

```
In [1]: import numpy as np
import pandas as pd
import seaborn as sns
sns.set(style="whitegrid")
import matplotlib.pyplot as plt
from collections import Counter
%matplotlib inline
import os
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')
```

Read Dataset

```
In [4]: fifa19=pd.read_csv(r"C:\Users\MANISHA\OneDrive\Documents\FIFA.csv")
```

Preview the dataset

```
In [6]: fifa19.head()
```

```
Out[6]:      Unnamed: 0   ID   Name   Age           Photo Nationality
0            0  158023  L. Messi  31  https://cdn.sofifa.org/players/4/19/158023.png  Argentina
1            1  20801  Cristiano Ronaldo  33  https://cdn.sofifa.org/players/4/19/20801.png  Portugal
2            2  190871  Neymar Jr  26  https://cdn.sofifa.org/players/4/19/190871.png  Brazil
3            3  193080  De Gea  27  https://cdn.sofifa.org/players/4/19/193080.png  Spain
4            4  192985  K. De Bruyne  27  https://cdn.sofifa.org/players/4/19/192985.png  Belgium
```

5 rows × 89 columns



view summary of dataset

```
In [8]: fifa19.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
```

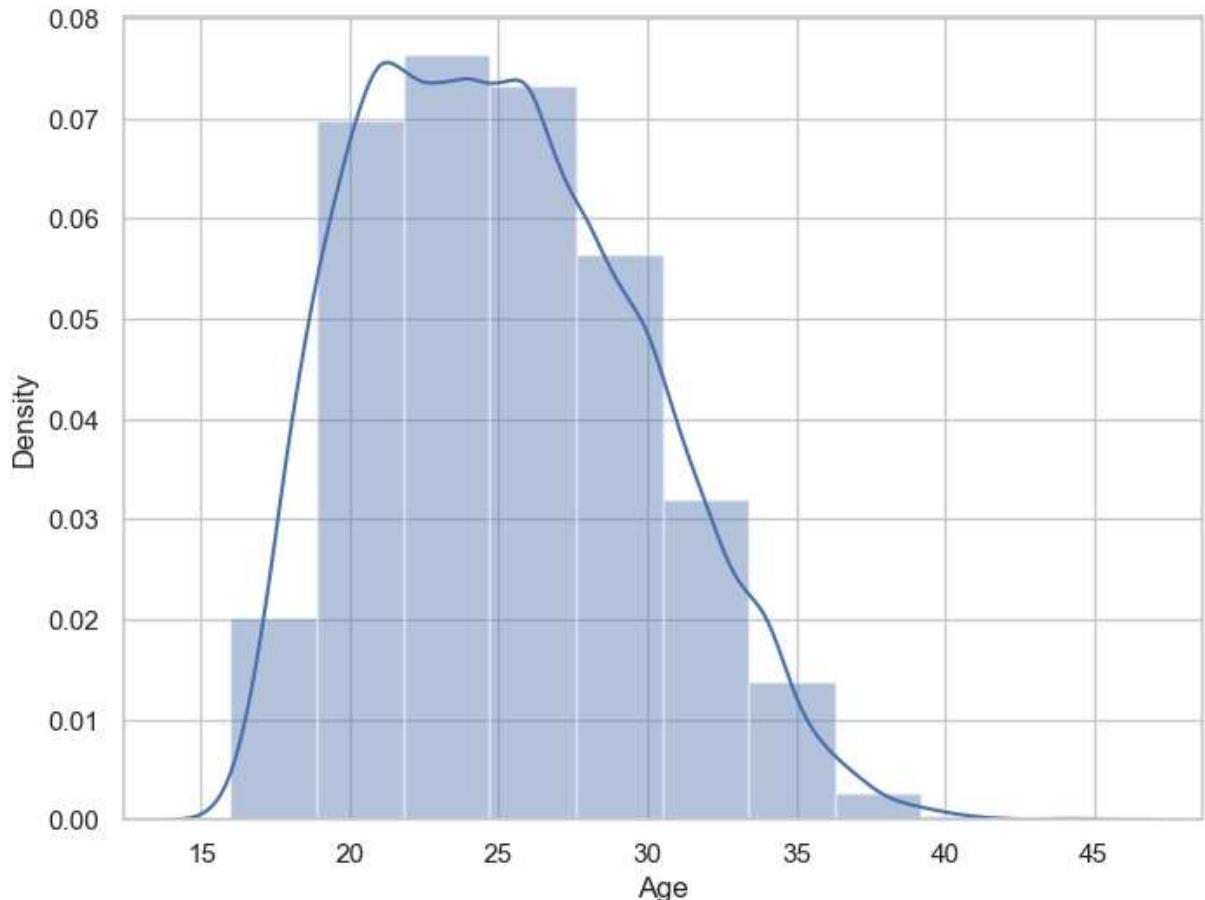
```
51 CB           16122 non-null object
52 RCB          16122 non-null object
53 RB           16122 non-null object
54 Crossing     18159 non-null float64
55 Finishing    18159 non-null float64
56 HeadingAccuracy 18159 non-null float64
57 ShortPassing 18159 non-null float64
58 Volleys      18159 non-null 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 [9]: fifa19['Body Type'].value_counts()
```

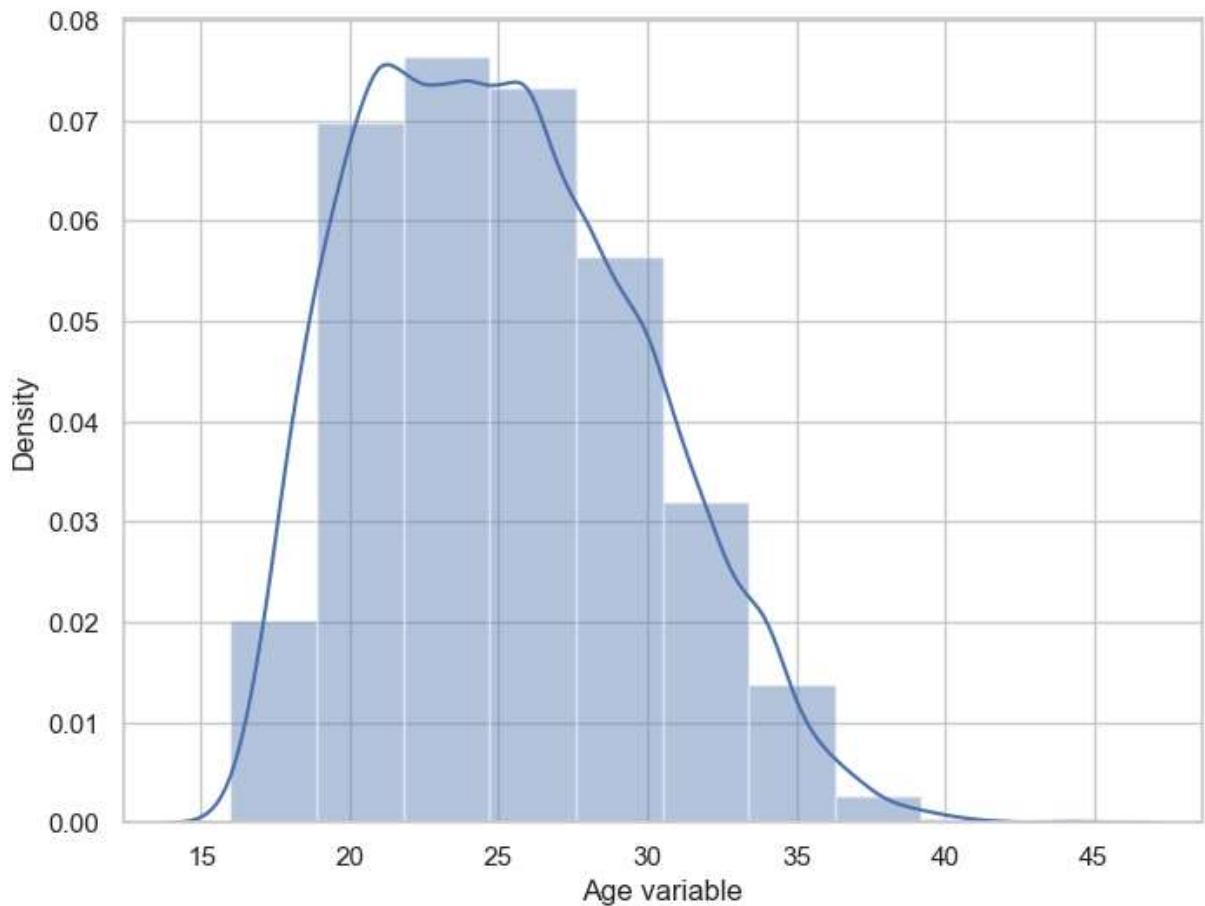
```
Out[9]: Body Type
Normal            10595
Lean              6417
Stocky             1140
Messi               1
C. Ronaldo         1
Neymar              1
Courtois             1
PLAYER_BODY_TYPE_25 1
Shaqiri              1
Akinfenwa            1
Name: count, dtype: int64
```

Explore age variable

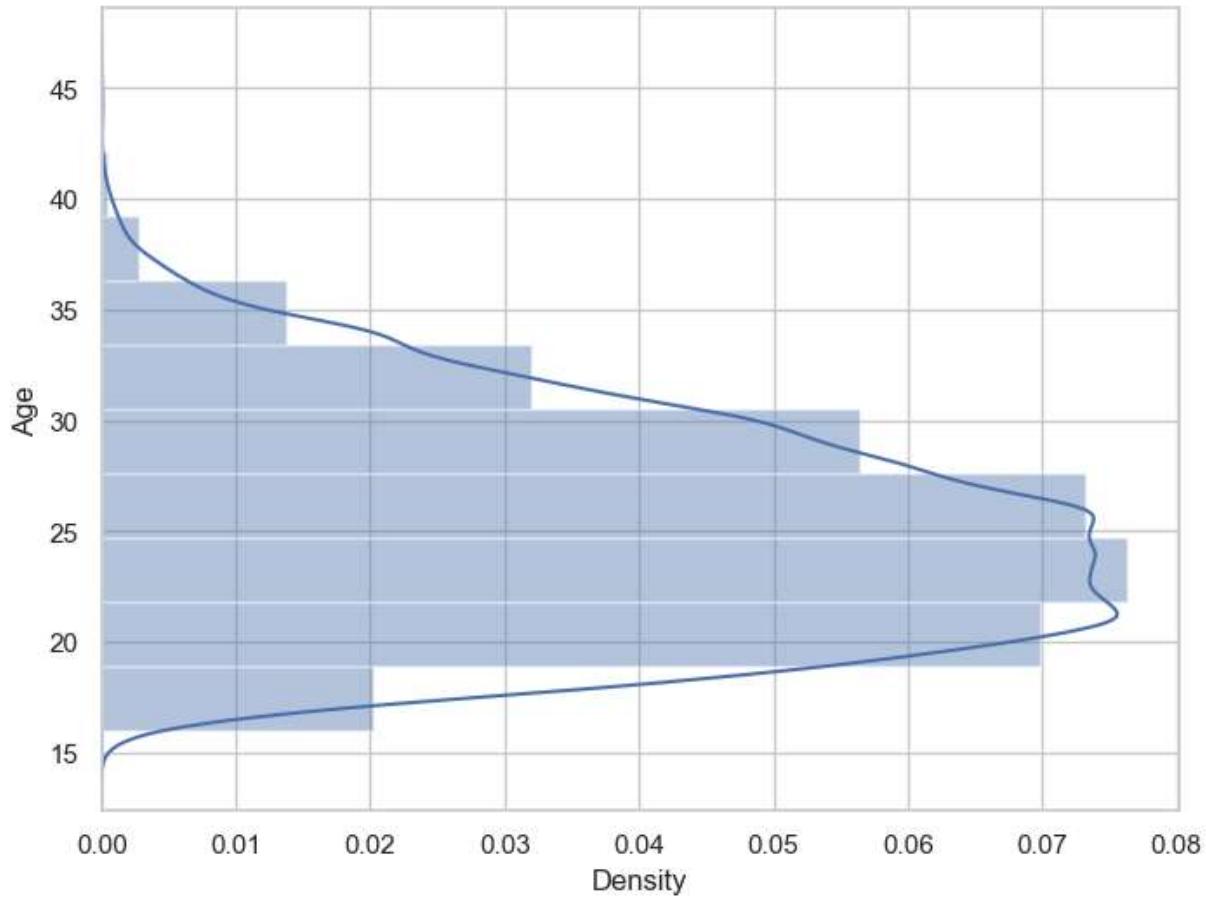
```
In [11]: f,ax=plt.subplots(figsize=(8,6))
x=fifa19['Age']
ax=sns.distplot(x,bins=10)
plt.show()
```



```
In [12]: f,ax=plt.subplots(figsize=(8,6))
x=fifa19['Age']
x=pd.Series(x,name='Age variable')
ax=sns.distplot(x,bins=10)
plt.show()
```

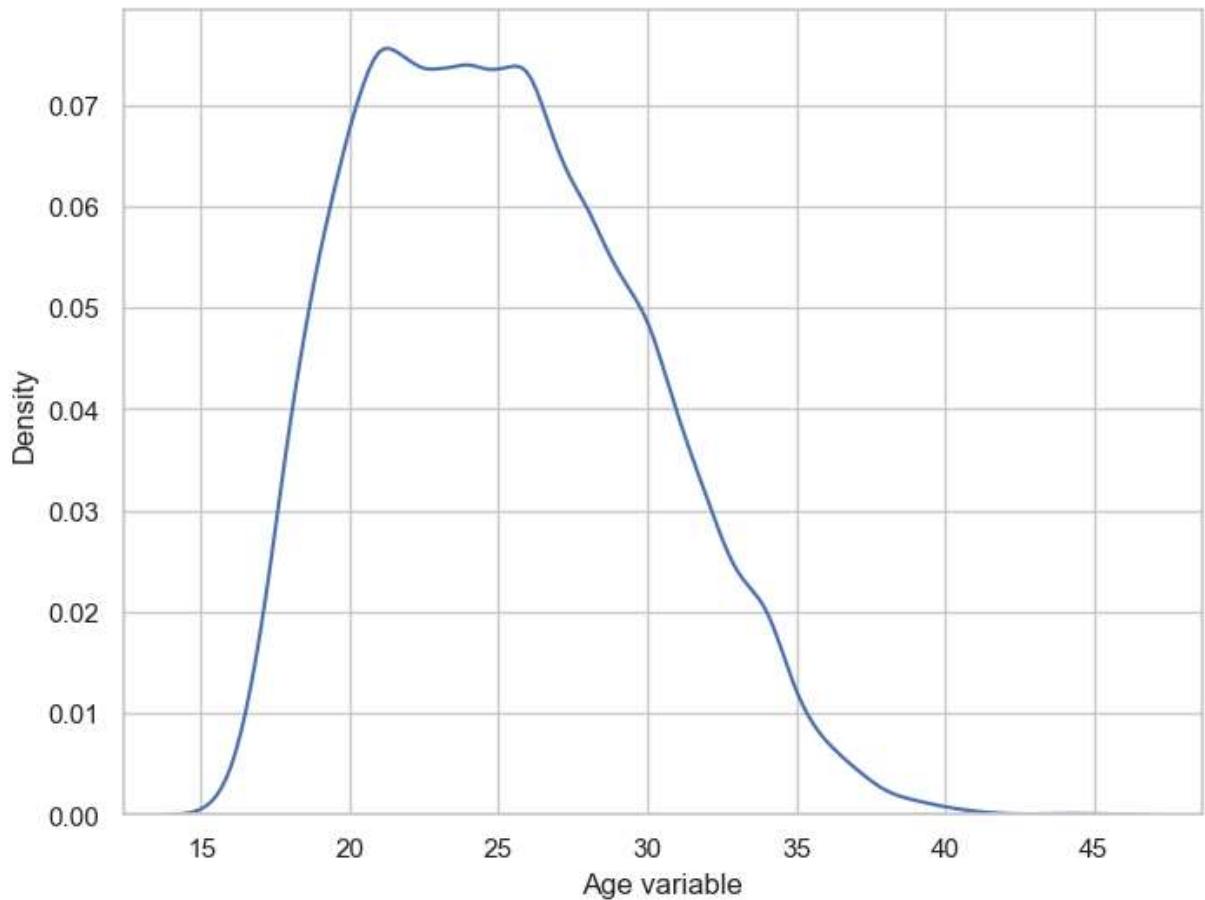


```
In [13]: f,ax=plt.subplots(figsize=(8,6))
x=fifa19['Age']
ax=sns.distplot(x,bins=10,vertical=True)
plt.show()
```

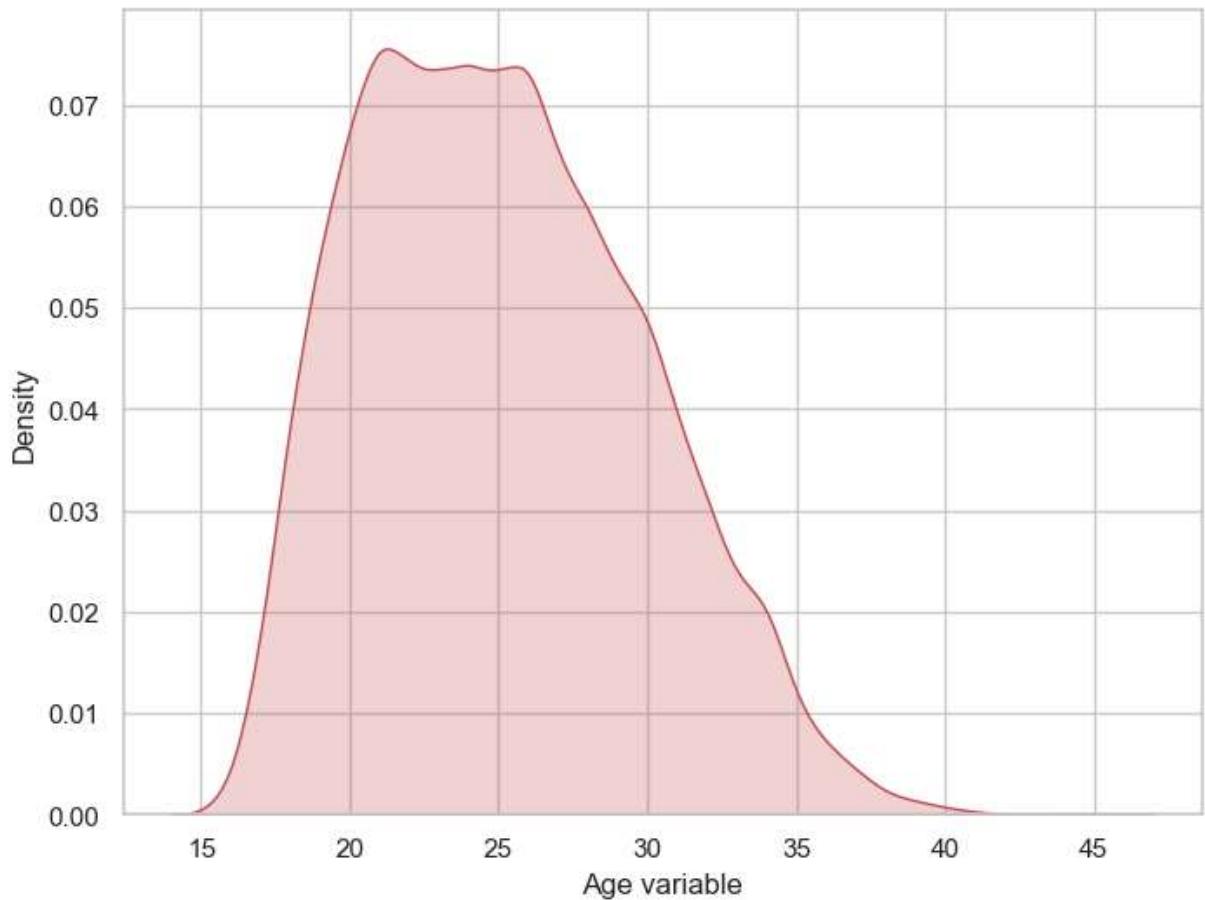


Seaborn Kernel Density Estimation(KDE) plot

```
In [15]: f,ax=plt.subplots(figsize=(8,6))
x=fifa19['Age']
x=pd.Series(x,name='Age variable')
ax=sns.kdeplot(x)
plt.show()
```

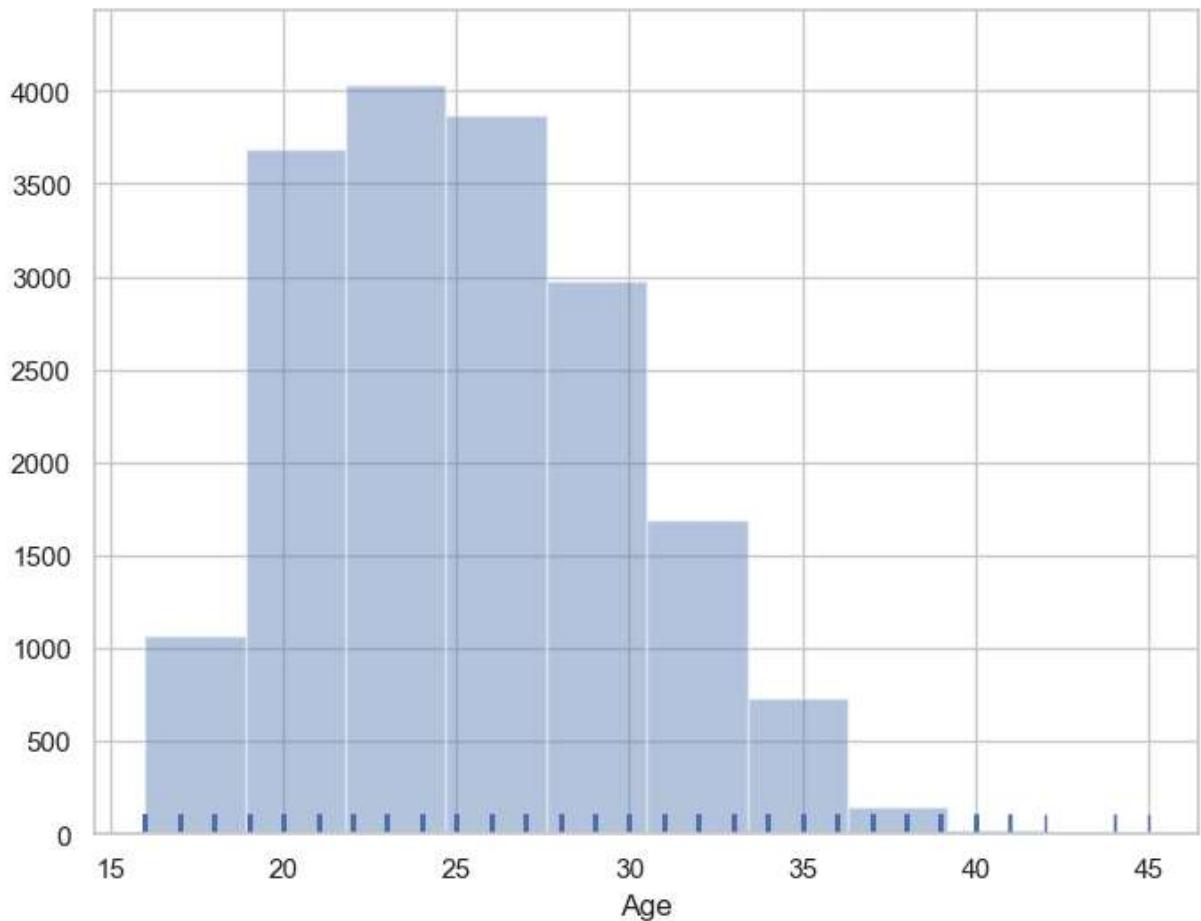


```
In [16]: f,ax=plt.subplots(figsize=(8,6))
x=fifa19['Age']
x=pd.Series(x,name='Age variable')
ax=sns.kdeplot(x,shade=True,color='r')
plt.show()
```

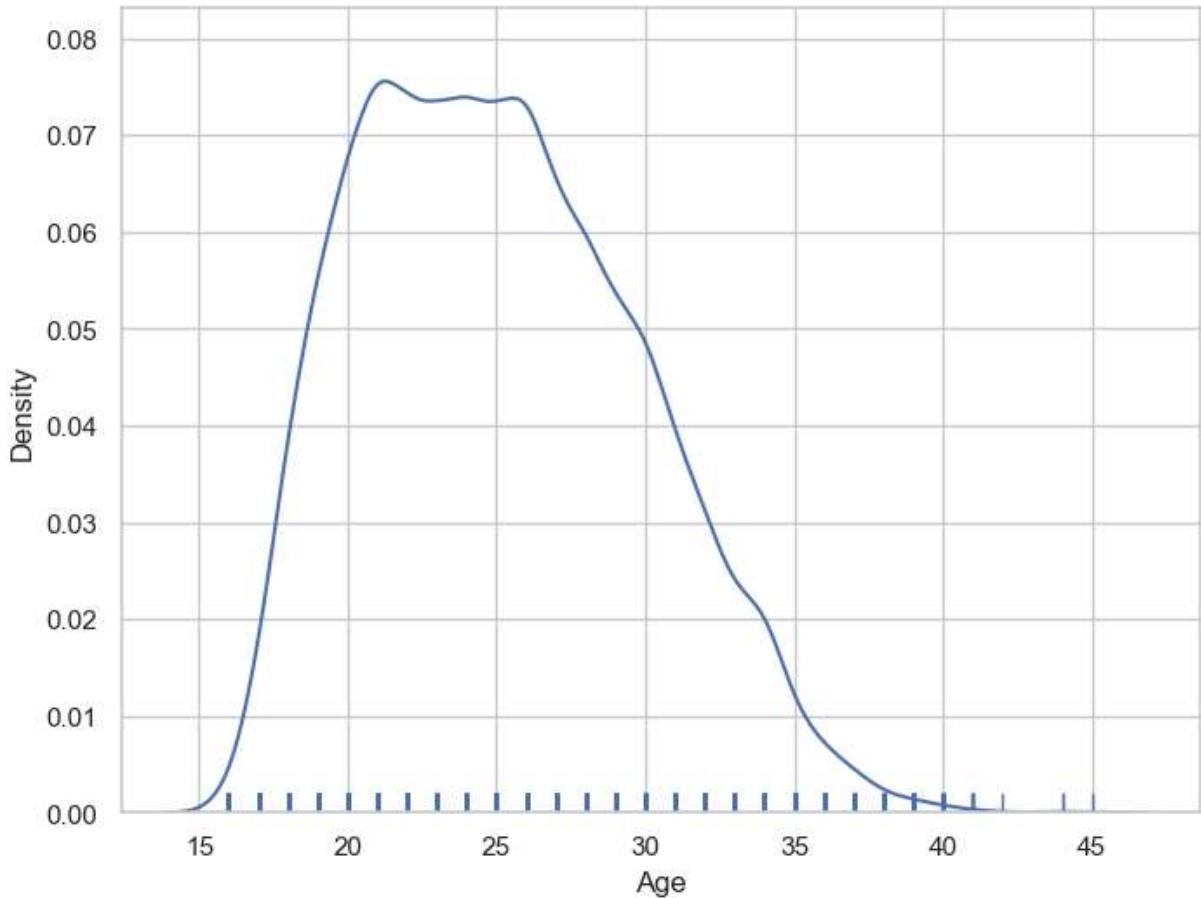


Histograms

```
In [18]: f,ax=plt.subplots(figsize=(8,6))
x=fifa19['Age']
ax=sns.distplot(x,kde=False,rug=True,bins=10)
plt.show()
```



```
In [19]: f,ax=plt.subplots(figsize=(8,6))
x=fifa19['Age']
ax=sns.distplot(x,hist=False,rug=True,bins=10)
plt.show()
```



Explore Preferred Foot Variable

```
In [21]: fifa19['Preferred Foot'].nunique()
```

