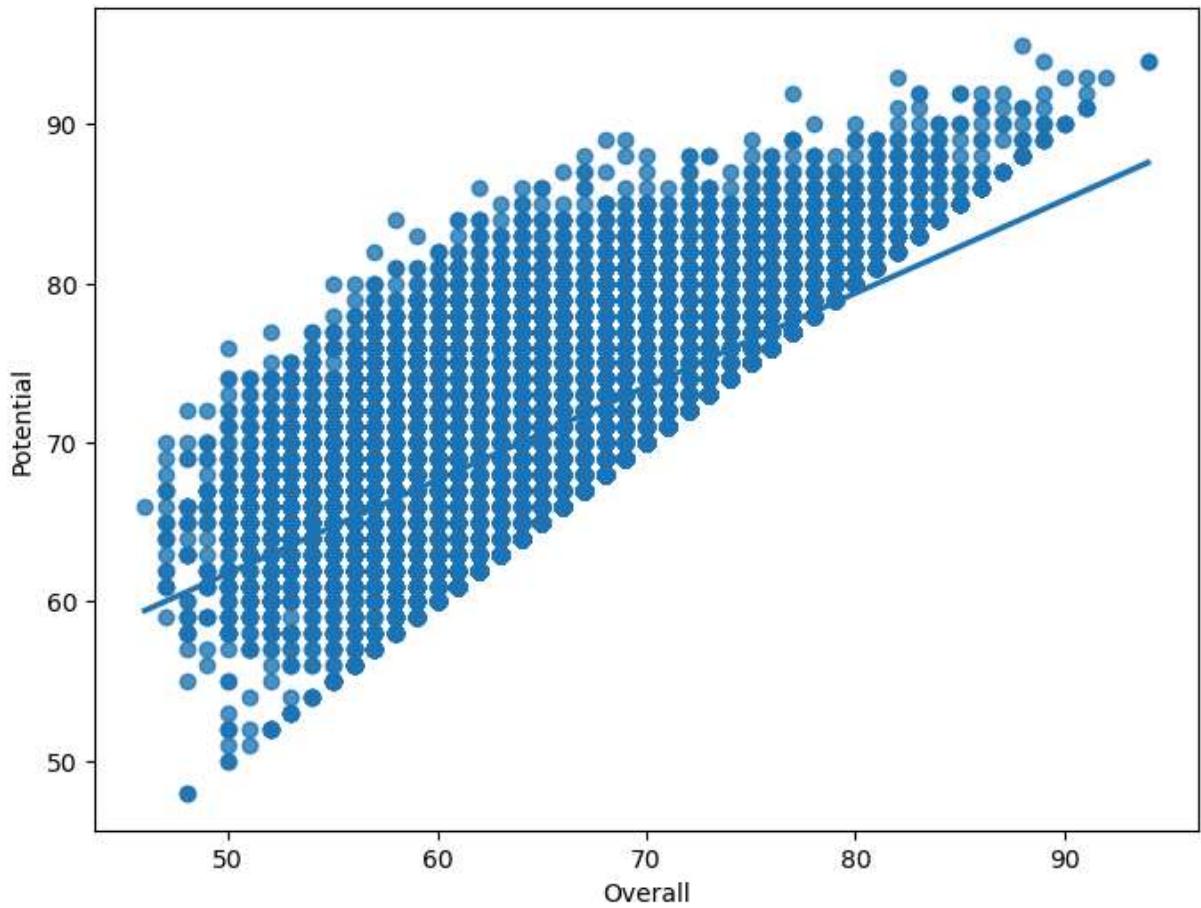
```
In [43]: f, ax = plt.subplots(figsize=(8,6))
sns.scatterplot(x="Height",y="Weight", data=fifa)
plt.show()
```



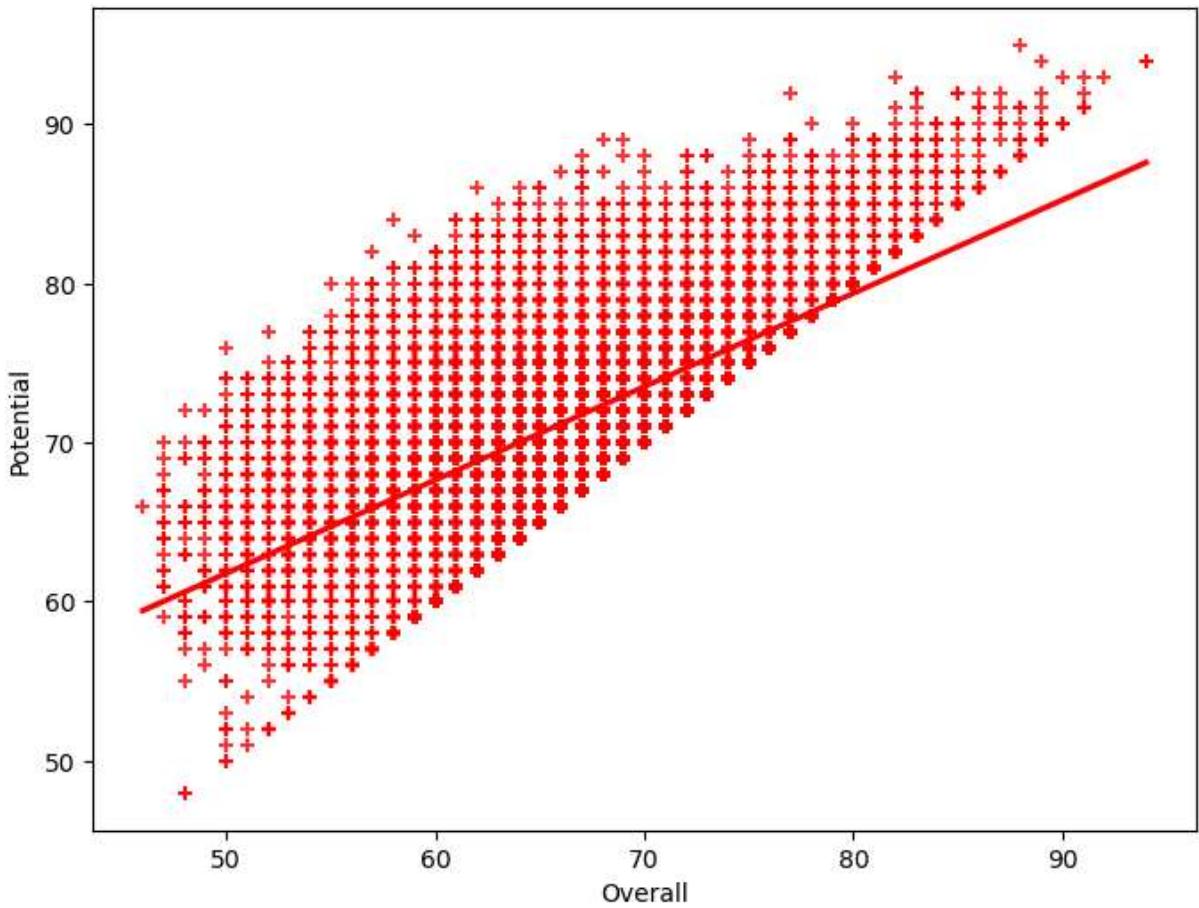
```
In [44]: f, ax = plt.subplots(figsize=(8,6))
sns.lineplot(x="Stamina",y="Strength", data=fifa)
plt.show()
```



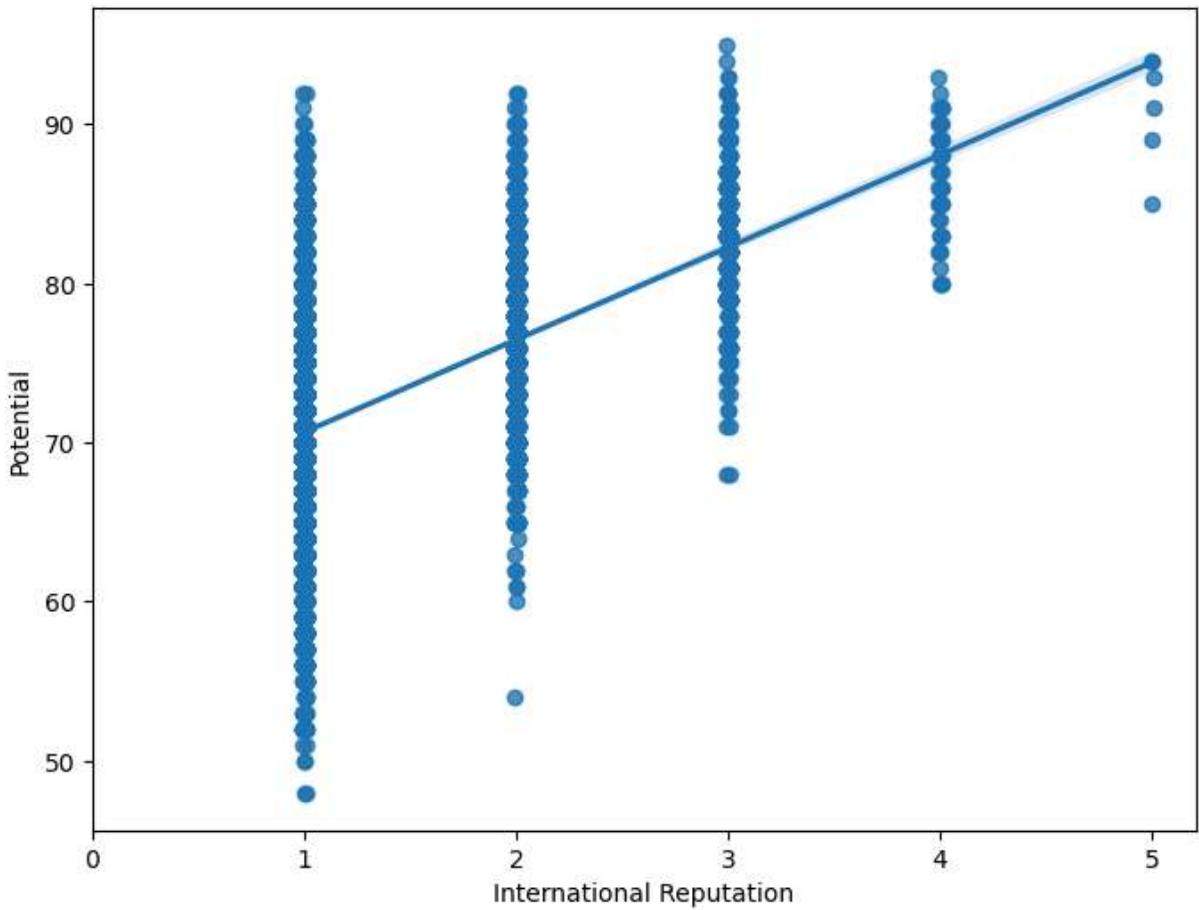
```
In [45]: f, ax = plt.subplots(figsize=(8,6))
sns.regplot(x="Overall",y="Potential", data=fifa)
plt.show()
```



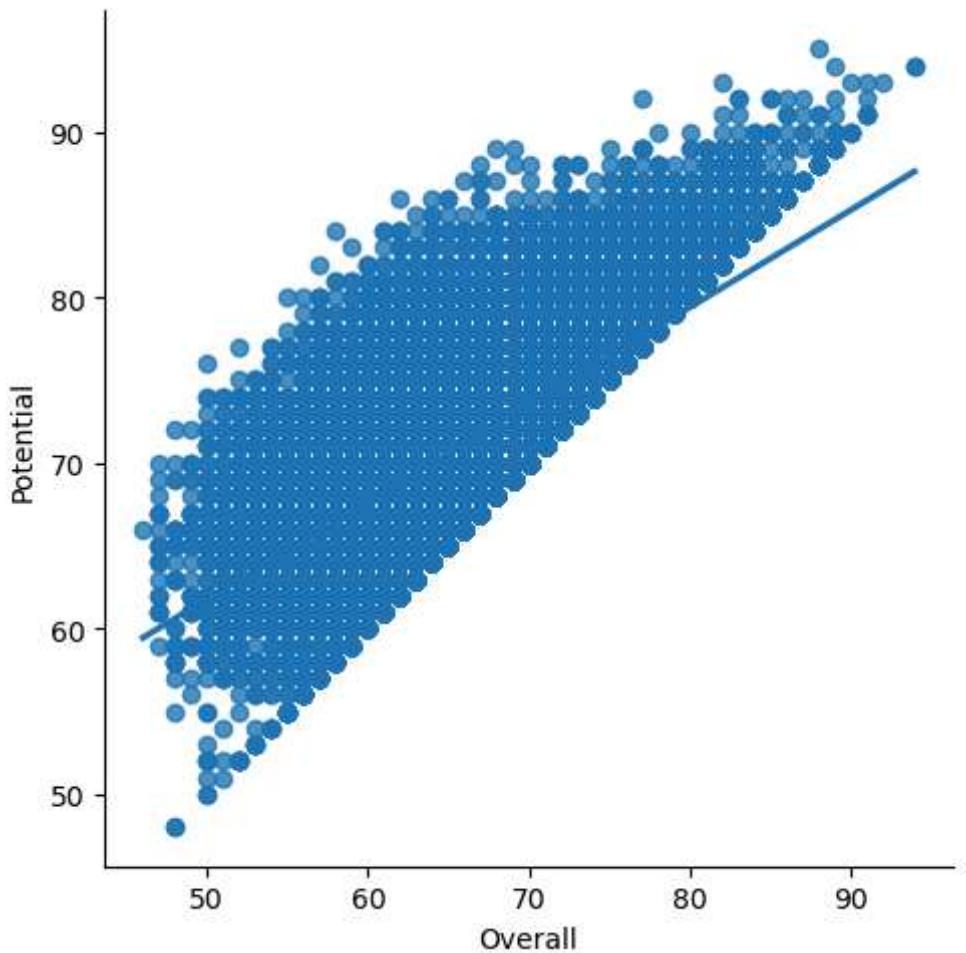
```
In [46]: f, ax = plt.subplots(figsize=(8,6))
sns.regplot(x="Overall",y="Potential", data=fifa, color="r", marker="+")
plt.show()
```