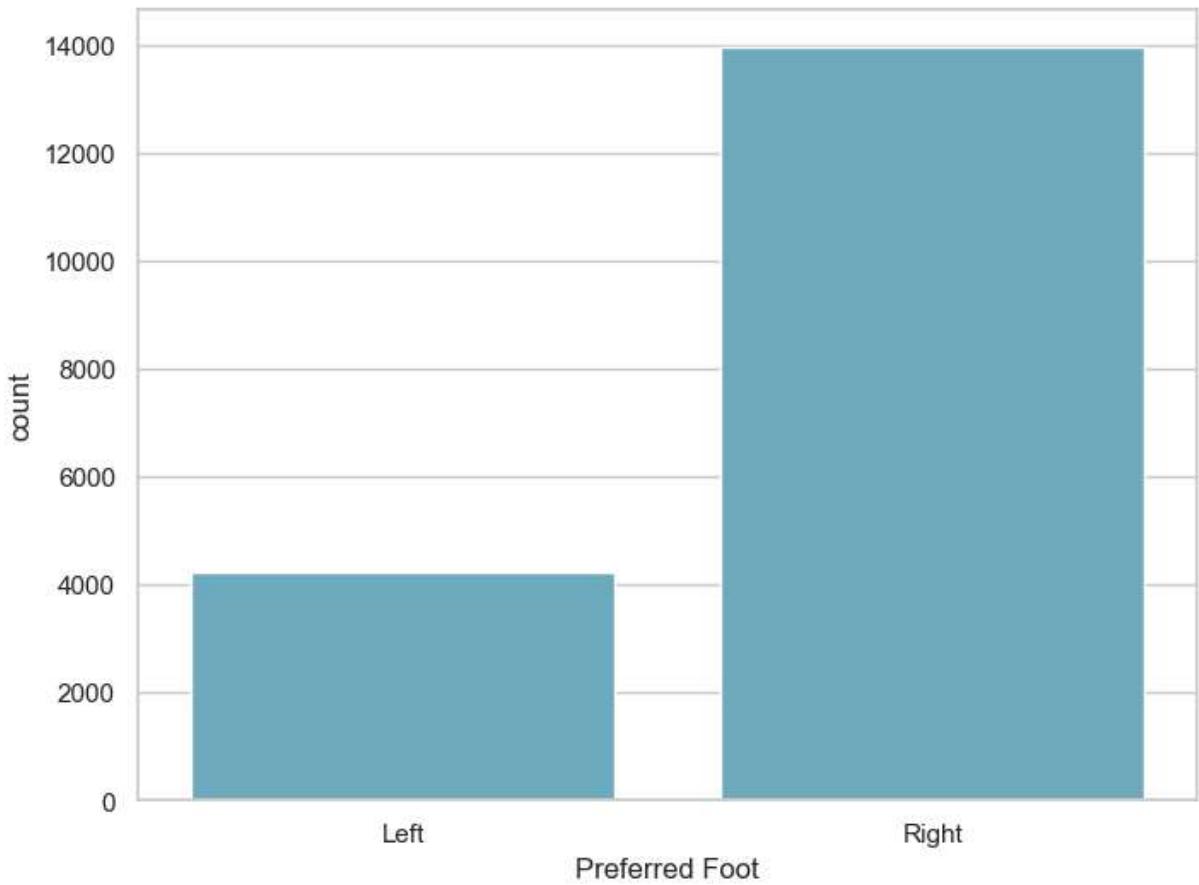
```
Out[21]: 2
```

```
In [22]: fifa19['Preferred Foot'].value_counts()
```

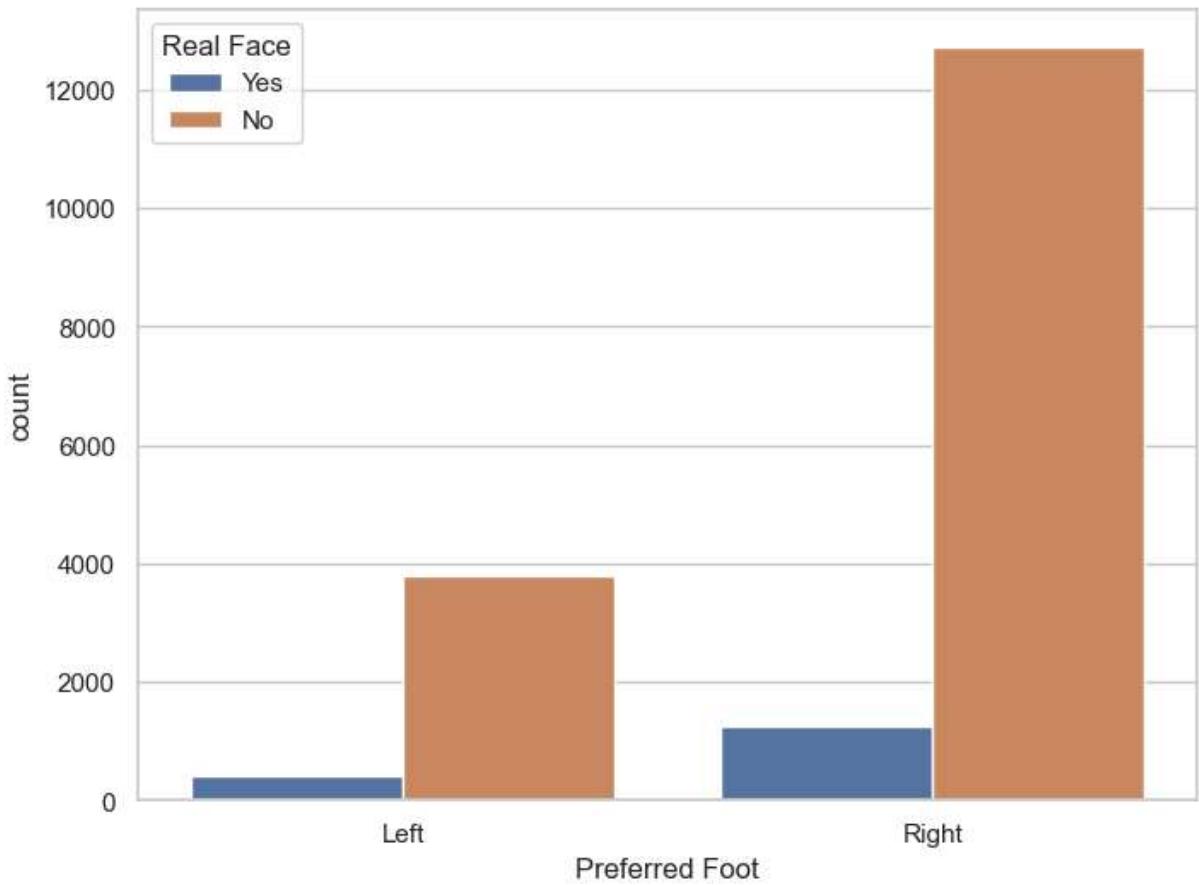
```
Out[22]: Preferred Foot
Right      13948
Left       4211
Name: count, dtype: int64
```

Visualize distribution of values with Seaborn Countplot() function

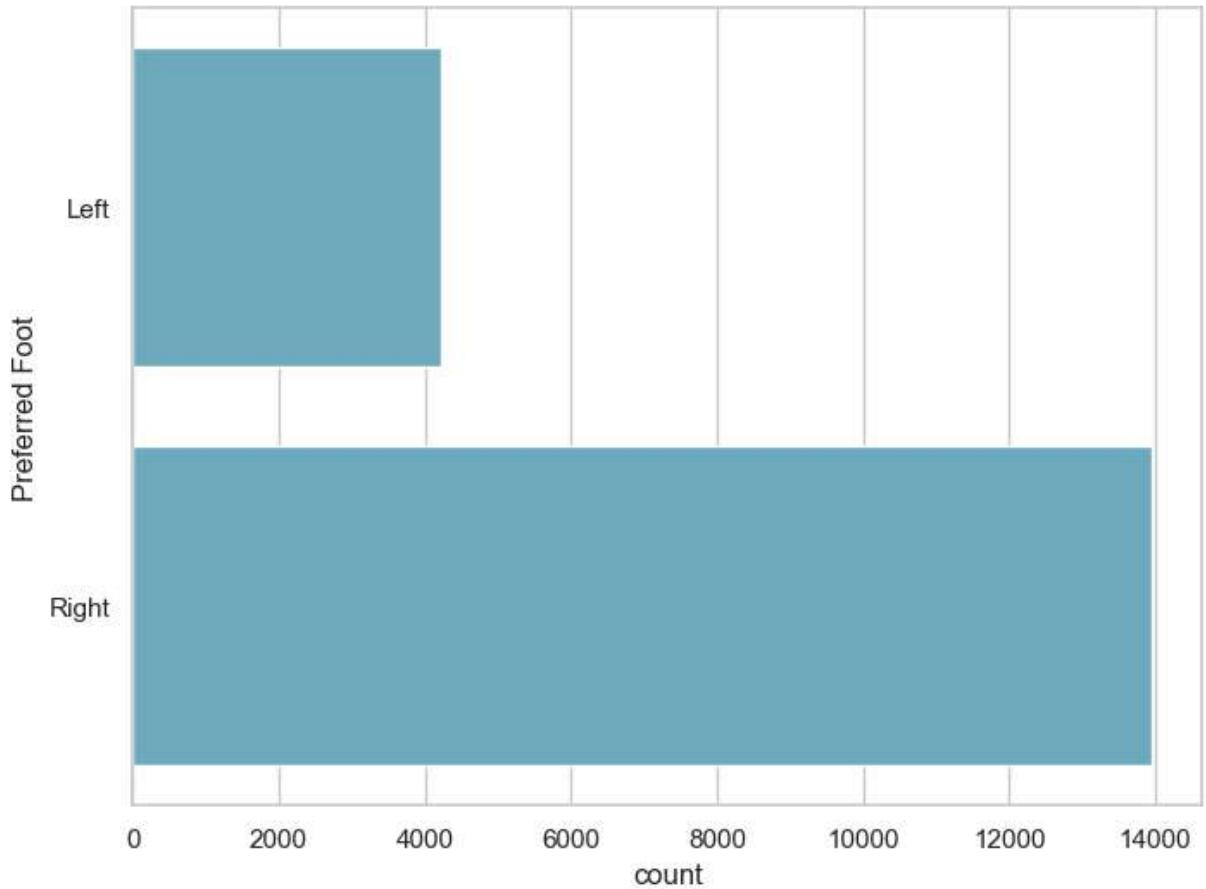
```
In [24]: f, ax = plt.subplots(figsize=(8, 6))
sns.countplot(x="Preferred Foot", data=fifa19, color="c")
plt.show()
```



```
In [25]: f, ax = plt.subplots(figsize=(8, 6))
sns.countplot(x="Preferred Foot", data=fifa19,hue="Real Face")
plt.show()
```

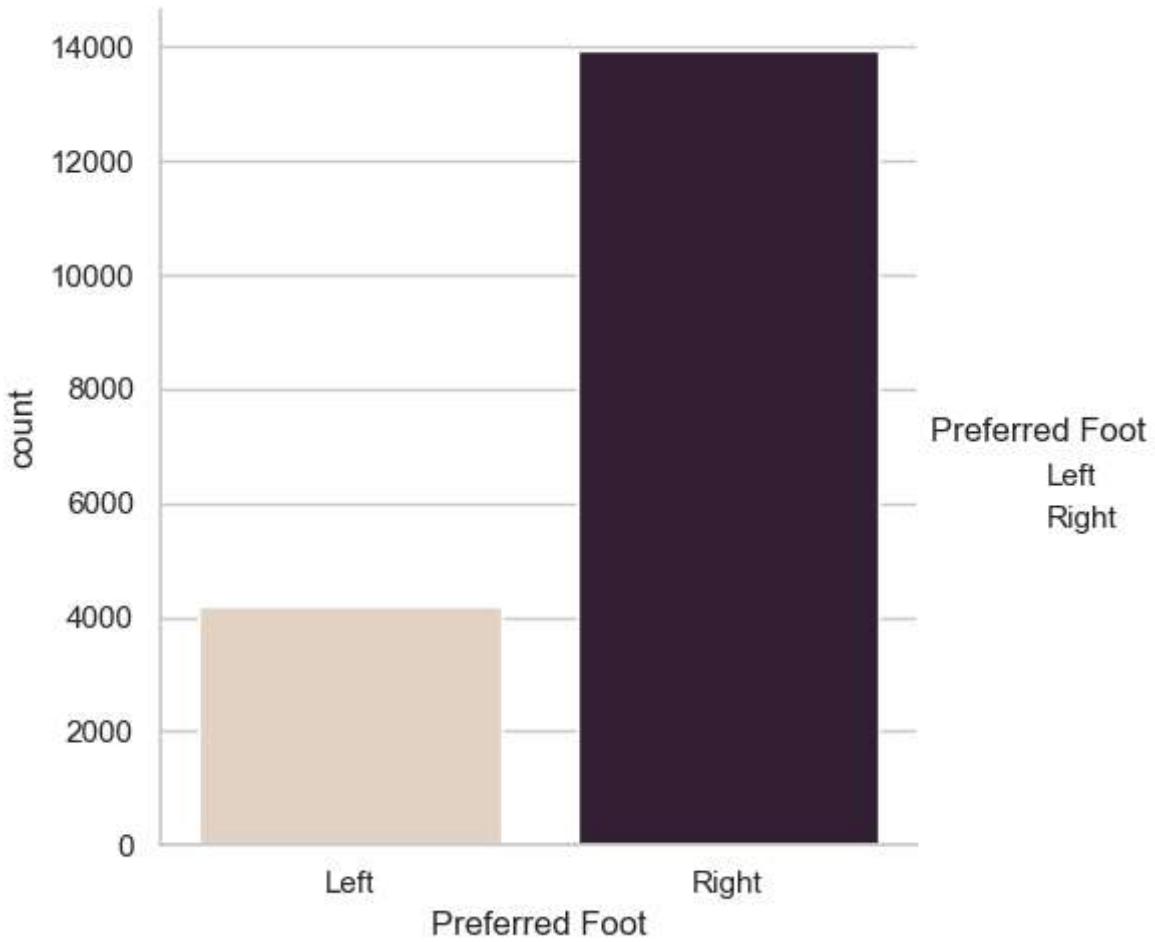


```
In [26]: f, ax = plt.subplots(figsize=(8, 6))
sns.countplot(y="Preferred Foot", data=fifa19, color="c")
plt.show()
```



Seaborn Catplot() function

```
In [28]: g=sns.catplot(x='Preferred Foot',kind='count',palette='ch:.25',data=fifa19)
```



International Reputation

```
In [30]: fifa19['International Reputation'].nunique()
```

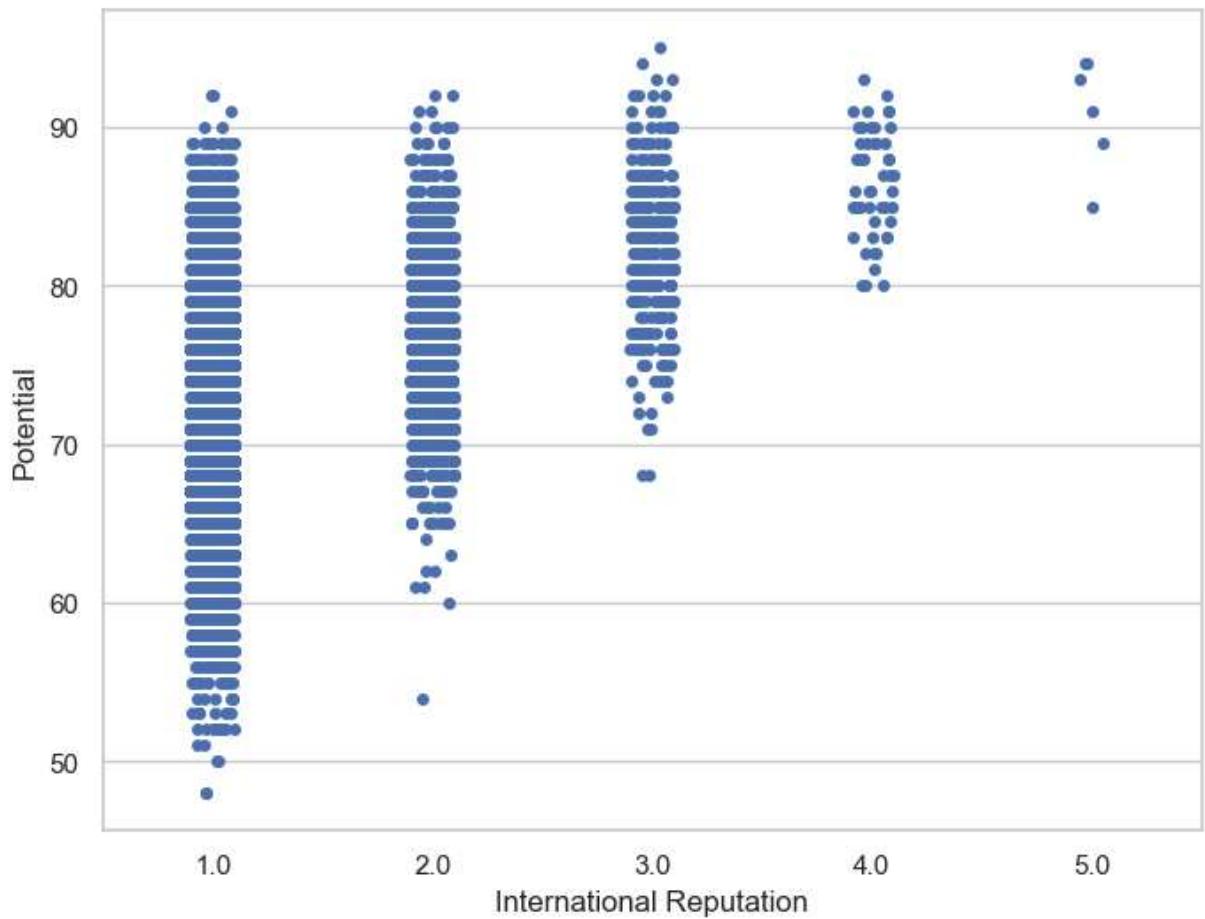
```
Out[30]: 5
```

```
In [31]: fifa19['International Reputation'].value_counts()
```

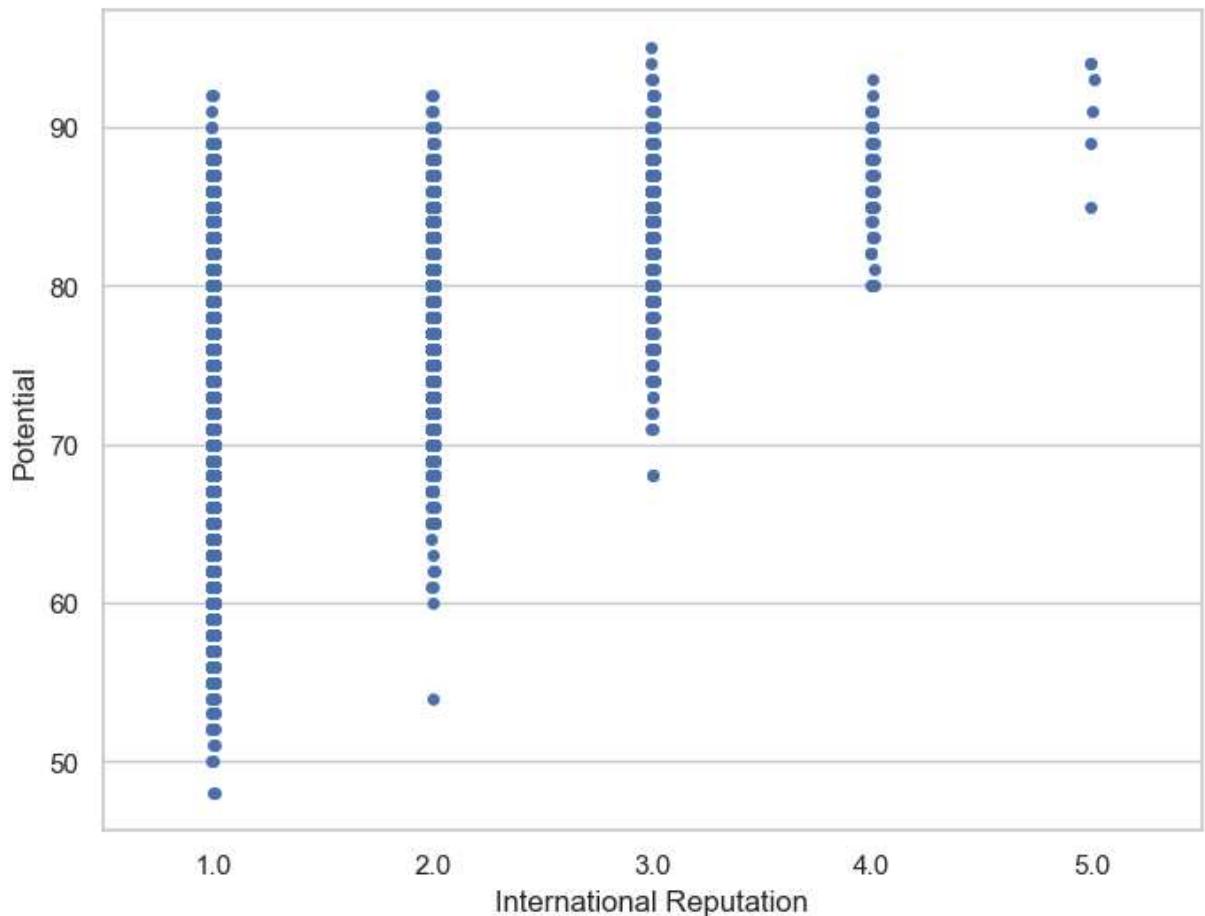
```
Out[31]: International Reputation
1.0    16532
2.0    1261
3.0     309
4.0      51
5.0       6
Name: count, dtype: int64
```

Seaborn Stripplot() function

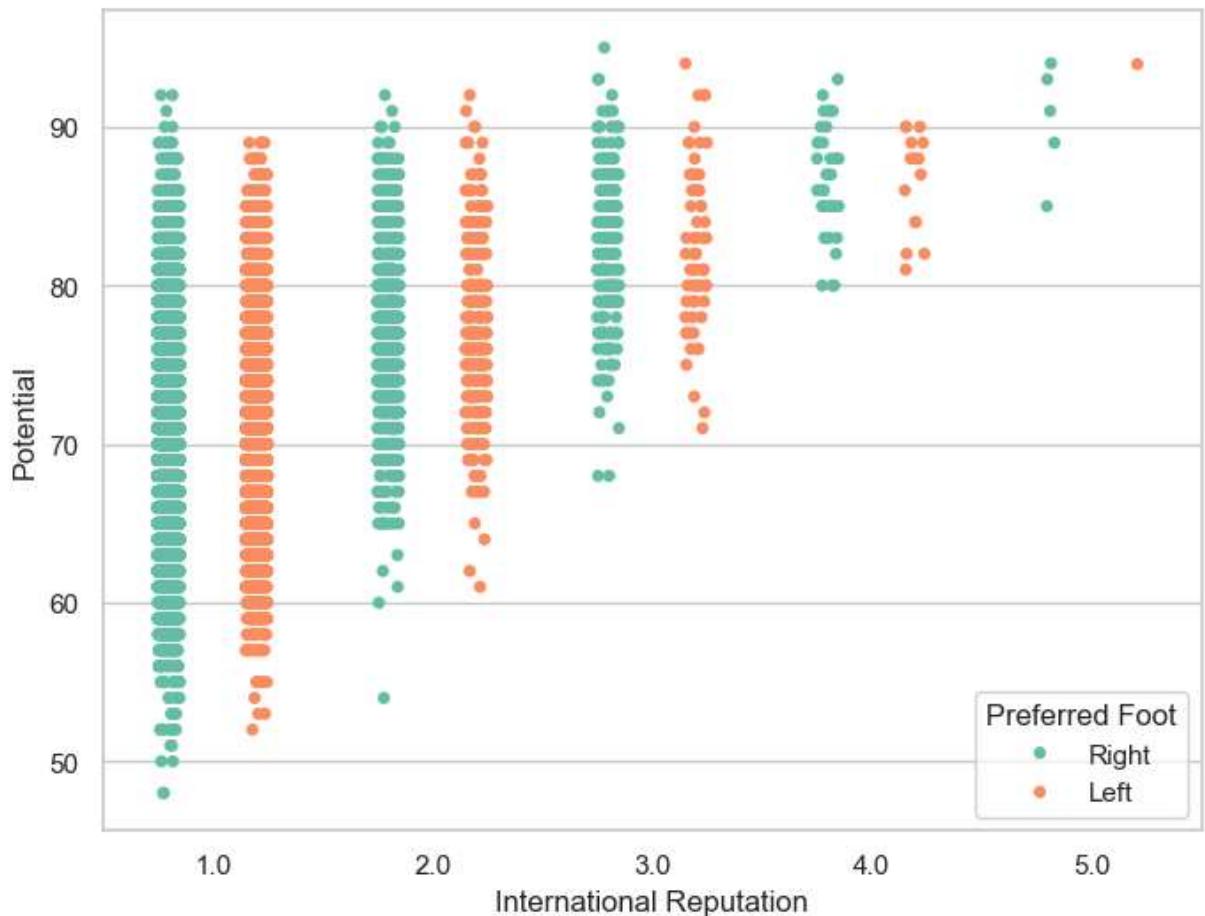
```
In [33]: f, ax = plt.subplots(figsize=(8, 6))
sns.stripplot(x='International Reputation',y='Potential',data=fifa19)
plt.show()
```



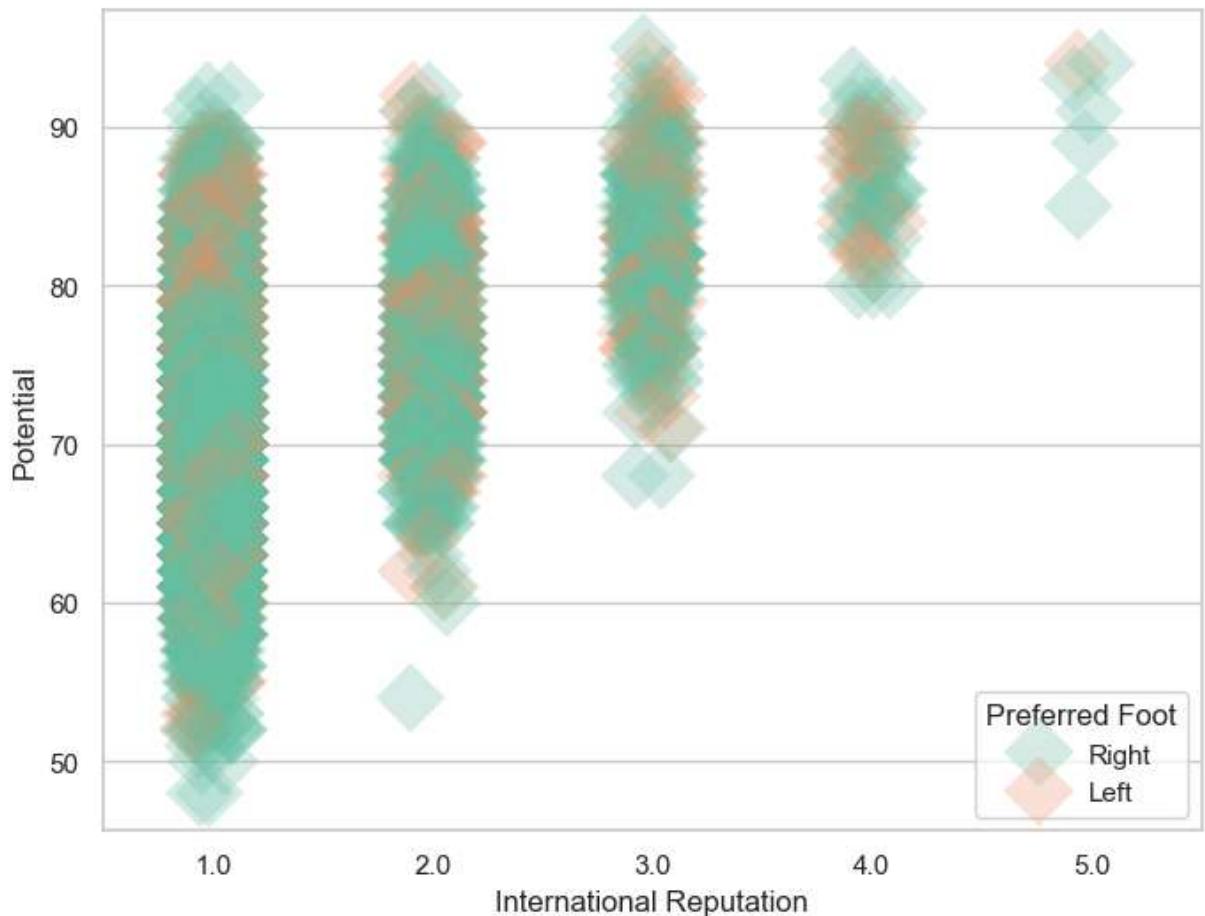
```
In [34]: f, ax = plt.subplots(figsize=(8, 6))
sns.stripplot(x='International Reputation',y='Potential',data=fifa19,jitter=0.01)
plt.show()
```



```
In [35]: f, ax = plt.subplots(figsize=(8, 6))
sns.stripplot(x='International Reputation', y='Potential', hue='Preferred Foot', data=
               palette='Set2', dodge=True)
plt.show()
```

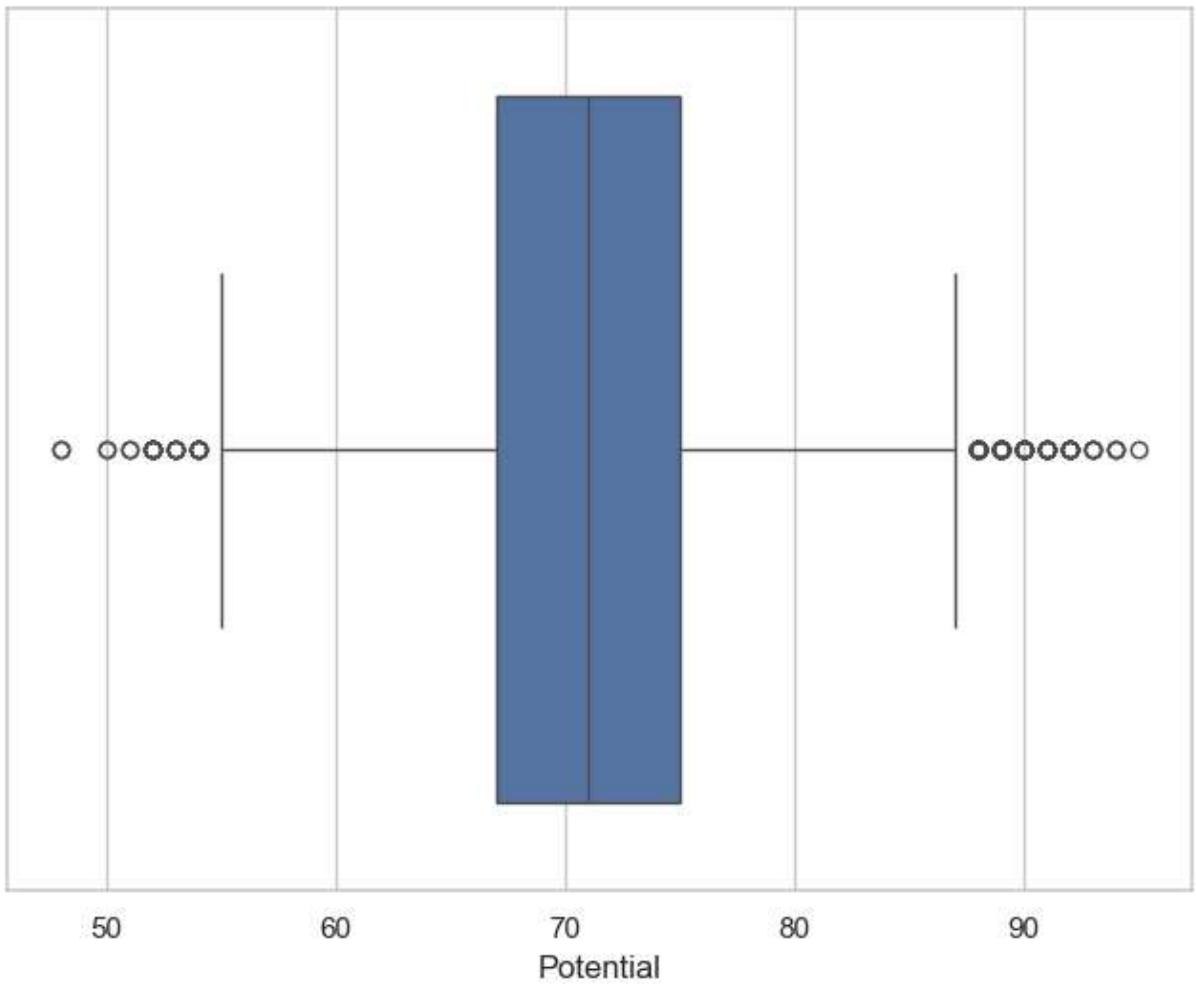


```
In [36]: f, ax = plt.subplots(figsize=(8, 6))
sns.stripplot(x="International Reputation", y="Potential", hue="Preferred Foot",
              data=fifa19, palette="Set2", size=20, marker="D",
              edgecolor="gray", alpha=.25)
plt.show()
```

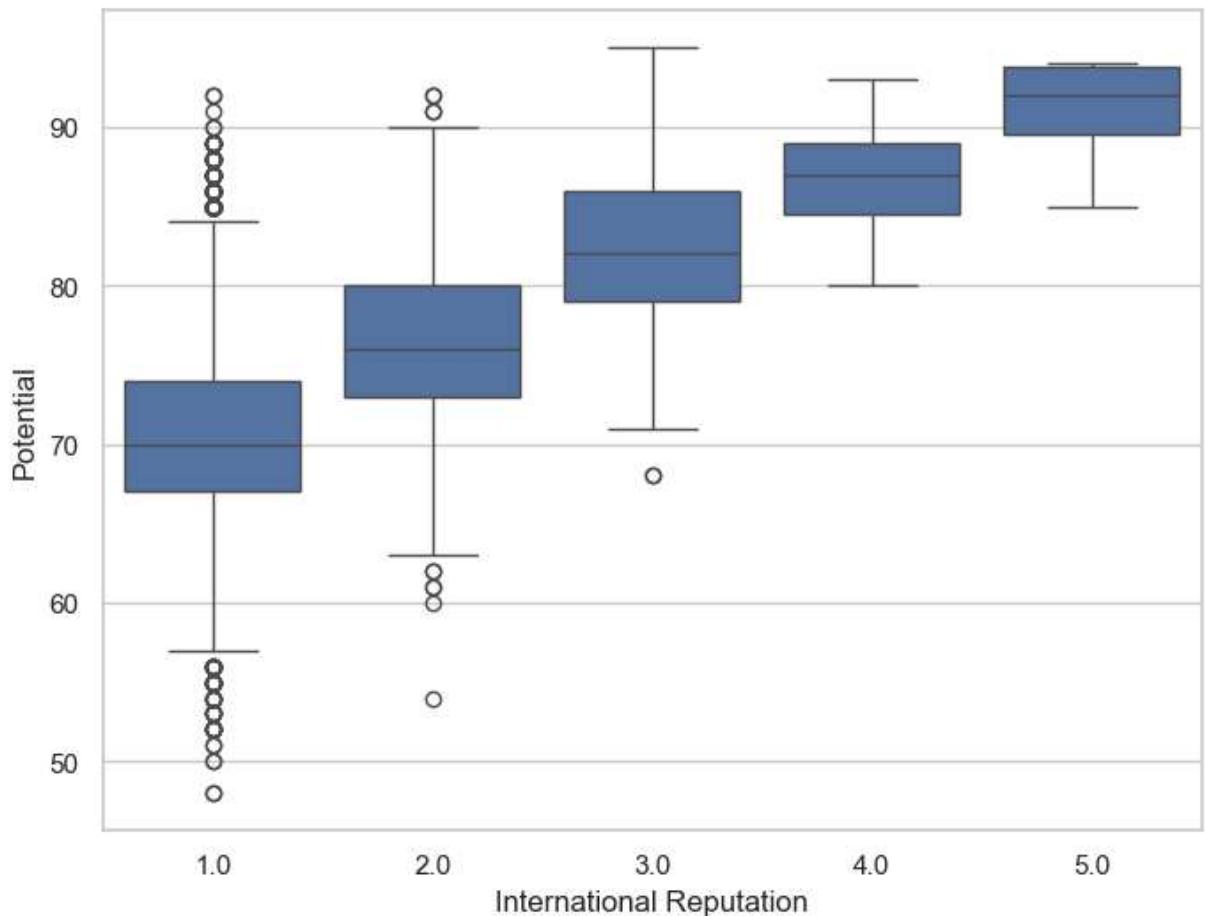


Seaborn Boxplot() function

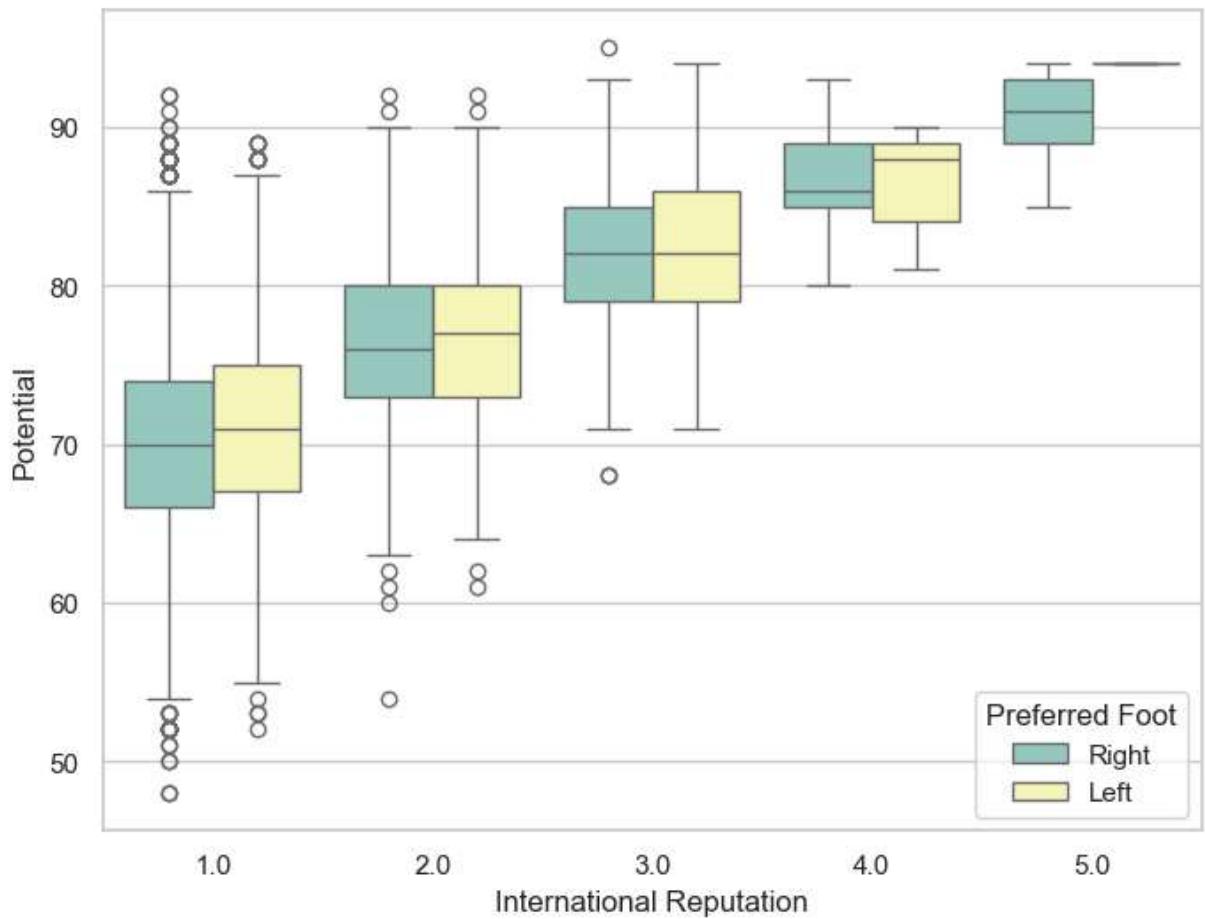
```
In [38]: f,ax=plt.subplots(figsize=(8,6))
sns.boxplot(x=fifa19['Potential'])
plt.show()
```



```
In [39]: f, ax = plt.subplots(figsize=(8, 6))
sns.boxplot(x="International Reputation", y="Potential", data=fifa19)
plt.show()
```

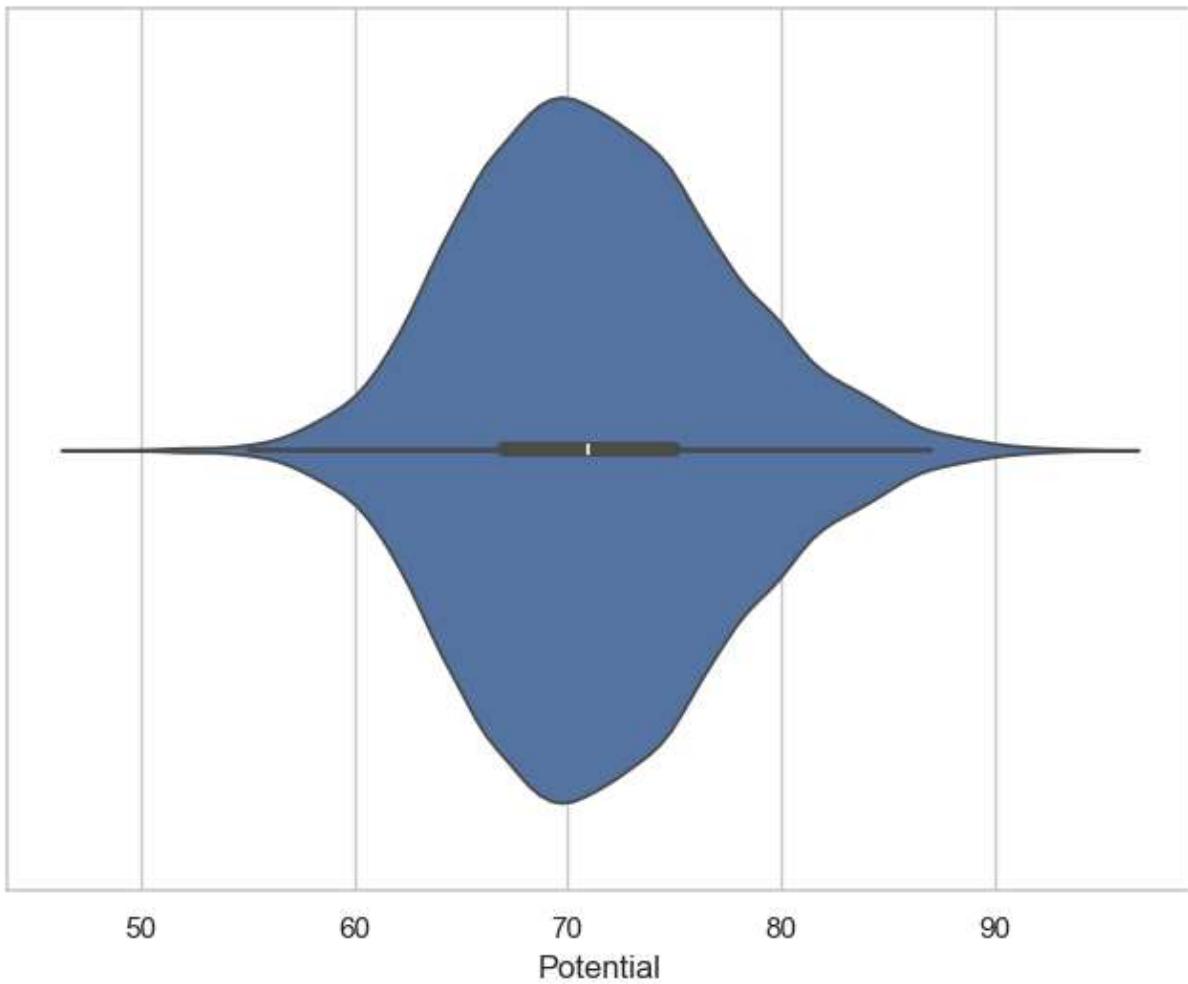


```
In [40]: f, ax = plt.subplots(figsize=(8, 6))
sns.boxplot(x="International Reputation", y="Potential", hue="Preferred Foot", data=players)
plt.show()
```

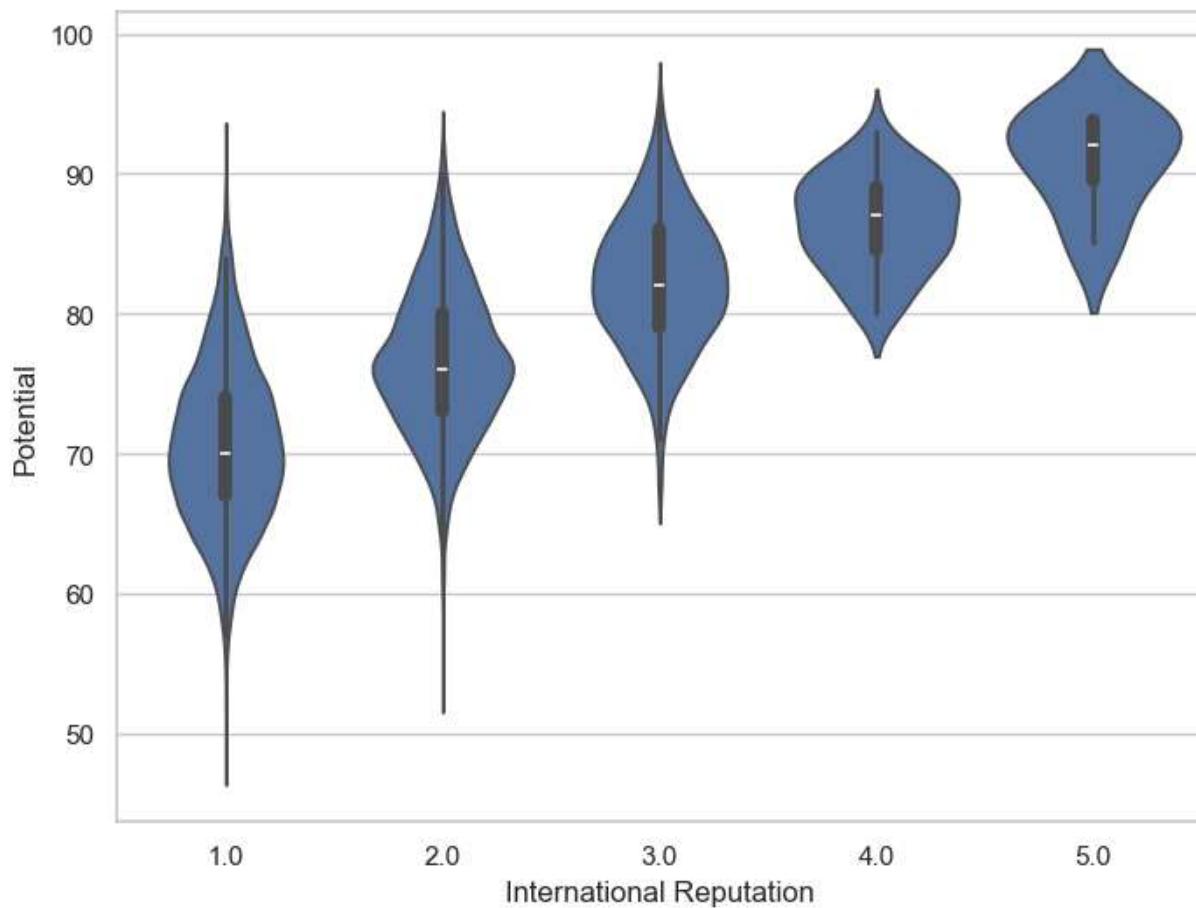


Violinplot() function

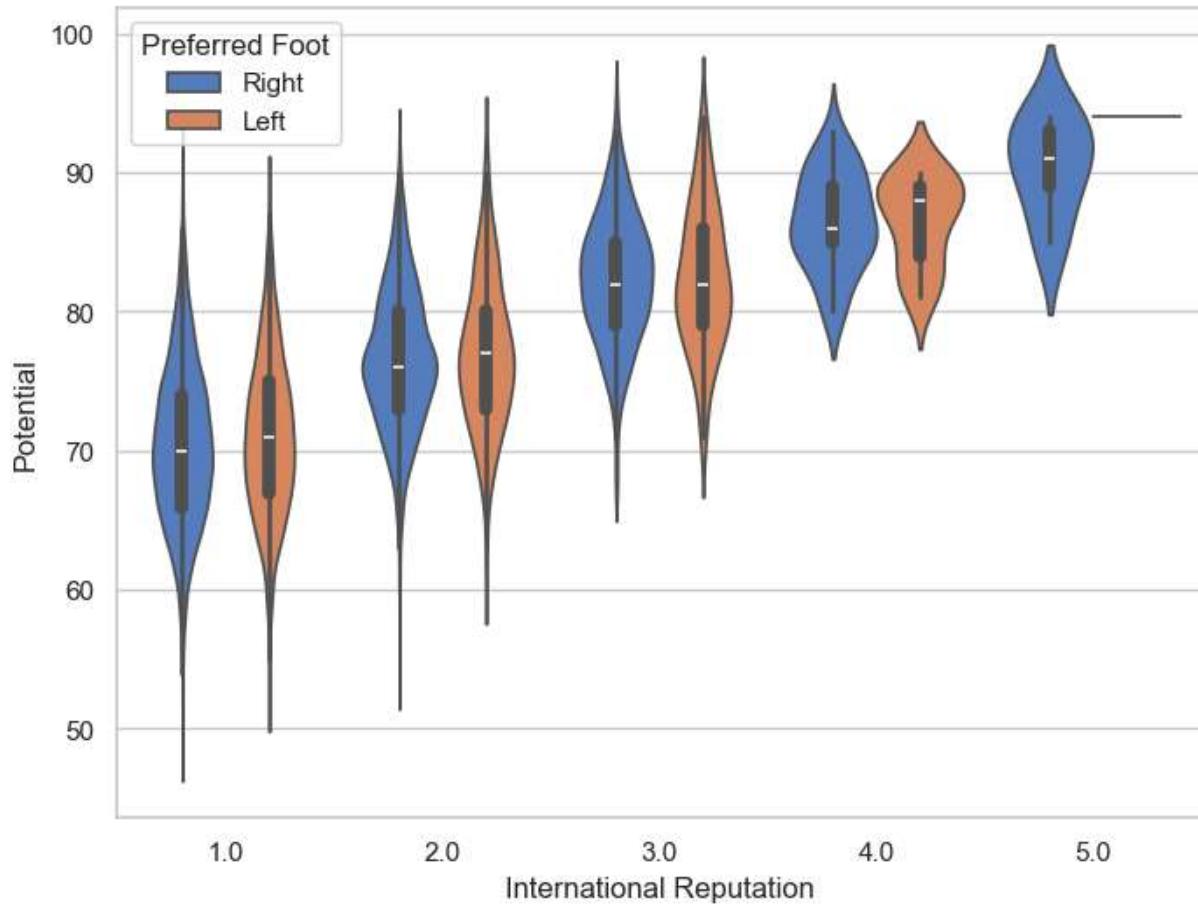
```
In [42]: f,ax=plt.subplots(figsize=(8,6))
sns.violinplot(x=fifa19['Potential'])
plt.show()
```



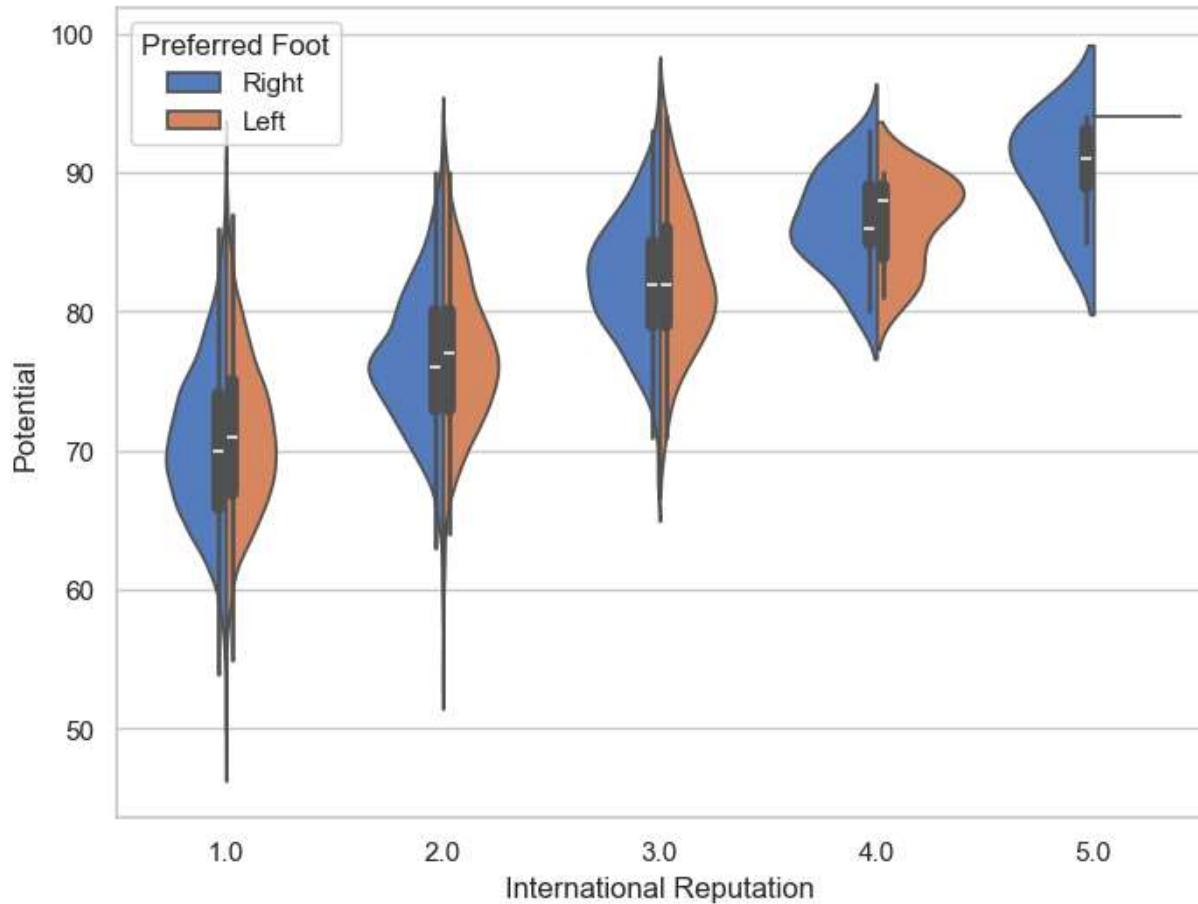
```
In [43]: f, ax = plt.subplots(figsize=(8, 6))
sns.violinplot(x="International Reputation", y="Potential", data=fifa19)
plt.show()
```



```
In [44]: f, ax = plt.subplots(figsize=(8, 6))
sns.violinplot(x="International Reputation", y="Potential", hue="Preferred Foot", d
plt.show()
```