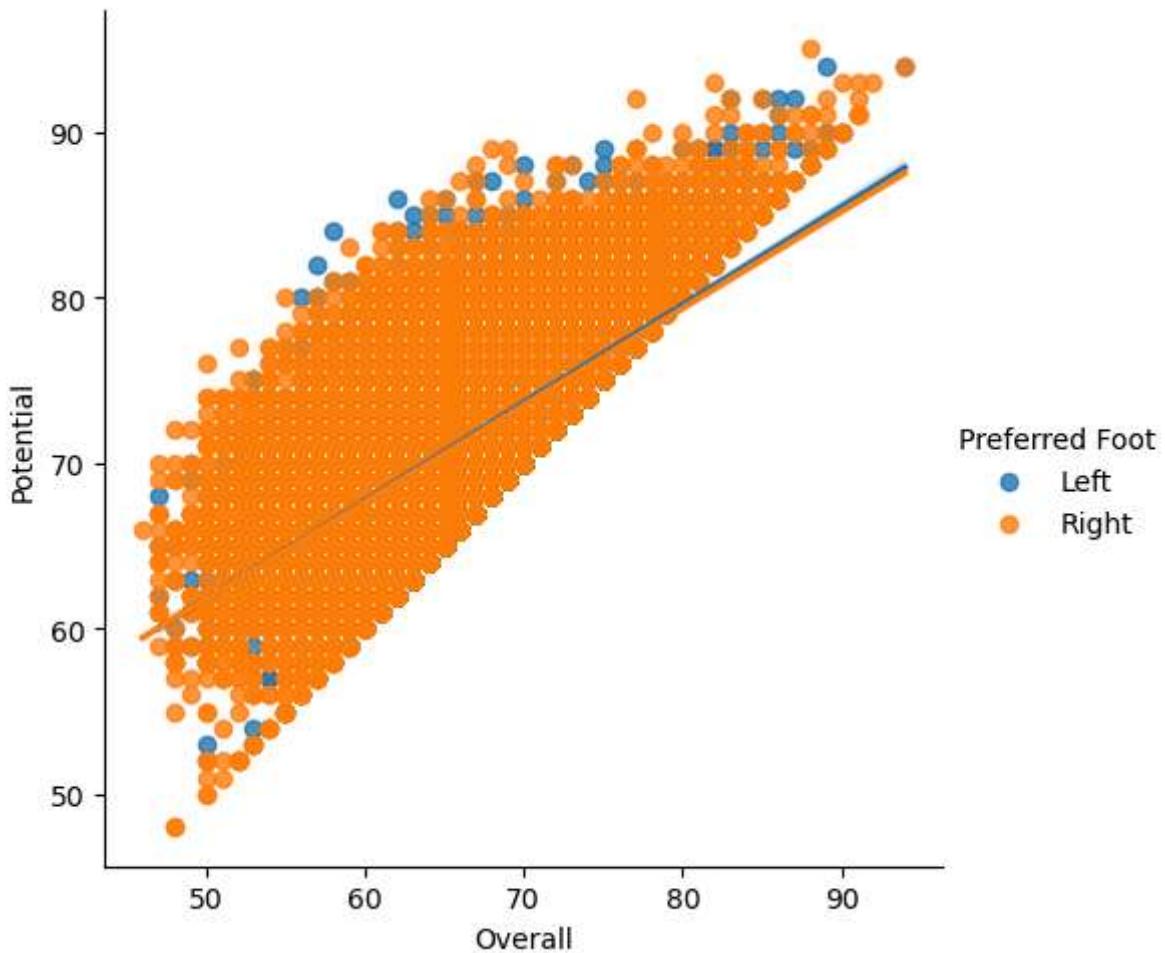
```
In [47]: fifa['International Reputation'] = pd.to_numeric(fifa['International Reputation'],
fifa['Potential'] = pd.to_numeric(fifa['Potential'], errors='coerce')
fifa_clean = fifa.dropna(subset=['International Reputation', 'Potential'])
f, ax = plt.subplots(figsize=(8, 6))
sns.regplot(
    x="International Reputation",
    y="Potential",
    data=fifa_clean,
    x_jitter=0.01)
ax.set_xlim(left=0)
plt.show()
```



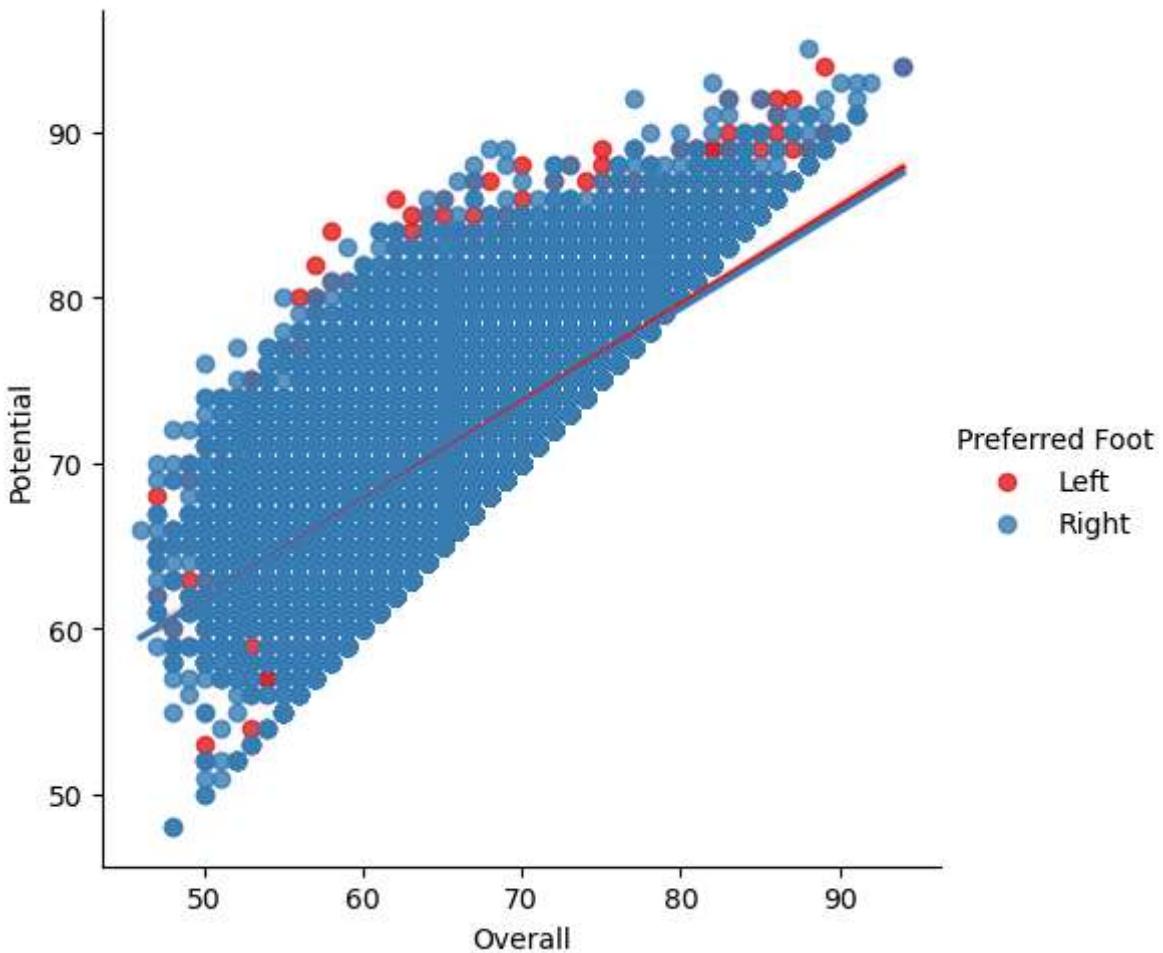
```
In [48]: g=sns.lmplot(x="Overall", y="Potential", data=fifa)  
plt.show()
```



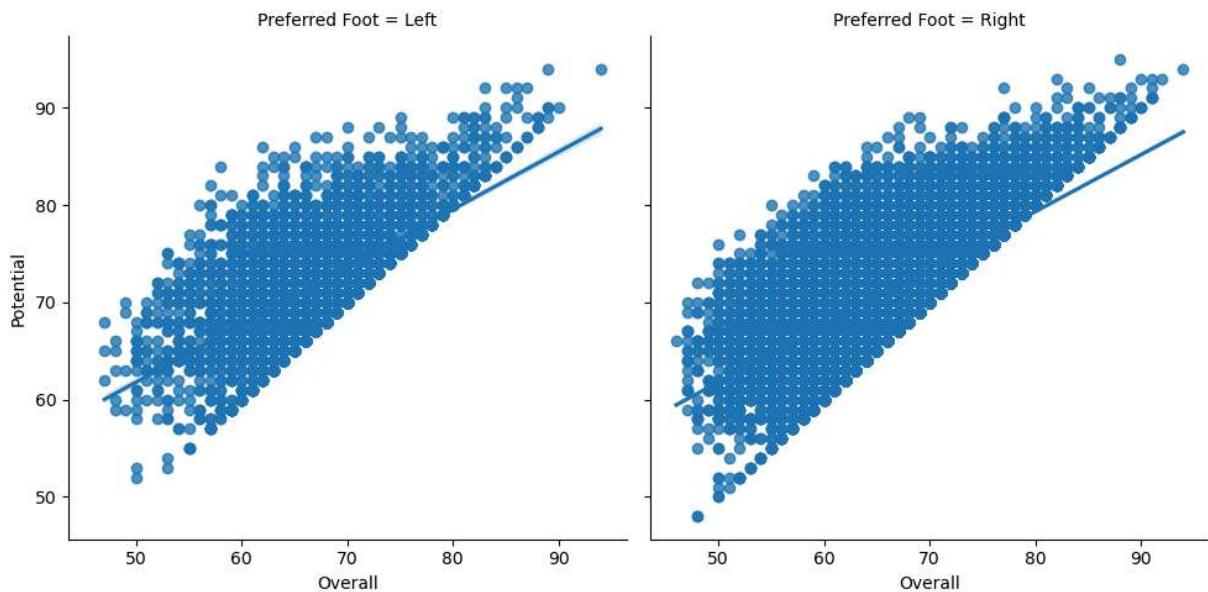
```
In [49]: g=sns.lmplot(x="Overall", y="Potential", hue="Preferred Foot", data=fifa)
plt.show()
```



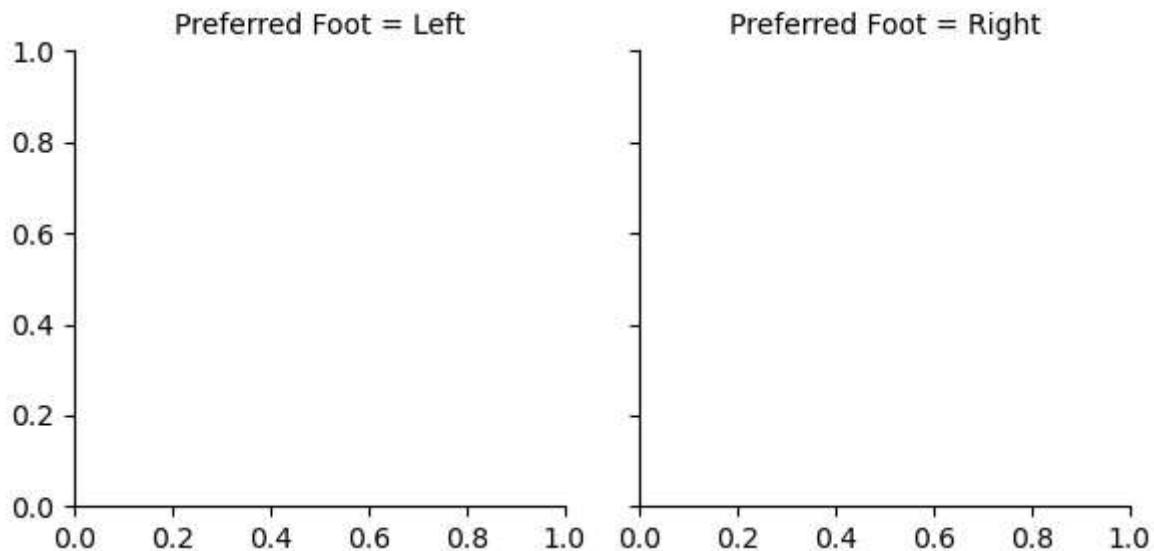
```
In [50]: g=sns.lmplot(x="Overall", y="Potential", hue="Preferred Foot", data=fifa, palette="Set1")
plt.show()
```