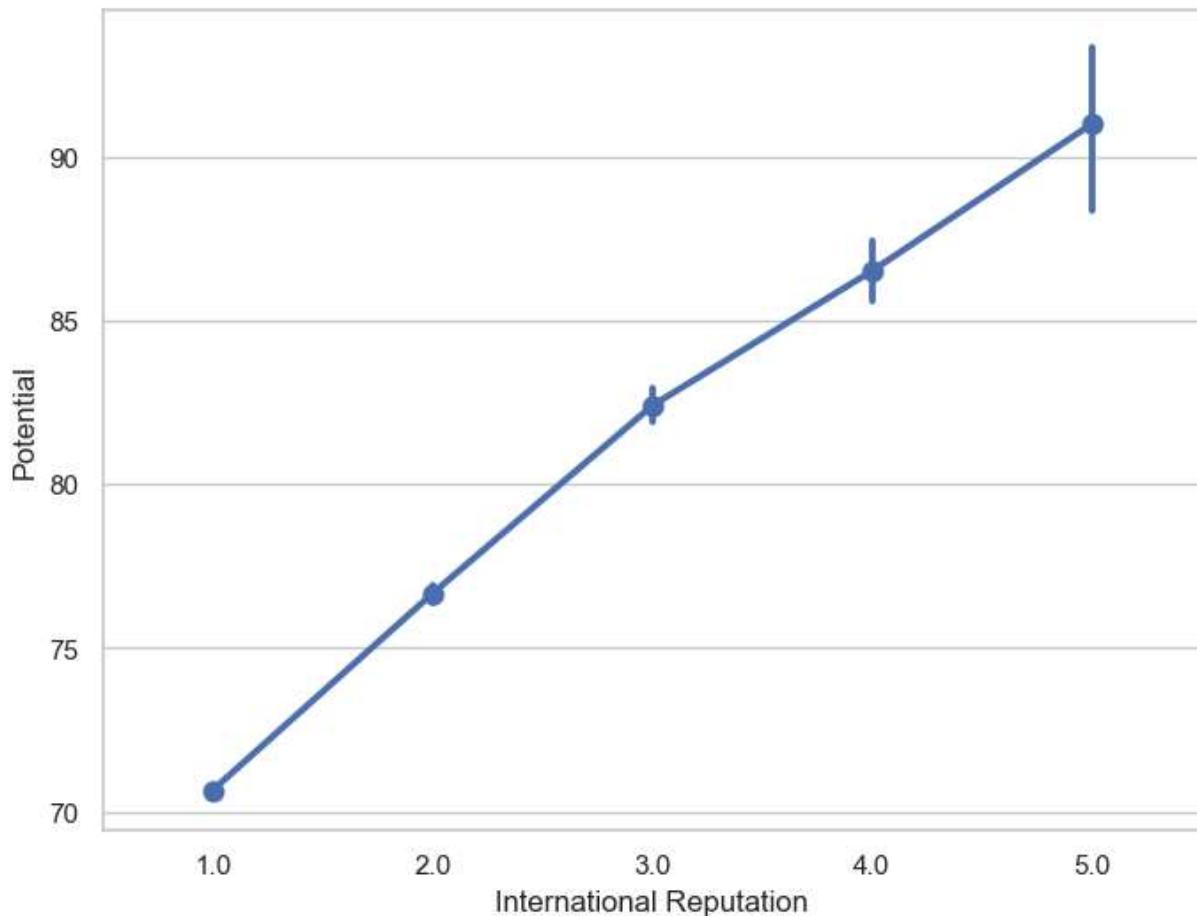


```
In [45]: f, ax = plt.subplots(figsize=(8, 6))
sns.violinplot(x="International Reputation", y="Potential", hue="Preferred Foot",
                 data=fifa19, palette="muted", split=True)
plt.show()
```

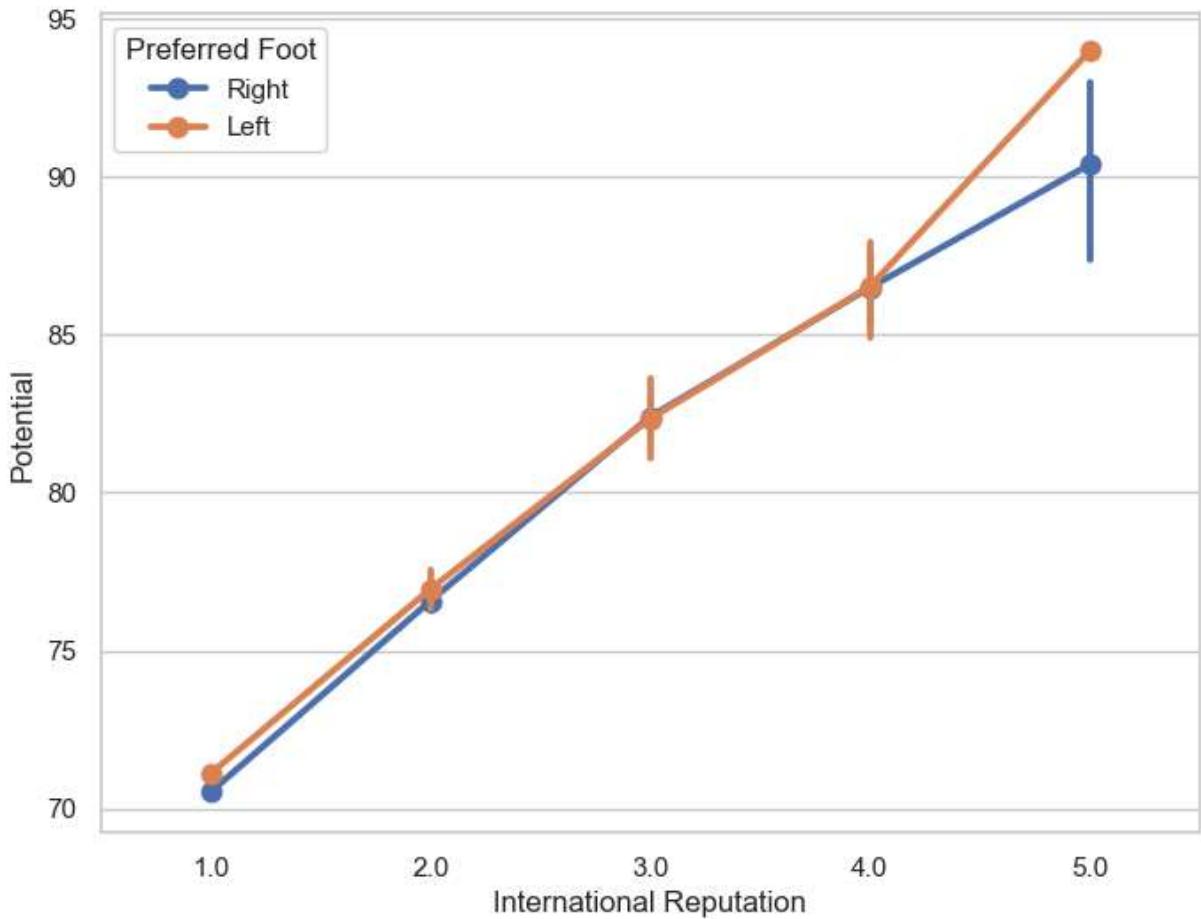


Pointplot() Function

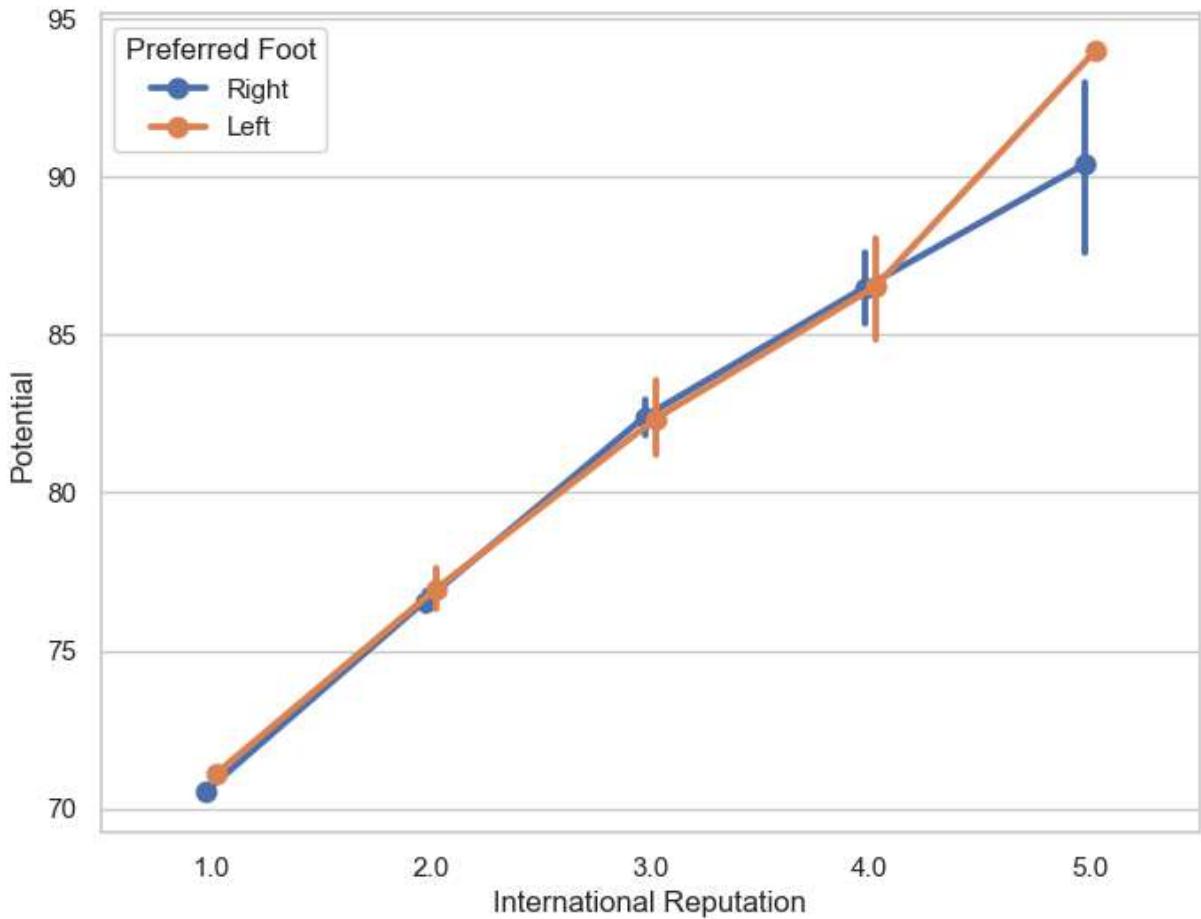
```
In [47]: f, ax = plt.subplots(figsize=(8, 6))
sns.pointplot(x="International Reputation", y="Potential", data=fifa19)
plt.show()
```



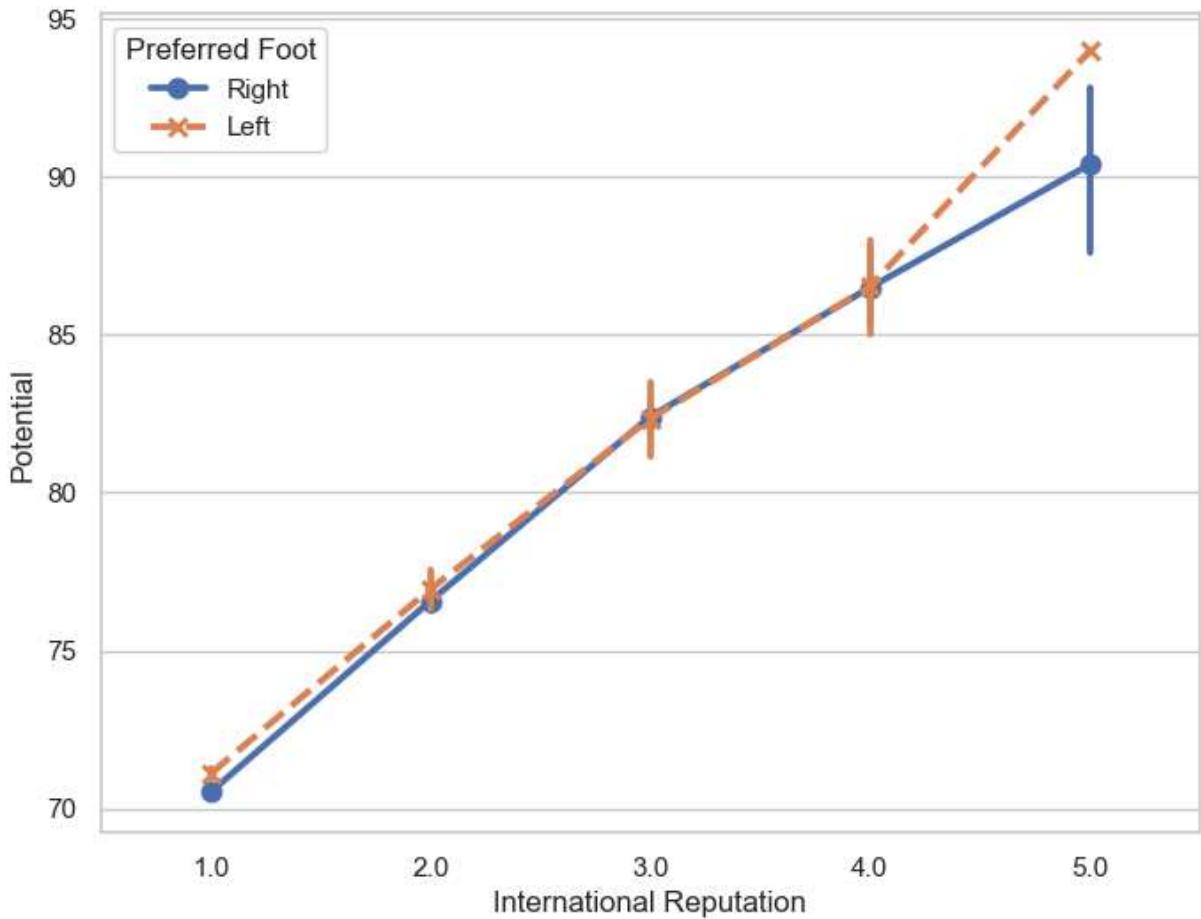
```
In [48]: f, ax = plt.subplots(figsize=(8, 6))
sns.pointplot(x="International Reputation", y="Potential", hue="Preferred Foot", data=da)
plt.show()
```



```
In [49]: f, ax = plt.subplots(figsize=(8, 6))
sns.pointplot(x="International Reputation", y="Potential", hue="Preferred Foot", da
plt.show()
```

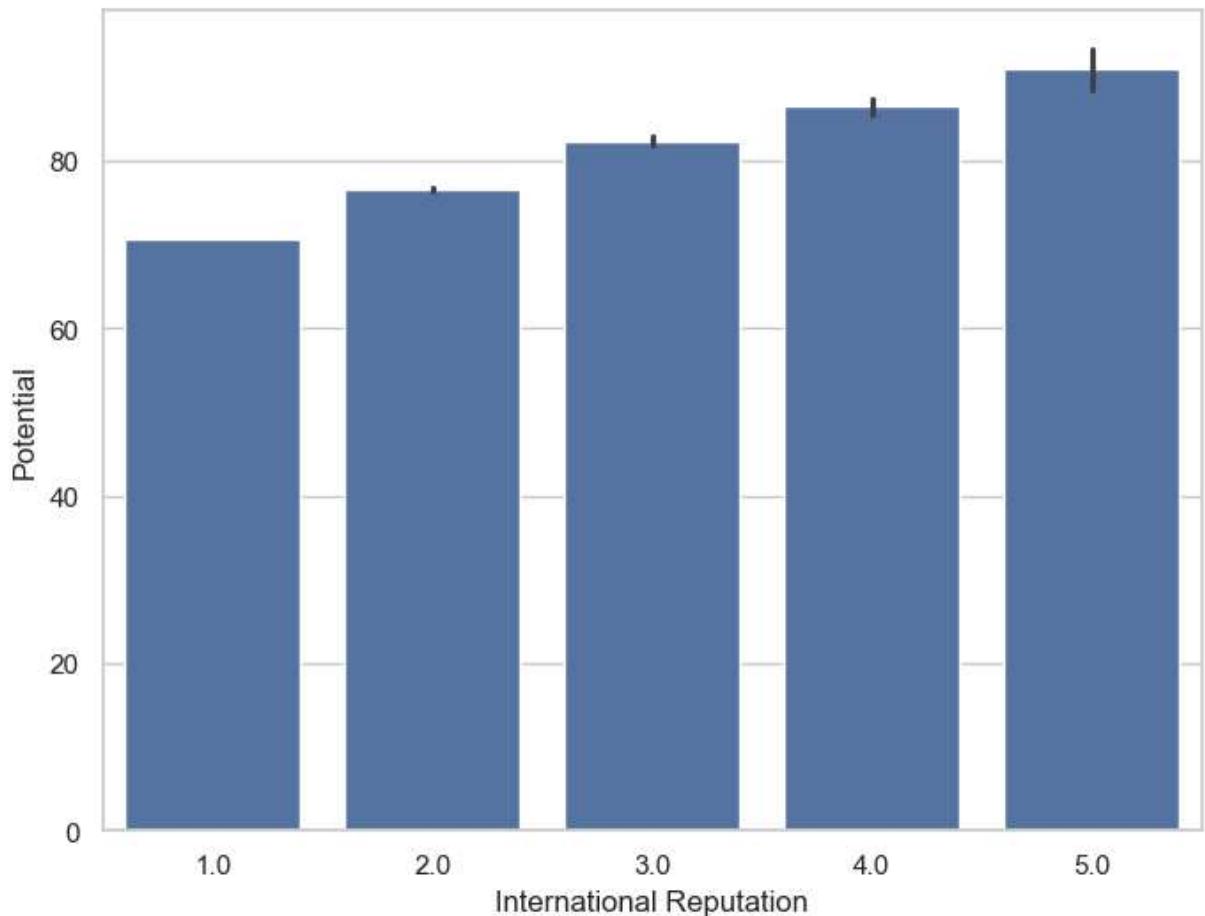


```
In [50]: f, ax = plt.subplots(figsize=(8, 6))
sns.pointplot(x="International Reputation", y="Potential", hue="Preferred Foot",
               data=fifa19, markers=["o", "x"], linestyles=[ "-", "--"])
plt.show()
```

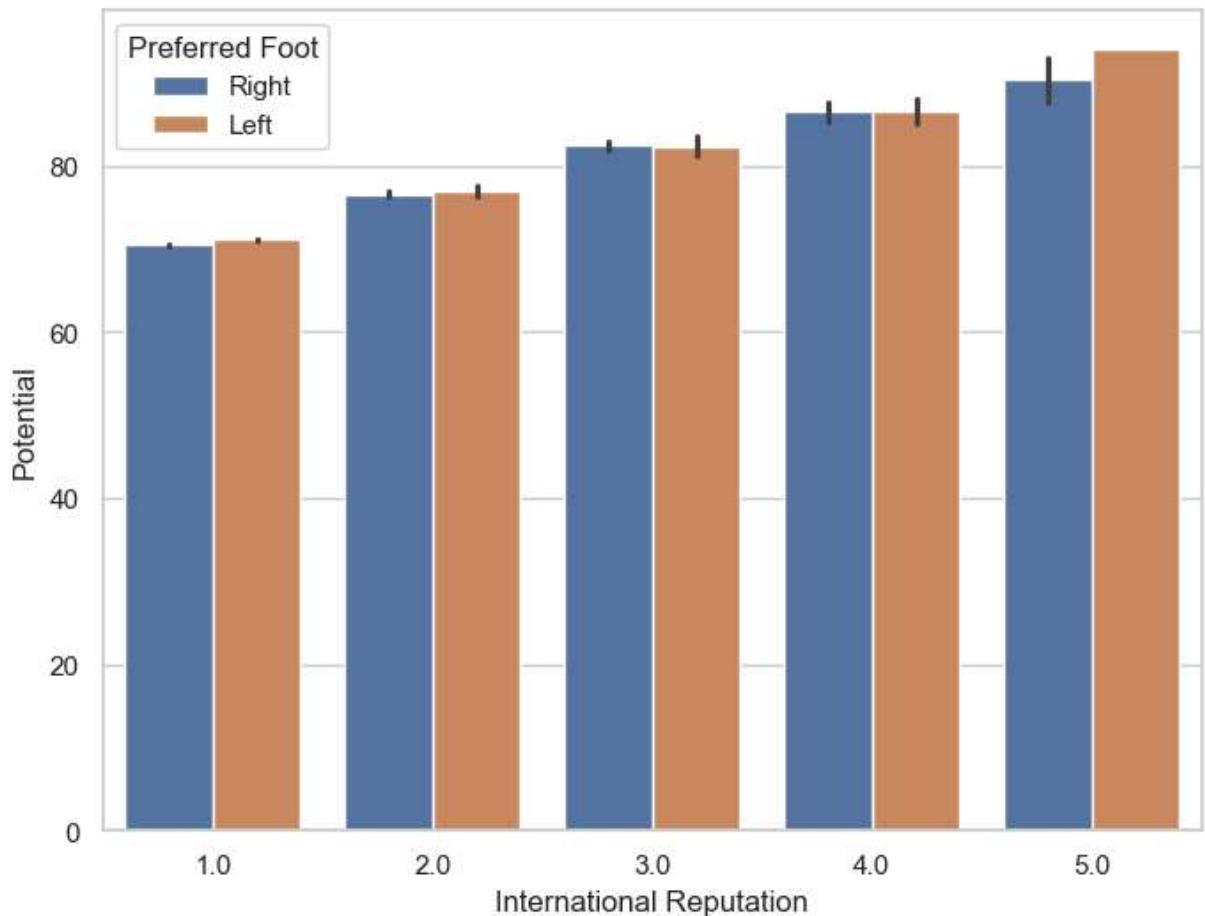


BarPlot function()

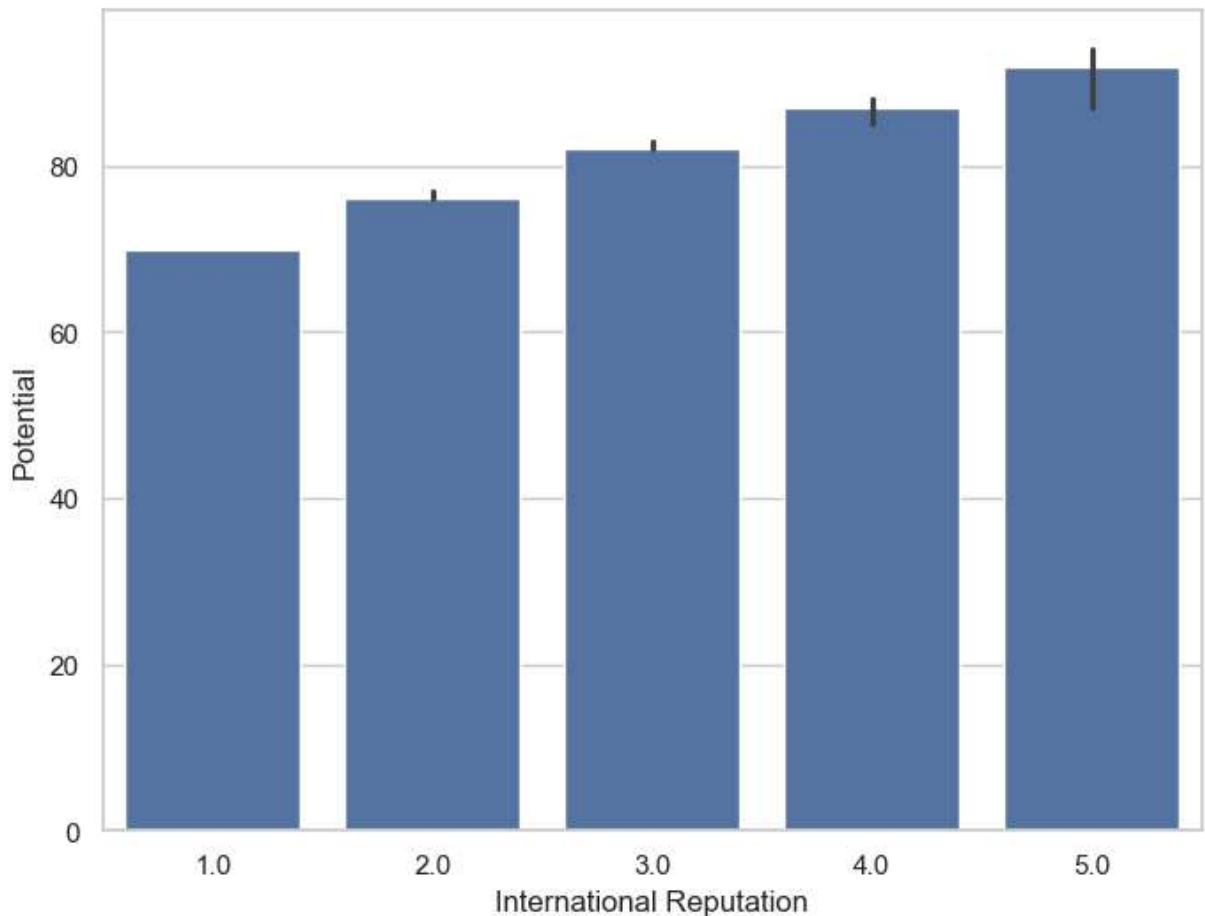
```
In [52]: f, ax = plt.subplots(figsize=(8, 6))
sns.barplot(x="International Reputation", y="Potential", data=fifa19)
plt.show()
```



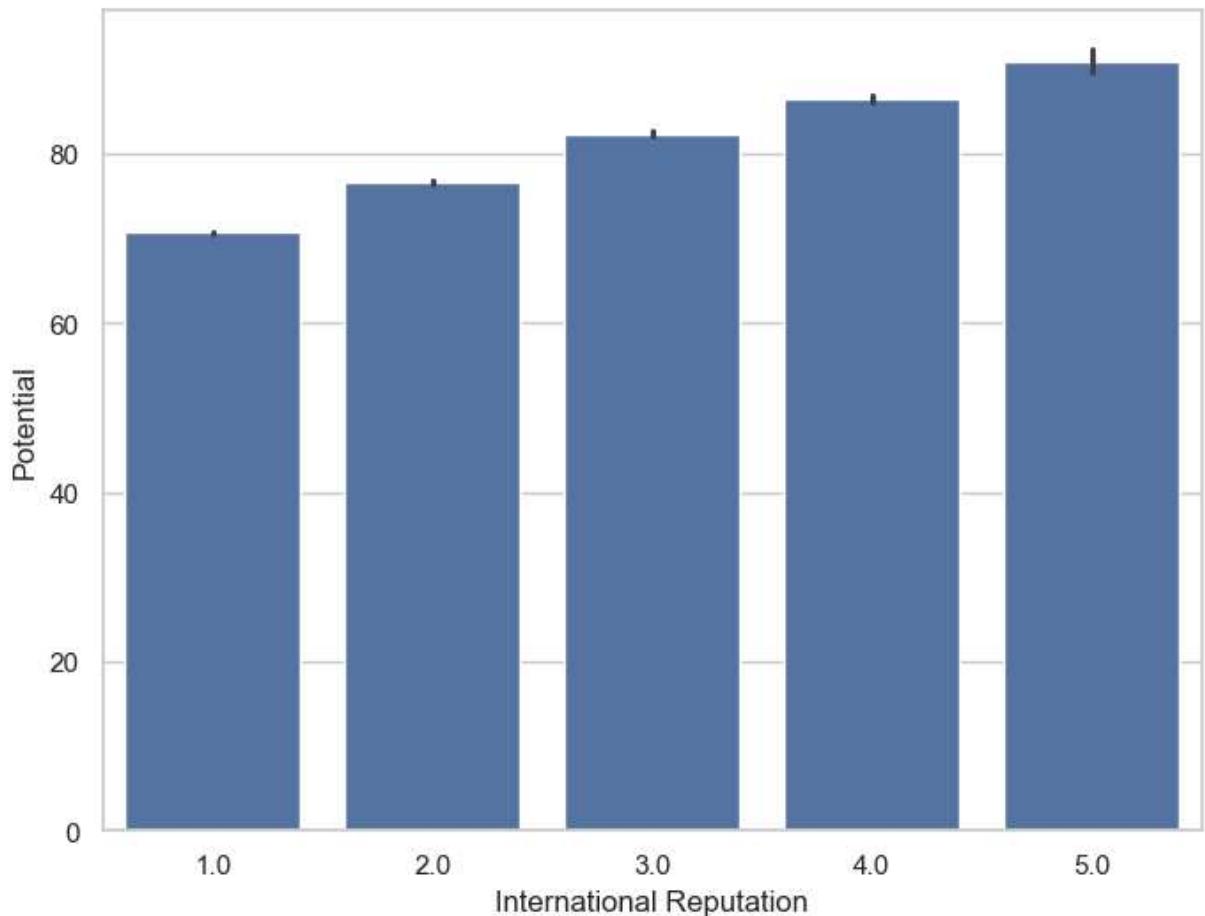
```
In [53]: f, ax = plt.subplots(figsize=(8, 6))
sns.barplot(x="International Reputation", y="Potential", hue='Preferred Foot', data=f)
plt.show()
```



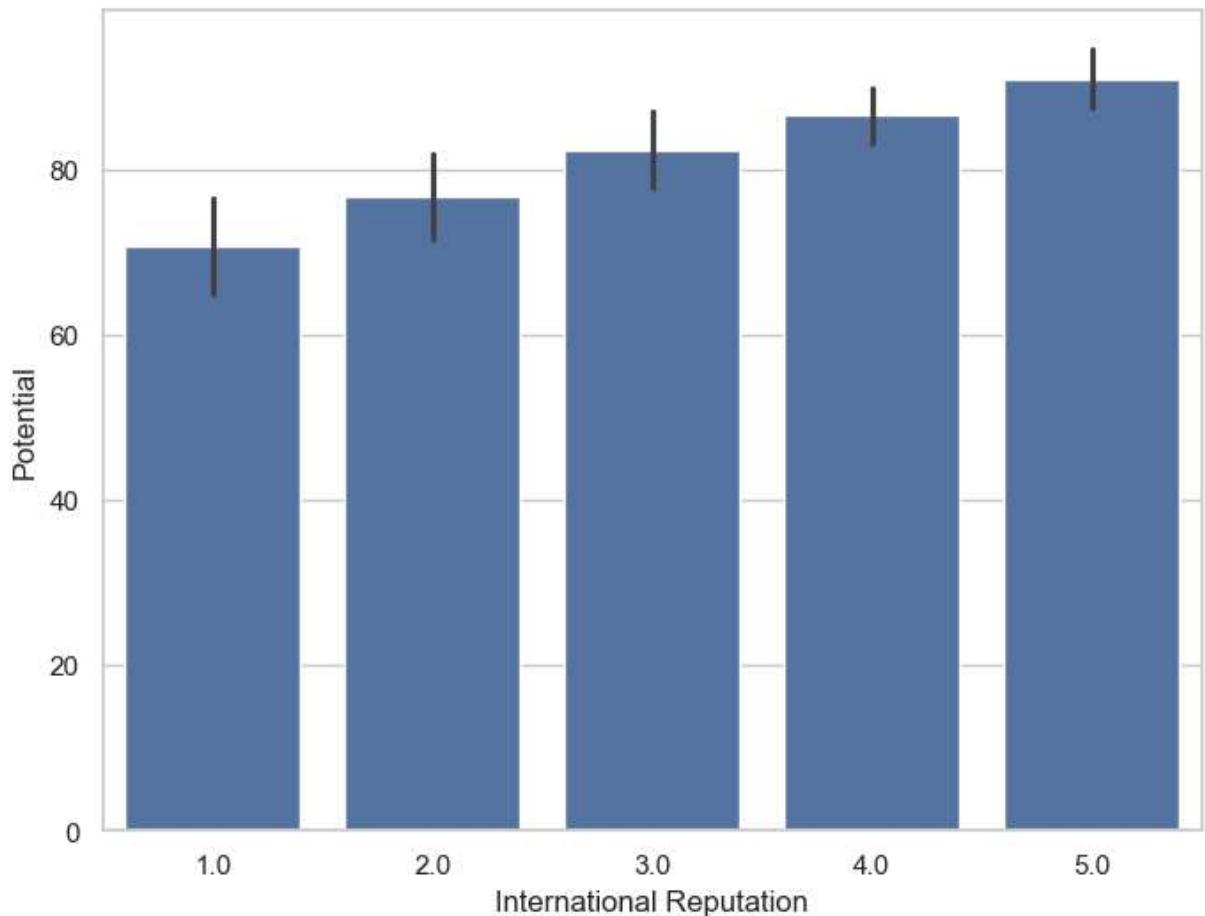
```
In [54]: from numpy import median
f,ax=plt.subplots(figsize=(8,6))
sns.barplot(x='International Reputation',y='Potential',data=fifa19,estimator=median
plt.show()
```



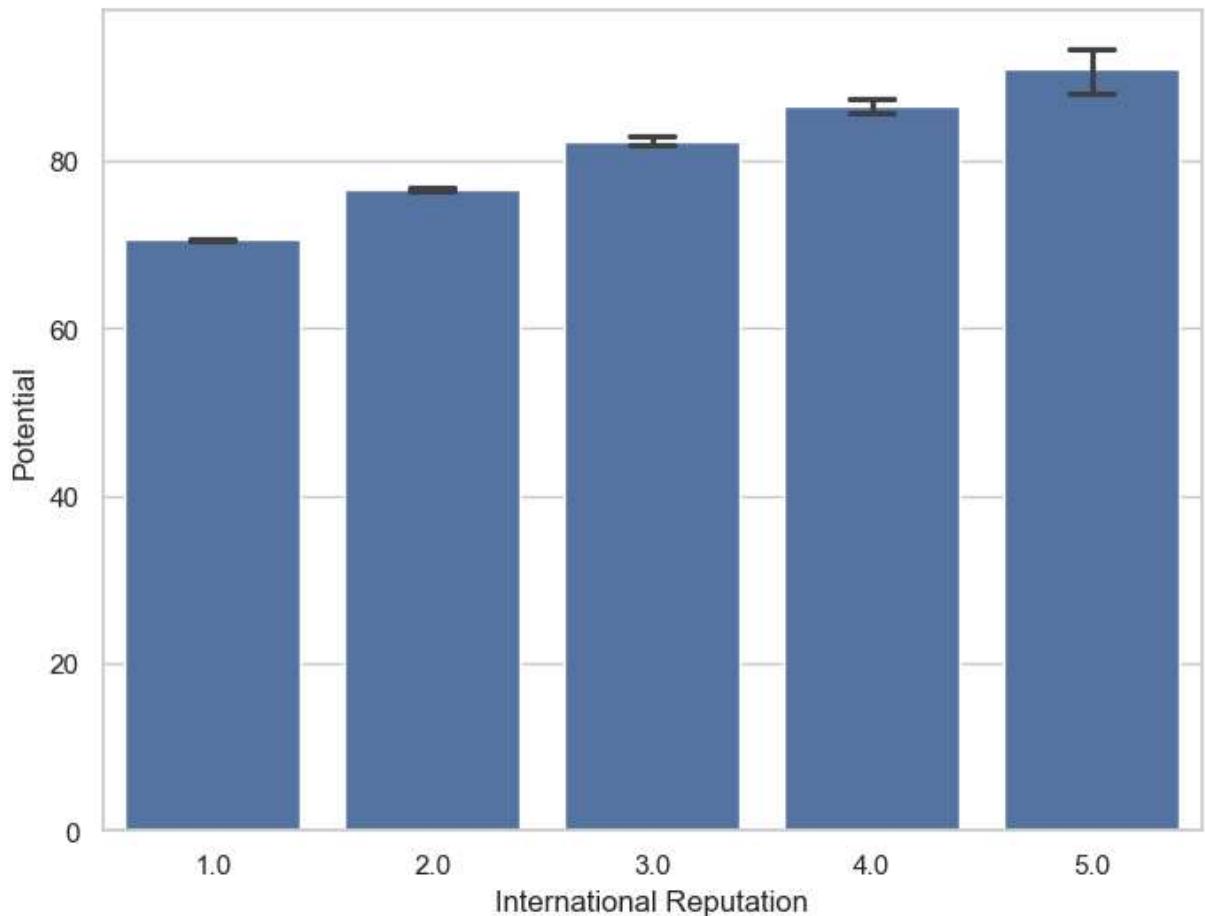
```
In [55]: f, ax = plt.subplots(figsize=(8, 6))
sns.barplot(x="International Reputation", y="Potential", data=fifa19, ci=68)
plt.show()
```



```
In [56]: f, ax = plt.subplots(figsize=(8, 6))
sns.barplot(x="International Reputation", y="Potential", data=fifa19, ci="sd")
plt.show()
```

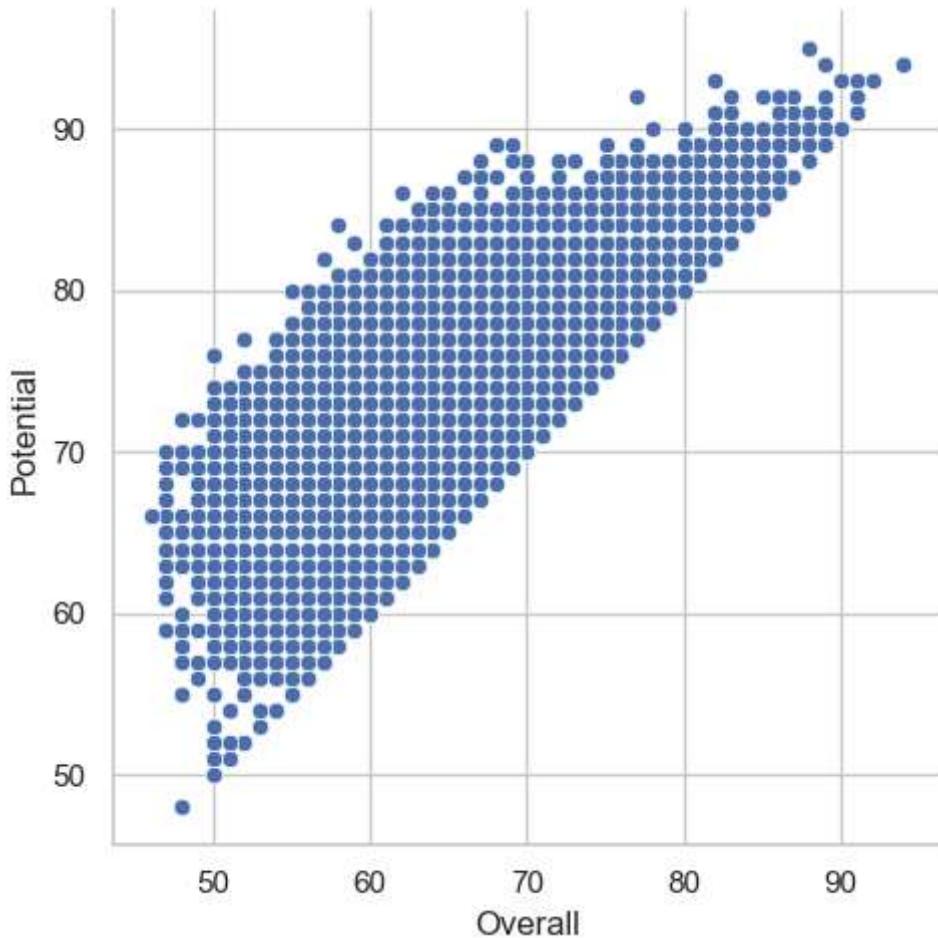


```
In [57]: f, ax = plt.subplots(figsize=(8, 6))
sns.barplot(x="International Reputation", y="Potential", data=fifa19, capsize=0.2)
plt.show()
```



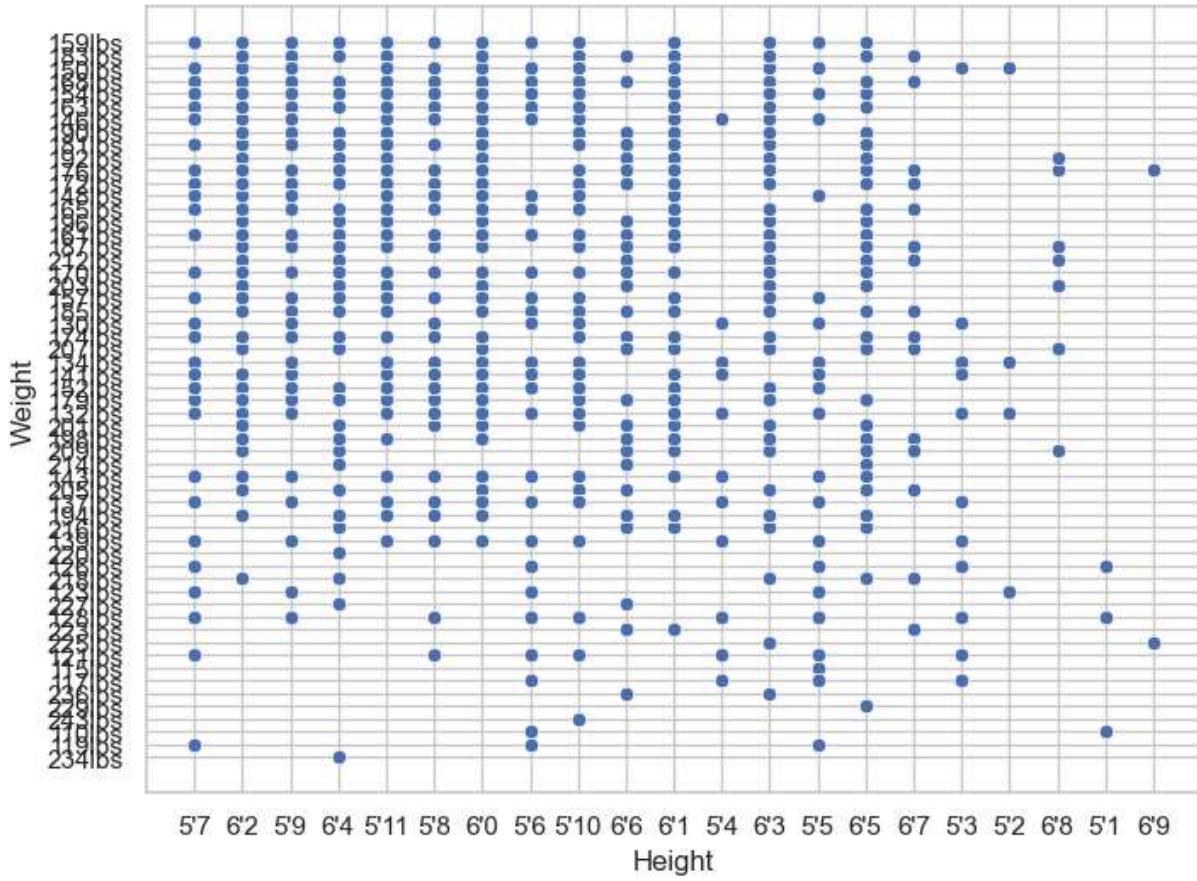
RelPlot() function

```
In [59]: g = sns.relplot(x="Overall", y="Potential", data=fifa19)
```



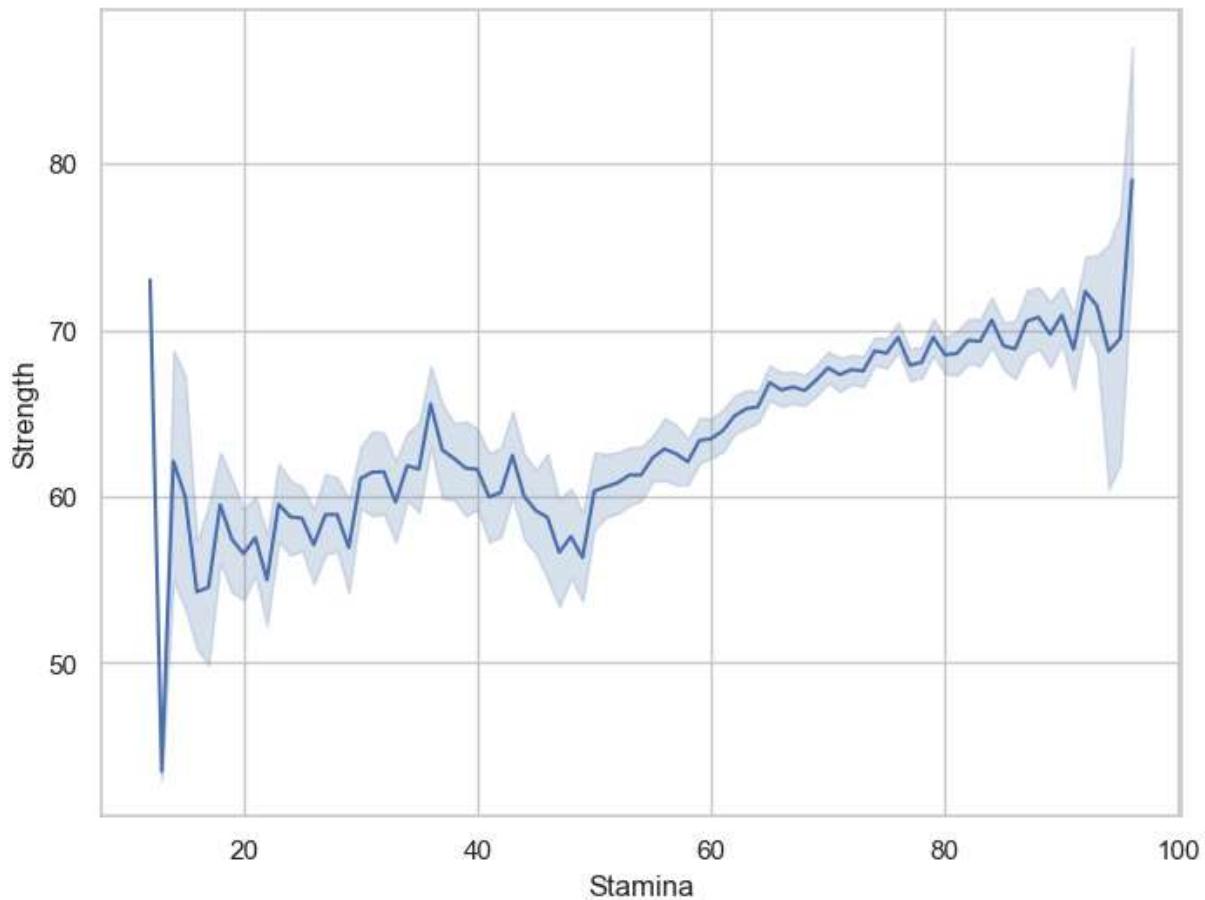
Scatterplot() function

```
In [61]: f, ax = plt.subplots(figsize=(8, 6))
sns.scatterplot(x="Height", y="Weight", data=fifa19)
plt.show()
```



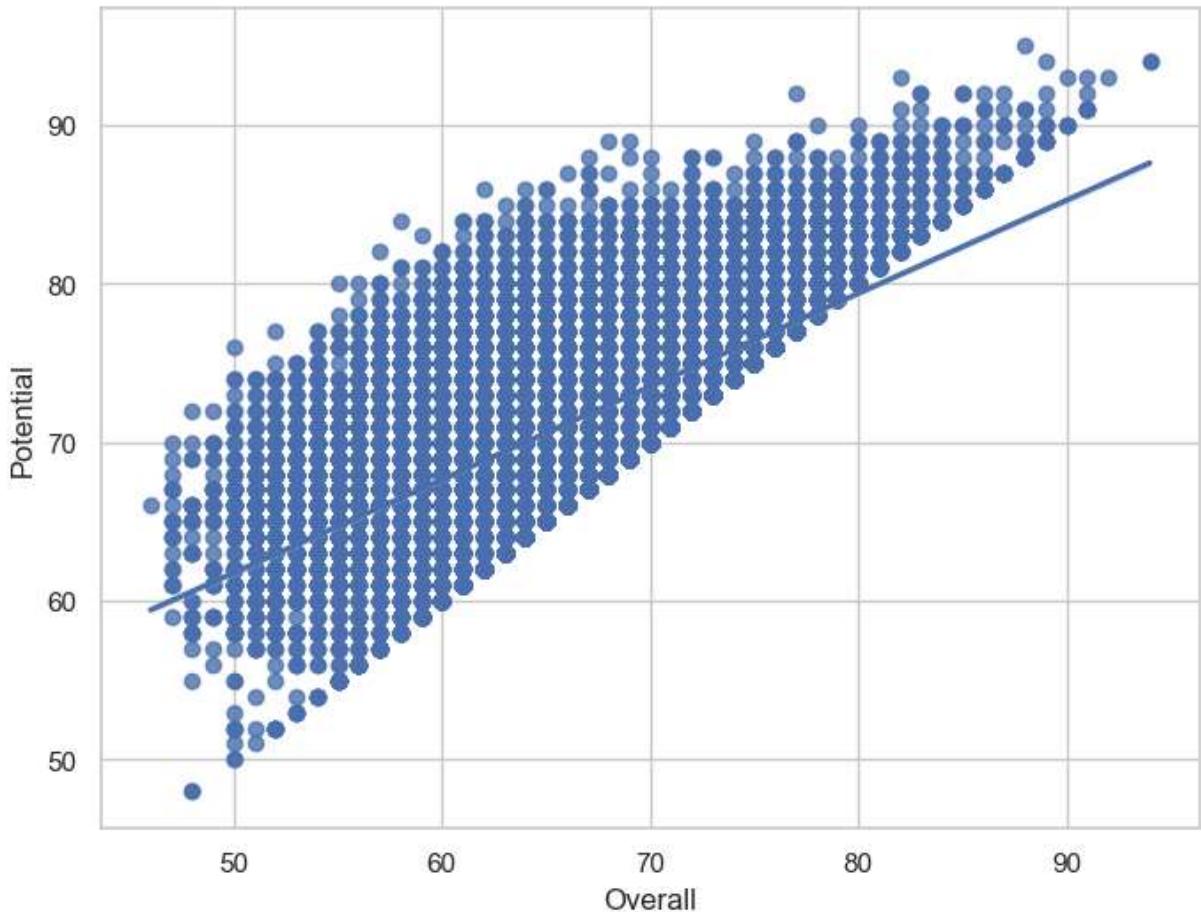
seaborn lineplot() function

```
In [63]: f, ax = plt.subplots(figsize=(8, 6))
ax = sns.lineplot(x="Stamina", y="Strength", data=fifa19)
plt.show()
```

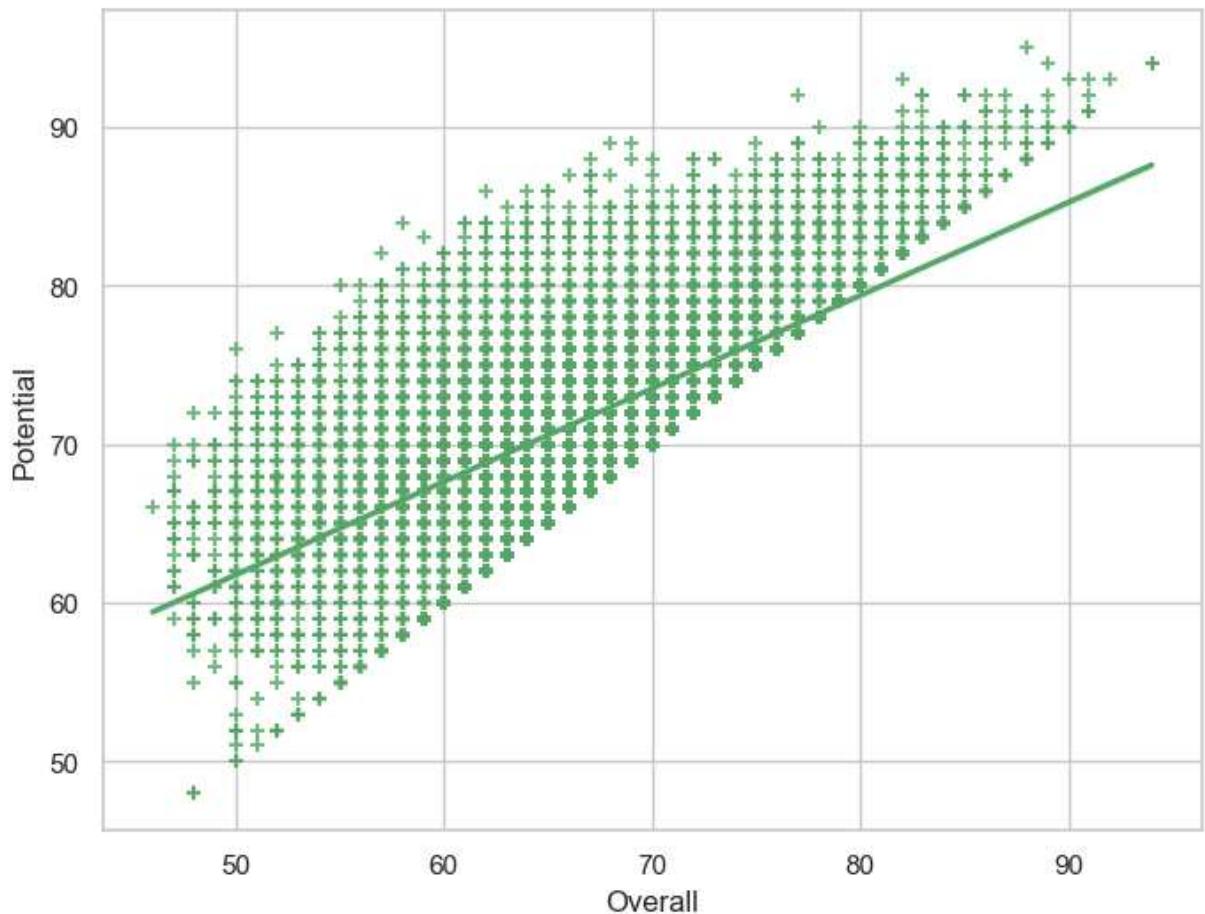


Seaborn regplot() function

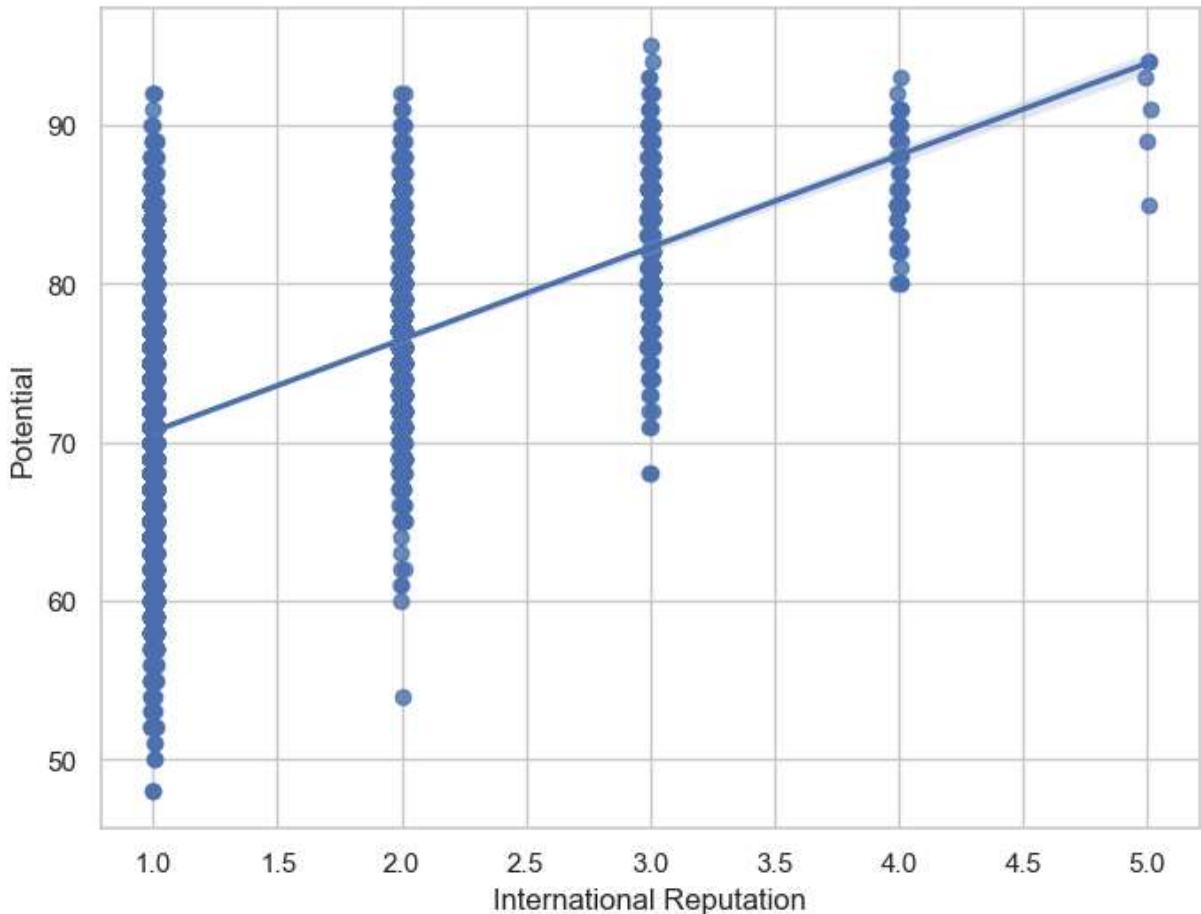
```
In [65]: f, ax = plt.subplots(figsize=(8, 6))
ax = sns.regplot(x="Overall", y="Potential", data=fifa19)
plt.show()
```



```
In [66]: f, ax = plt.subplots(figsize=(8, 6))
ax = sns.regplot(x="Overall", y="Potential", data=fifa19, color="g", marker="+")
plt.show()
```