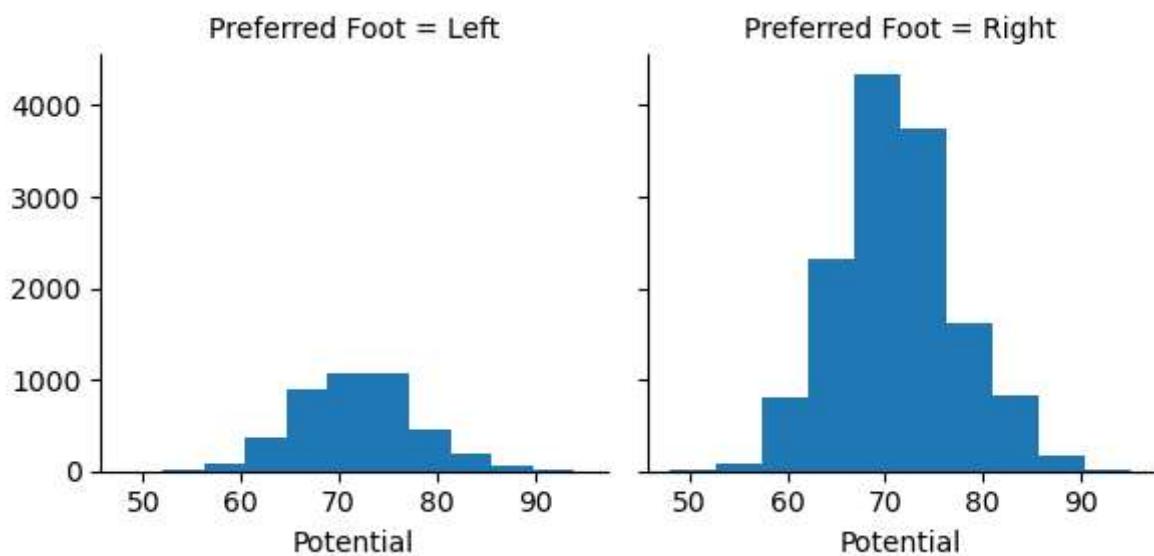
```
In [51]: g = sns.lmplot(x="Overall", y="Potential", col="Preferred Foot", data=fifa)
plt.show()
```



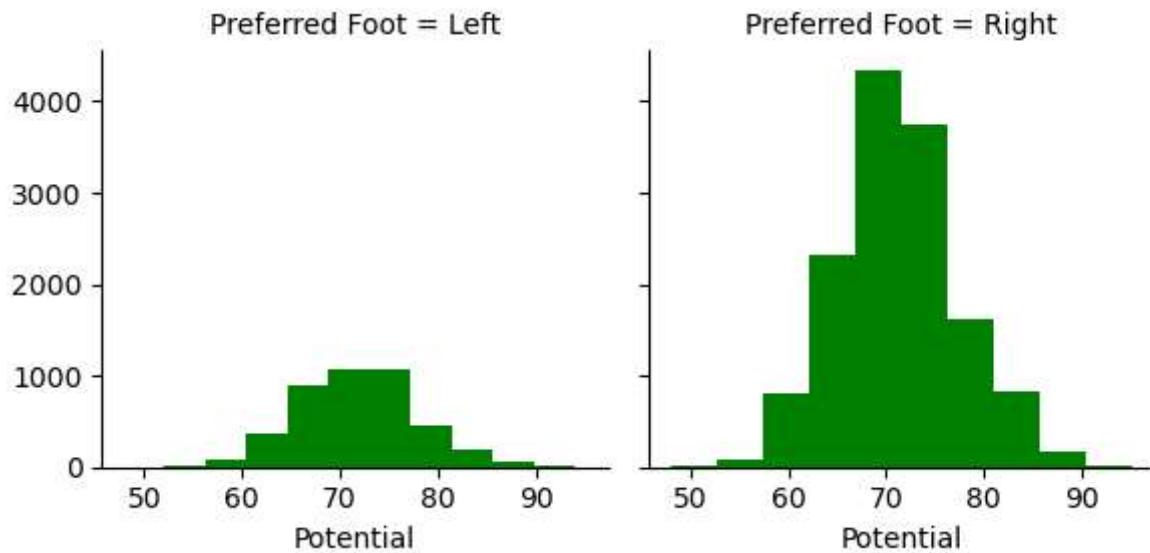
```
In [52]: g = sns.FacetGrid(fifa, col="Preferred Foot")
plt.show()
```



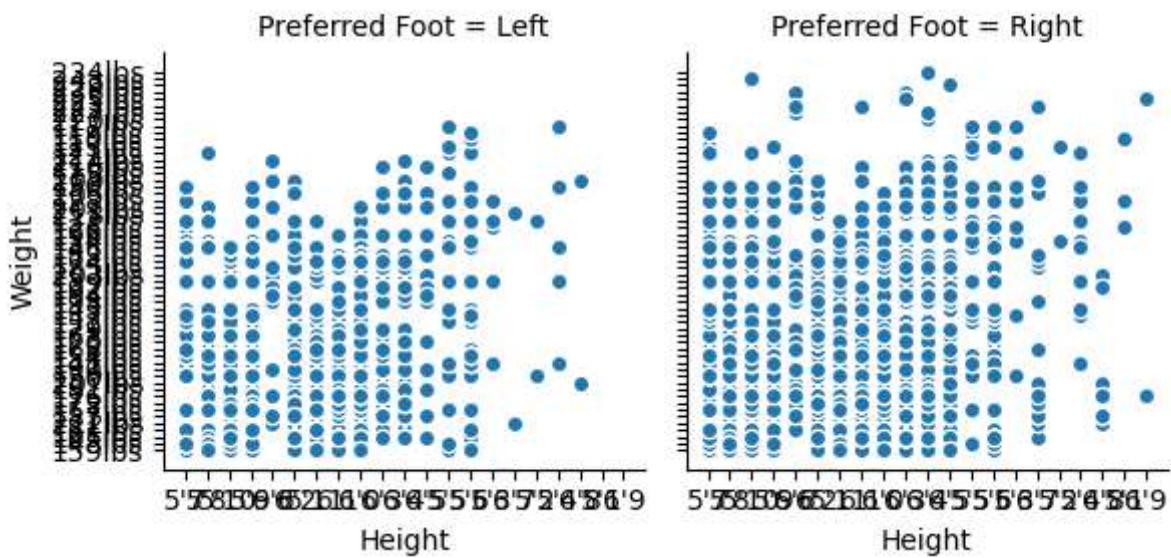
```
In [53]: g= sns.FacetGrid(fifa, col="Preferred Foot")
g.map(plt.hist, "Potential")
plt.show()
```



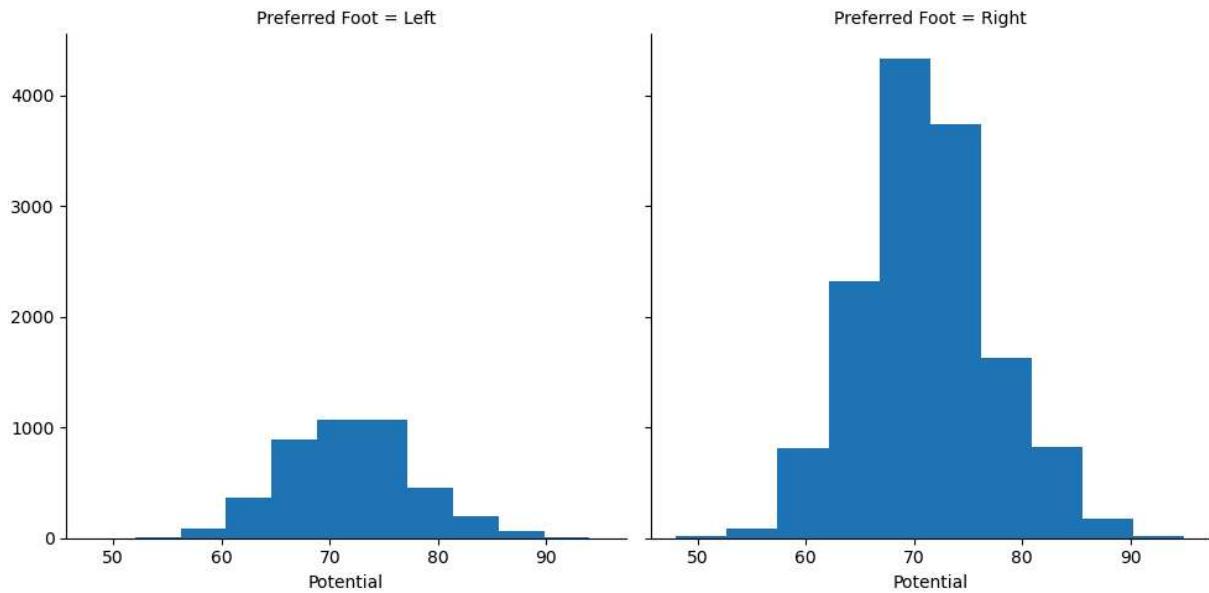
```
In [54]: g= sns.FacetGrid(fifa, col="Preferred Foot")
g.map(plt.hist, "Potential", bins=10, color="g")
plt.show()
```



```
In [55]: g=sns.FacetGrid(fifa, col="Preferred Foot")
g=g.map(plt.scatter, "Height", "Weight", edgecolor="w").add_legend()
plt.show()
```

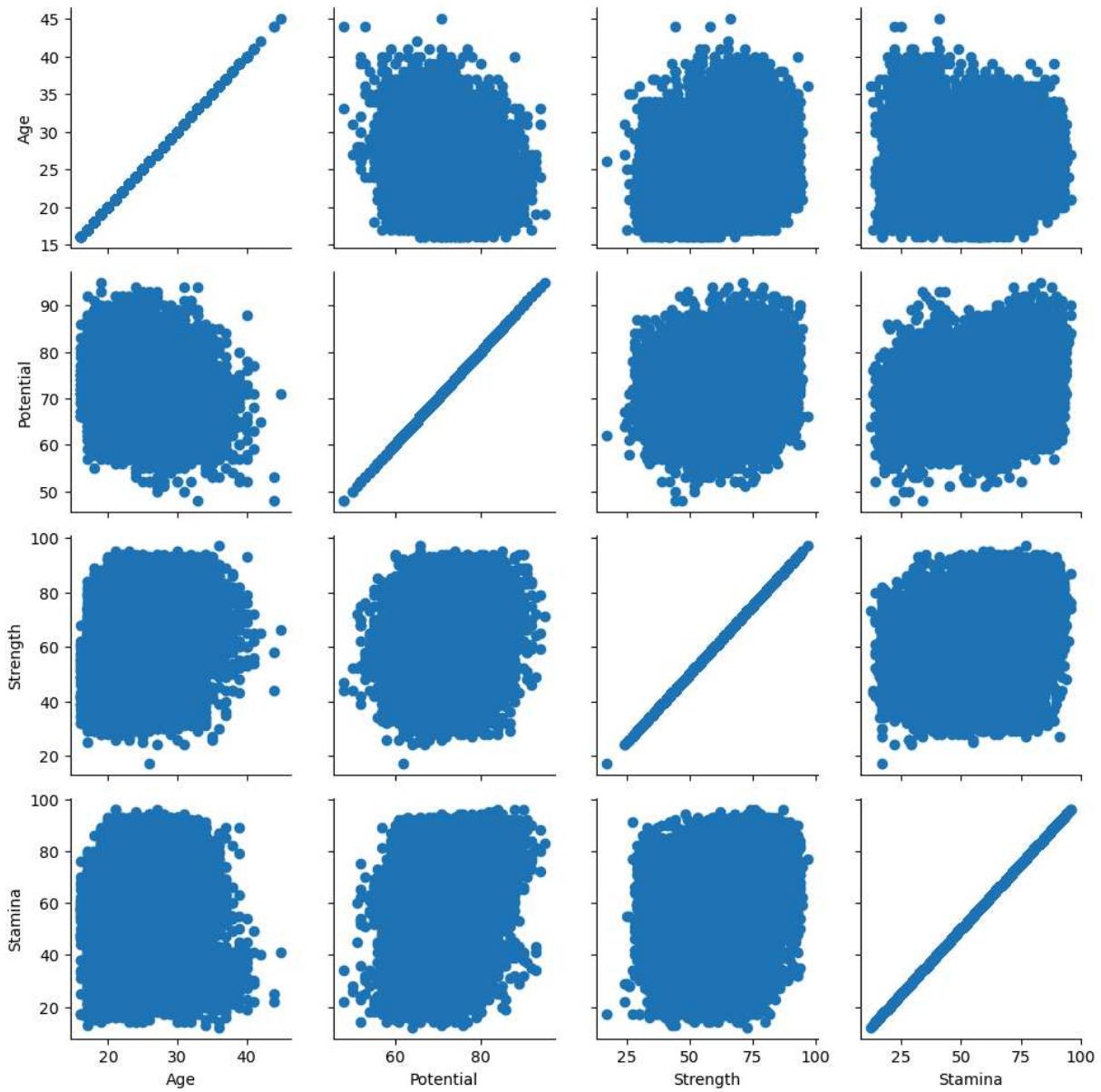


```
In [56]: g = sns.FacetGrid(fifa, col="Preferred Foot", height=5, aspect=1)
g = g.map(plt.hist, "Potential")
plt.show()
```