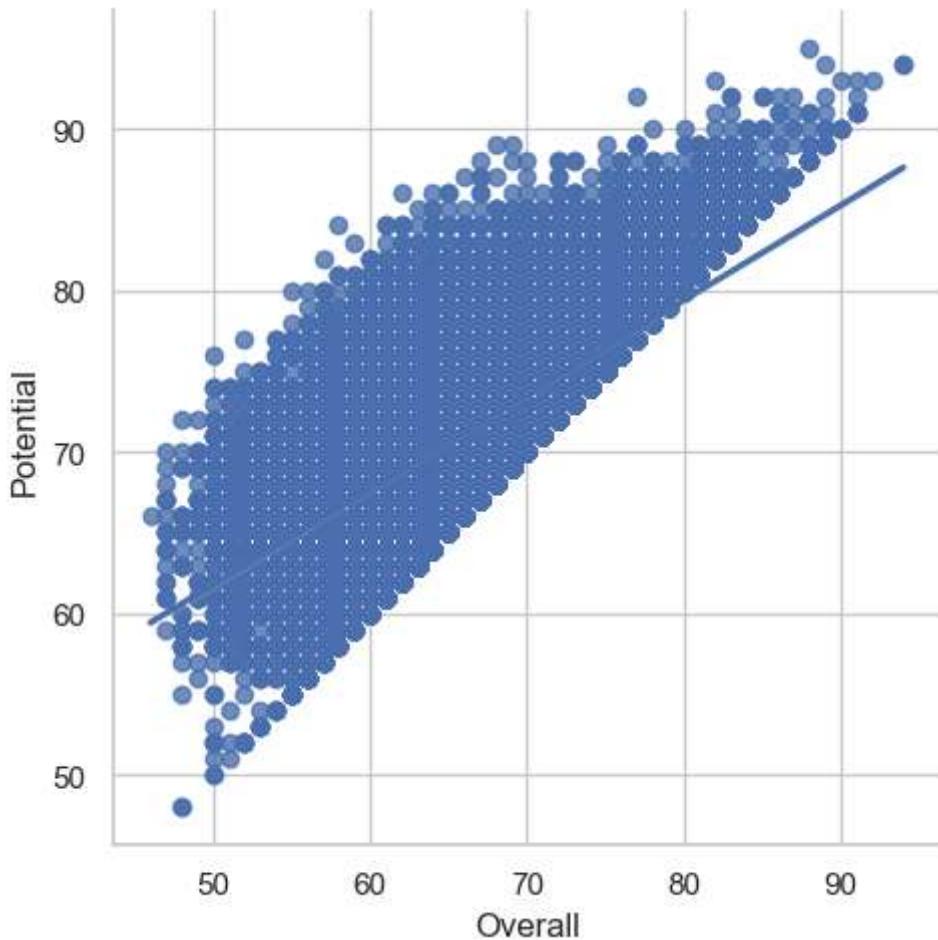


```
In [67]: f, ax = plt.subplots(figsize=(8, 6))
sns.regplot(x="International Reputation", y="Potential", data=fifa19, x_jitter=.01)
plt.show()
```

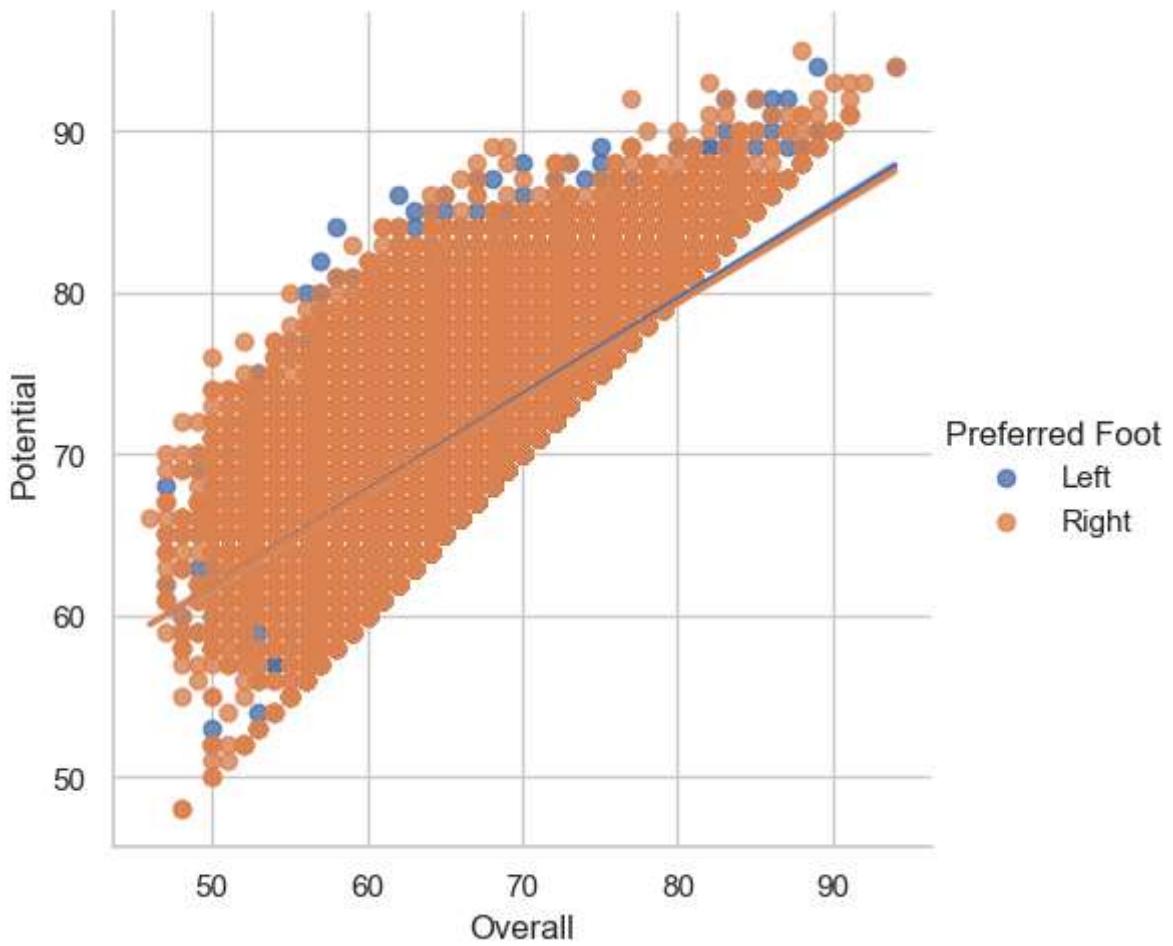


Seaborn lmplot() Function

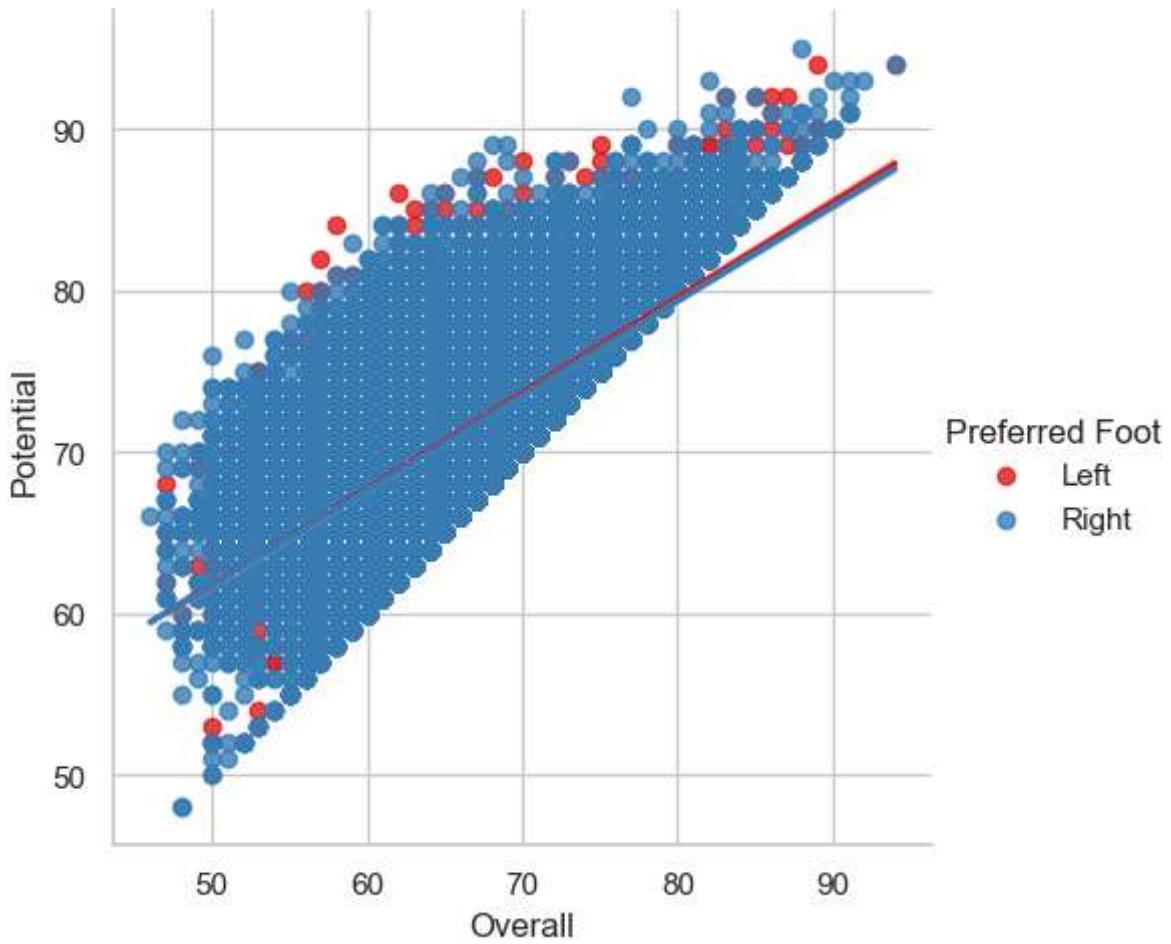
```
In [69]: g = sns.lmplot(x="Overall", y="Potential", data=fifa19)
```



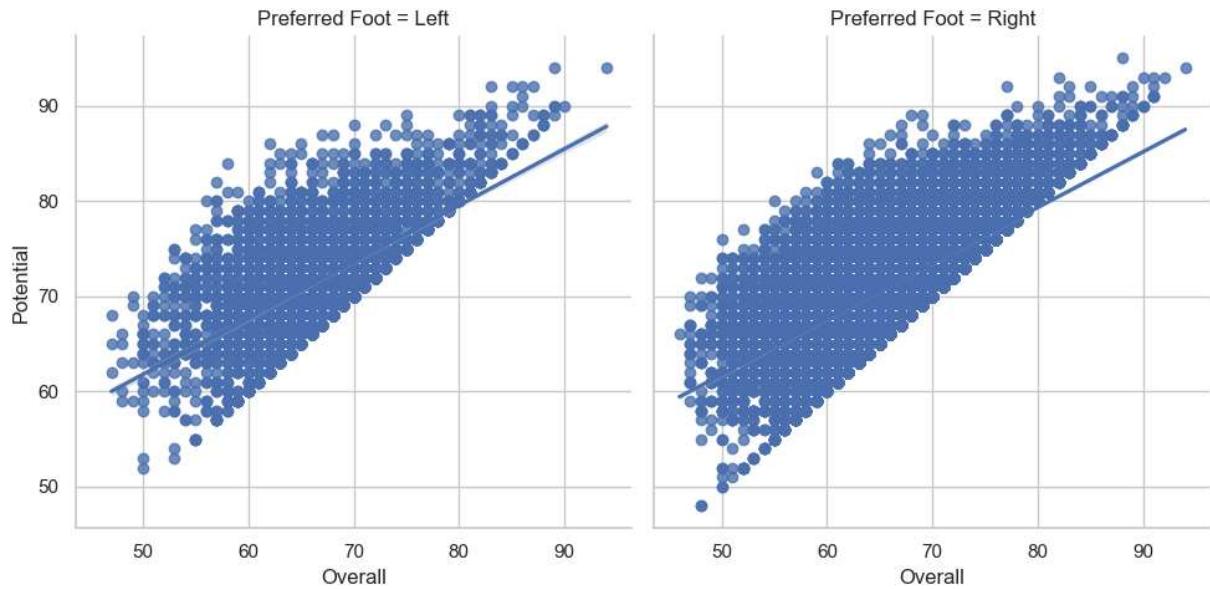
```
In [70]: g= sns.lmplot(x="Overall", y="Potential", hue="Preferred Foot", data=fifa19)
```



```
In [71]: g= sns.lmplot(x="Overall", y="Potential", hue="Preferred Foot", data=fifa19, palette="Set1")
```

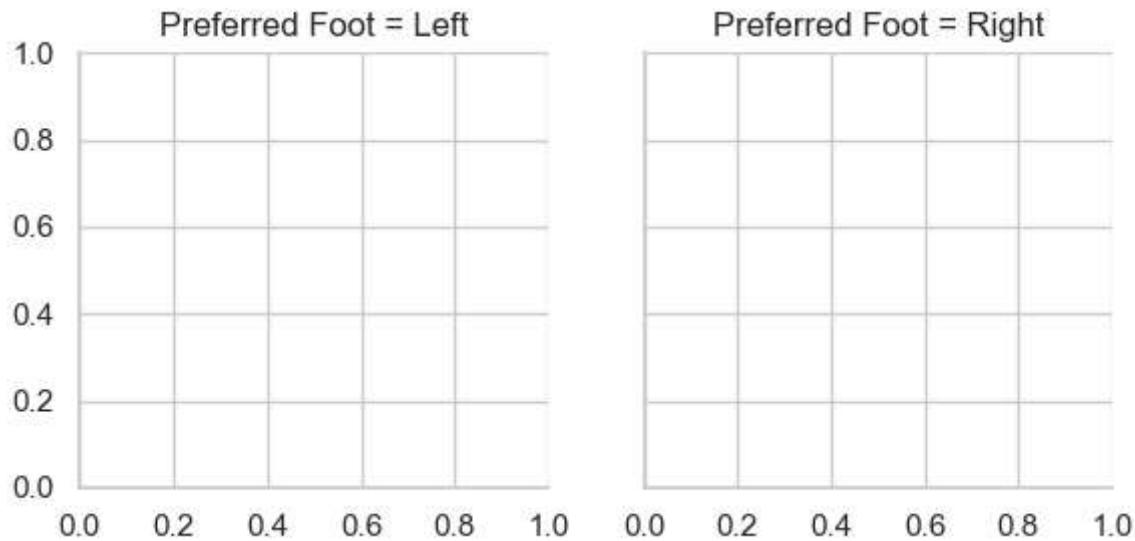


```
In [72]: g = sns.lmplot(x="Overall", y="Potential", col="Preferred Foot", data=fifa19)
```

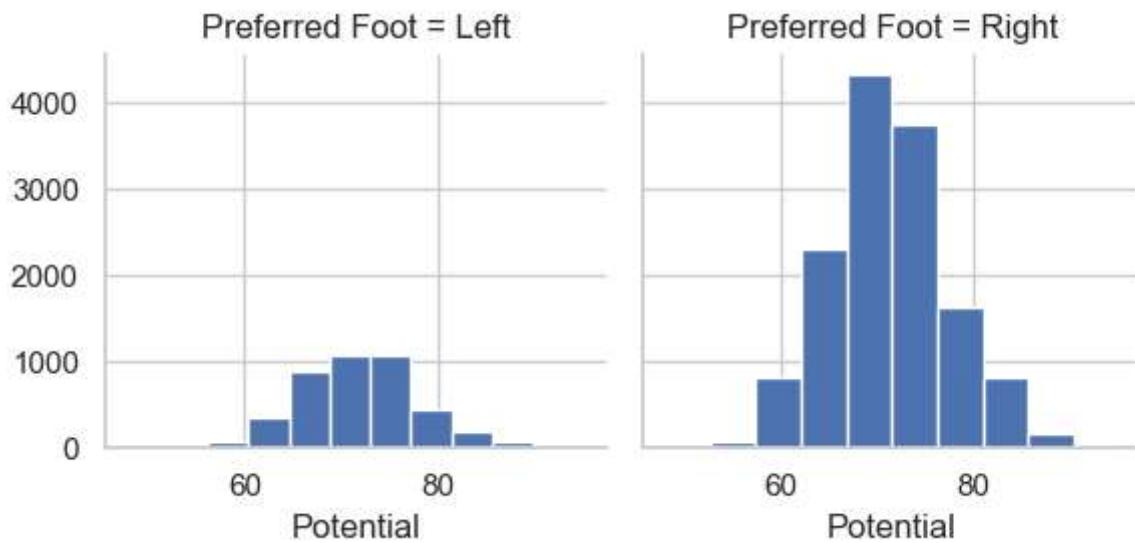


Seaborn FacetGrid() function

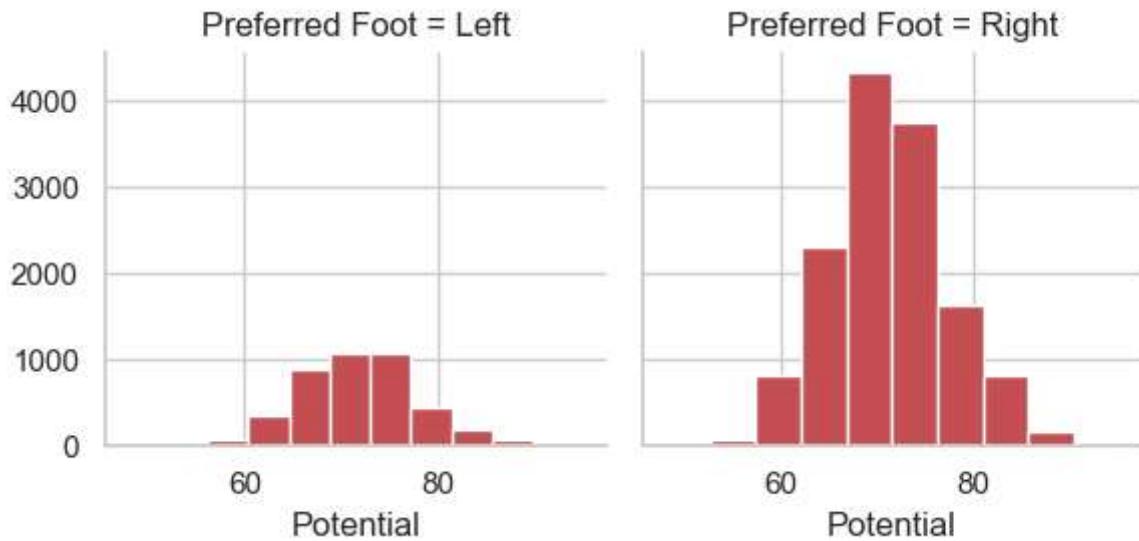
```
In [74]: g = sns.FacetGrid(fifa19, col="Preferred Foot")
```



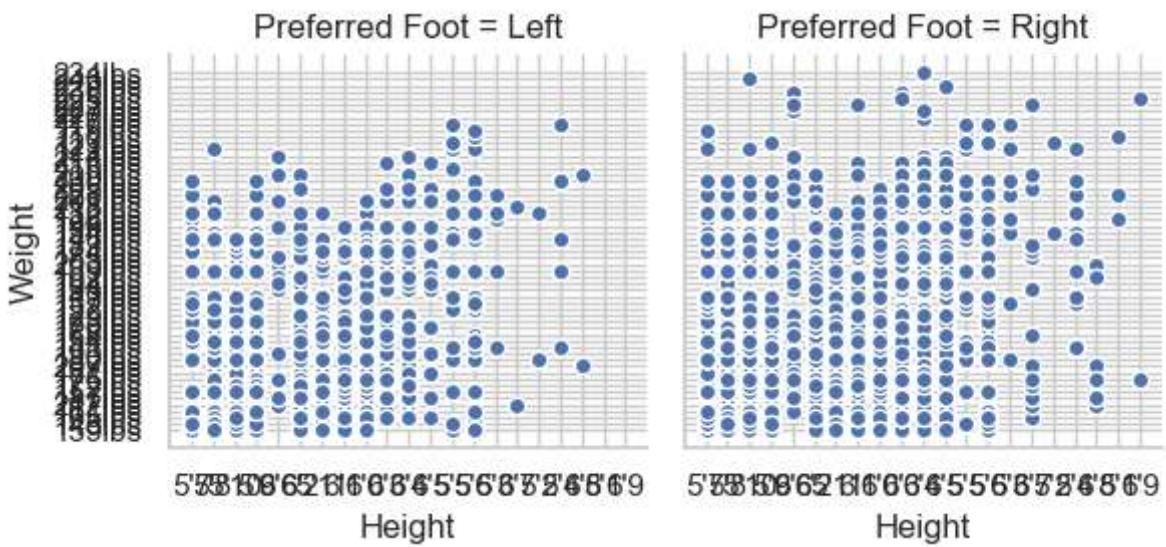
```
In [75]: g = sns.FacetGrid(fifa19, col="Preferred Foot")
g=g.map(plt.hist,'Potential')
```



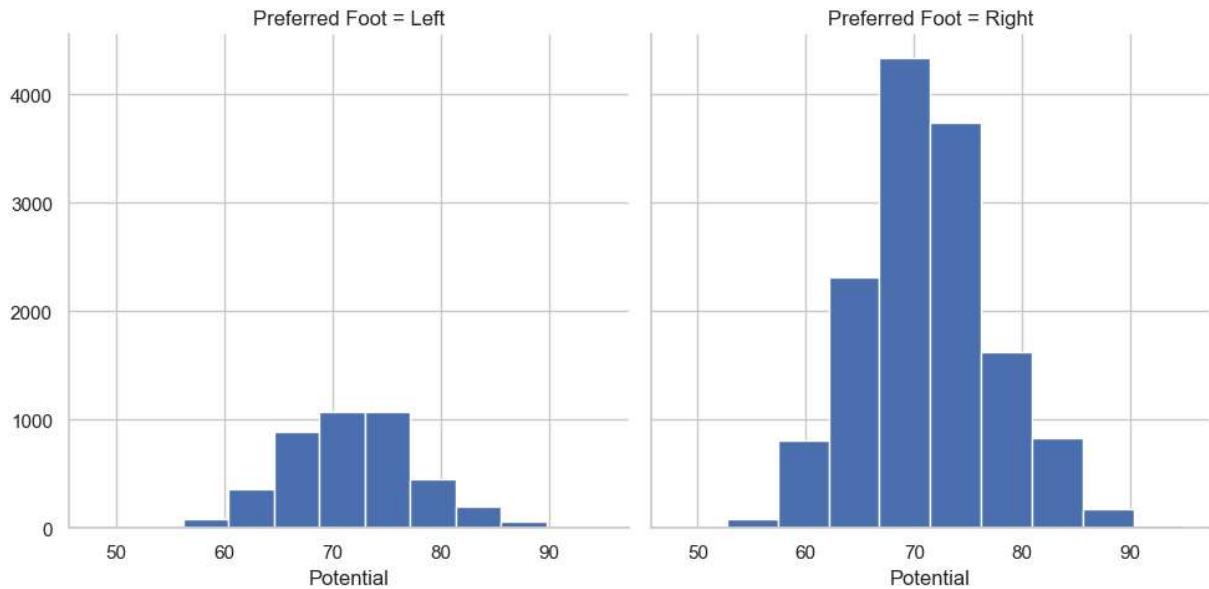
```
In [76]: g = sns.FacetGrid(fifa19, col="Preferred Foot")
g=g.map(plt.hist,'Potential',bins=10,color='r')
```



```
In [77]: g = sns.FacetGrid(fifa19, col="Preferred Foot")
g=g.map(plt.scatter,'Height','Weight',edgecolor='w').add_legend()
```



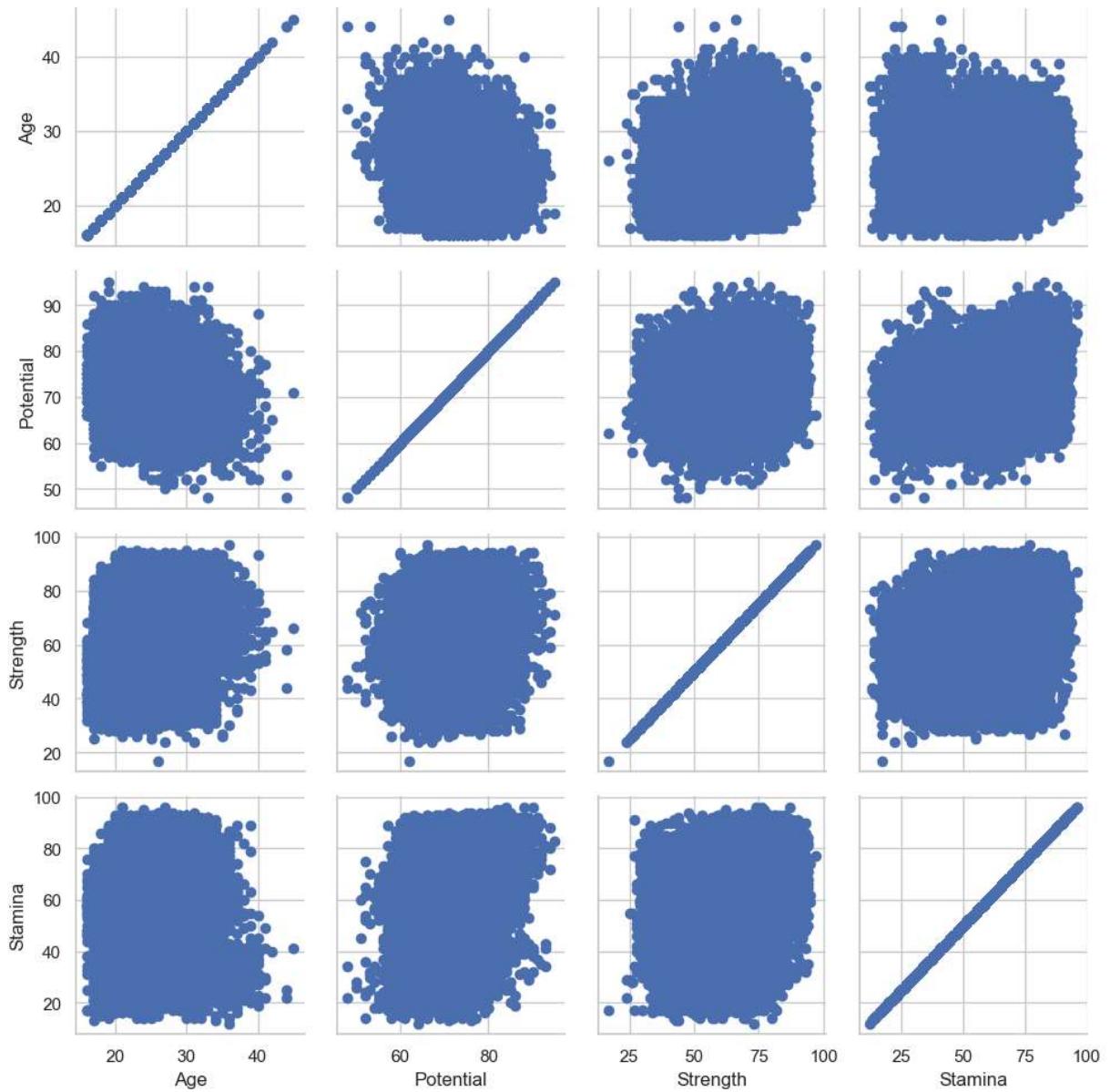
```
In [78]: g = sns.FacetGrid(fifa19, col="Preferred Foot", height=5, aspect=1)
g = g.map(plt.hist, "Potential")
```



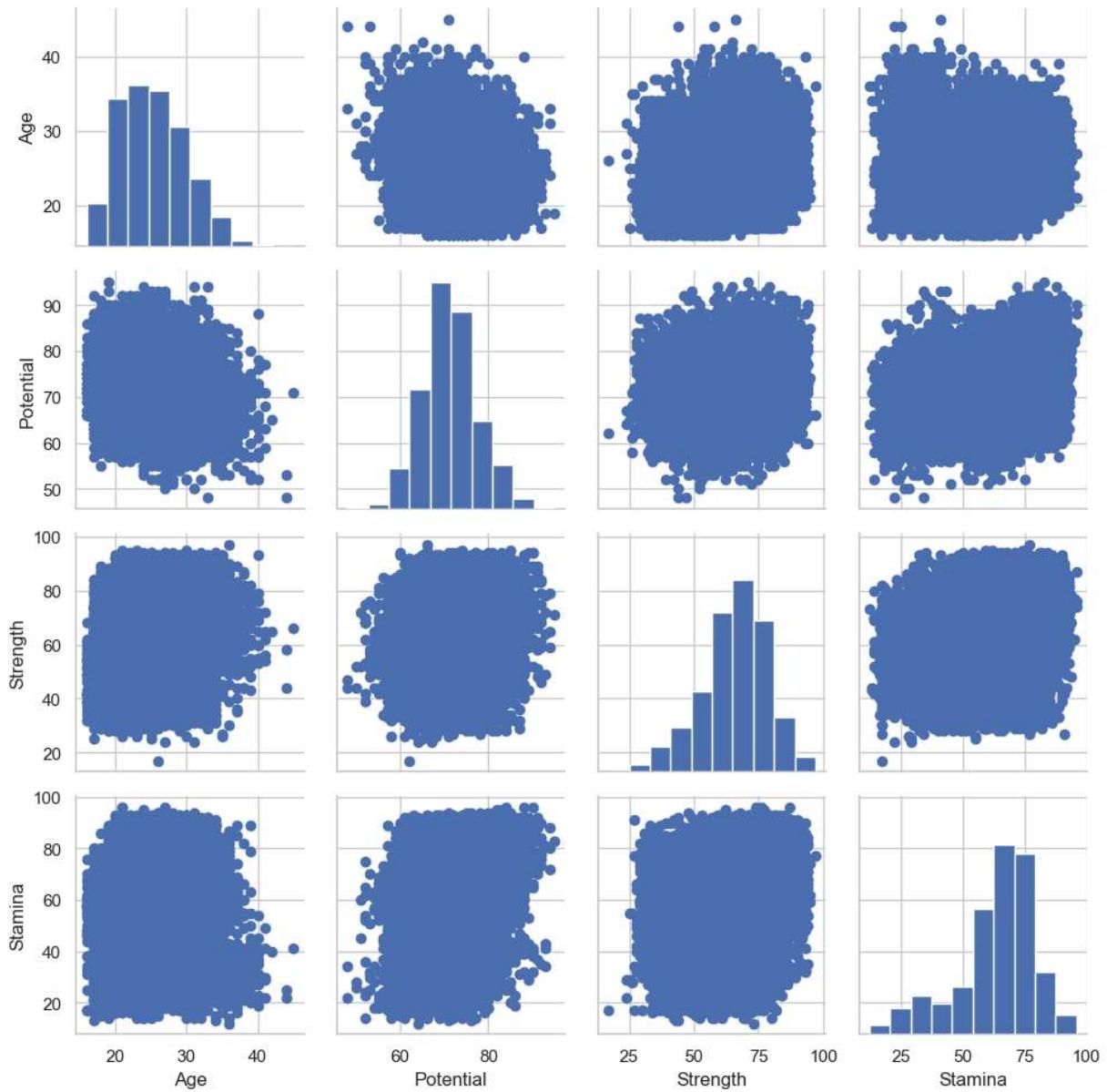
Seaborn Pairgrid() function

```
In [80]: fifa19_new = fifa19[['Age', 'Potential', 'Strength', 'Stamina', 'Preferred Foot']]
```

```
In [81]: g=sns.PairGrid(fifa19_new)
g=g.map(plt.scatter)
```

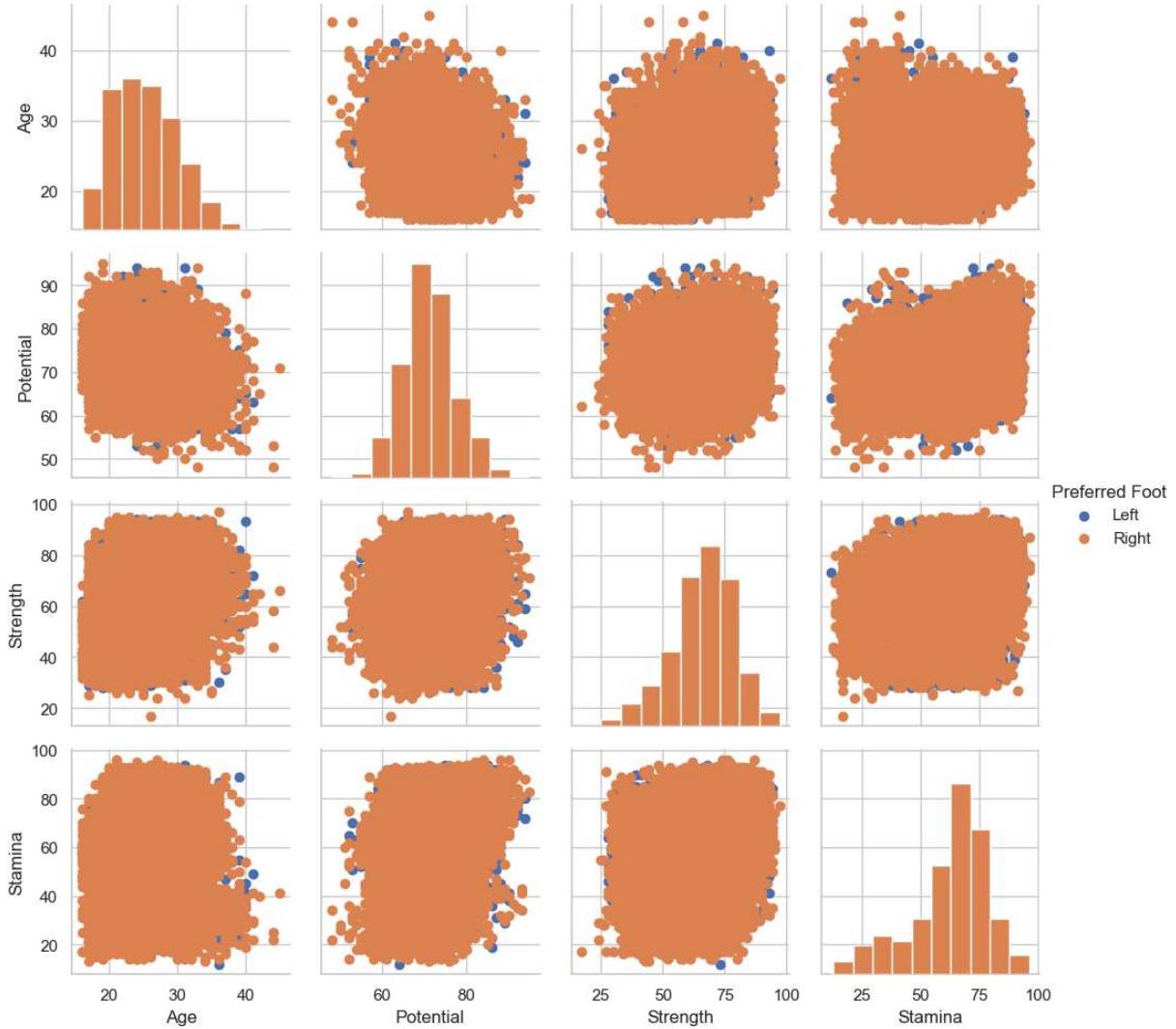


```
In [82]: g=sns.PairGrid(fifa19_new)
g=g.map_diag(plt.hist)
g=g.map_offdiag(plt.scatter)
```

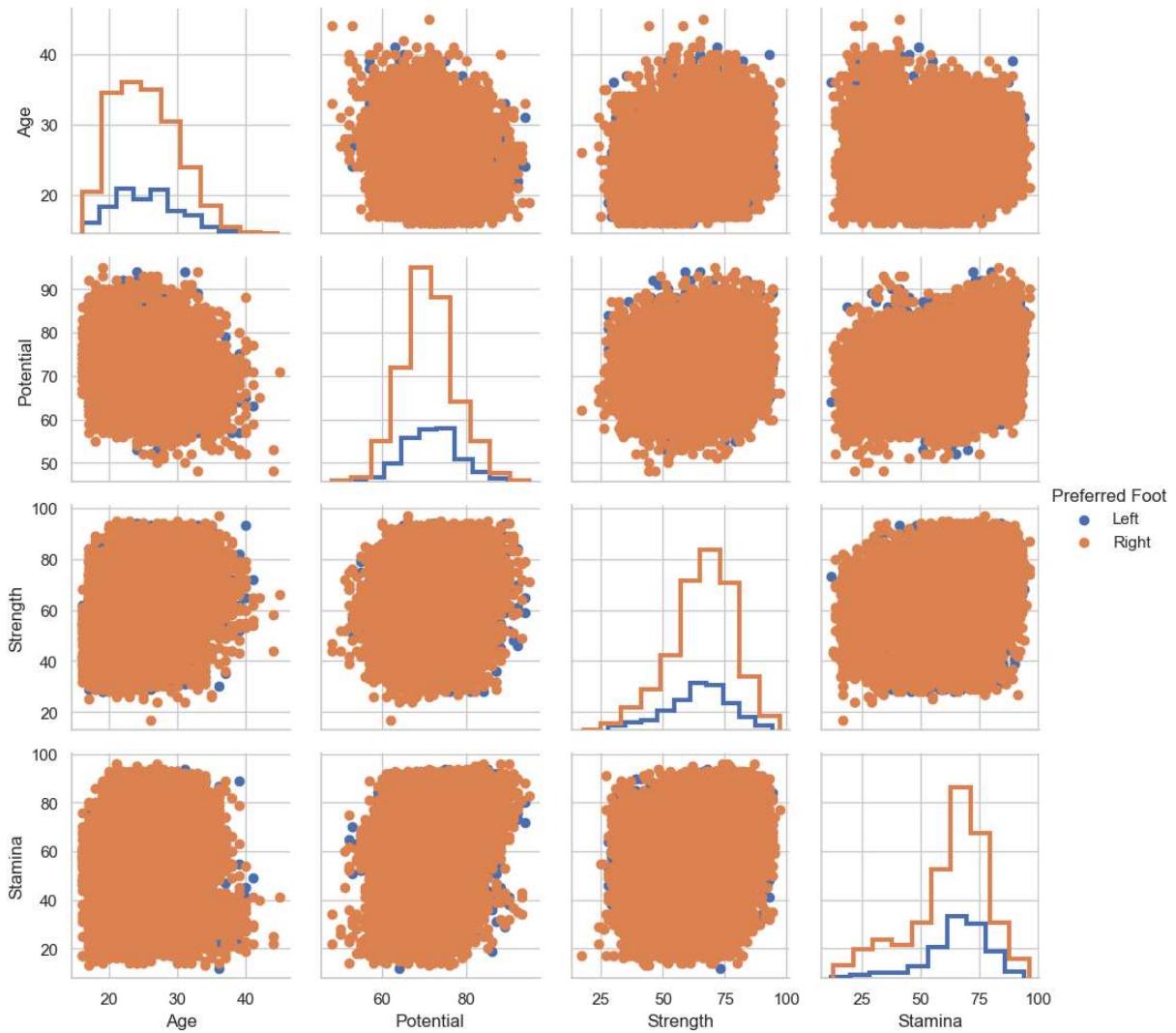


```
In [83]: g = sns.PairGrid(fifa19_new, hue="Preferred Foot")
```

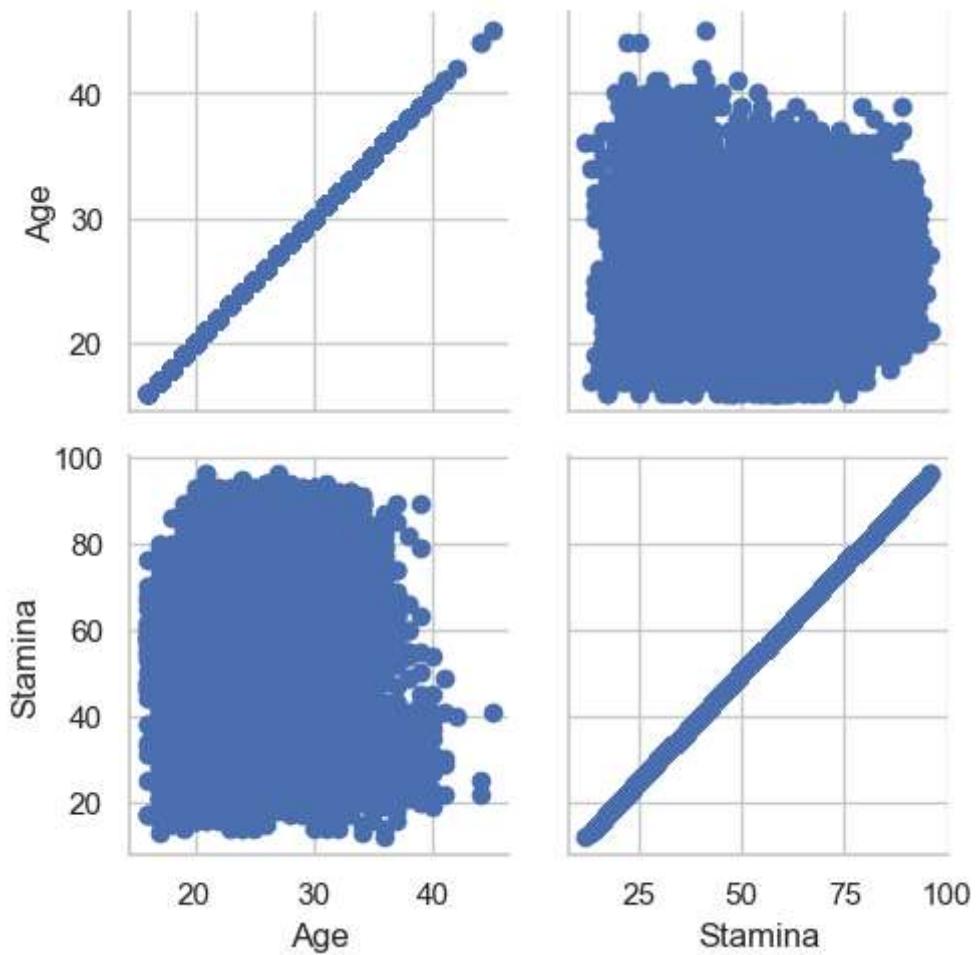
```
g = g.map_diag(plt.hist)  
g = g.map_offdiag(plt.scatter)  
g = g.add_legend()
```



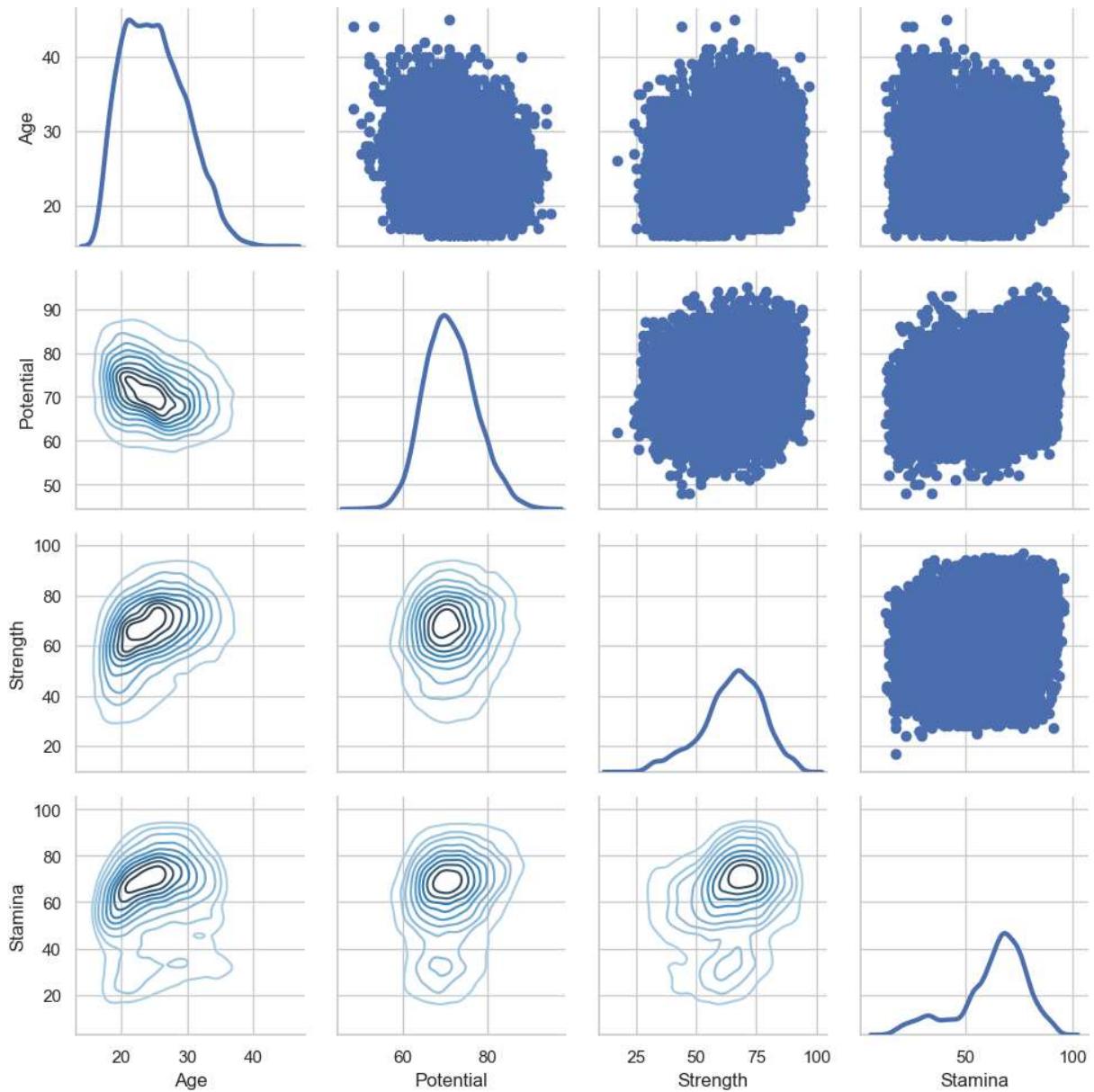
```
In [84]: g = sns.PairGrid(fifa19_new, hue="Preferred Foot")
g = g.map_diag(plt.hist, histtype="step", linewidth=3)
g = g.map_offdiag(plt.scatter)
g = g.add_legend()
```



```
In [85]: g=sns.PairGrid(fifa19_new,vars=['Age','Stamina'])
g=g.map(plt.scatter)
```



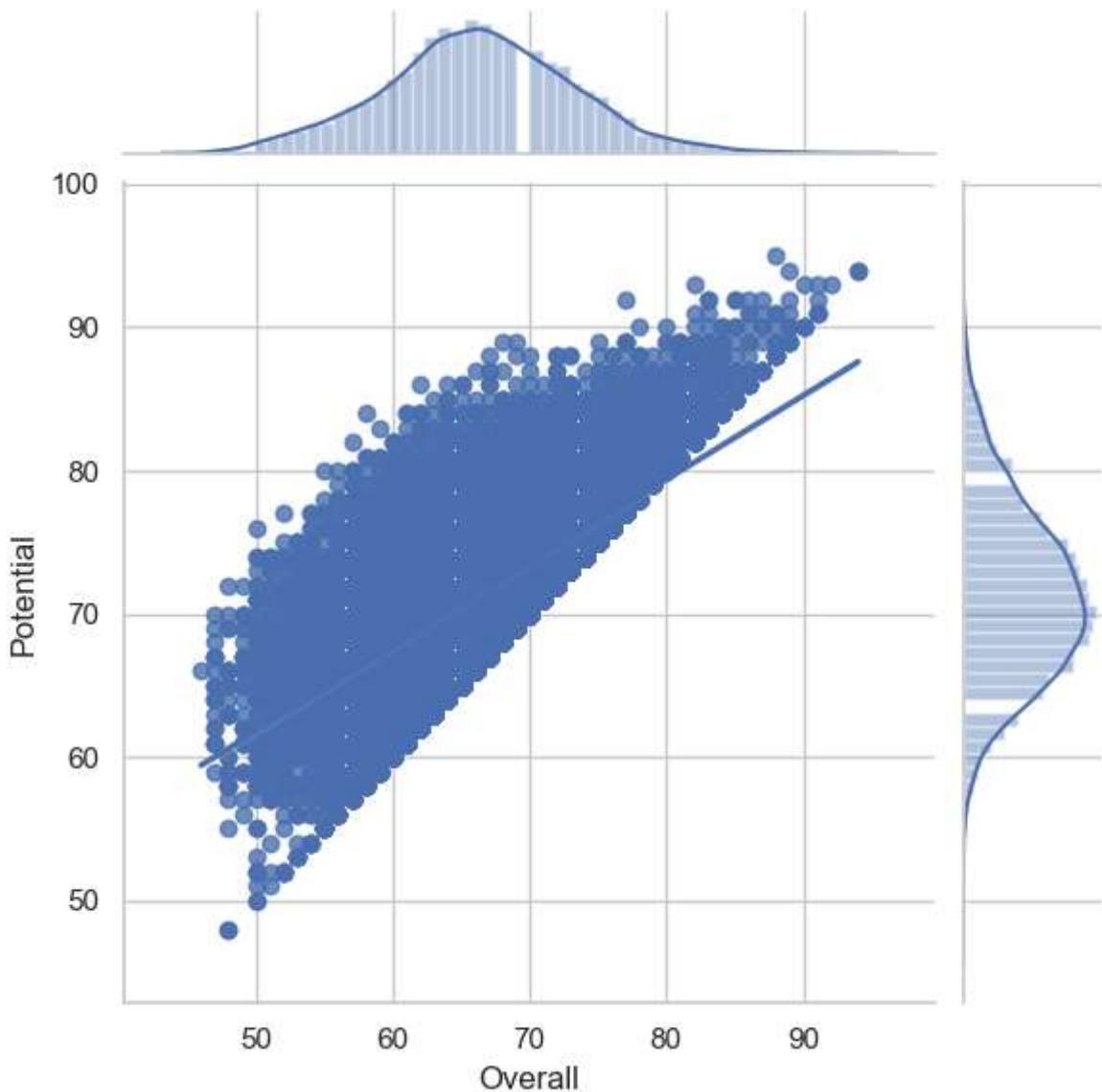
```
In [86]: g = sns.PairGrid(fifa19_new)
g = g.map_upper(plt.scatter)
g = g.map_lower(sns.kdeplot, cmap="Blues_d")
g = g.map_diag(sns.kdeplot, lw=3, legend=False)
```



Seaborn Jointgrid() Function

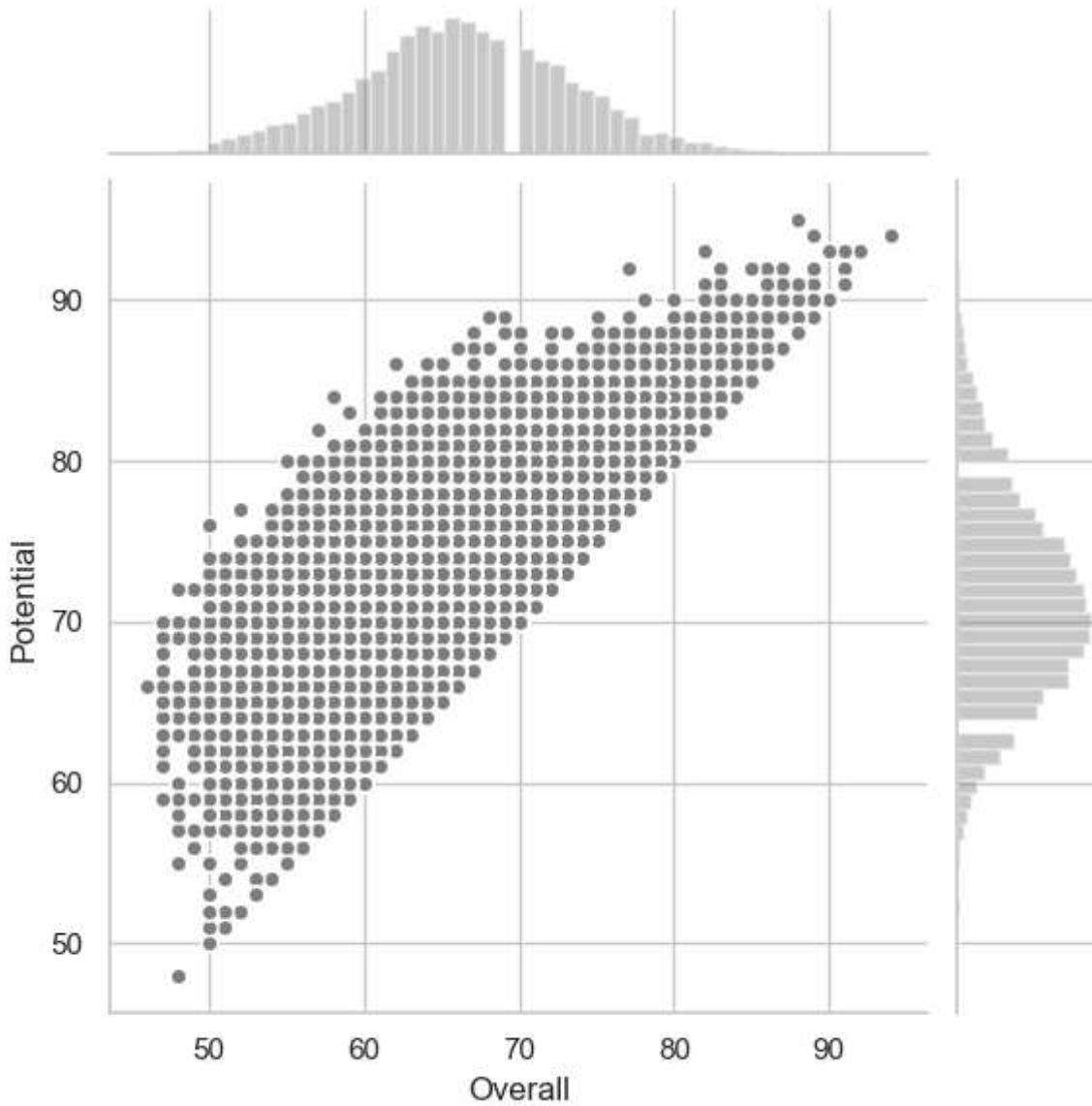
In [153]:

```
g = sns.JointGrid(x="Overall", y="Potential", data=fifa19)
g = g.plot(sns.regplot, sns.distplot)
```

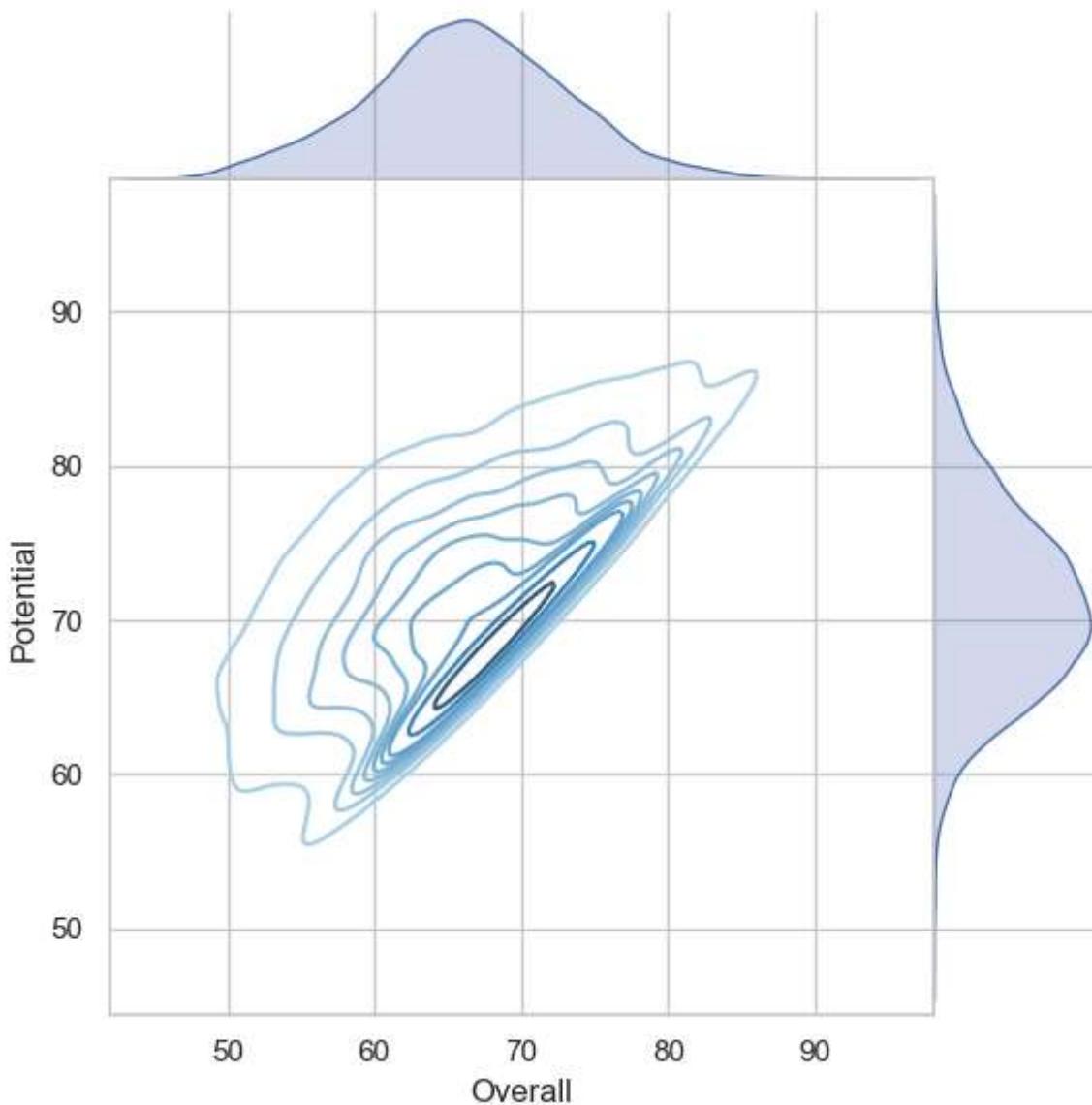


```
In [155...]: import matplotlib.pyplot as plt
```