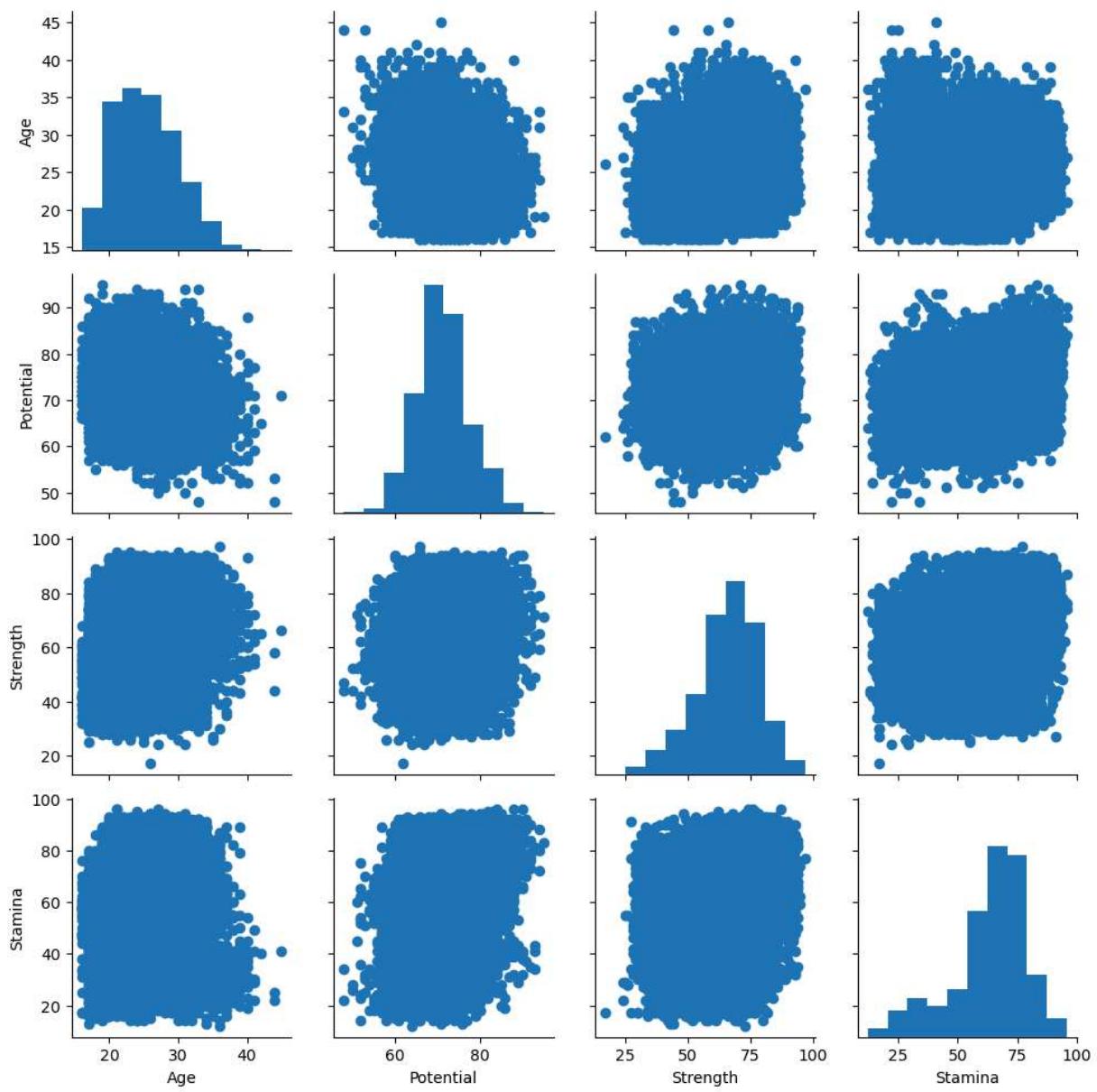


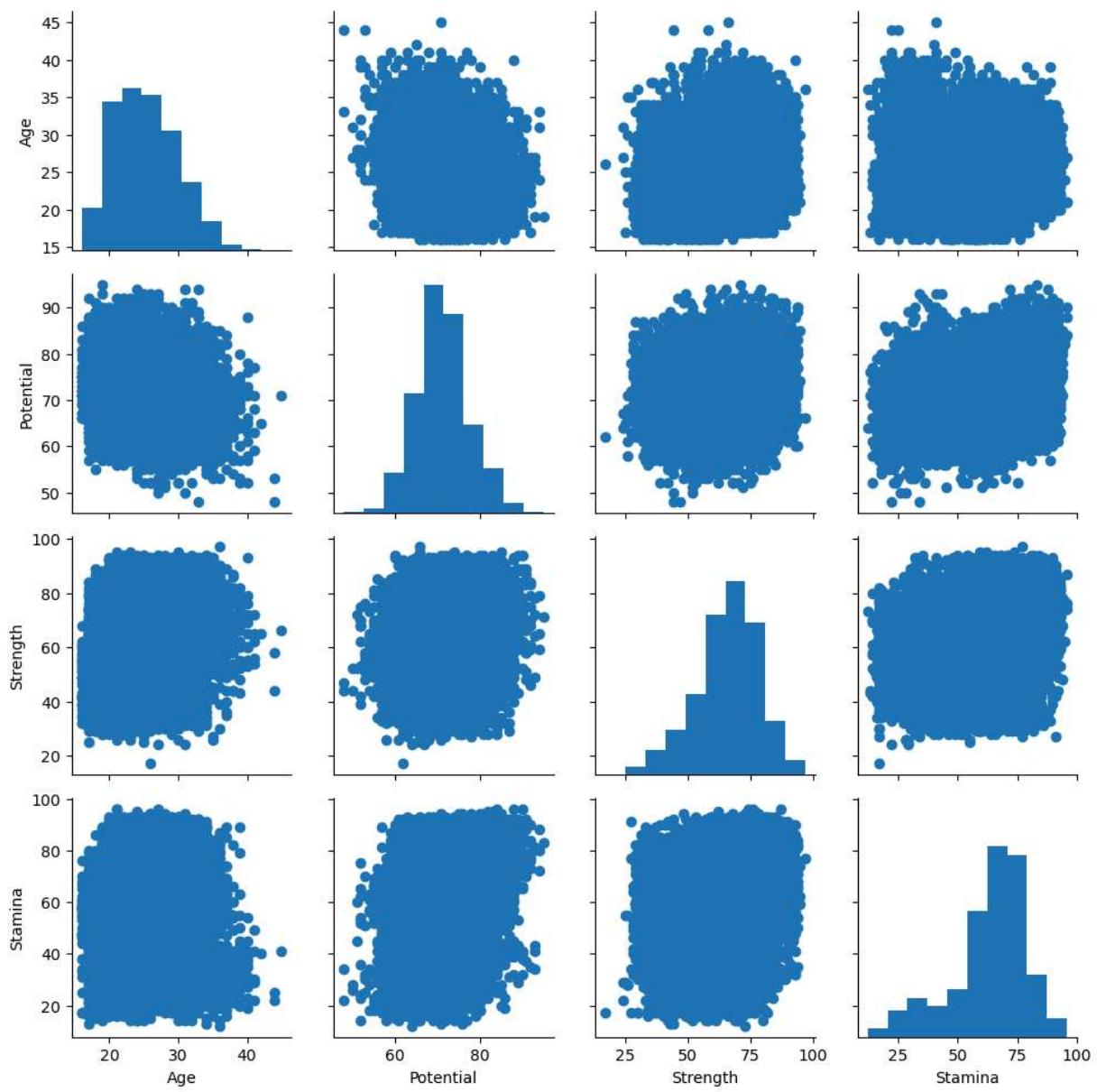
```
In [57]: fifa_new= fifa[['Age', 'Potential', 'Strength', 'Stamina', 'Preferred Foot']]
```

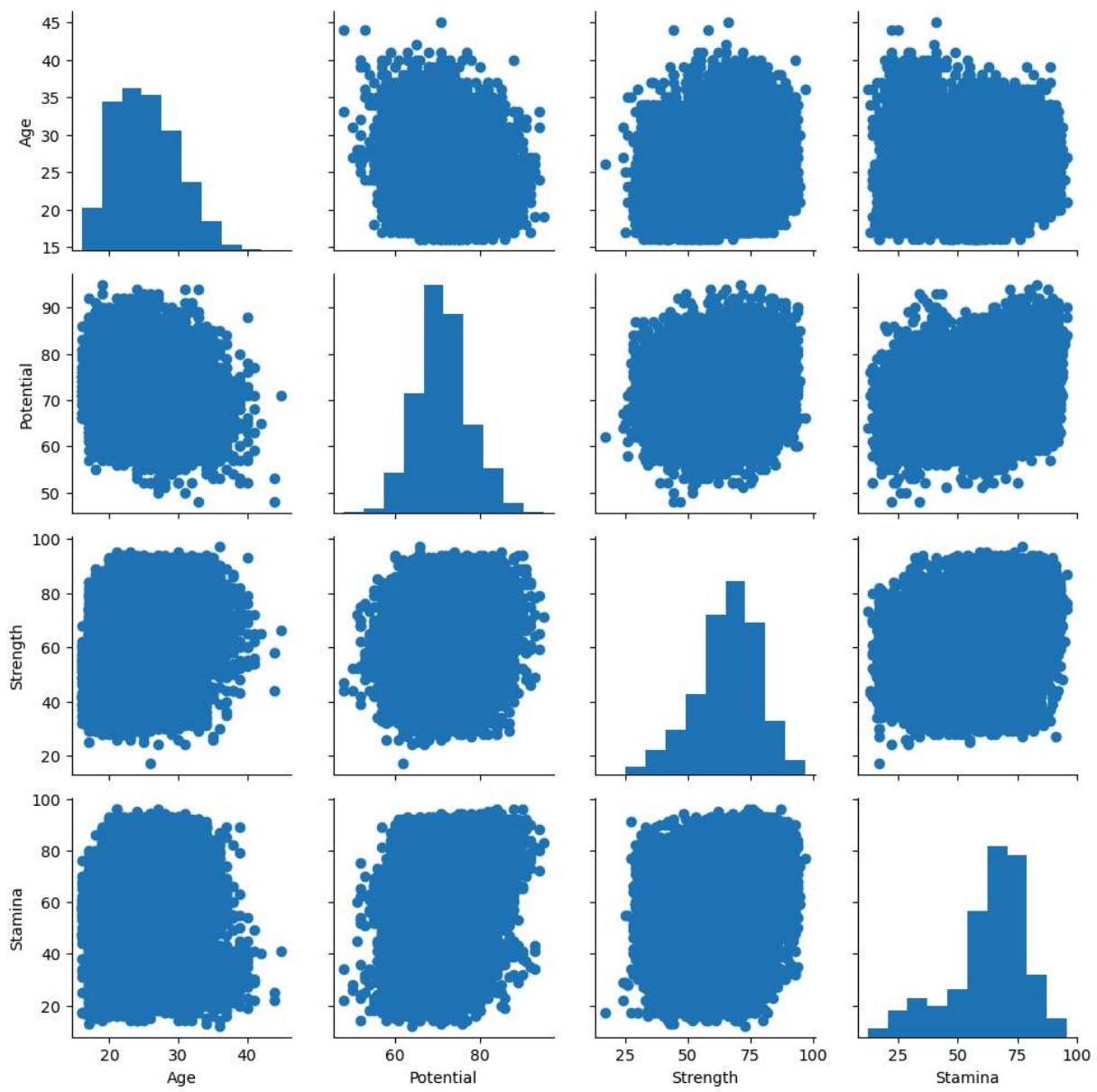
```
In [58]: g = sns.PairGrid(fifa_new)
g = g.map(plt.scatter)
plt.show()
```

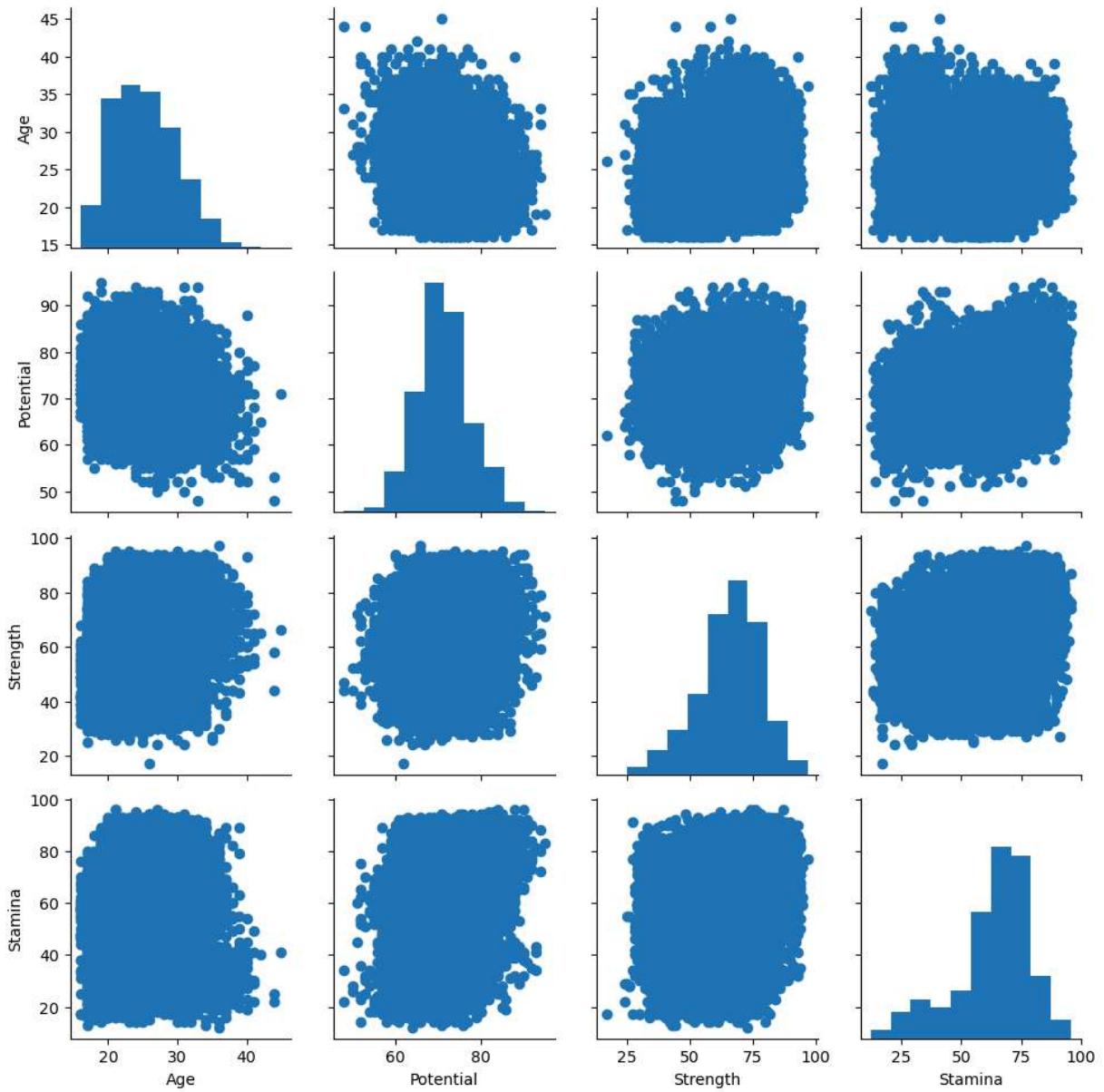


```
In [62]: g = sns.PairGrid(fifa_new)
g = g.map_diag(plt.hist)
g = g.map_offdiag(plt.scatter)
plt.show()
```

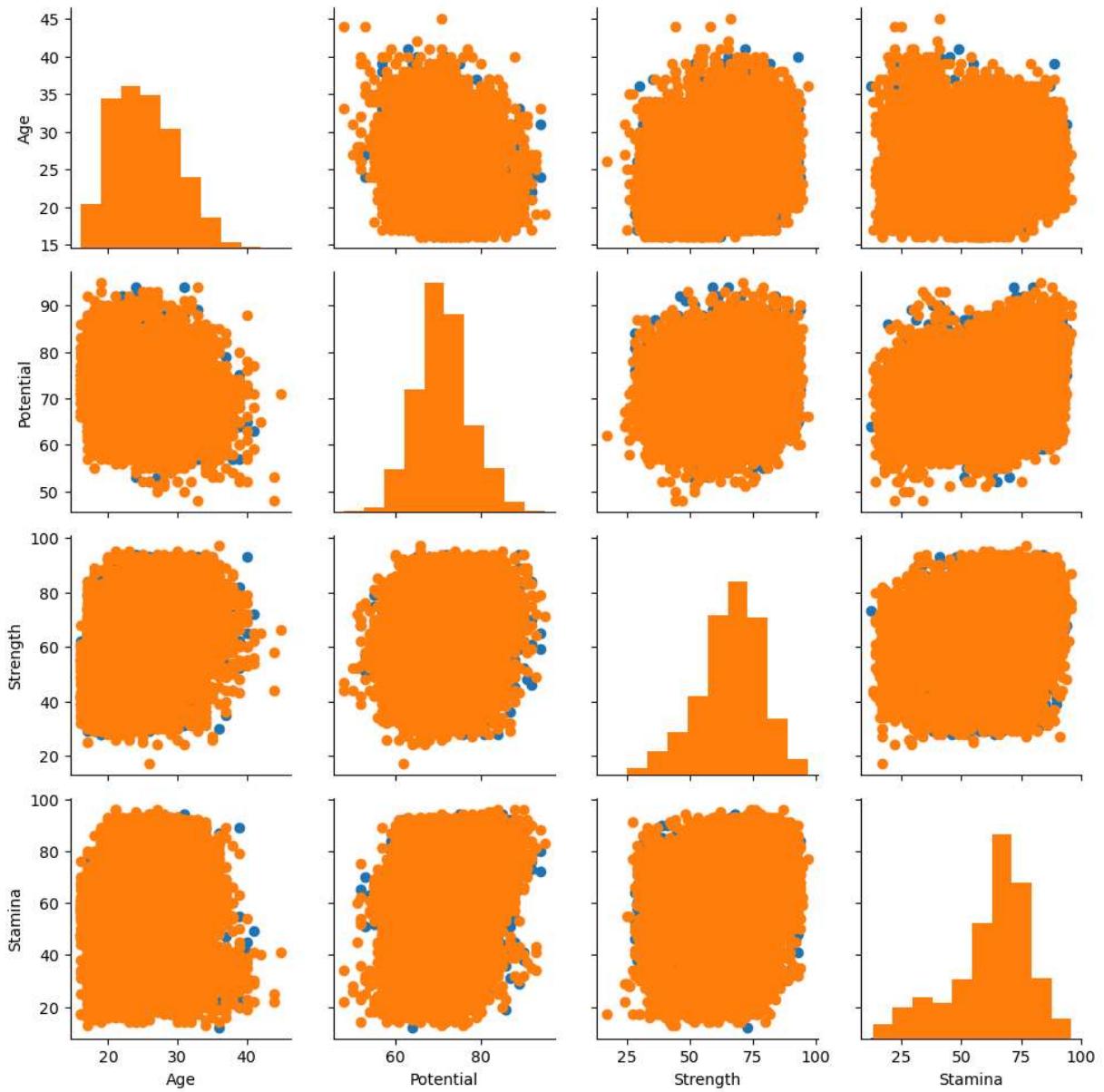




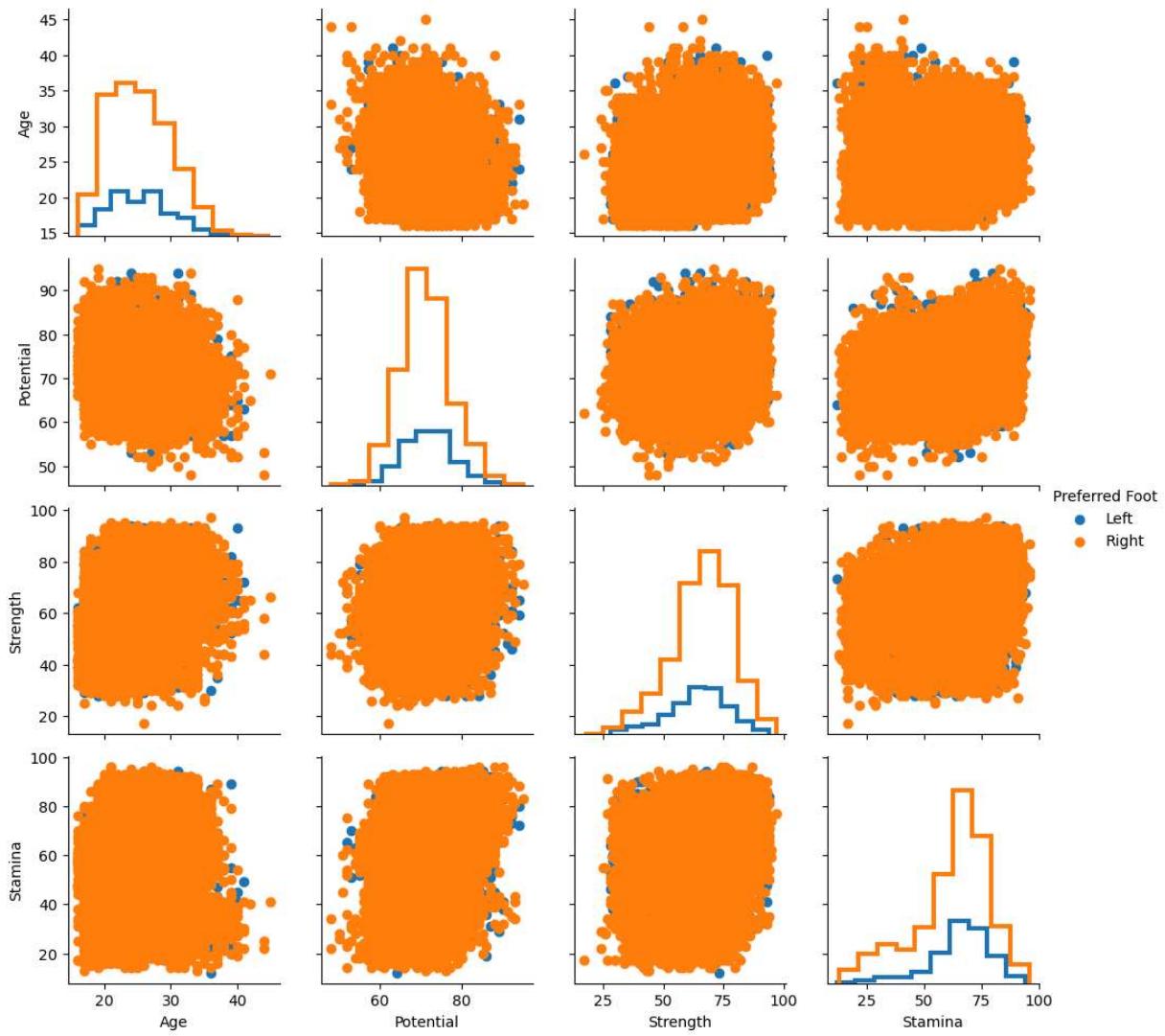




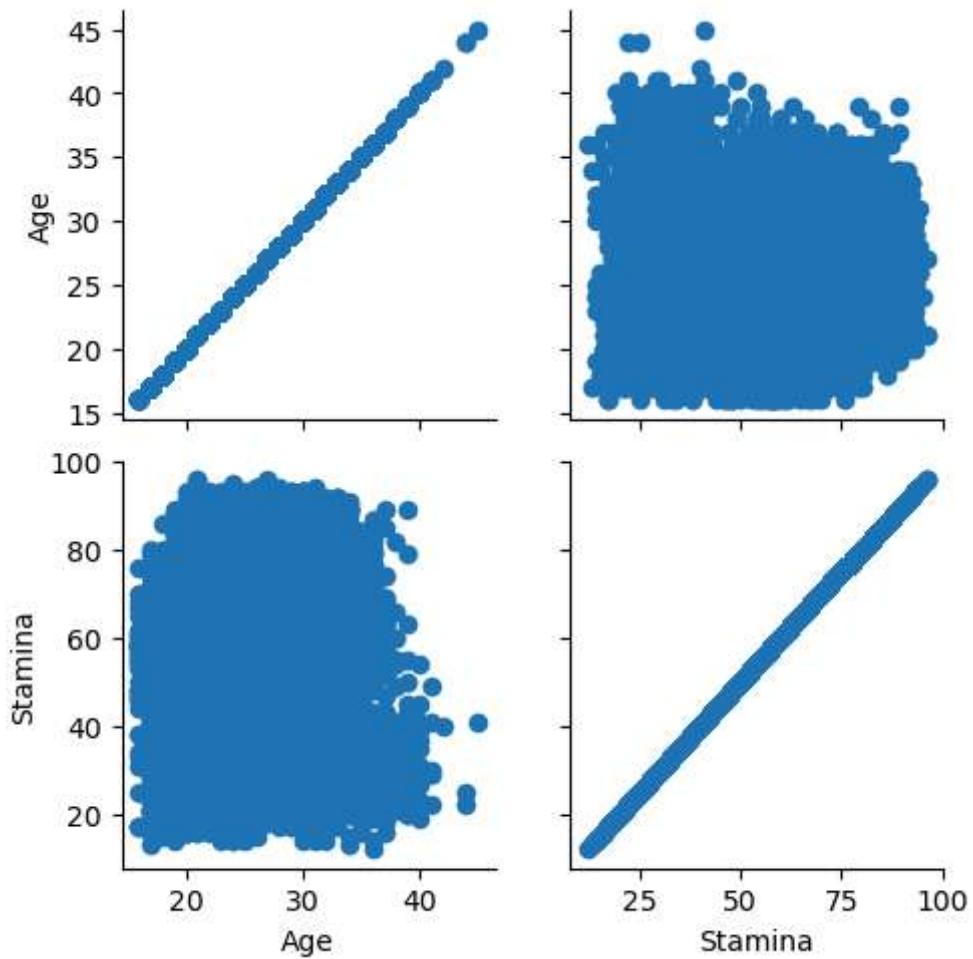
```
In [63]: g = sns.PairGrid(fifa_new, hue="Preferred Foot")
g = g.map_diag(plt.hist)
g = g.map_offdiag(plt.scatter)
plt.show()
```



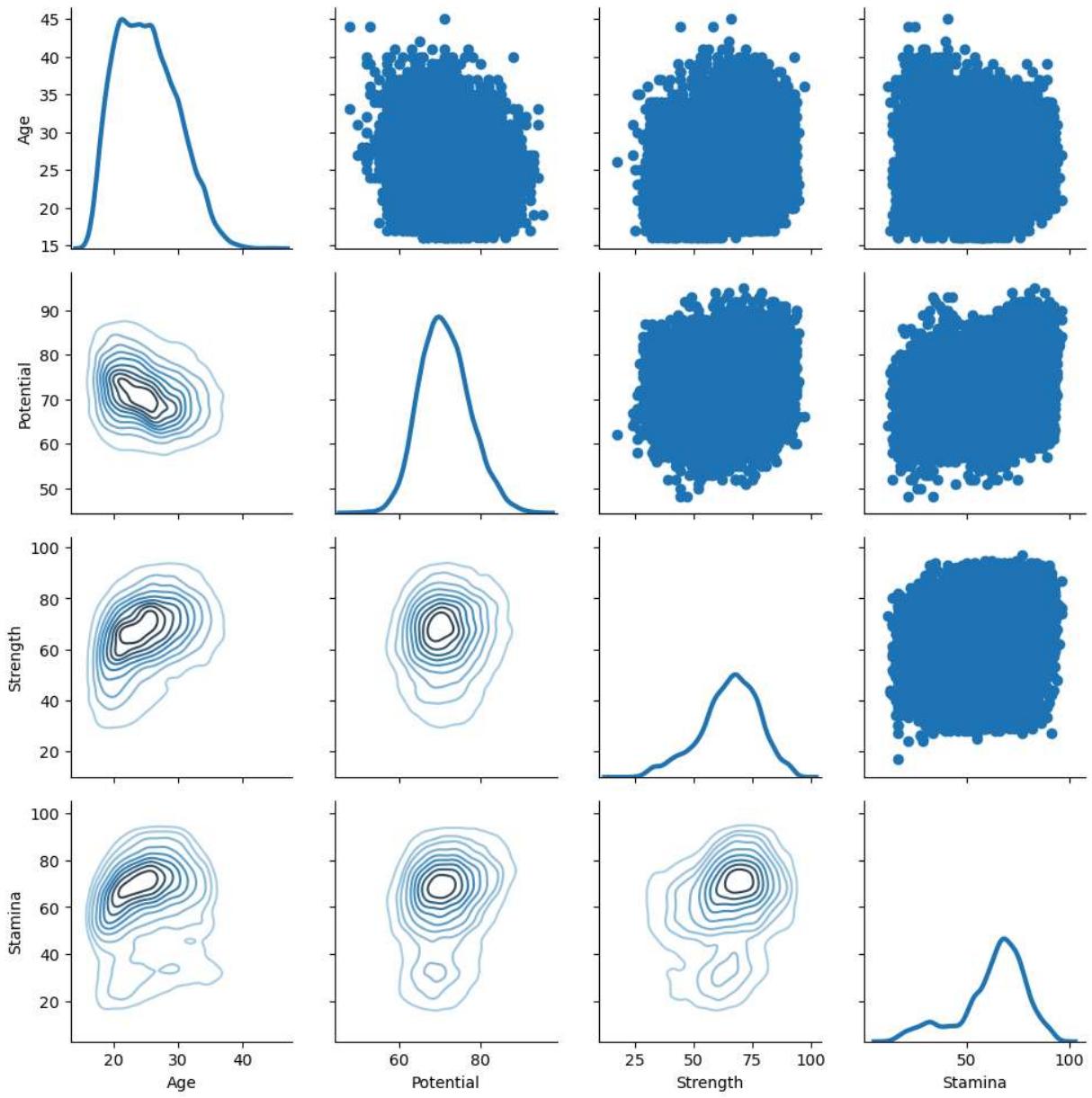
```
In [64]: g = sns.PairGrid(fifa_new, hue="Preferred Foot")
g = g.map_diag(plt.hist, histtype="step", linewidth=3)
g = g.map_offdiag(plt.scatter)
g = g.add_legend()
plt.show()
```



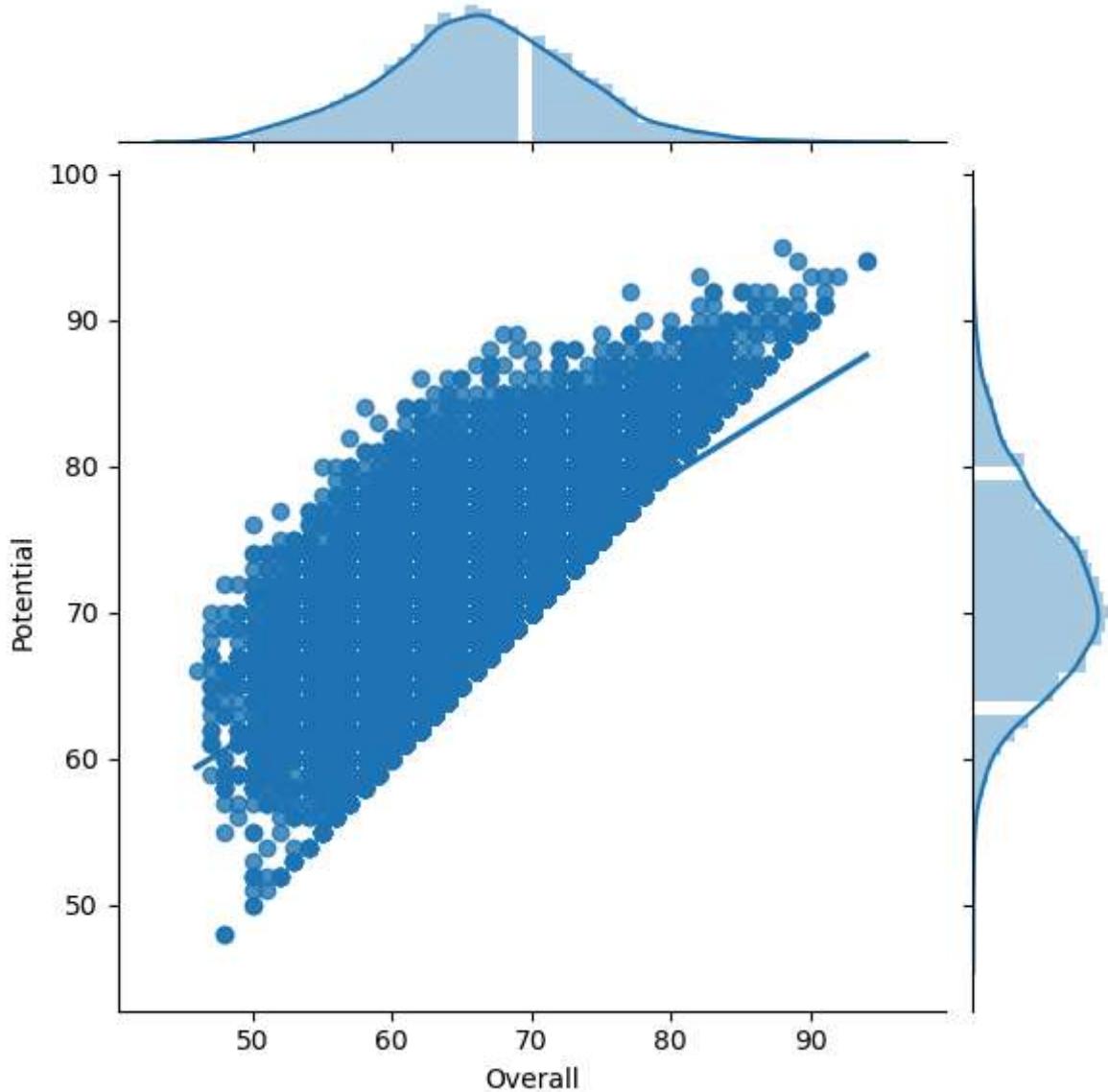
```
In [65]: g = sns.PairGrid(fifa_new, vars=['Age', 'Stamina'])
g = g.map(plt.scatter)
plt.show()
```



```
In [66]: g = sns.PairGrid(fifa_new)
g = g.map_upper(plt.scatter)
g = g.map_lower(sns.kdeplot, cmap="Blues_d")
g = g.map_diag(sns.kdeplot, lw=3, legend=False)
plt.show()
```

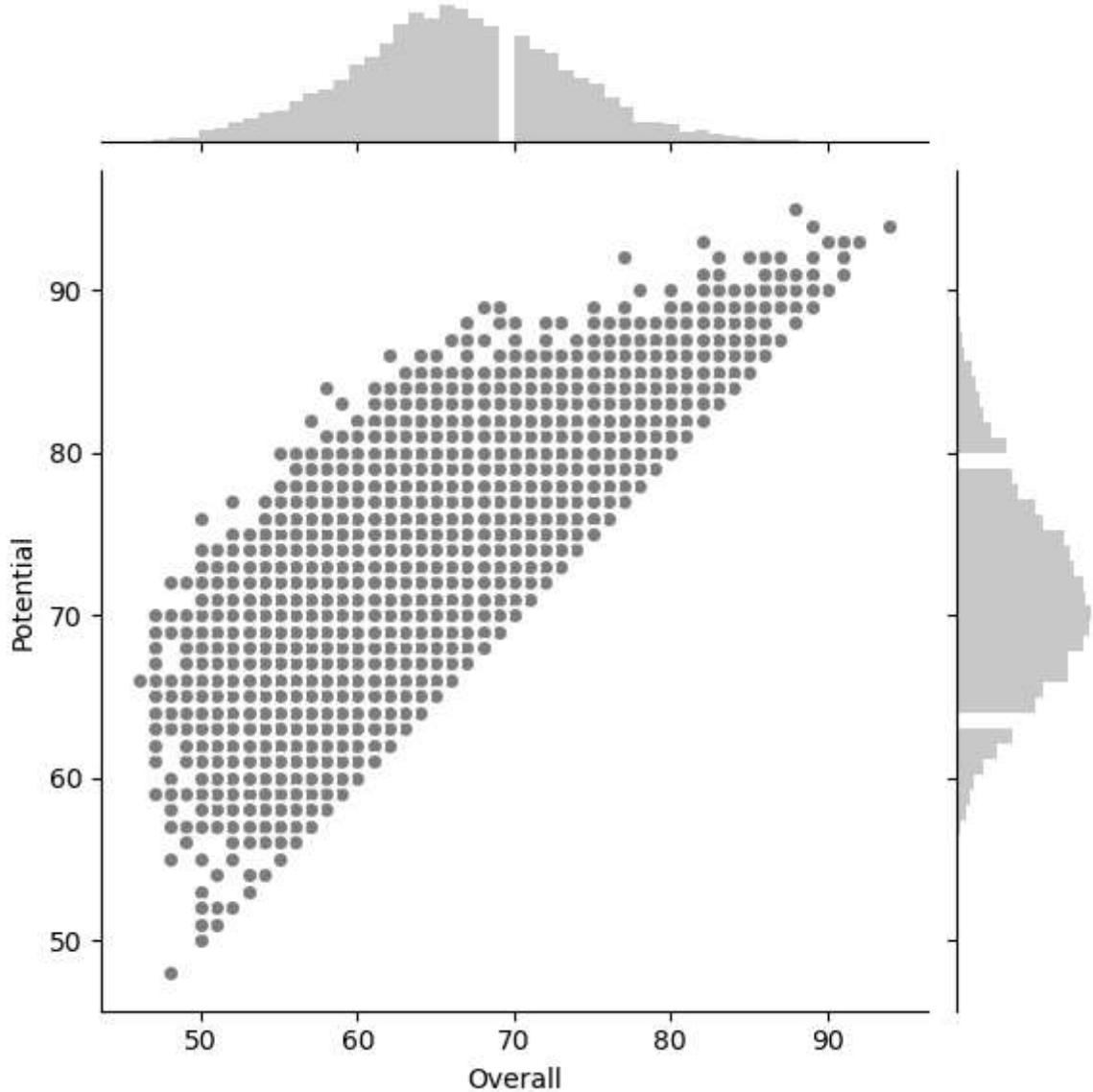


```
In [67]: g = sns.JointGrid(x="Overall", y="Potential", data=fifa)
g = g.plot(sns.regplot, sns.distplot)
plt.show()
```

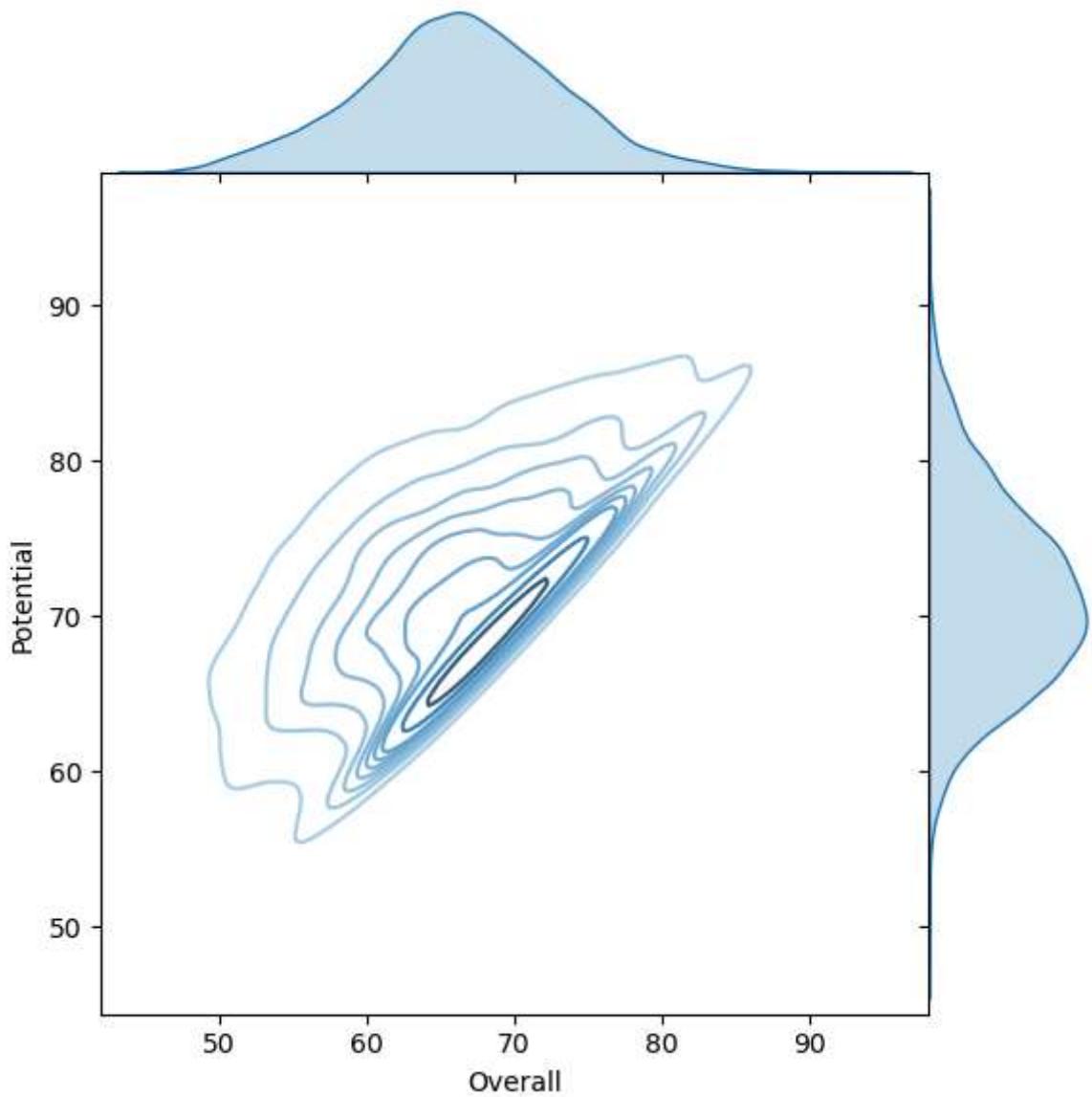


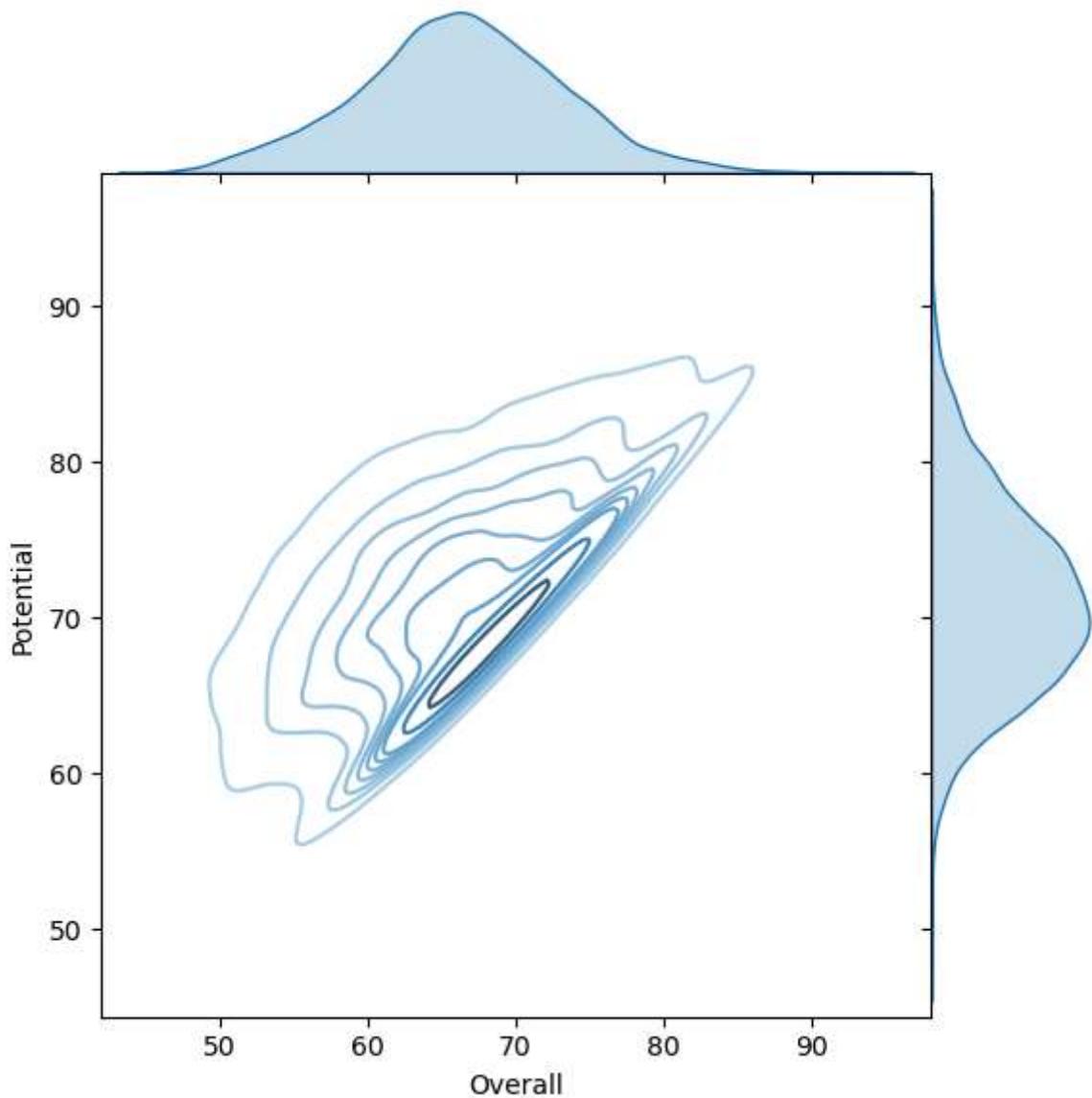
```
In [68]: import matplotlib.pyplot as plt
```

```
In [69]: g = sns.JointGrid(x="Overall", y="Potential", data=fifa)
g = g.plot_joint(plt.scatter, color=".5", edgecolor="white")
g = g.plot_marginals(sns.distplot, kde=False, color=".5")
plt.show()
```

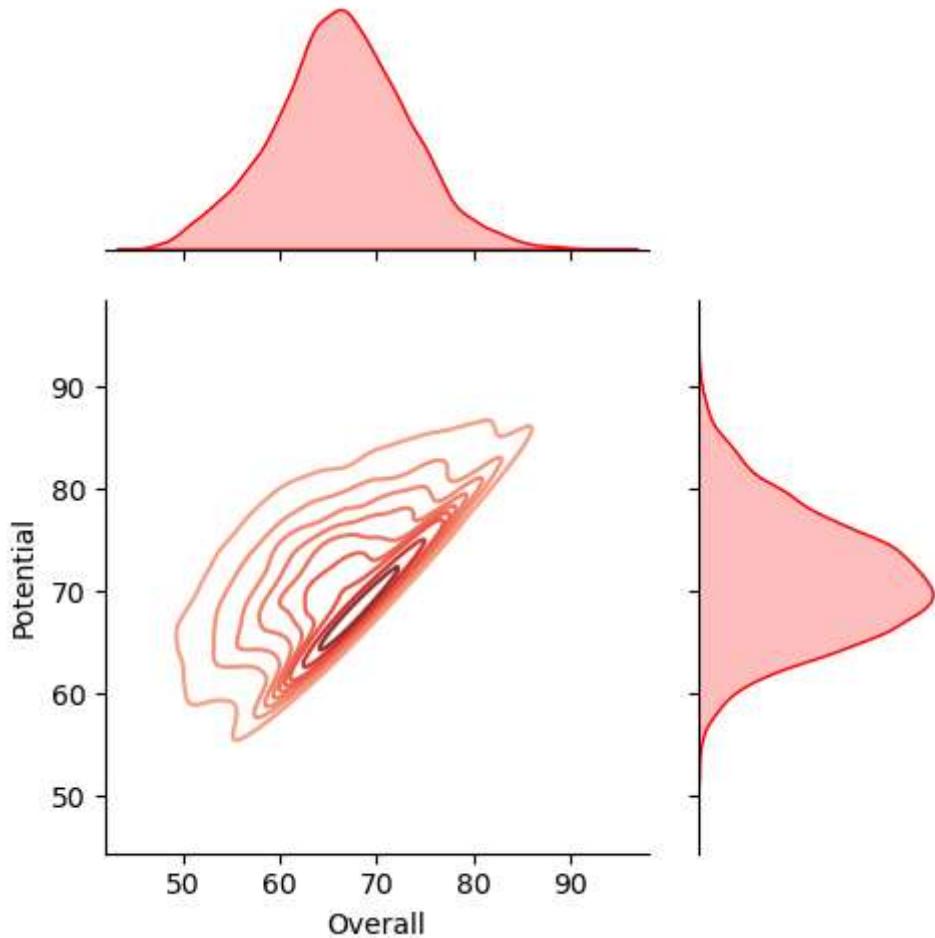


```
In [71]: g = sns.JointGrid(x="Overall", y="Potential", data=fifa, space=0)
g = g.plot_joint(sns.kdeplot, cmap="Blues_d")
g = g.plot_marginals(sns.kdeplot, shade=True)
plt.show()
```





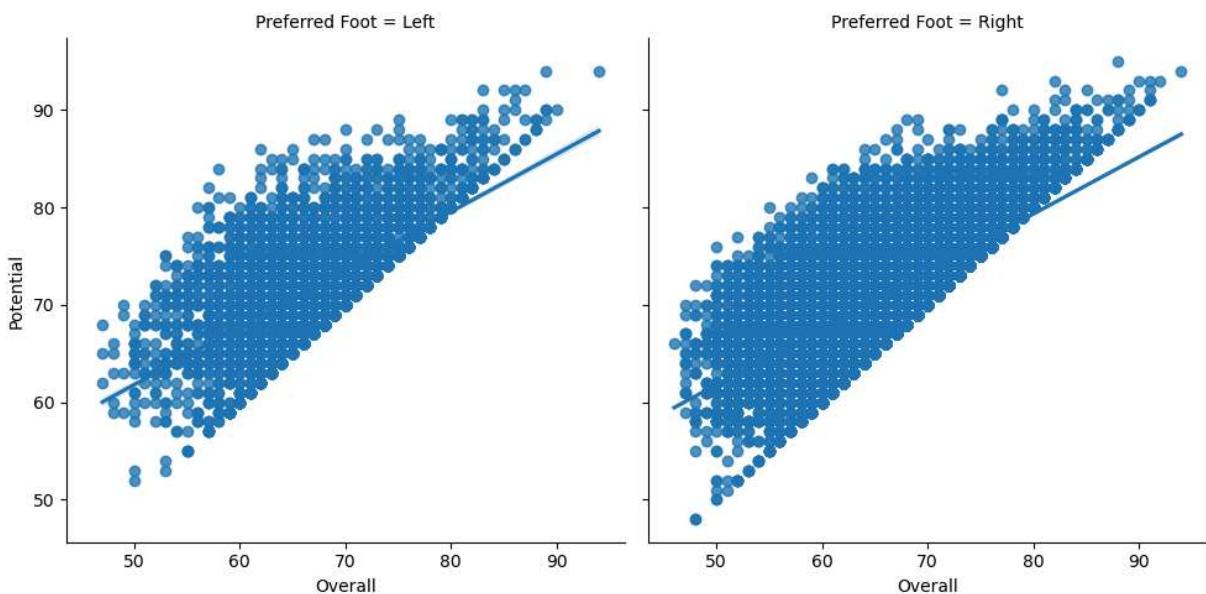
```
In [72]: g = sns.JointGrid(x="Overall", y="Potential", data=fifa, height=5, ratio=2)
g = g.plot_joint(sns.kdeplot, cmap="Reds_d")
g = g.plot_marginals(sns.kdeplot, color="r", shade=True)
plt.show()
```



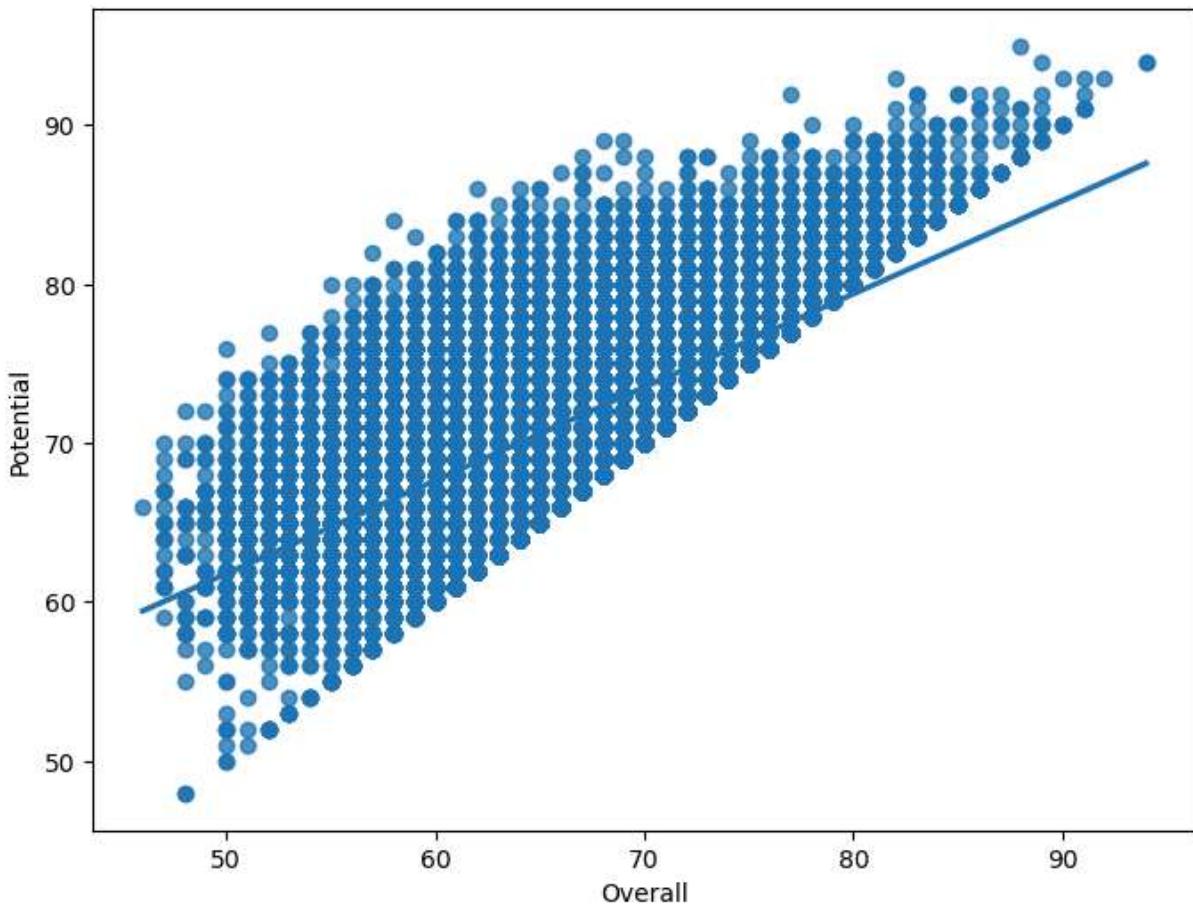
```
In [73]: sns.lmplot(x="Overall", y="Potential", col="Preferred Foot", data=fifa, col_wrap=2,
```

```
Out[73]: <seaborn.axisgrid.FacetGrid at 0x12c6ebe7750>
```

```
In [74]: plt.show()
```

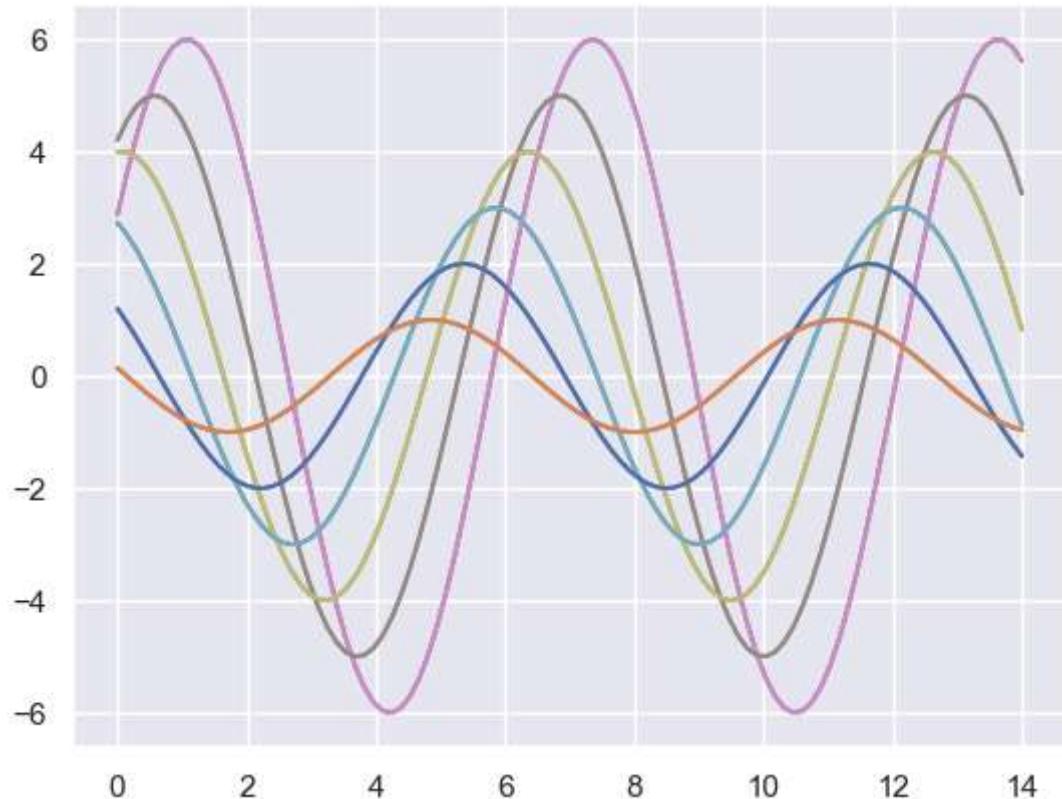


```
In [75]: f, ax = plt.subplots(figsize=(8, 6))
ax = sns.regplot(x="Overall", y="Potential", data=fifa);
plt.show()
```

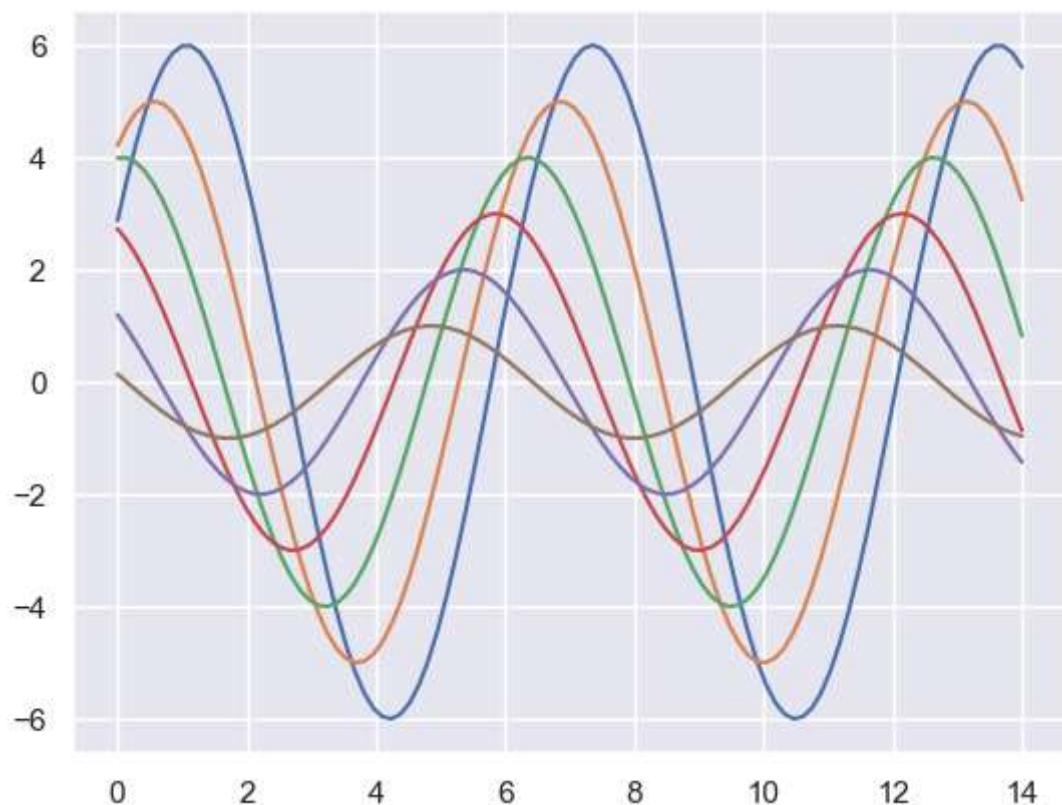


```
In [93]: def sinplot(flip=1):
    x = np.linspace(0, 14, 100)
    for i in range(1, 7):
        plt.plot(x, np.sin(x + i * .5) * (7 - i) * flip)
```

```
In [95]: sinplot()
plt.show()
```



```
In [96]: sns.set()  
sinplot()  
plt.show()
```



```
In [97]: sns.set_style("Whitegrid")
sinplot()
plt.show()
```

```
-----
ValueError                                                 Traceback (most recent call last)
Cell In[97], line 1
----> 1 sns.set_style("Whitegrid")
      2 sinplot()
      3 plt.show()

File ~\anaconda3\Lib\site-packages\seaborn\rcmod.py:331, in set_style(style, rc)
    303 def set_style(style=None, rc=None):
    304     """
    305     Set the parameters that control the general style of the plots.
    306
    (...)

 329     """
 330
--> 331     style_object = axes_style(style, rc)
 332     mpl.rcParams.update(style_object)

File ~\anaconda3\Lib\site-packages\seaborn\rcmod.py:185, in axes_style(style, rc)
 183 styles = ["white", "dark", "whitegrid", "darkgrid", "ticks"]
 184 if style not in styles:
--> 185     raise ValueError(f"style must be one of {', '.join(styles)}")
 187 # Define colors here
 188 dark_gray = ".15"

ValueError: style must be one of white, dark, whitegrid, darkgrid, ticks
```

```
In [ ]:
```