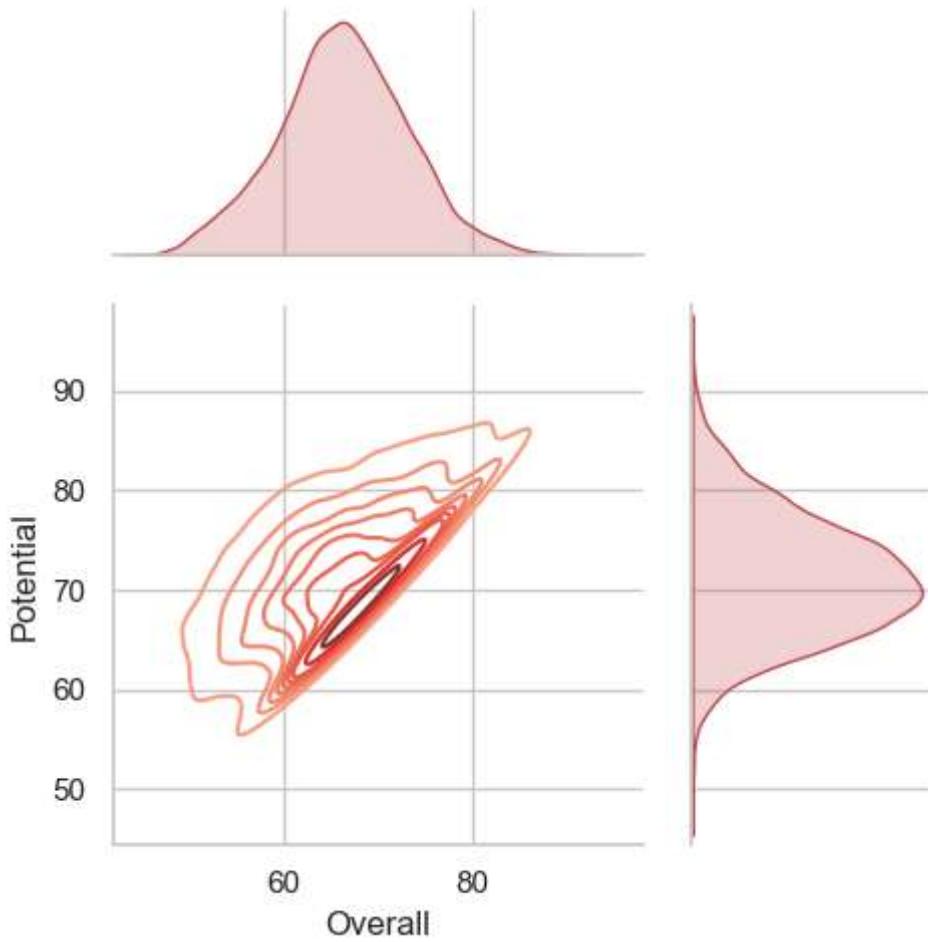
```
In [157...]: g = sns.JointGrid(x="Overall", y="Potential", data=fifa19)
g = g.plot_joint(plt.scatter, color=".5", edgecolor="white")
g = g.plot_marginals(sns.distplot, kde=False, color=".5")
```



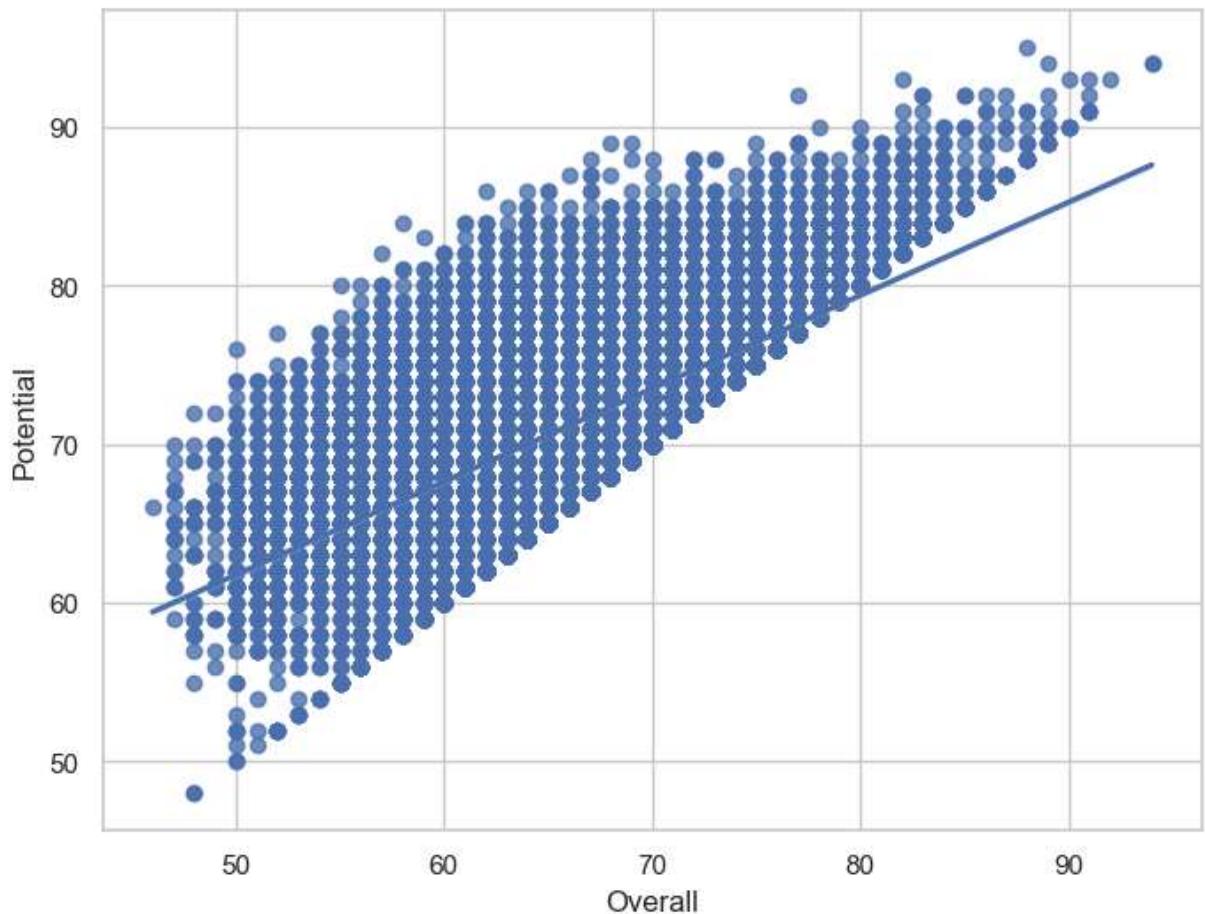
```
In [159]:  
g = sns.JointGrid(x="Overall", y="Potential", data=fifa19, space=0)  
g = g.plot_joint(sns.kdeplot, cmap="Blues_d")  
g = g.plot_marginals(sns.kdeplot, shade=True)
```



```
In [161]: g = sns.JointGrid(x="Overall", y="Potential", data=fifa19, height=5, ratio=2)
g = g.plot_joint(sns.kdeplot, cmap="Reds_d")
g = g.plot_marginals(sns.kdeplot, color="r", shade=True)
```

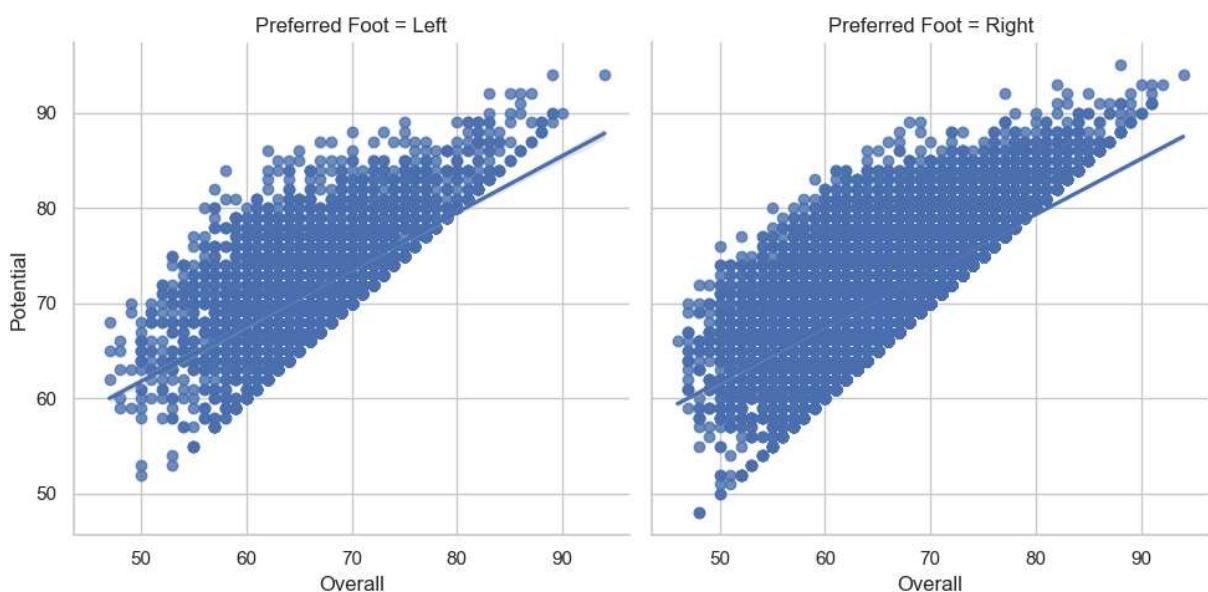


```
In [163]:  
f, ax = plt.subplots(figsize=(8, 6))  
ax = sns.regplot(x="Overall", y="Potential", data=fifa19);
```



```
In [165...]: sns.lmplot(x="Overall", y="Potential", col="Preferred Foot", data=fifa19, col_wrap=
```

```
Out[165...]: <seaborn.axisgrid.FacetGrid at 0x1af7c6bd310>
```



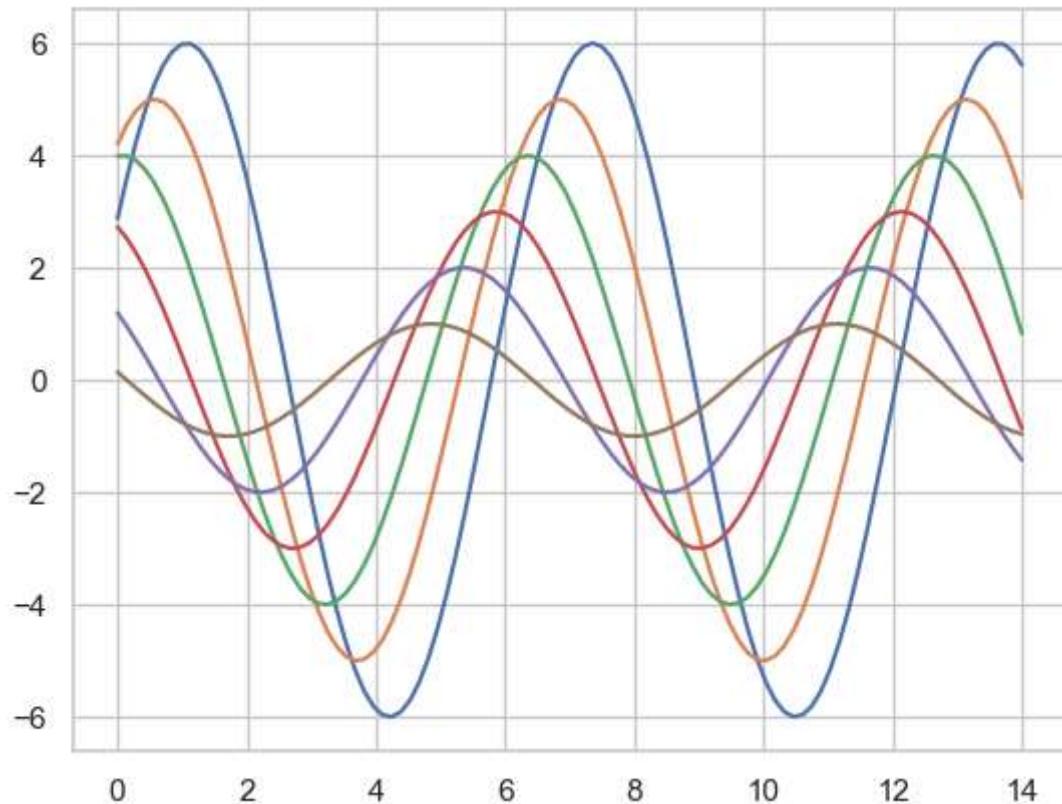
Seaborn figurev styles

In [168...]

```
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)
```

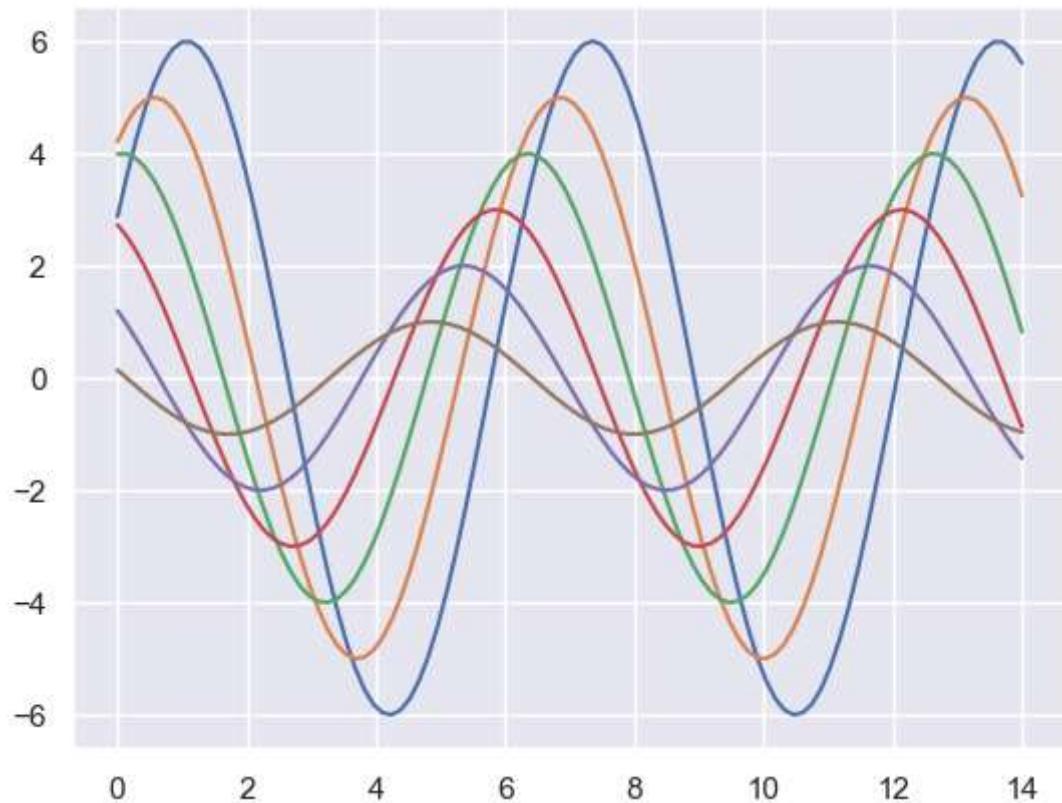
In [170...]

```
sinplot()
```

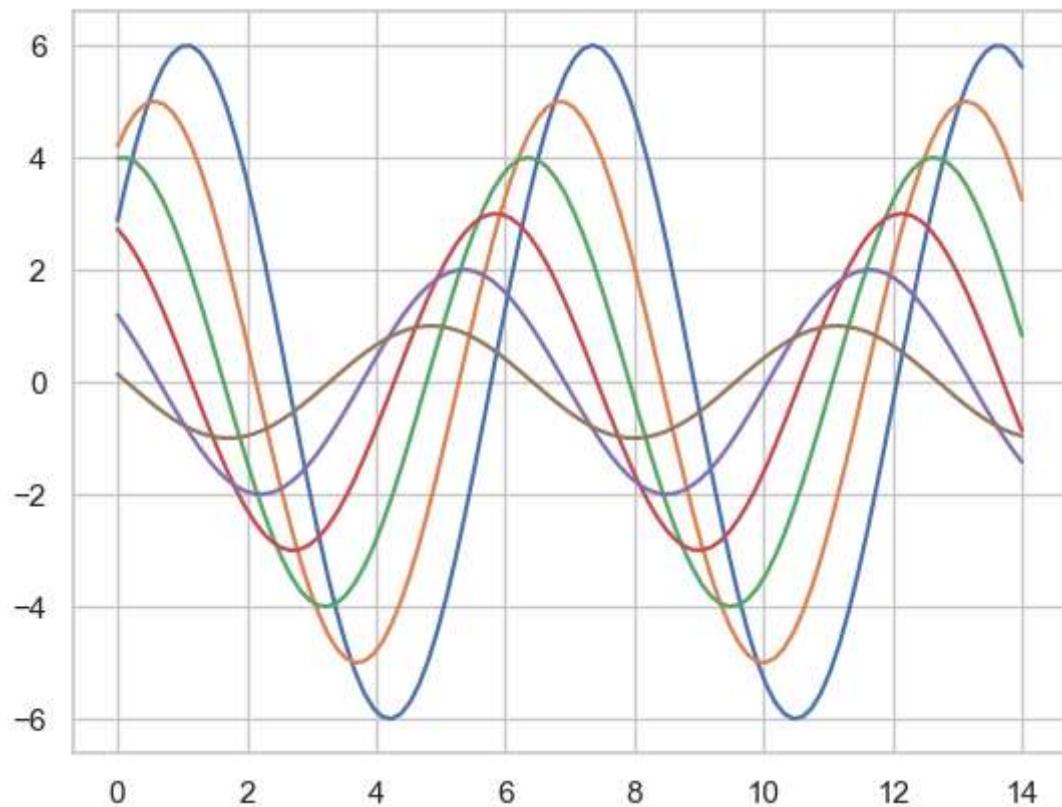


In [172...]

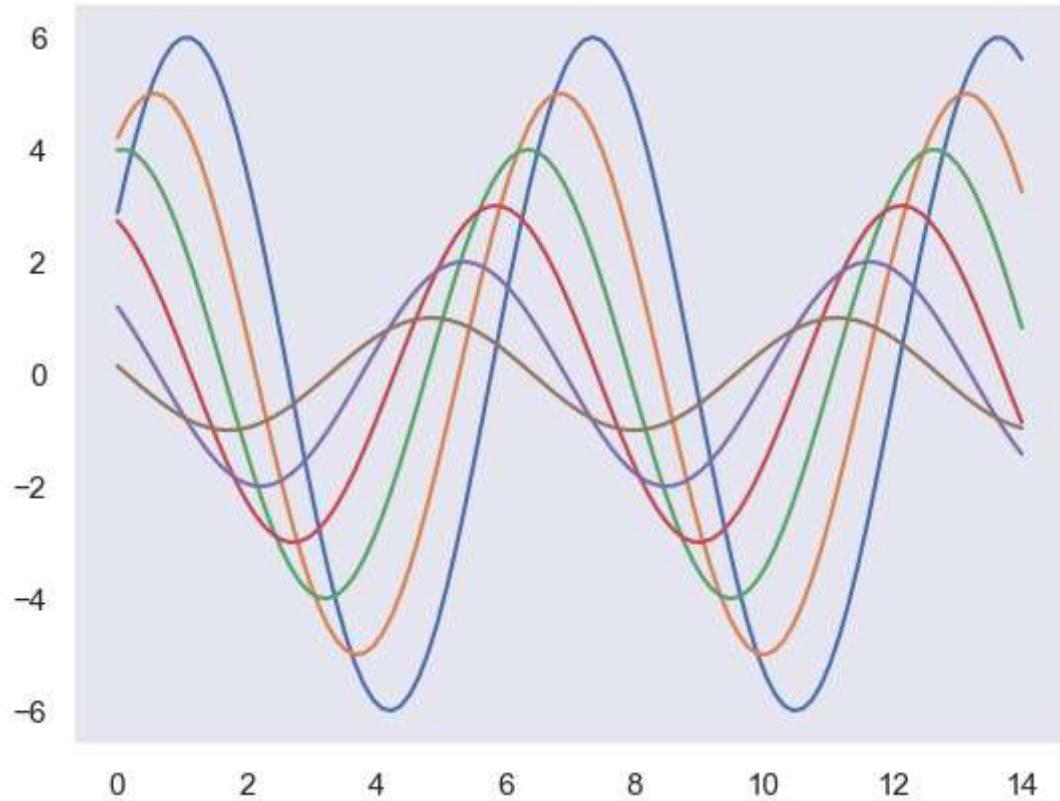
```
sns.set()
sinplot()
```



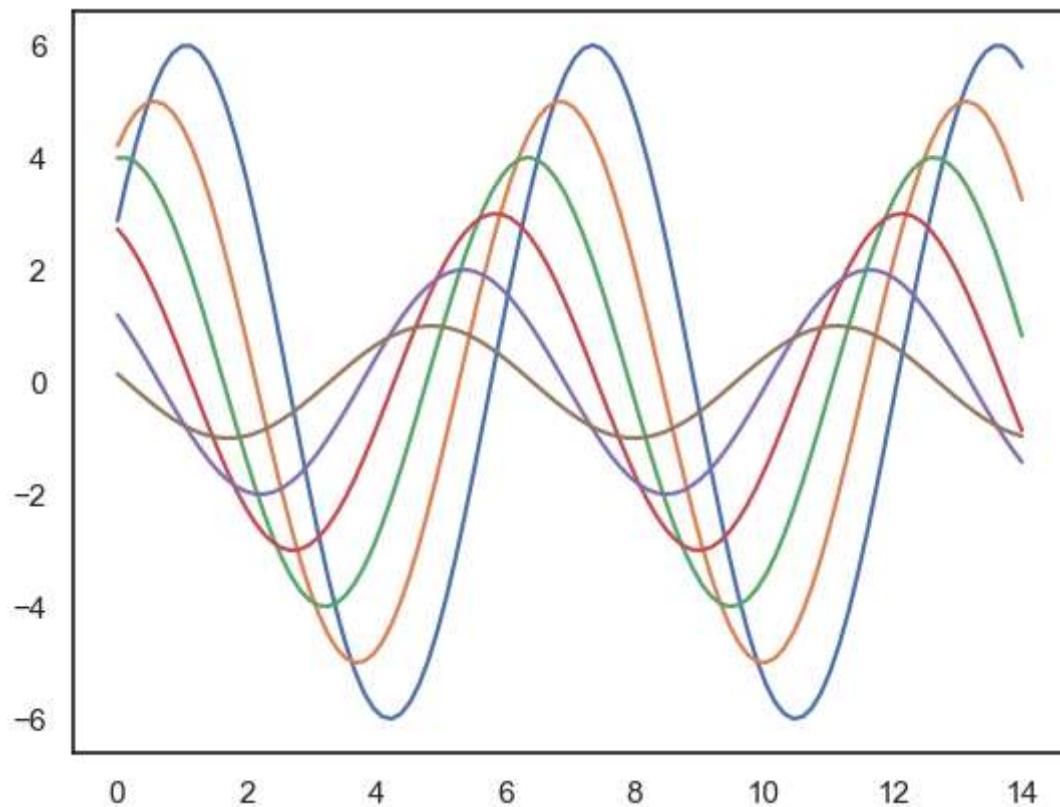
```
In [174...]: sns.set_style('whitegrid')
sinplot()
```



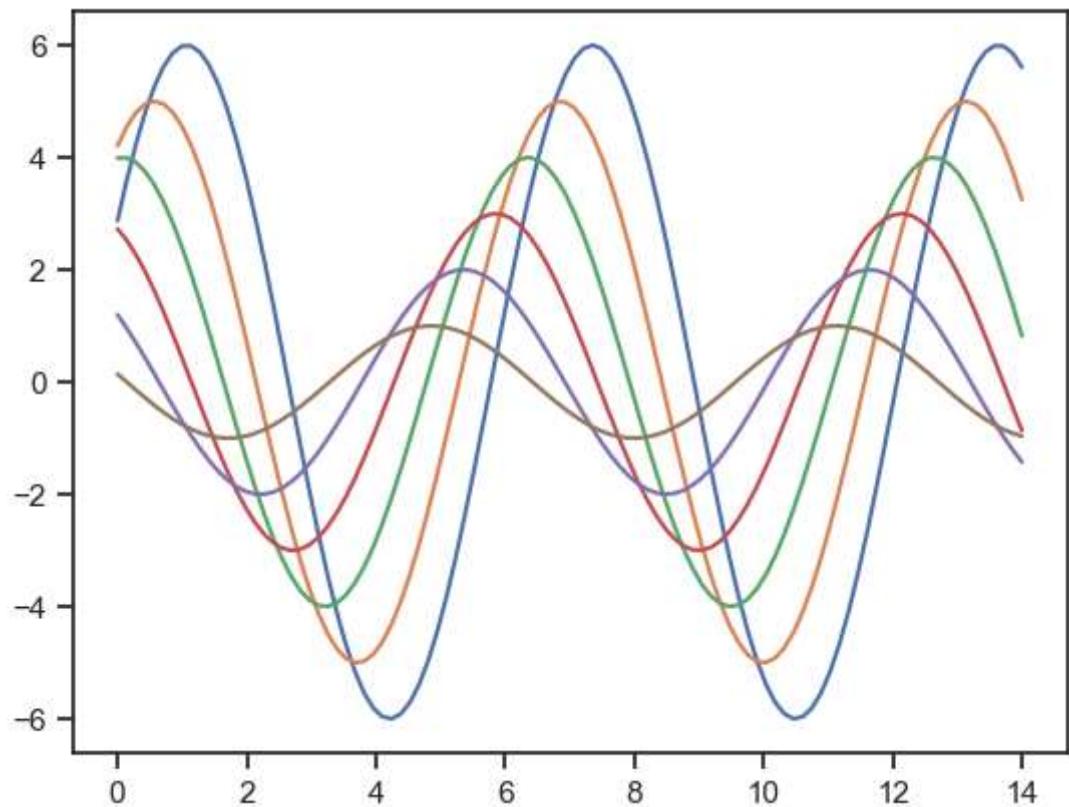
```
In [176...]: sns.set_style('dark')
sinplot()
```



```
In [178]:  
sns.set_style('white')  
sinplot()
```



```
In [180]:  
sns.set_style('ticks')  
sinplot()
```



In []: