```
In [3]: 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
```

```
In [5]: import os
        for dirname, _, filenames in os.walk('/kaggle/input'):
            for filename in filenames:
                print(os.path.join(dirname, filename))
```

```
In [7]: import warnings
        warnings.filterwarnings('ignore')
```

```
In [13]: fifa19 = pd.read_csv(r'C:\Users\DELL\Downloads\FIFA.csv', index_col=0)
```

```
In [15]: fifa19
```

Out[15]:

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

18207 rows × 88 columns

```
In [17]:  fifa19.head()
```

Out[17]:

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

5 rows × 88 columns

```
In [19]:  fifa19.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Index: 18207 entries, 0 to 18206
Data columns (total 88 columns):
 #   Column                   Non-Null Count  Dtype
---  ------                   --------------  -----
 0   ID                       18207 non-null  int64
 1   Name                     18207 non-null  object
 2   Age                      18207 non-null  int64
 3   Photo                    18207 non-null  object
 4   Nationality              18207 non-null  object
 5   Flag                     18207 non-null  object
 6   Overall                  18207 non-null  int64
 7   Potential                18207 non-null  int64
 8   Club                     17966 non-null  object
 9   Club Logo                18207 non-null  object
 10  Value                    18207 non-null  object
 11  Wage                     18207 non-null  object
 12  Special                  18207 non-null  int64
 13  Preferred Foot           18159 non-null  object
 14  International Reputation  18159 non-null  float64
 15  Weak Foot                18159 non-null  float64
 16  Skill Moves              18159 non-null  float64
 17  Work Rate                18159 non-null  object
 18  Body Type                18159 non-null  object
 19  Real Face                18159 non-null  object
 20  Position                 18147 non-null  object
 21  Jersey Number            18147 non-null  float64
 22  Joined                   16654 non-null  object
 23  Loaned From              1264 non-null   object
 24  Contract Valid Until     17918 non-null  object
 25  Height                   18159 non-null  object
 26  Weight                   18159 non-null  object
 27  LS                       16122 non-null  object
 28  ST                       16122 non-null  object
 29  RS                       16122 non-null  object
 30  LW                       16122 non-null  object
 31  LF                       16122 non-null  object
 32  CF                       16122 non-null  object
 33  RF                       16122 non-null  object
 34  RW                       16122 non-null  object
 35  LAM                      16122 non-null  object
 36  CAM                      16122 non-null  object
 37  RAM                      16122 non-null  object
 38  LM                       16122 non-null  object
 39  LCM                      16122 non-null  object
 40  CM                       16122 non-null  object
 41  RCM                      16122 non-null  object
 42  RM                       16122 non-null  object
 43  LWB                      16122 non-null  object
 44  LDM                      16122 non-null  object
 45  CDM                      16122 non-null  object
 46  RDM                      16122 non-null  object
 47  RWB                      16122 non-null  object
 48  LB                       16122 non-null  object
 49  LCB                      16122 non-null  object
 50  CB                       16122 non-null  object
 51  RCB                      16122 non-null  object
 52  RB                       16122 non-null  object
 53  Crossing                 18159 non-null  float64
 54  Finishing                18159 non-null  float64
```

```
55  HeadingAccuracy        18159 non-null  float64
56  ShortPassing           18159 non-null  float64
57  Volleys                18159 non-null  float64
58  Dribbling              18159 non-null  float64
59  Curve                  18159 non-null  float64
60  FKAccuracy             18159 non-null  float64
61  LongPassing            18159 non-null  float64
62  BallControl            18159 non-null  float64
63  Acceleration           18159 non-null  float64
64  SprintSpeed            18159 non-null  float64
65  Agility                18159 non-null  float64
66  Reactions              18159 non-null  float64
67  Balance                18159 non-null  float64
68  ShotPower              18159 non-null  float64
69  Jumping                18159 non-null  float64
70  Stamina                18159 non-null  float64
71  Strength               18159 non-null  float64
72  LongShots              18159 non-null  float64
73  Aggression             18159 non-null  float64
74  Interceptions          18159 non-null  float64
75  Positioning            18159 non-null  float64
76  Vision                 18159 non-null  float64
77  Penalties              18159 non-null  float64
78  Composure              18159 non-null  float64
79  Marking                18159 non-null  float64
80  StandingTackle         18159 non-null  float64
81  SlidingTackle          18159 non-null  float64
82  GKDiving               18159 non-null  float64
83  GKHandling             18159 non-null  float64
84  GKKicking              18159 non-null  float64
85  GKPositioning          18159 non-null  float64
86  GKReflexes             18159 non-null  float64
87  Release Clause         16643 non-null  object
dtypes: float64(38), int64(5), object(45)
memory usage: 12.4+ MB
```

In [21]:
```python
fifa19['Body Type'].value_counts()
```

Out[21]:
```
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 [23]:
```python
f, ax = plt.subplots(figsize=(8,6))
x = fifa19['Age']
ax = sns.distplot(x, bins=10)
plt.show()
```
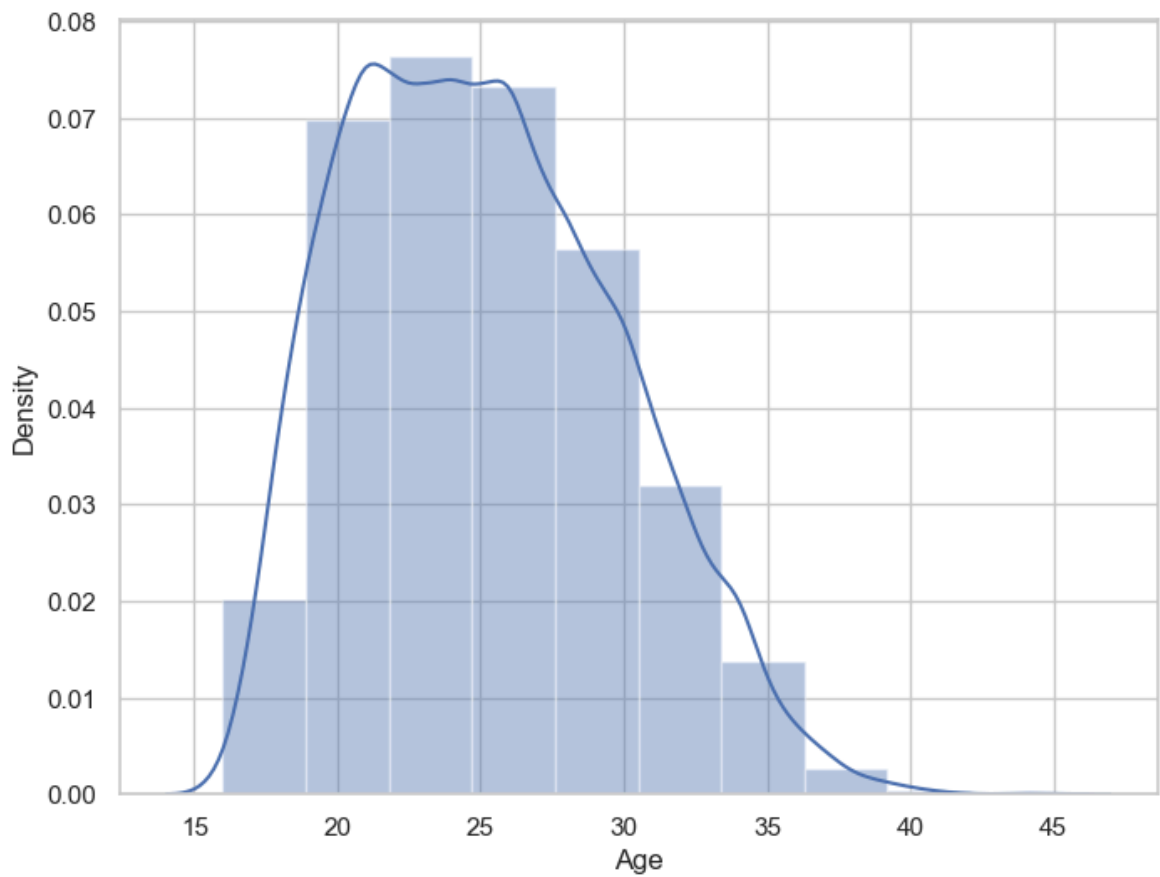
```
In [25]:  f, ax = plt.subplots(figsize=(8,6))
          x = fifa19['Age']
          x = pd.Series(x, name="Age variable")
          ax = sns.distplot(x, bins=10)
          plt.show()
```
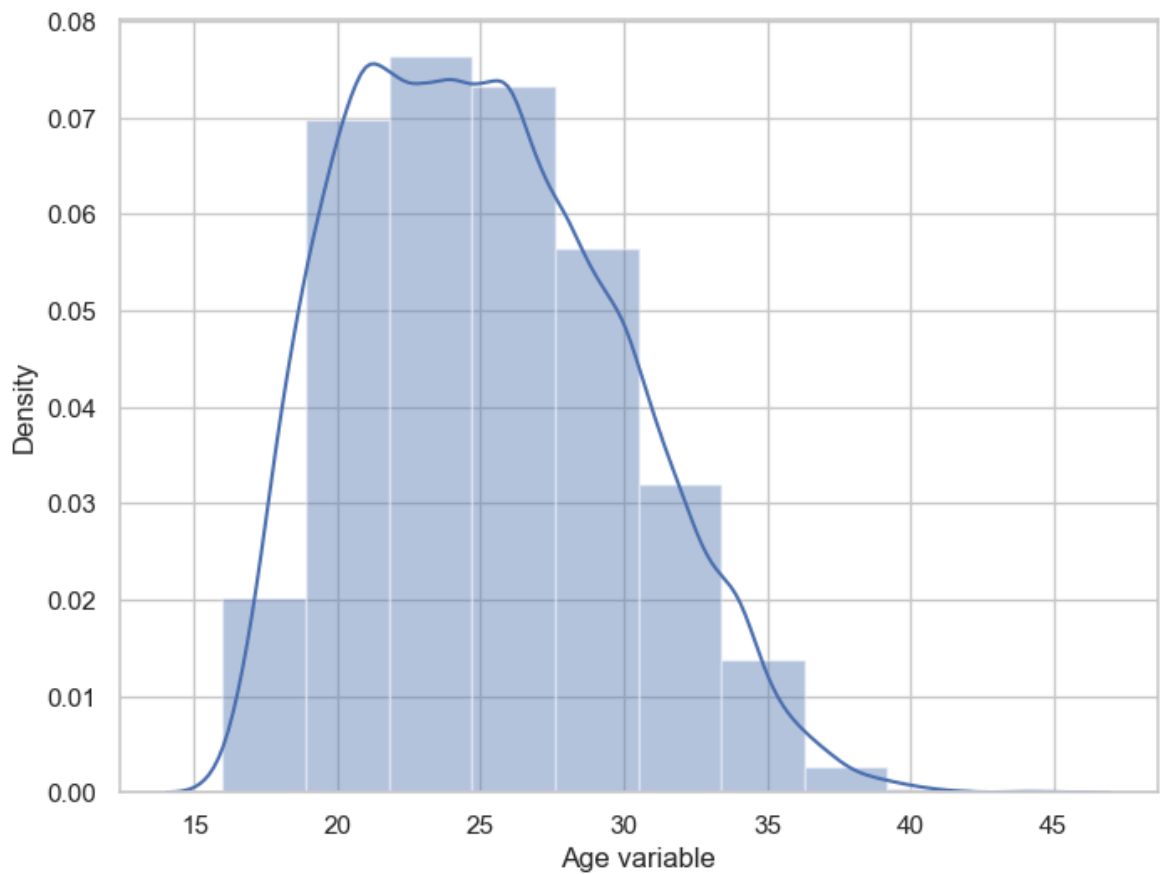
```
In [27]: f, ax = plt.subplots(figsize=(8,6))
         x = fifa19['Age']
         ax = sns.distplot(x, bins=10, vertical = True)
         plt.show()
```
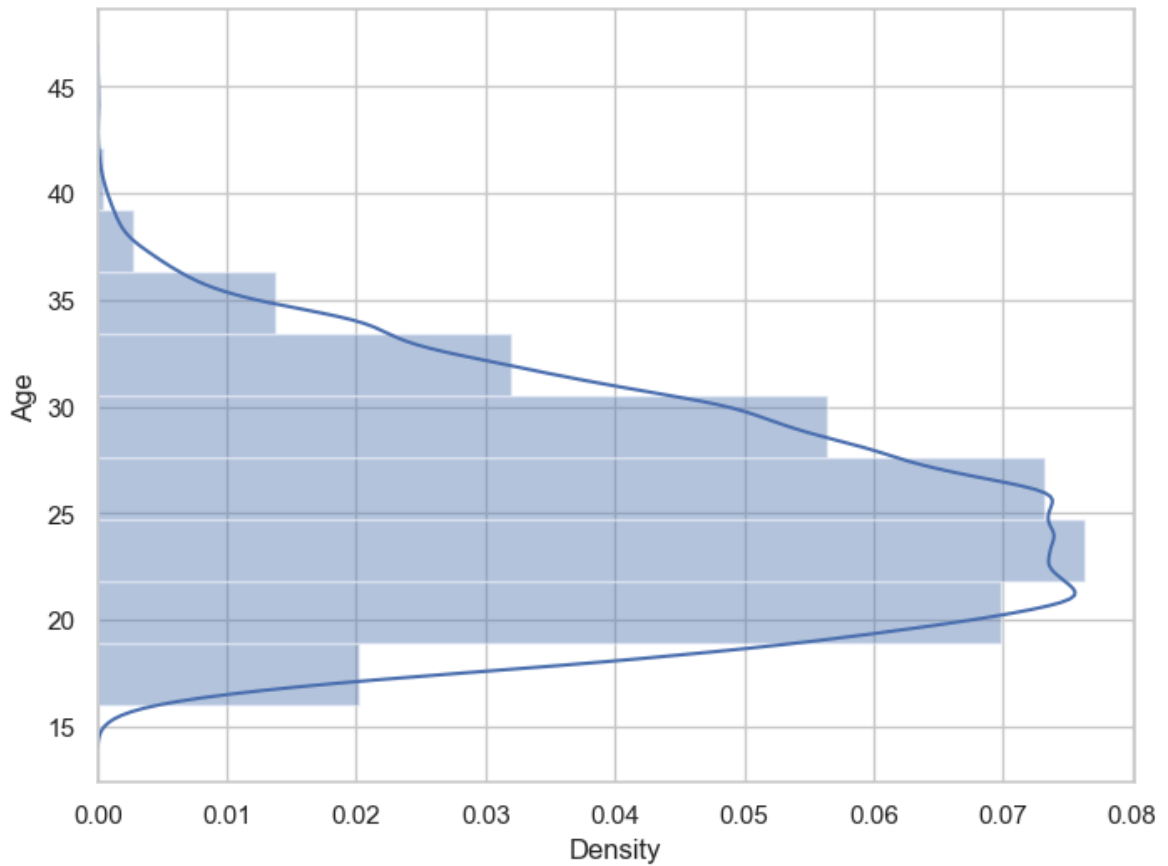


```
In [29]: f, ax = plt.subplots(figsize=(8,6))
         x = fifa19['Age']
         x = pd.Series(x, name="Age variable")
         ax = sns.kdeplot(x)
         plt.show()
```
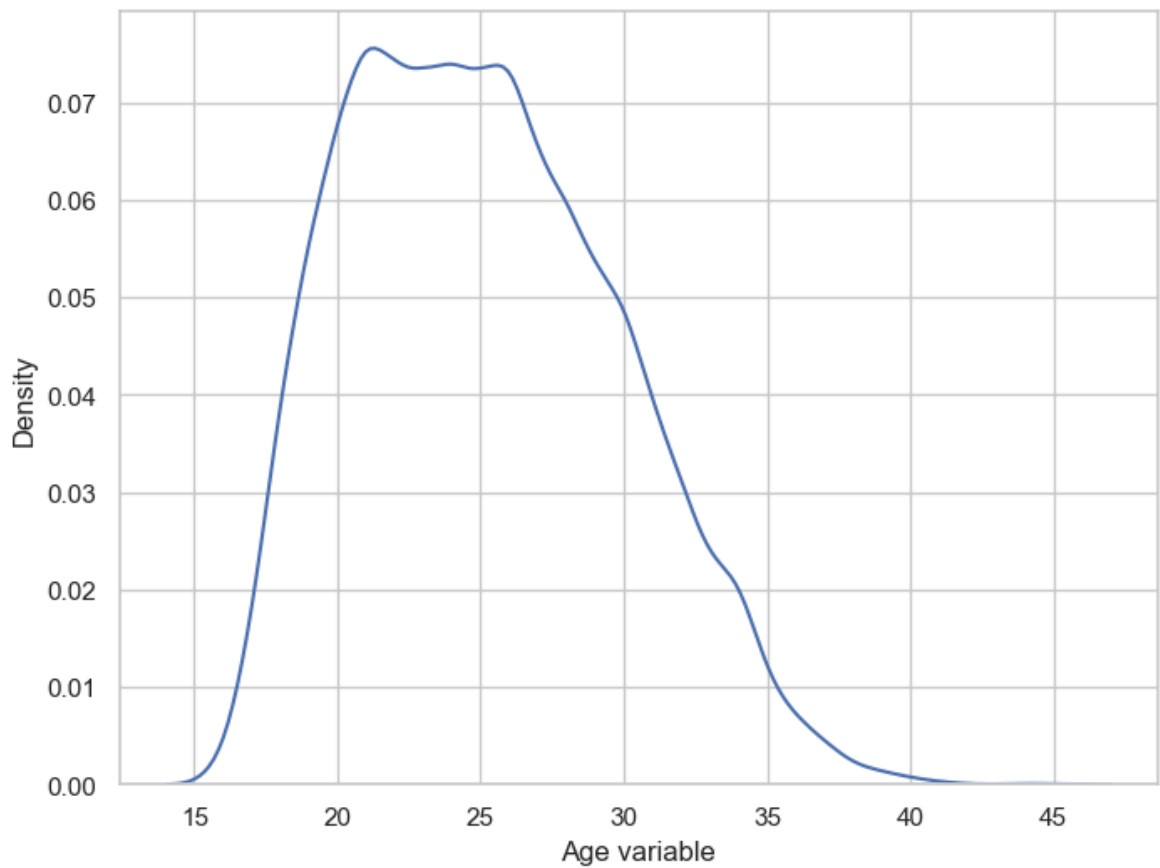
```
In [31]: f, ax = plt.subplots(figsize=(8,6))
         x = fifa19['Age']
         x = pd.Series(x, name="Age variable")
         ax = sns.kdeplot(x, shade=True, color='r')
         plt.show()
```
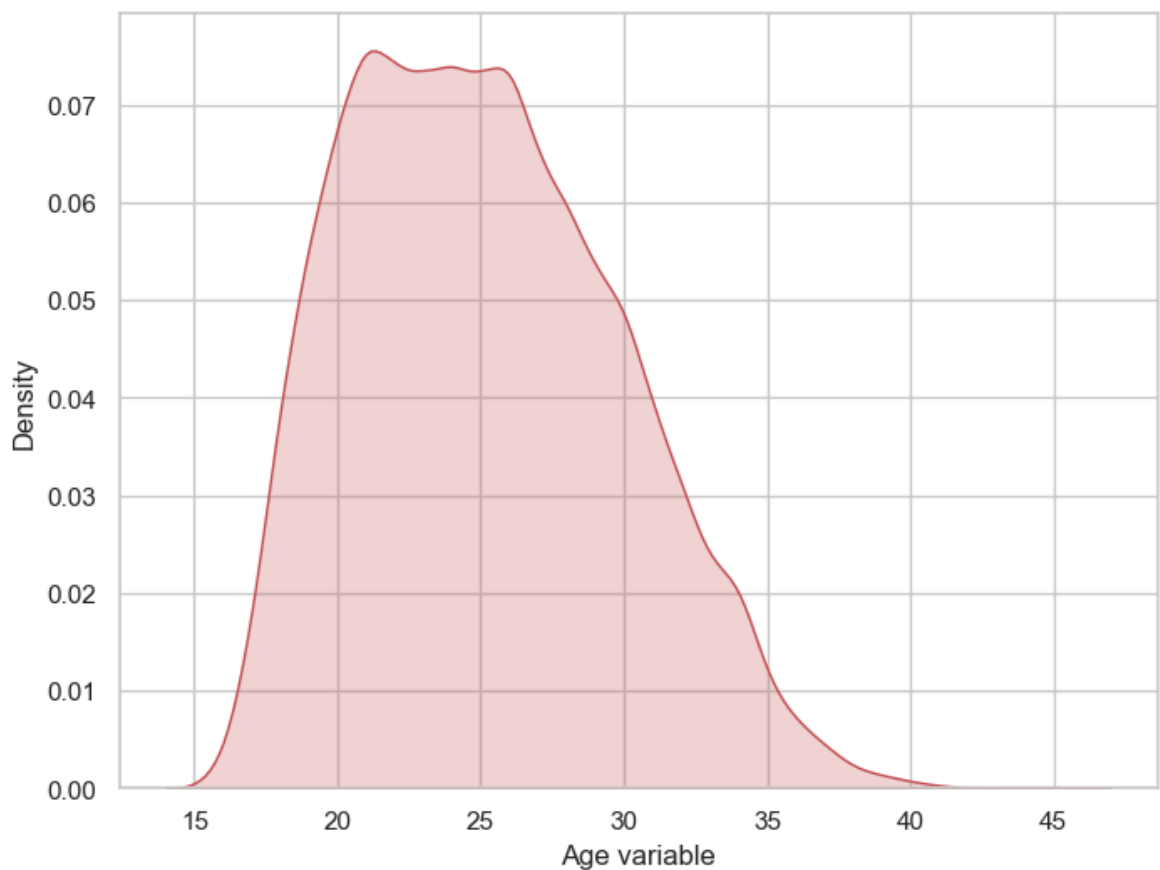
```
In [33]: f, ax = plt.subplots(figsize=(8,6))
         x = fifa19['Age']
         ax = sns.distplot(x, kde=False, rug=True, bins=10)
         plt.show()
```
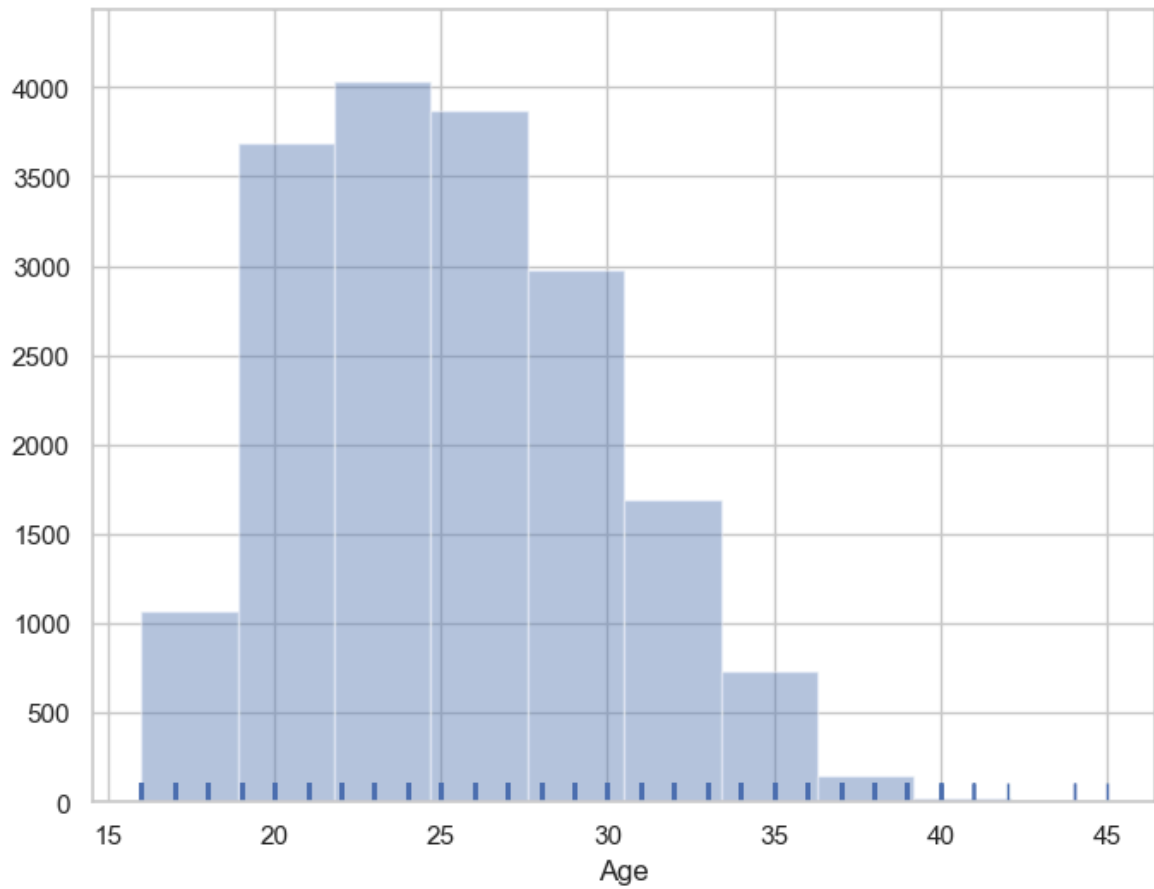


```
In [35]: f, ax = plt.subplots(figsize=(8,6))
         x = fifa19['Age']
         ax = sns.distplot(x, hist=False, rug=True, bins=10)
         plt.show()
```
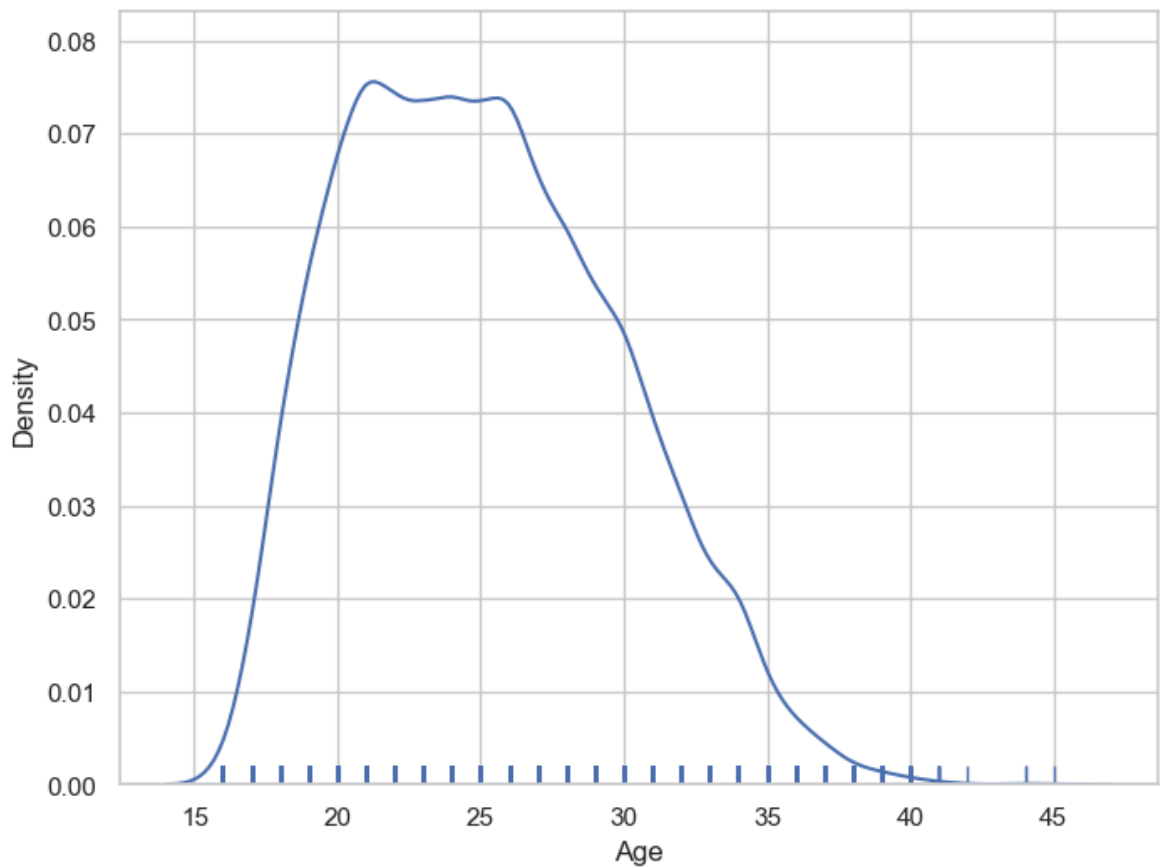
`fifa19['Preferred Foot'].nunique()`

2

`fifa19['Preferred Foot'].value_counts()`

```
Preferred Foot
Right    13948
Left      4211
Name: count, dtype: int64
```

```python
f, ax = plt.subplots(figsize=(6, 4))
sns.countplot(x="Preferred Foot", data=fifa19, color="c")
plt.show()
```
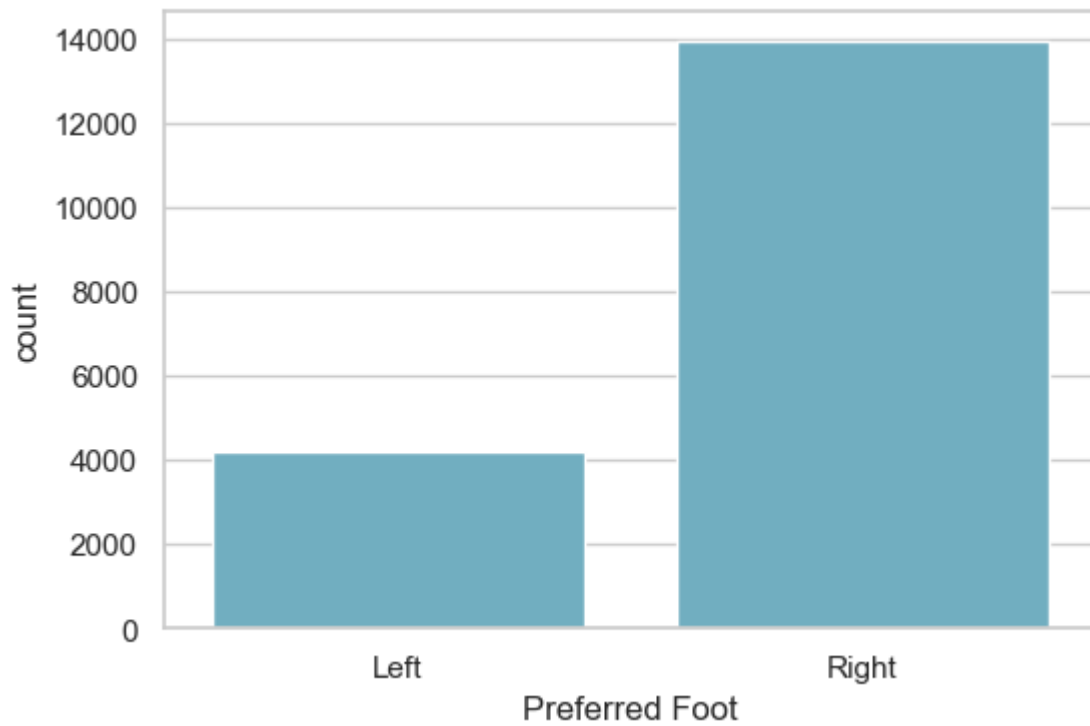
```
f, ax = plt.subplots(figsize=(8, 6))
sns.countplot(x="Preferred Foot", hue="Real Face", data=fifa19)
plt.show()
```
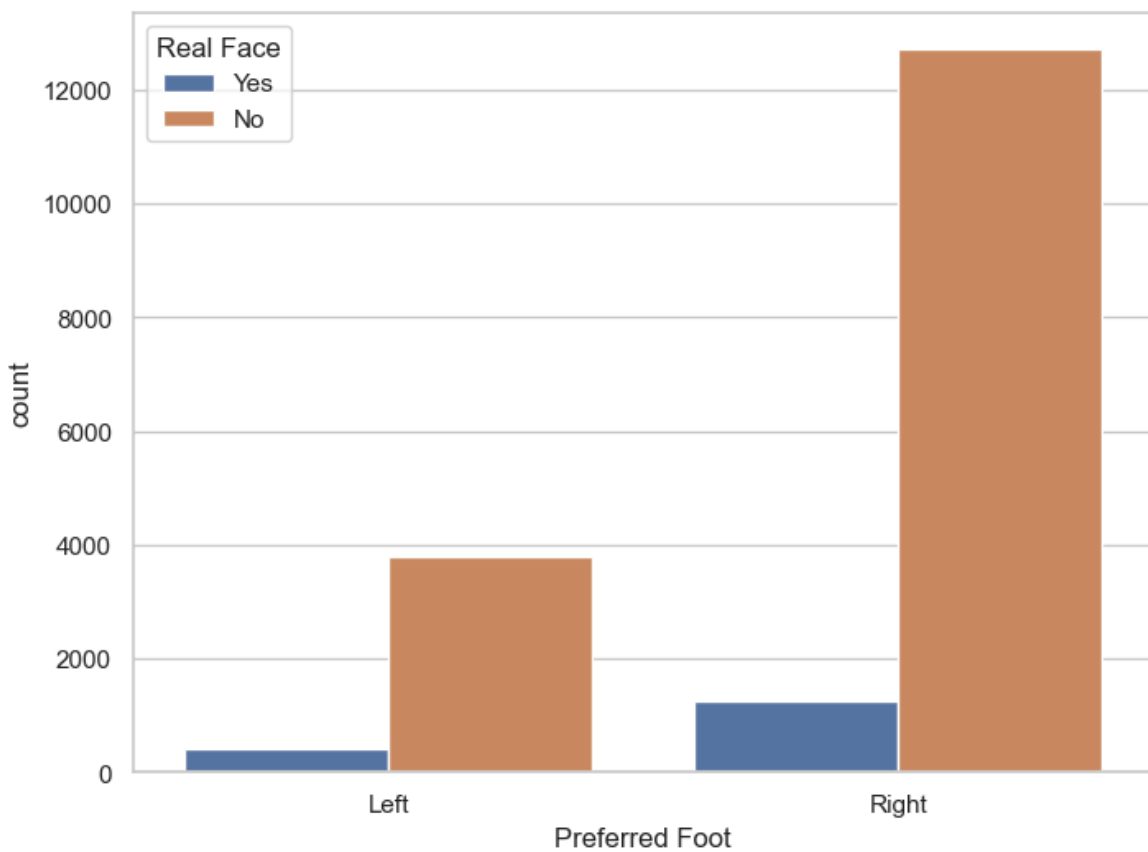
```
f, ax = plt.subplots(figsize=(8, 6))
sns.countplot(y="Preferred Foot", data=fifa19, color="c")
plt.show()
```
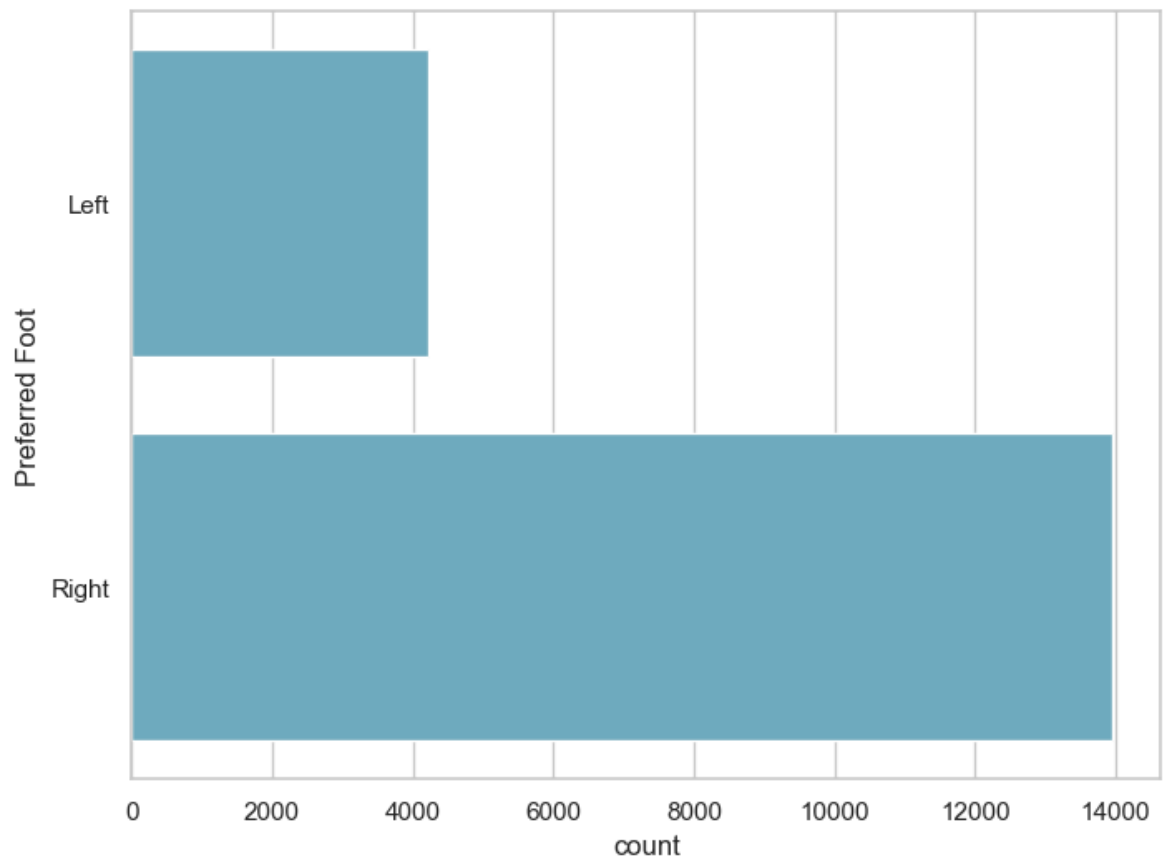
```
In [52]: g = sns.catplot(x="Preferred Foot", kind="count", palette="ch:.25", data=fifa19)
         plt.show()
```
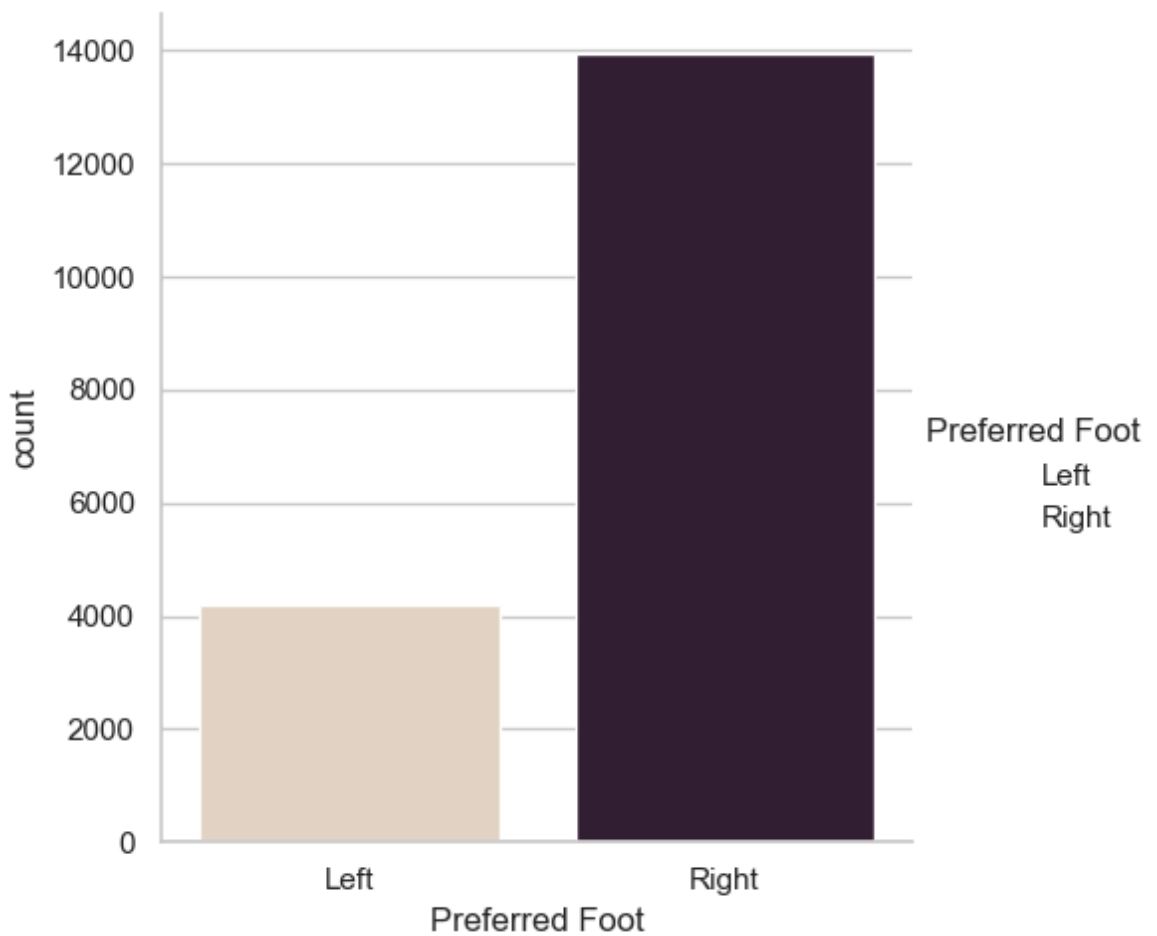
```
In [54]:  fifa19['International Reputation'].nunique()
```

```
Out[54]:  5
```

```
In [56]:  fifa19['International Reputation'].value_counts()
```

```
Out[56]:  International Reputation
          1.0     16532
          2.0      1261
          3.0       309
          4.0        51
          5.0         6
          Name: count, dtype: int64
```

```
In [58]:  f, ax = plt.subplots(figsize=(8, 6))
          sns.stripplot(x="International Reputation", y="Potential", data=fifa19)
          plt.show()
```
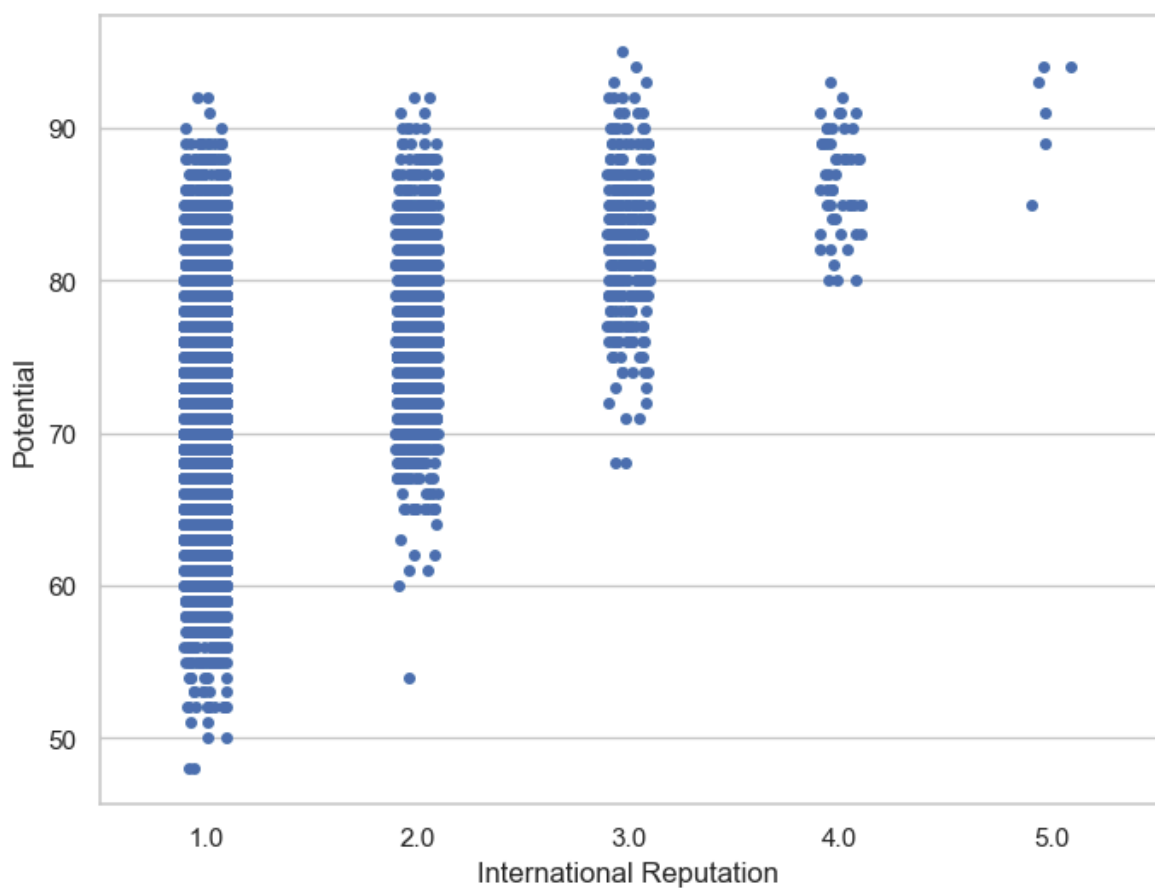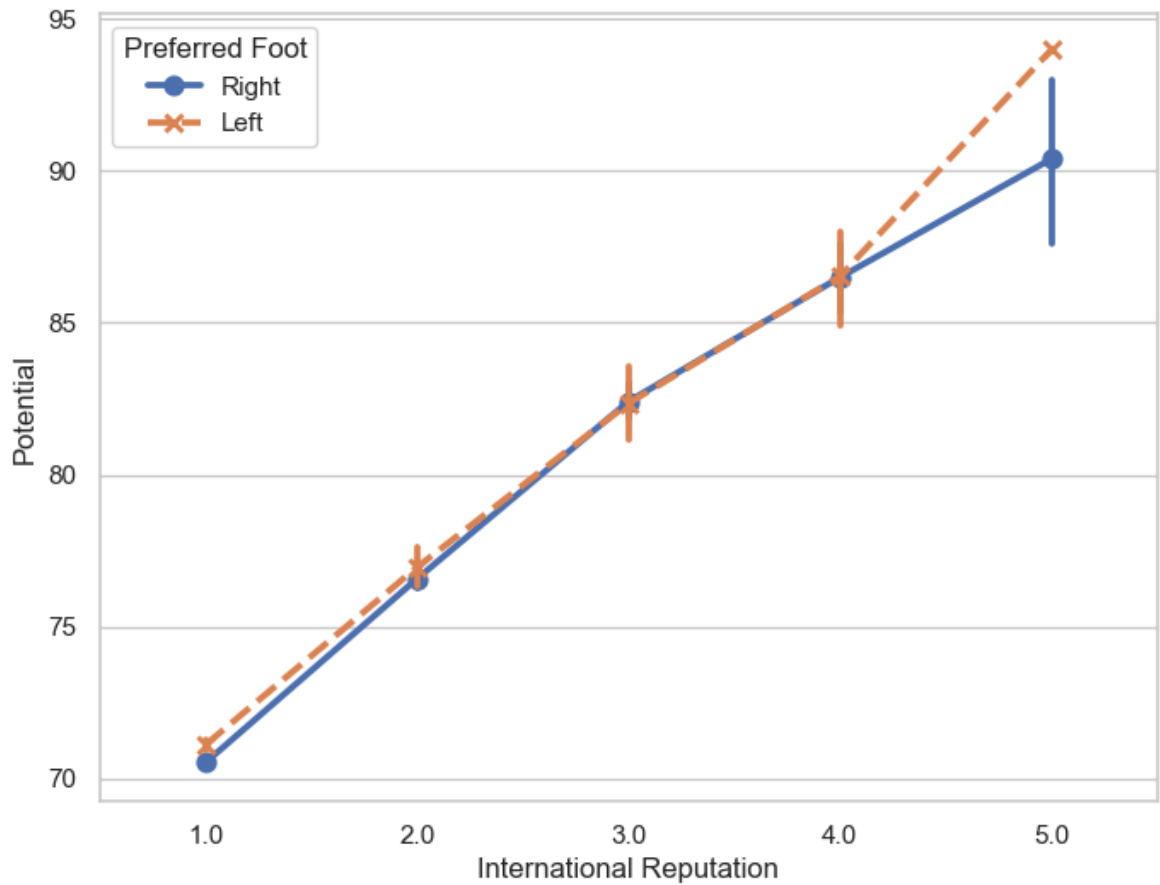


```
In [60]:  f, ax = plt.subplots(figsize=(8, 6))
          sns.stripplot(x="International Reputation", y="Potential", data=fifa19, jitter=0
          plt.show()
```
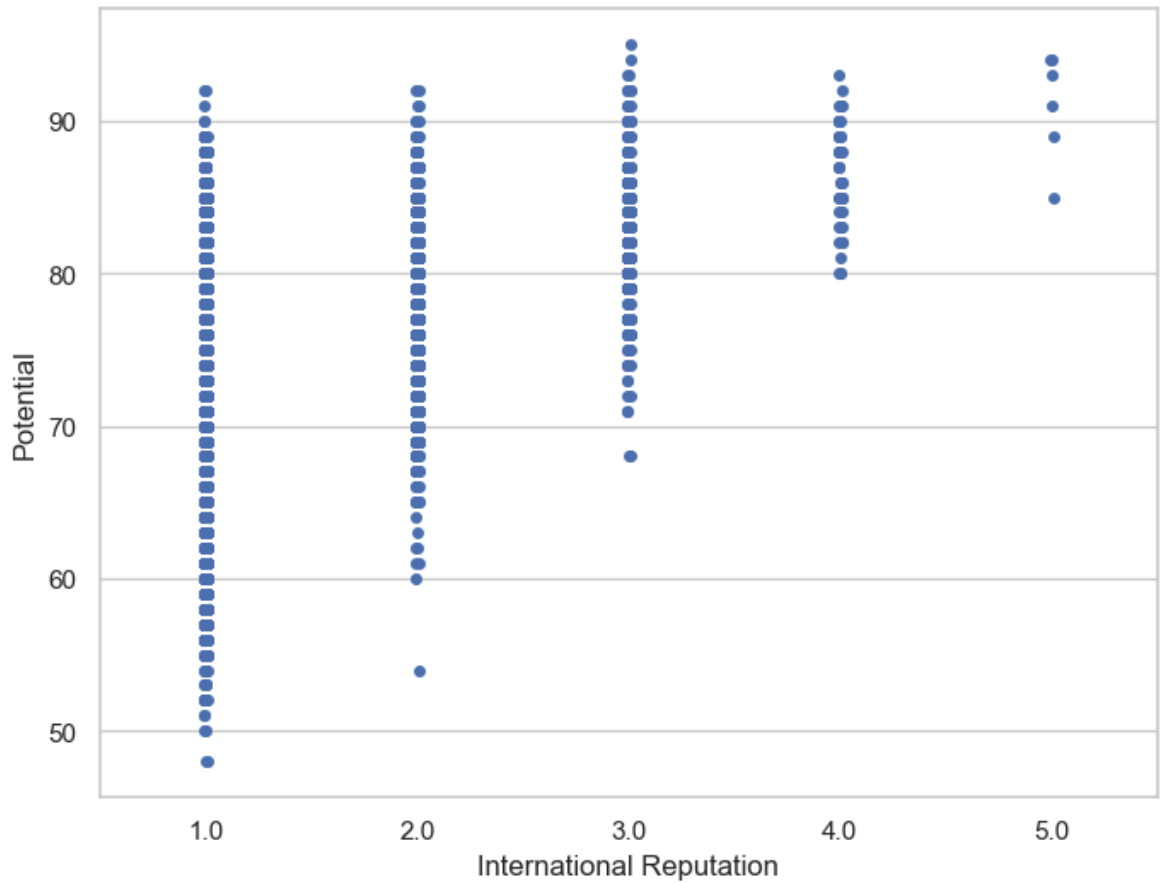
```
In [62]: f, ax = plt.subplots(figsize=(8, 6))
         sns.stripplot(x="International Reputation", y="Potential", hue="Preferred Foot",
                       data=fifa19, jitter=0.2, palette="Set2", dodge=True)
         plt.show()
```
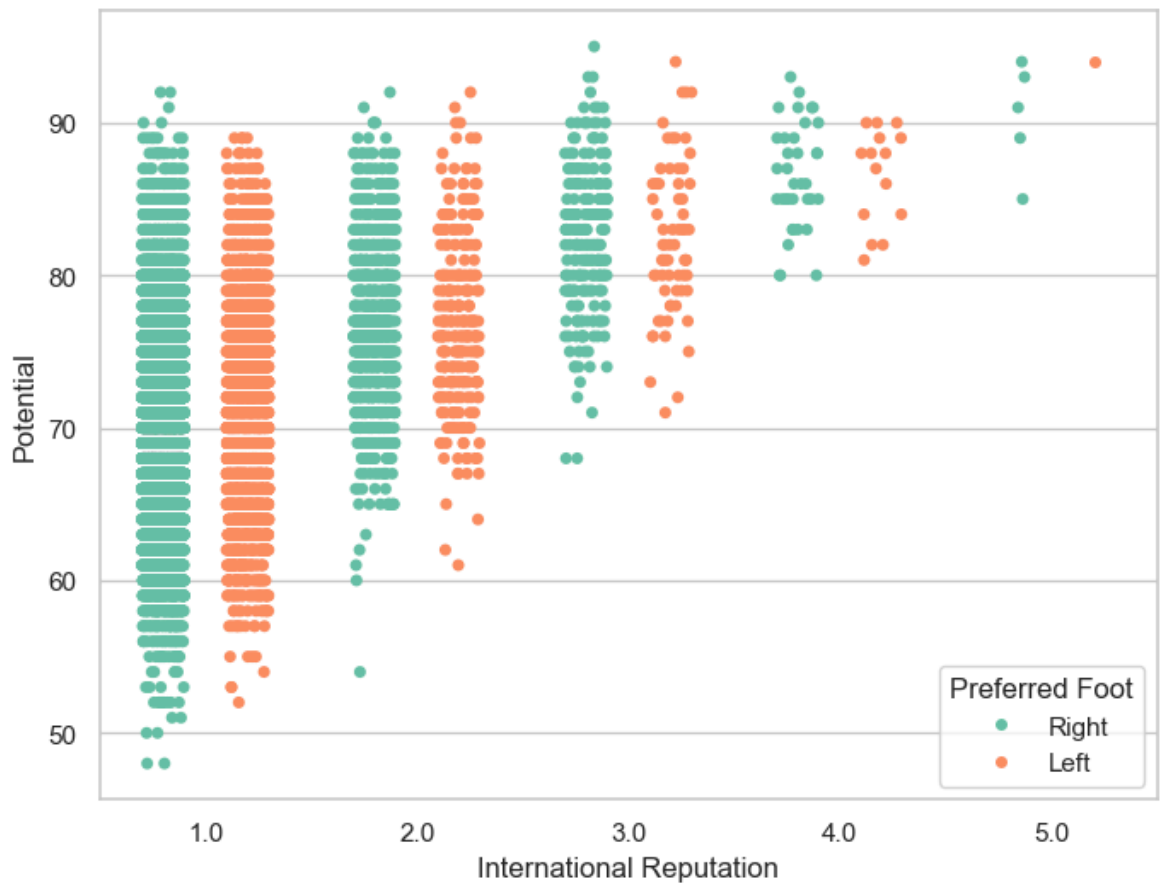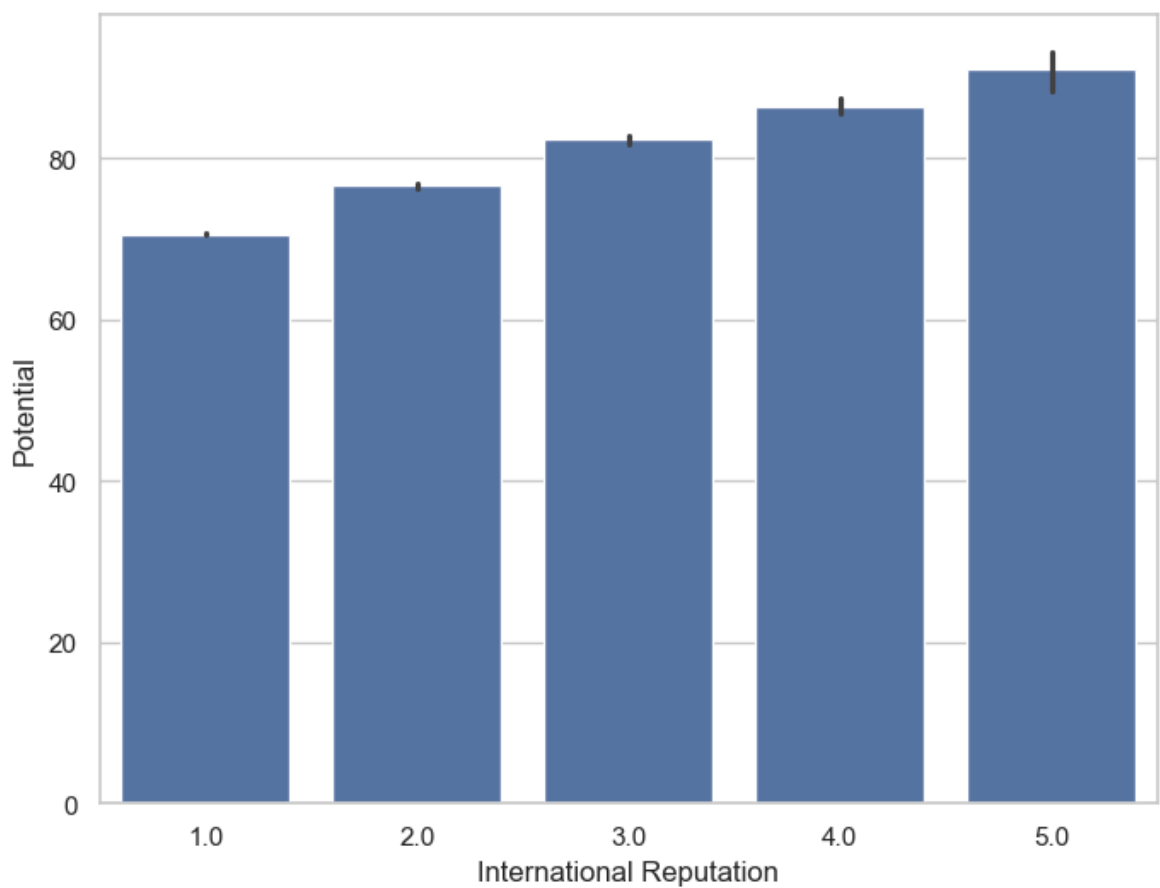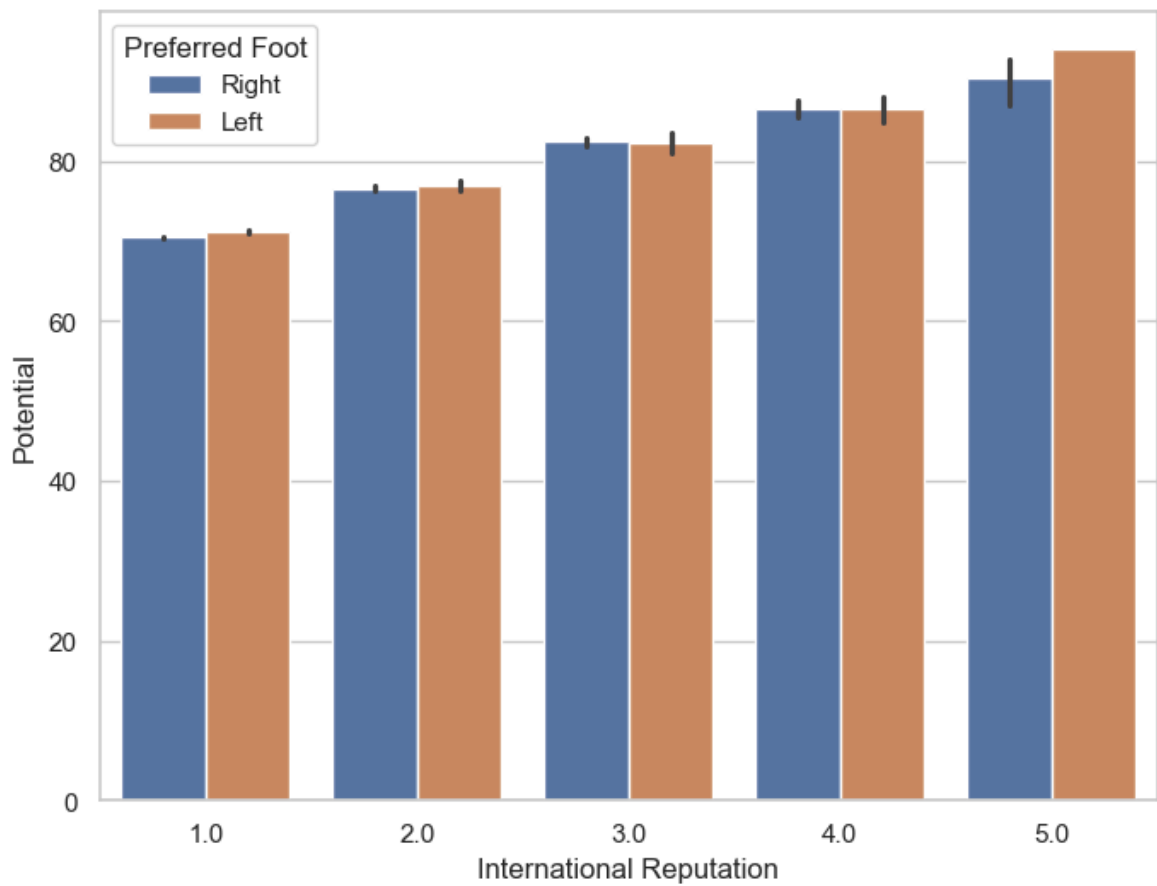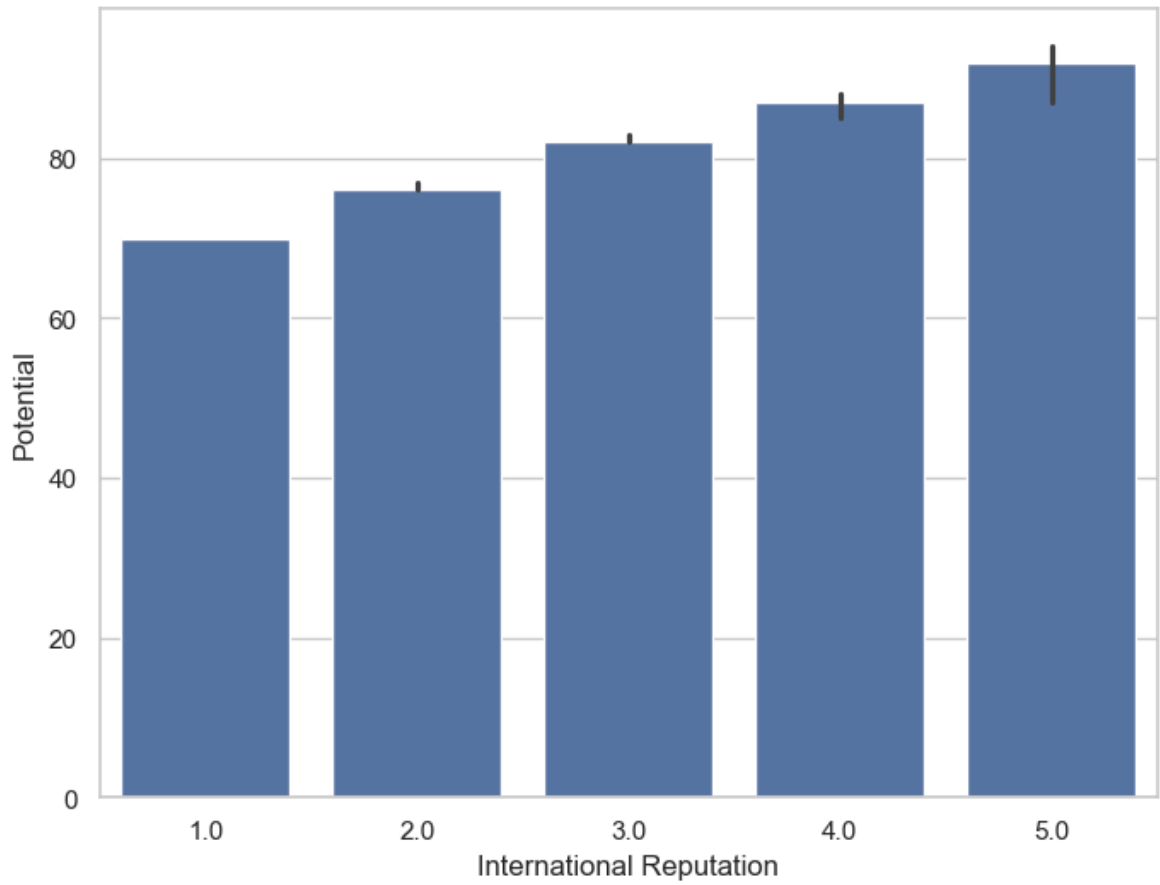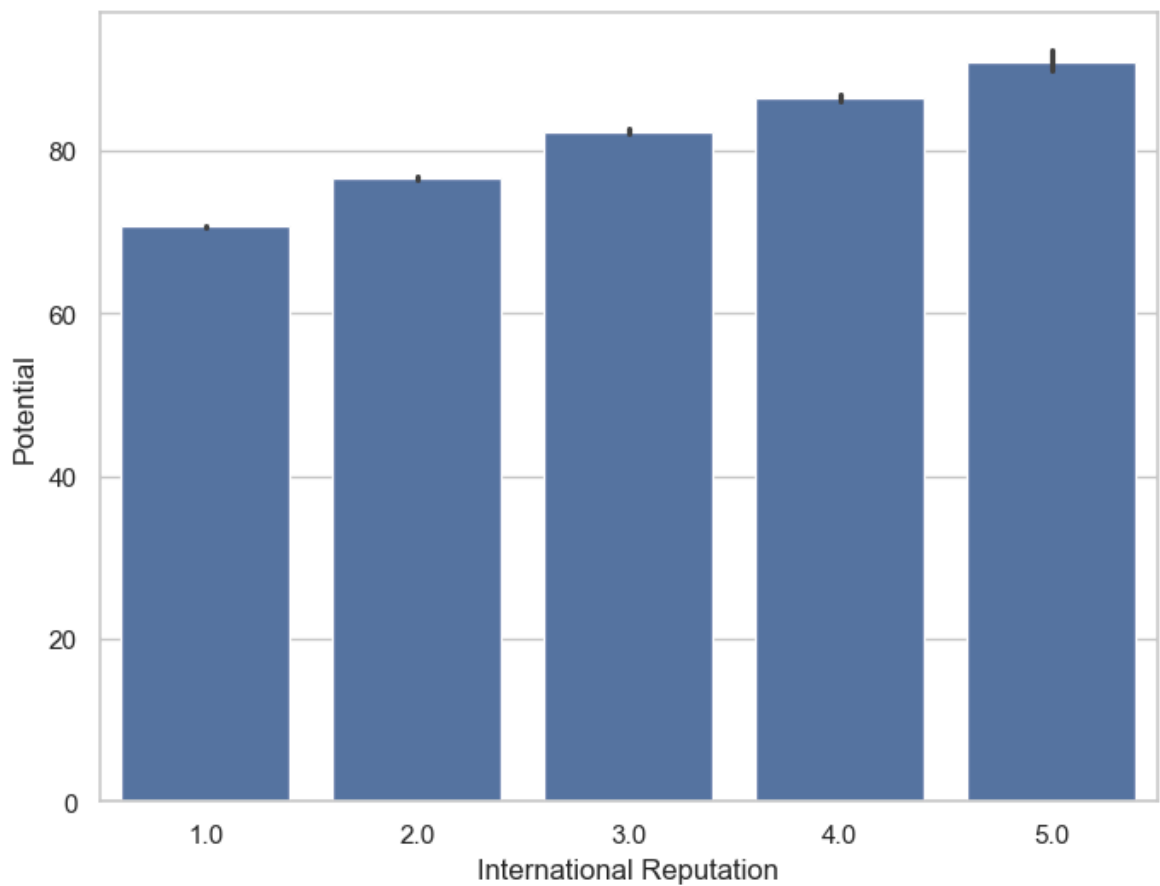
```
In [64]:  f, ax = plt.subplots(figsize=(8, 6))
          sns.stripplot(x="International Reputation", y="Potential", hue="Preferred Foot",
                        data=fifa19, palette="Set2", size=20, marker="D",
                        edgecolor="gray", alpha=.25)
          plt.show()
```
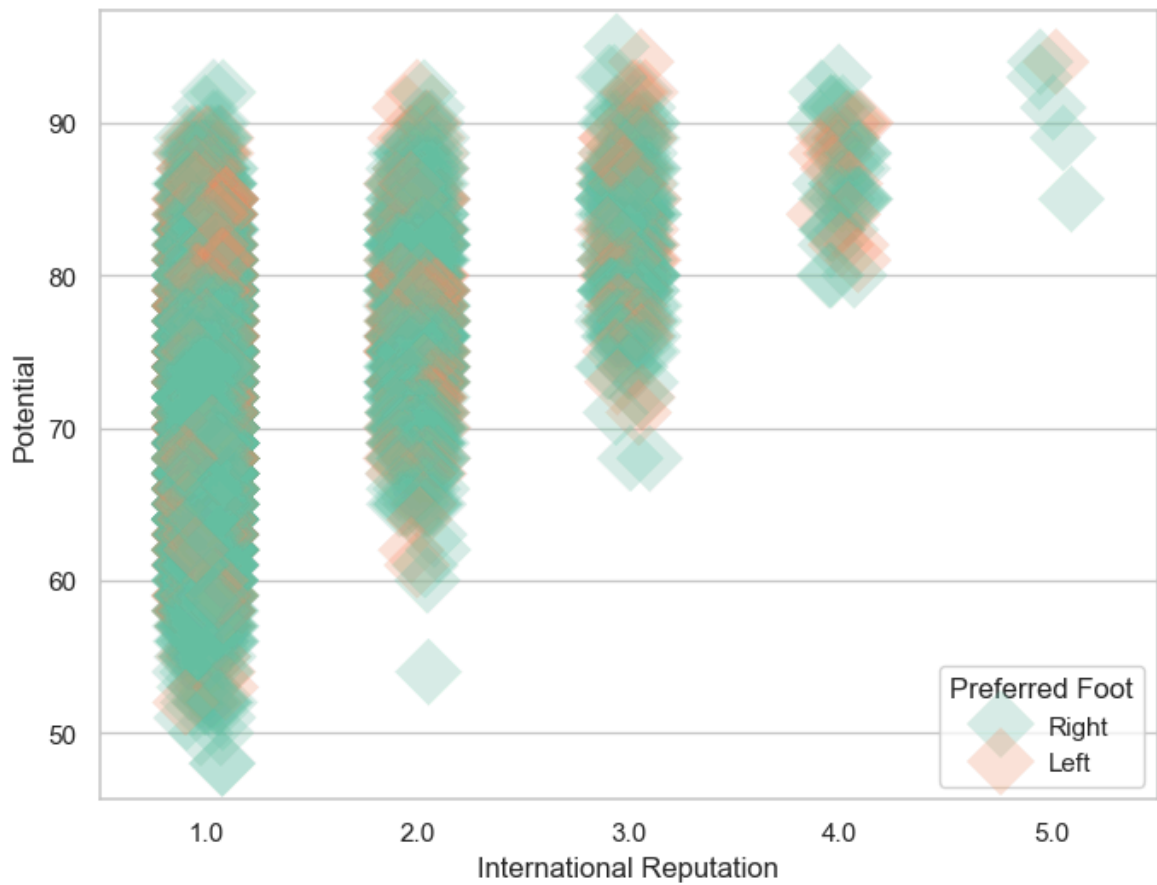


```
In [66]:  f, ax = plt.subplots(figsize=(8, 6))
          sns.boxplot(x=fifa19["Potential"])
          plt.show()
```
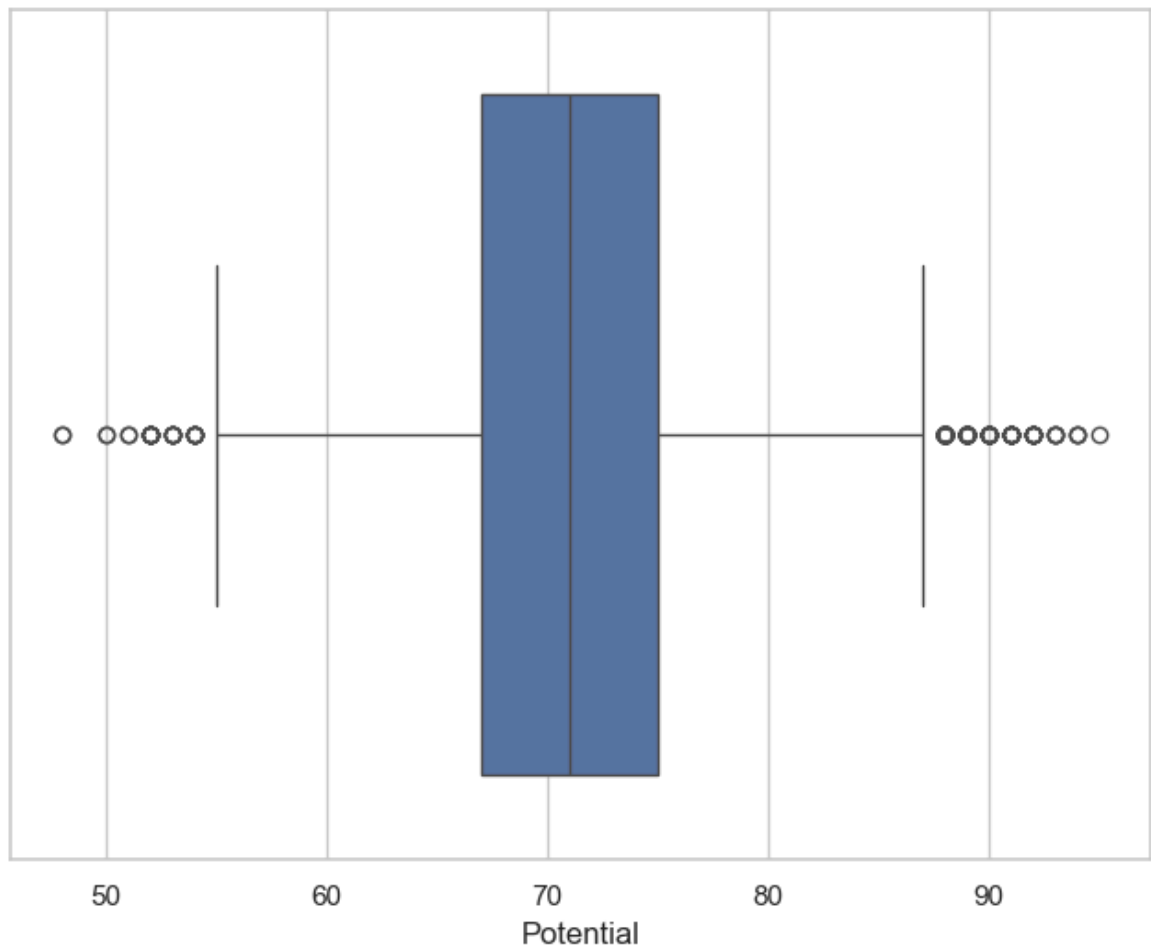
```
In [68]:  f, ax = plt.subplots(figsize=(8, 6))
          sns.boxplot(x="International Reputation", y="Potential", data=fifa19)
          plt.show()
```
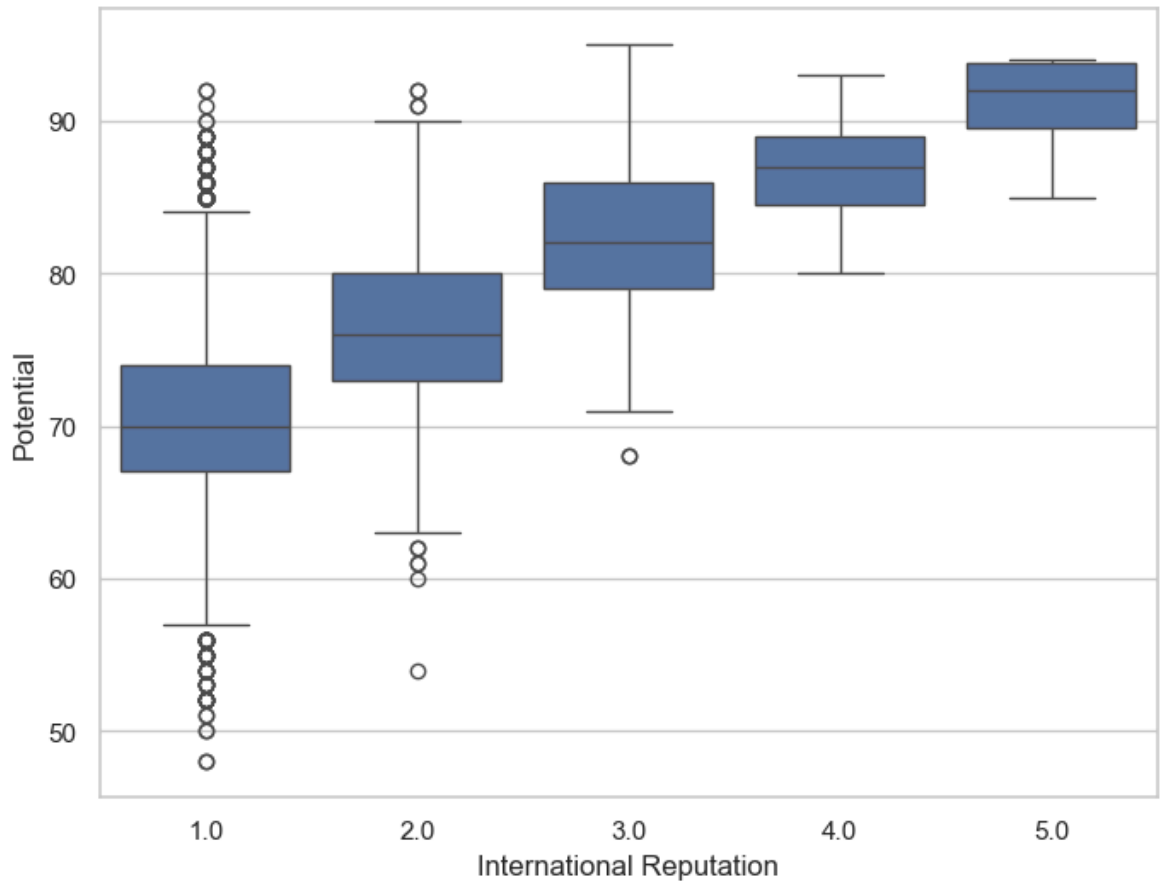
```
In [70]: f, ax = plt.subplots(figsize=(8, 6))
         sns.boxplot(x="International Reputation", y="Potential", hue="Preferred Foot", d
         plt.show()
```
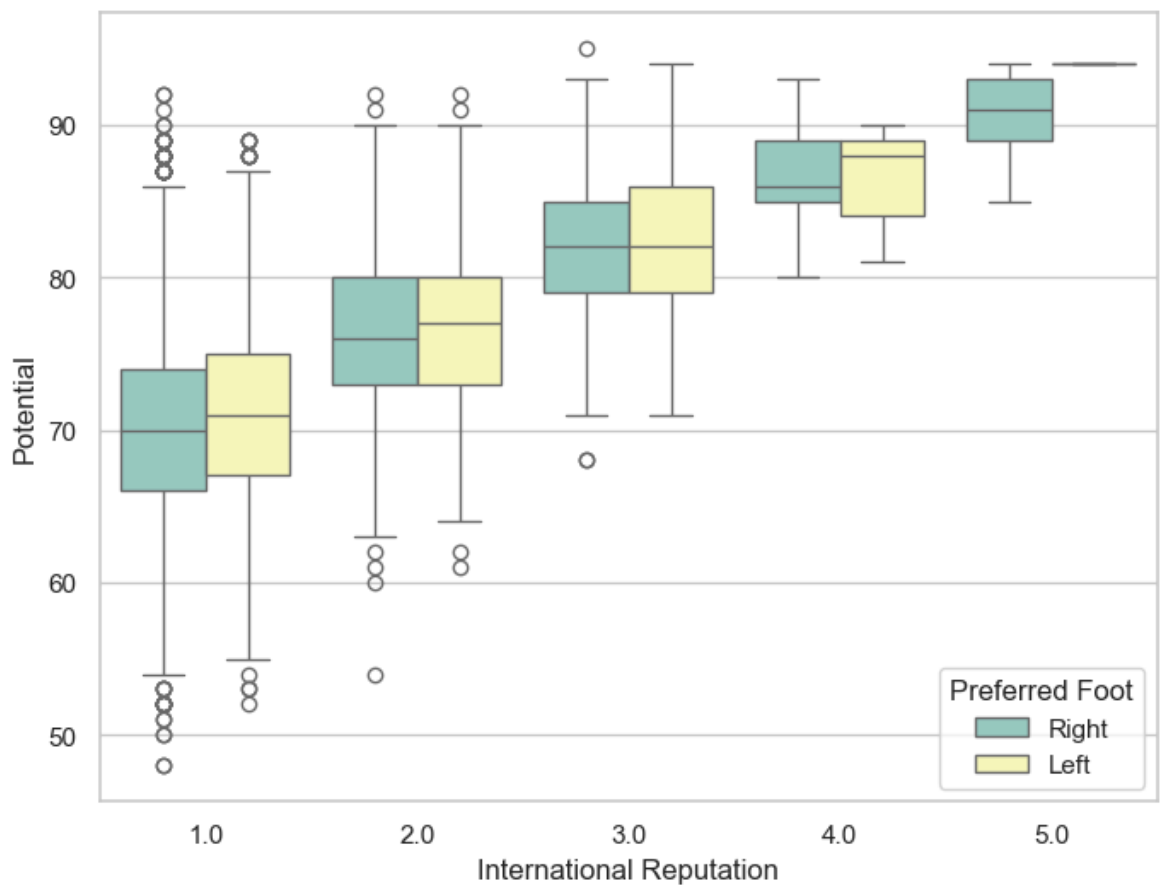
```
In [72]: f, ax = plt.subplots(figsize=(8, 6))
         sns.violinplot(x=fifa19["Potential"])
         plt.show()
```
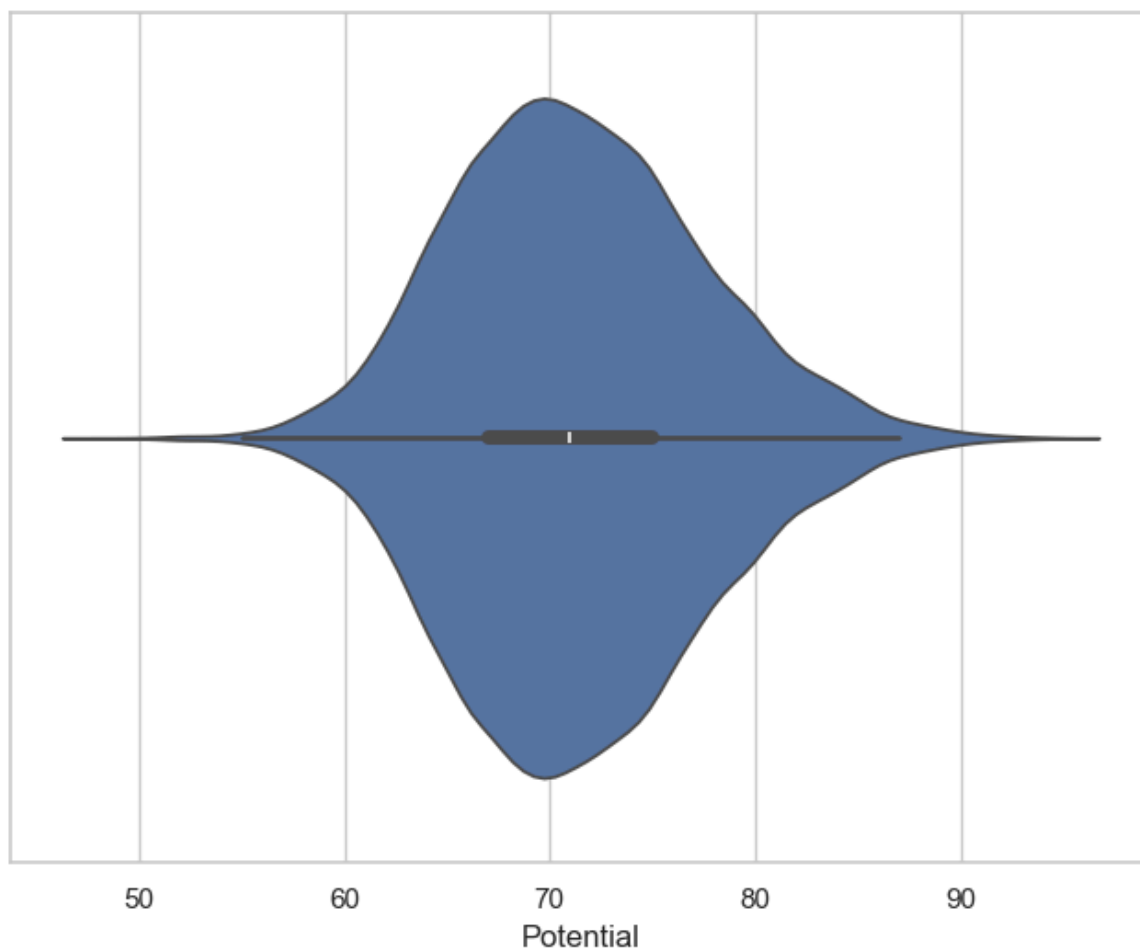


```
In [74]: f, ax = plt.subplots(figsize=(8, 6))
         sns.violinplot(x="International Reputation", y="Potential", data=fifa19)
         plt.show()
```
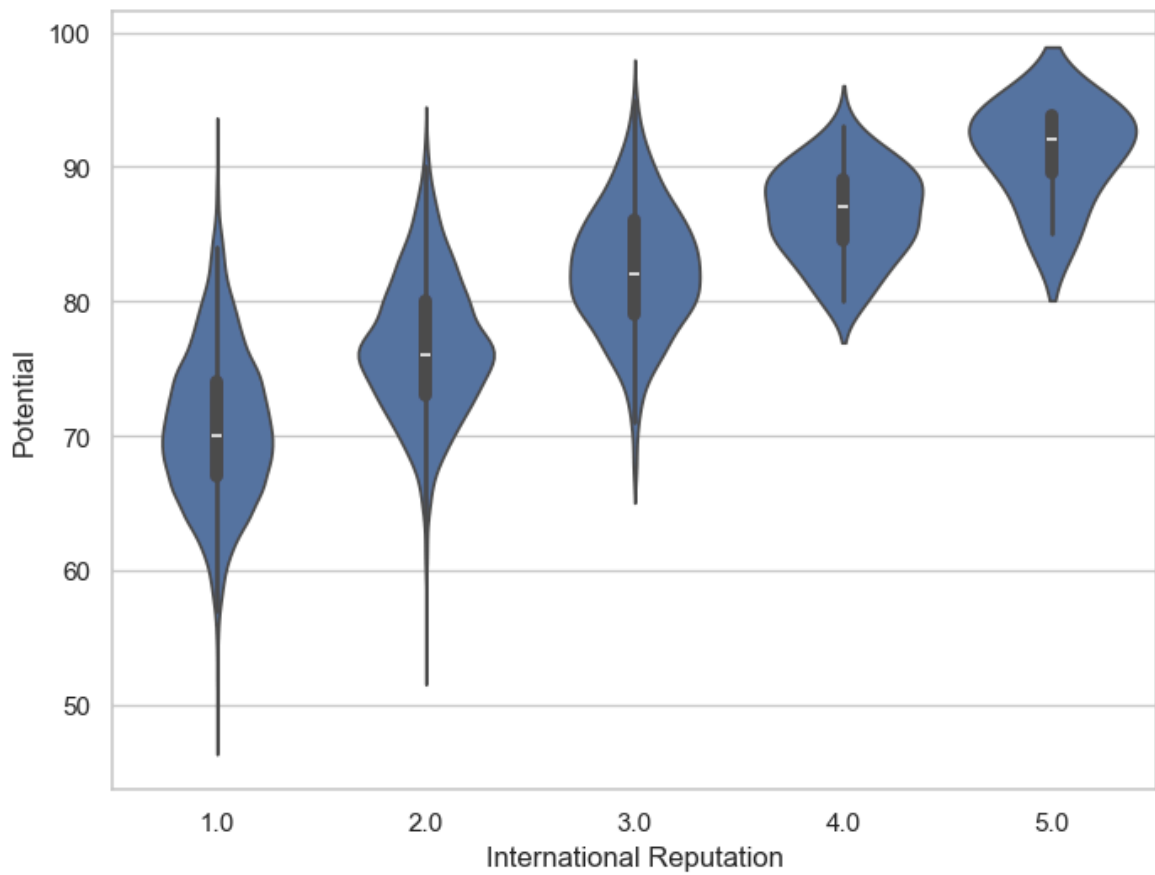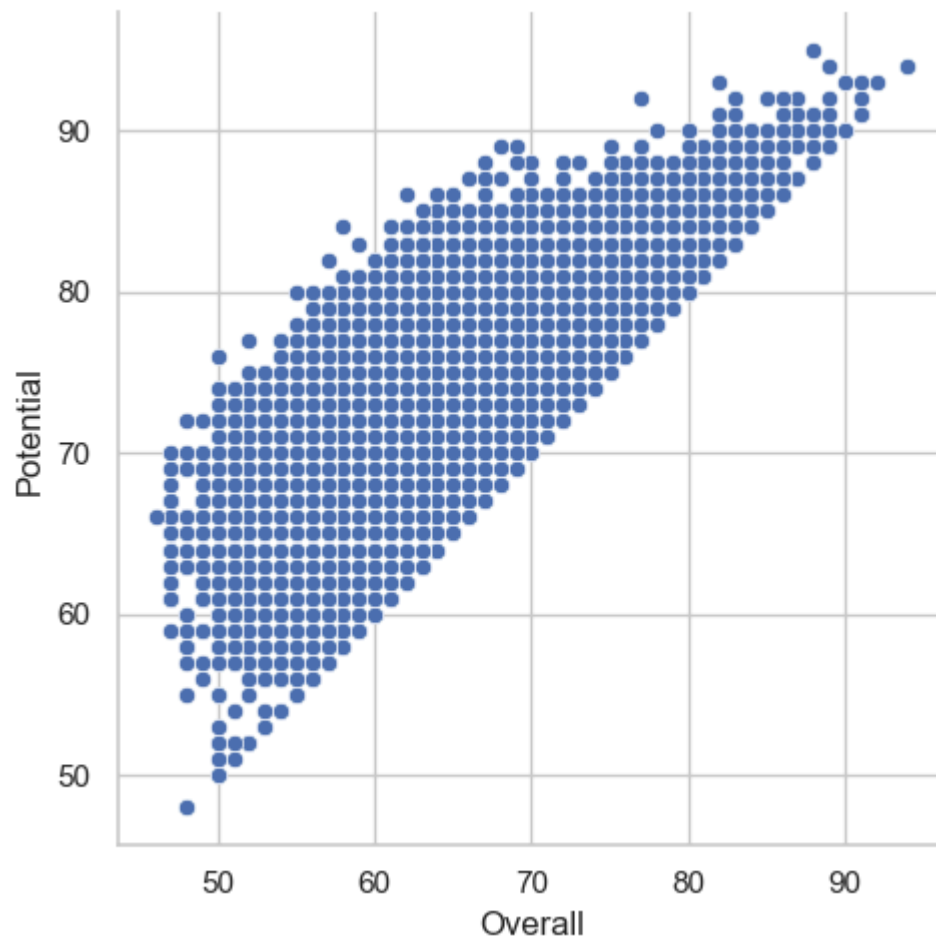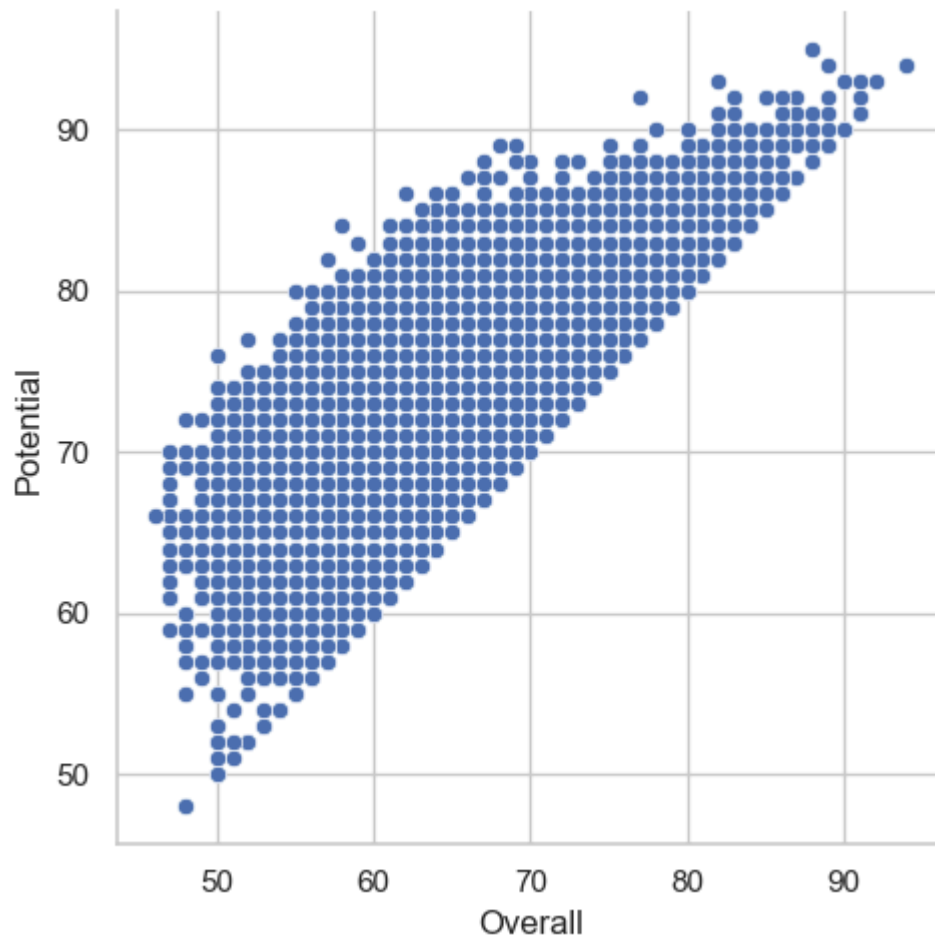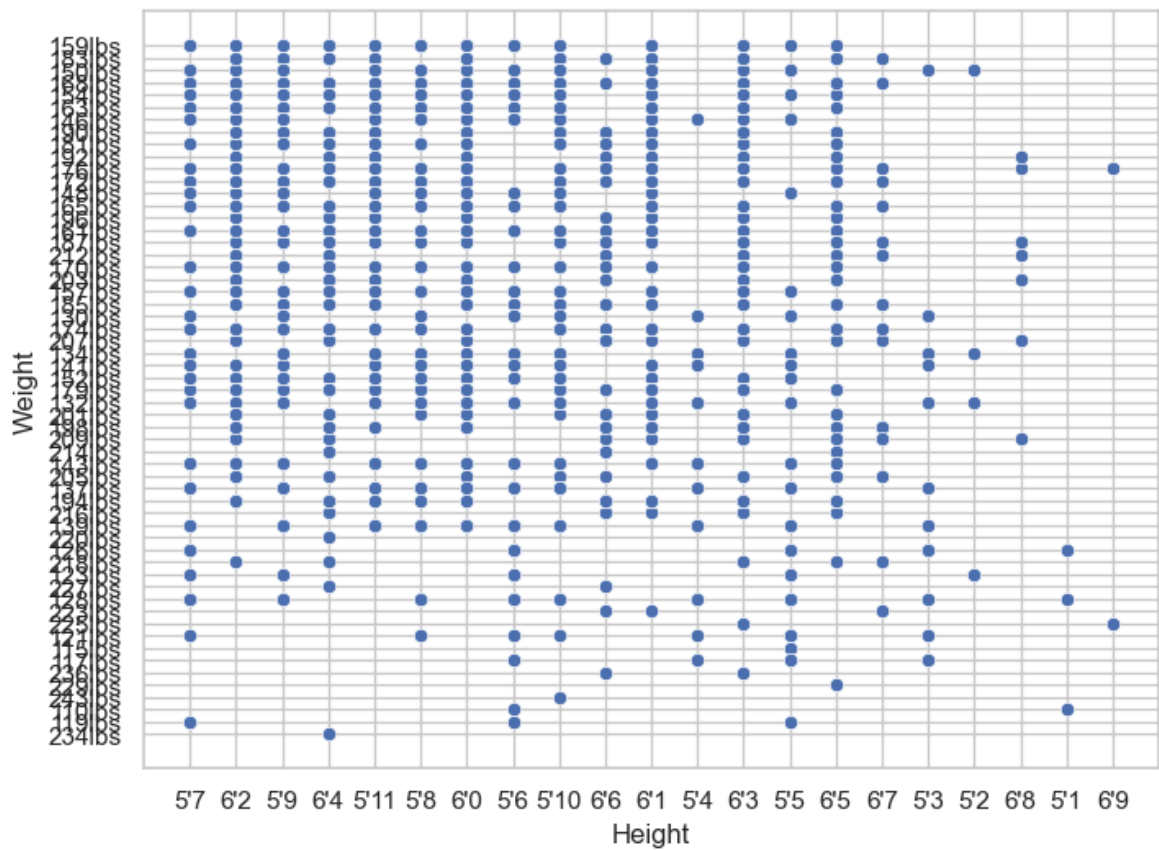
```
In [76]: f, ax = plt.subplots(figsize=(8, 6))
         sns.violinplot(x="International Reputation", y="Potential", hue="Preferred Foot"
         plt.show()
```
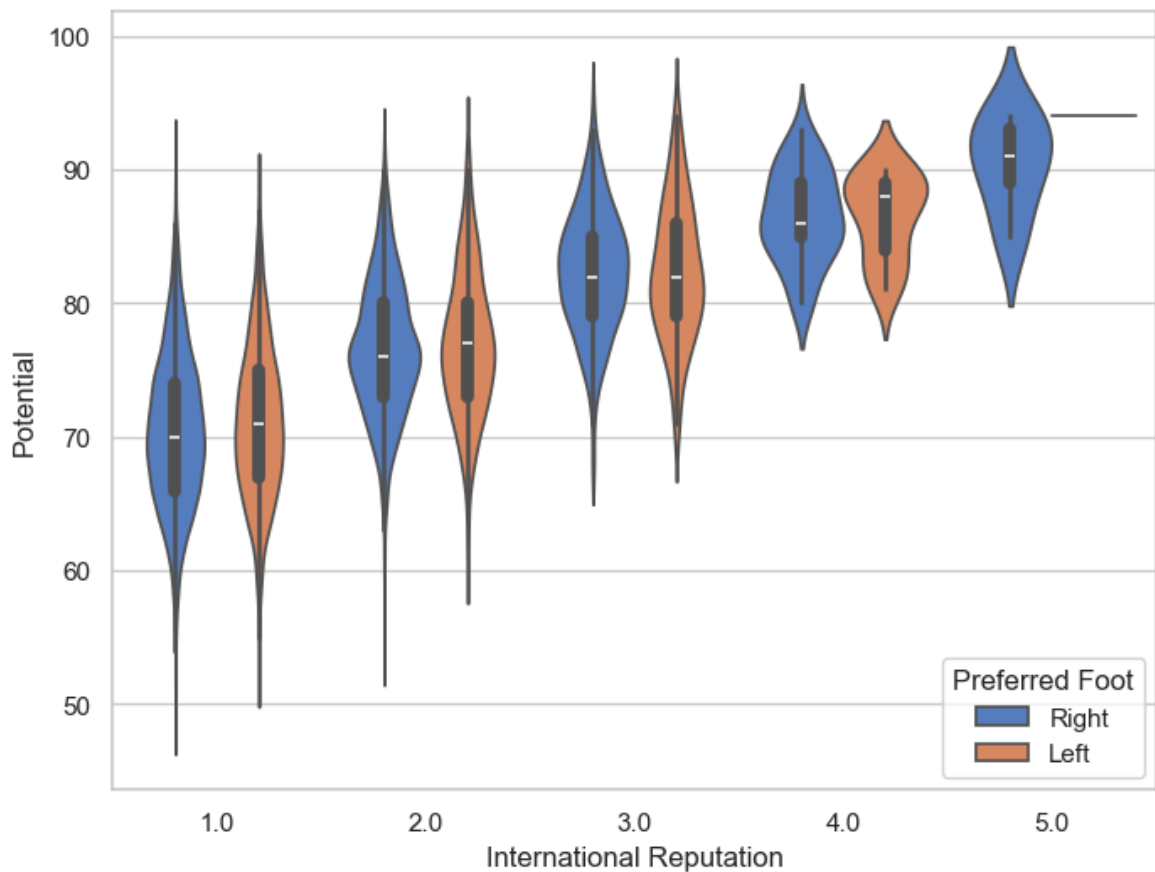


```
In [78]: f, ax = plt.subplots(figsize=(8, 6))
         sns.violinplot(x="International Reputation", y="Potential", hue="Preferred Foot"
```

```
                data=fifa19, palette="muted", split=True)
plt.show()
```
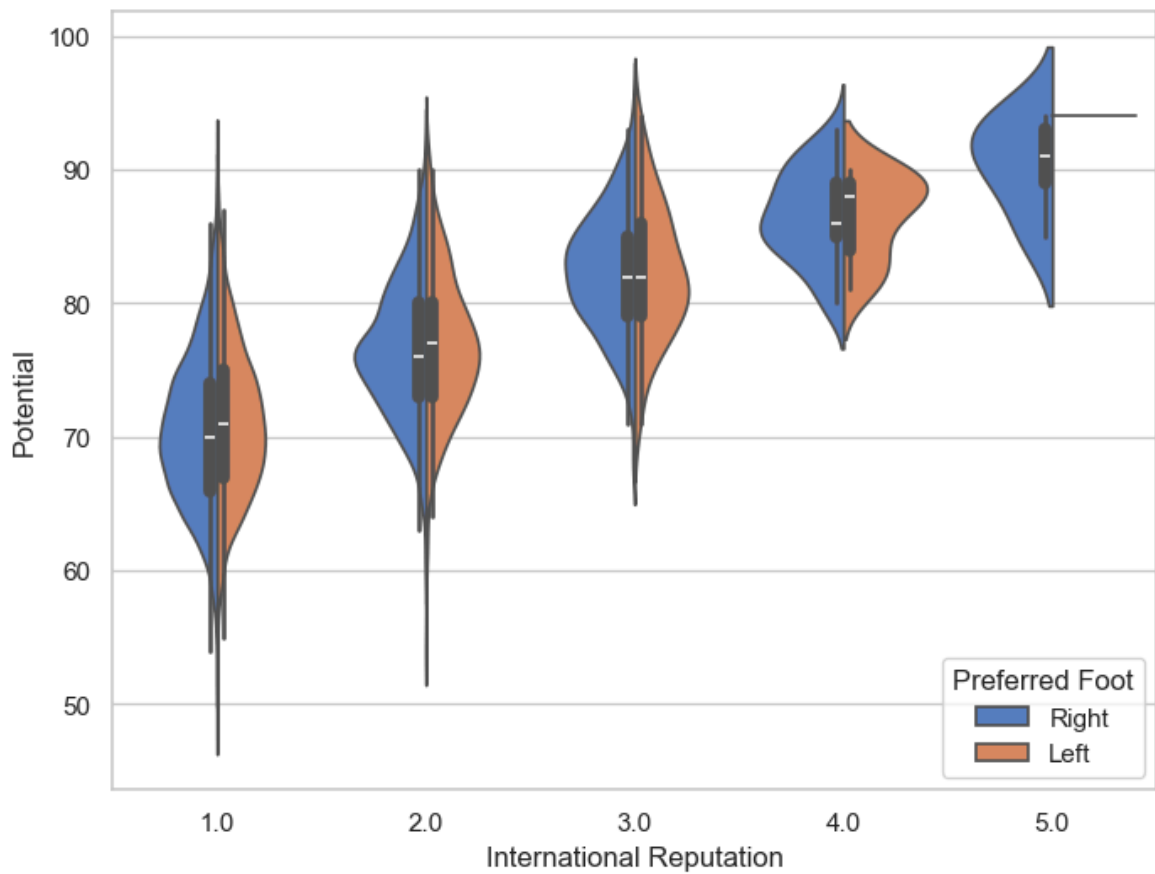


```
In [80]: f, ax = plt.subplots(figsize=(8, 6))
         sns.pointplot(x="International Reputation", y="Potential", data=fifa19)
         plt.show()
```
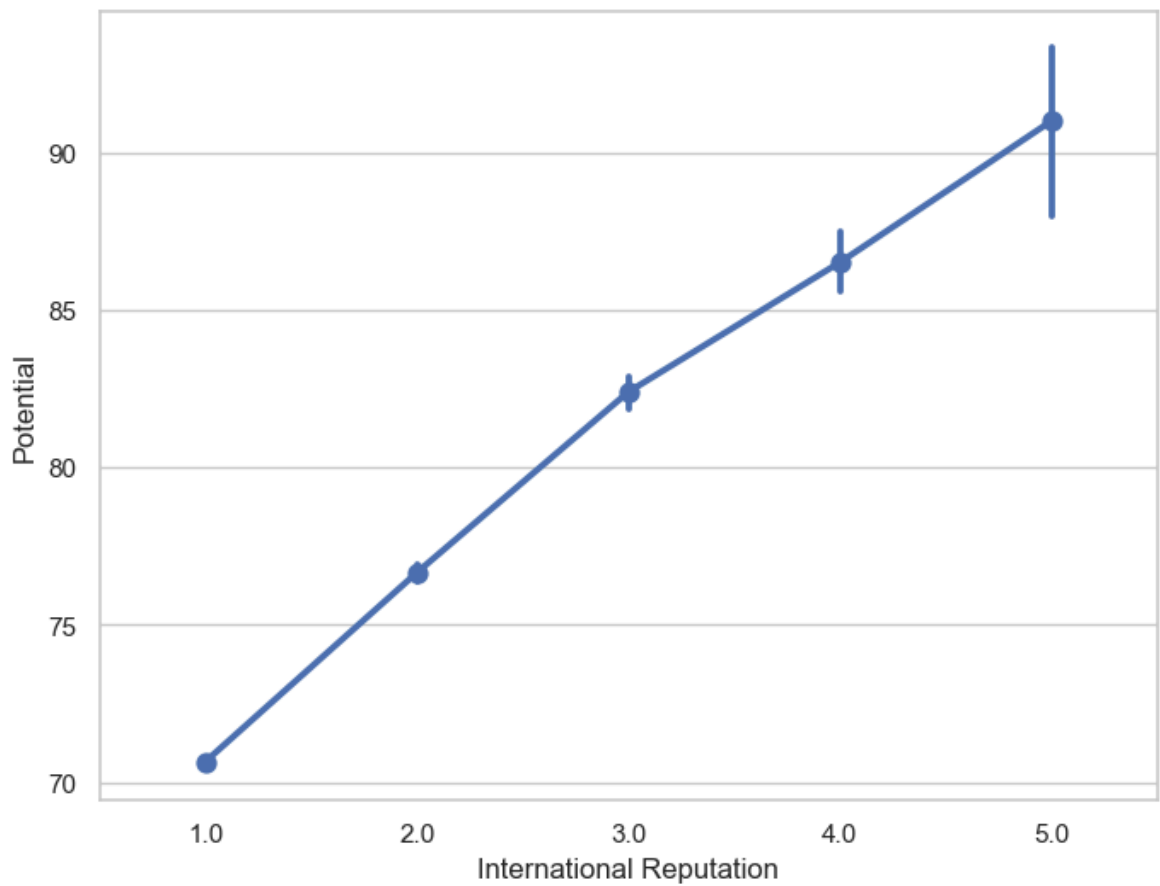
```
In [82]: f, ax = plt.subplots(figsize=(8, 6))
         sns.pointplot(x="International Reputation", y="Potential", hue="Preferred Foot",
         plt.show()
```
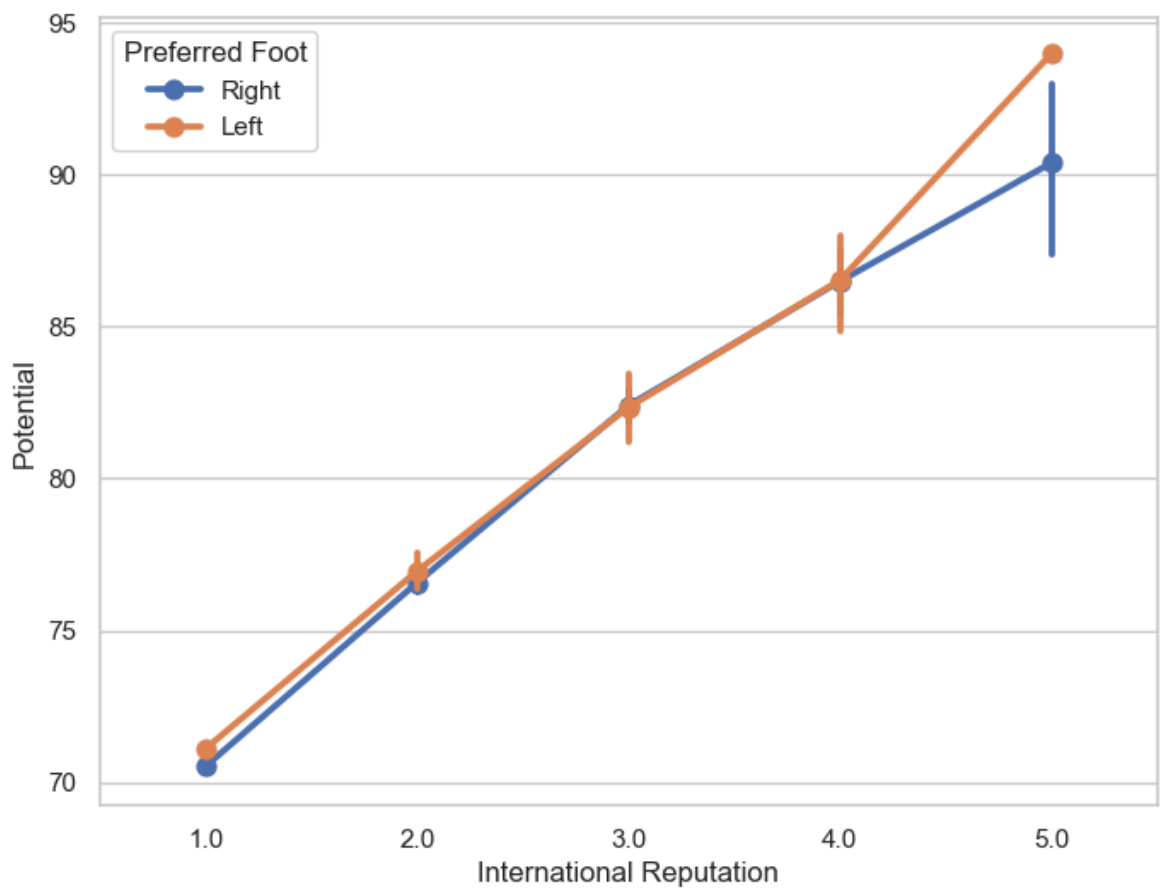
```
In [84]: f, ax = plt.subplots(figsize=(8, 6))
         sns.pointplot(x="International Reputation", y="Potential", hue="Preferred Foot",
         plt.show()
```
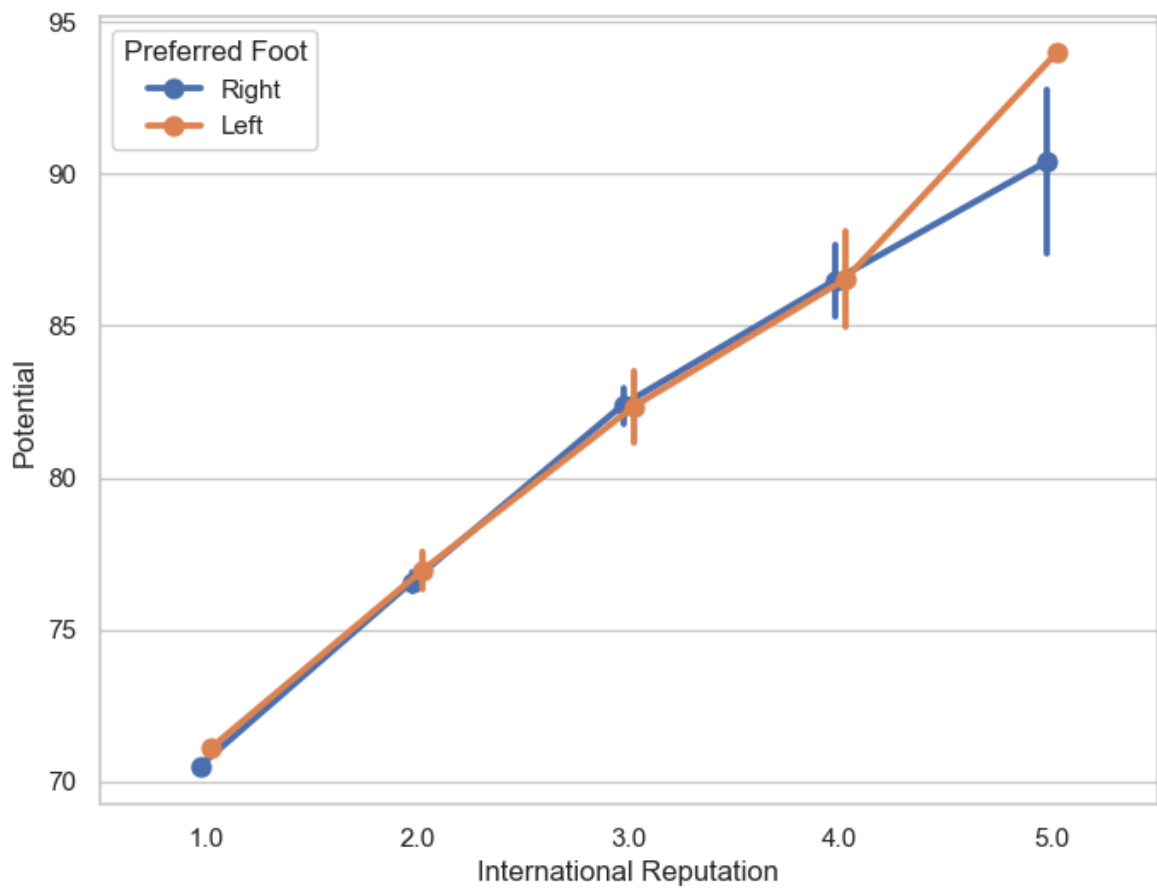


```
In [86]: f, ax = plt.subplots(figsize=(8, 6))
         sns.pointplot(x="International Reputation", y="Potential", hue="Preferred Foot",
                       data=fifa19, markers=["o", "x"], linestyles=["-", "--"])
         plt.show()
```

```
In [88]: f, ax = plt.subplots(figsize=(8, 6))
         sns.barplot(x="International Reputation", y="Potential", data=fifa19)
         plt.show()
```

```python
f, ax = plt.subplots(figsize=(8, 6))
sns.barplot(x="International Reputation", y="Potential", hue="Preferred Foot", d
plt.show()
```

```python
from numpy import median
f, ax = plt.subplots(figsize=(8, 6))
sns.barplot(x="International Reputation", y="Potential", data=fifa19, estimator=
plt.show()
```

```
In [94]:  f, ax = plt.subplots(figsize=(8, 6))
          sns.barplot(x="International Reputation", y="Potential", data=fifa19, ci=68)
          plt.show()
```

In [96]:
```python
f, ax = plt.subplots(figsize=(8, 6))
sns.barplot(x="International Reputation", y="Potential", data=fifa19, ci="sd")
plt.show()
```
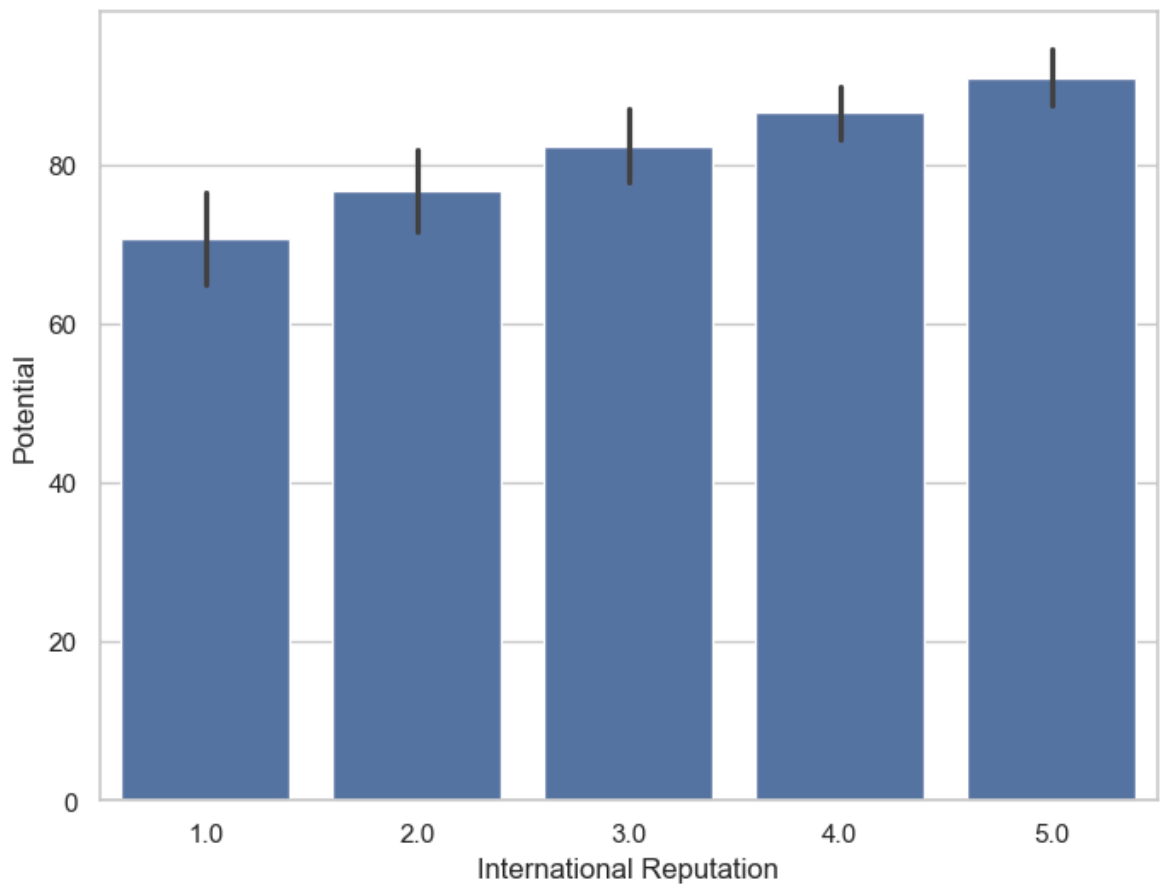

In [98]:
```python
f, ax = plt.subplots(figsize=(8, 6))
sns.barplot(x="International Reputation", y="Potential", data=fifa19, capsize=0.
plt.show()
```
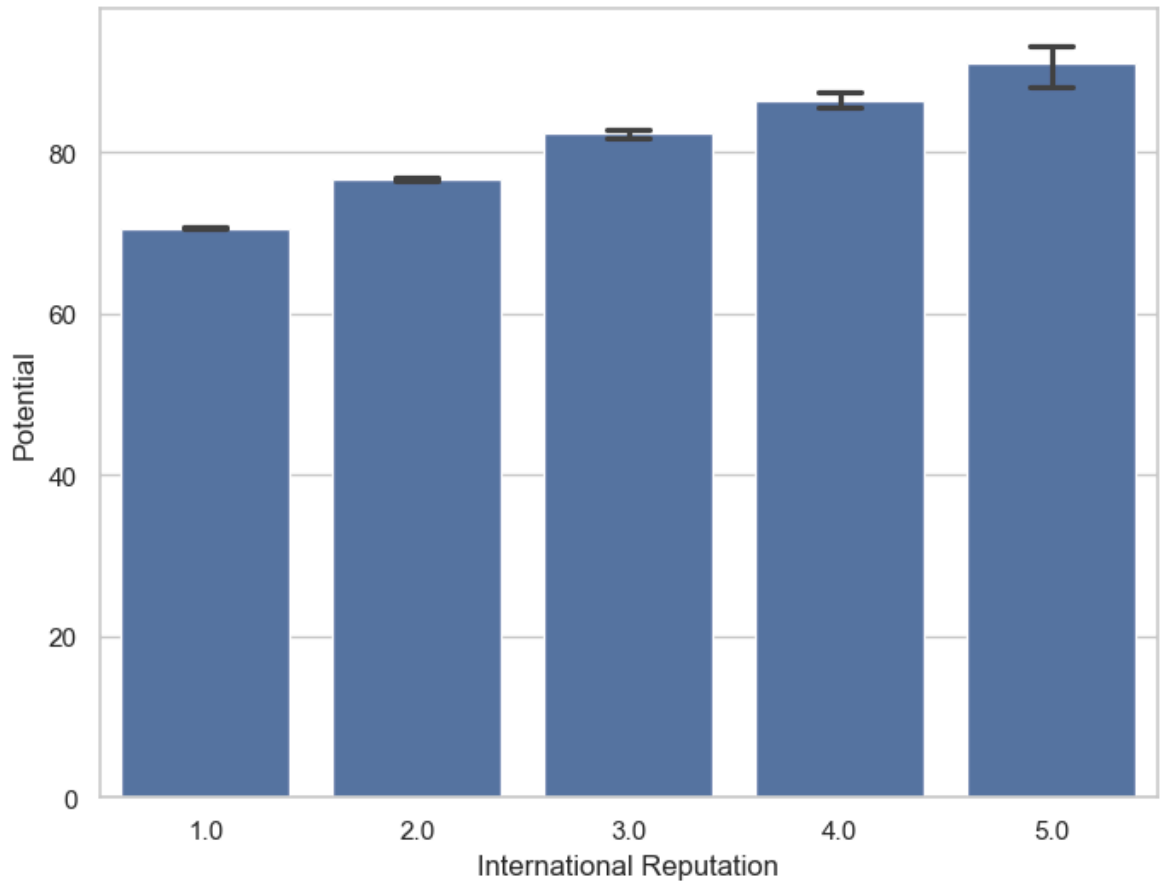
```
In [102...    g = sns.relplot(x="Overall", y="Potential", data=fifa19)
             plt.show()
```
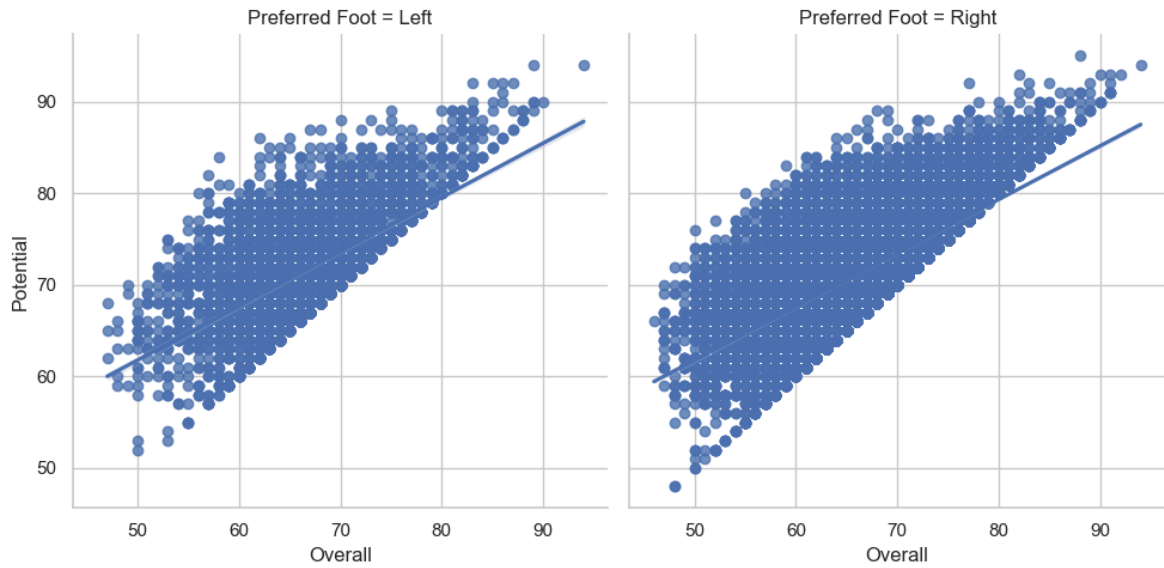
```
f, ax = plt.subplots(figsize=(8, 6))
sns.scatterplot(x="Height", y="Weight", data=fifa19)
plt.show()
```

```
In [106...  f, ax = plt.subplots(figsize=(8, 6))
            ax = sns.lineplot(x="Stamina", y="Strength", data=fifa19)
            plt.show()
```
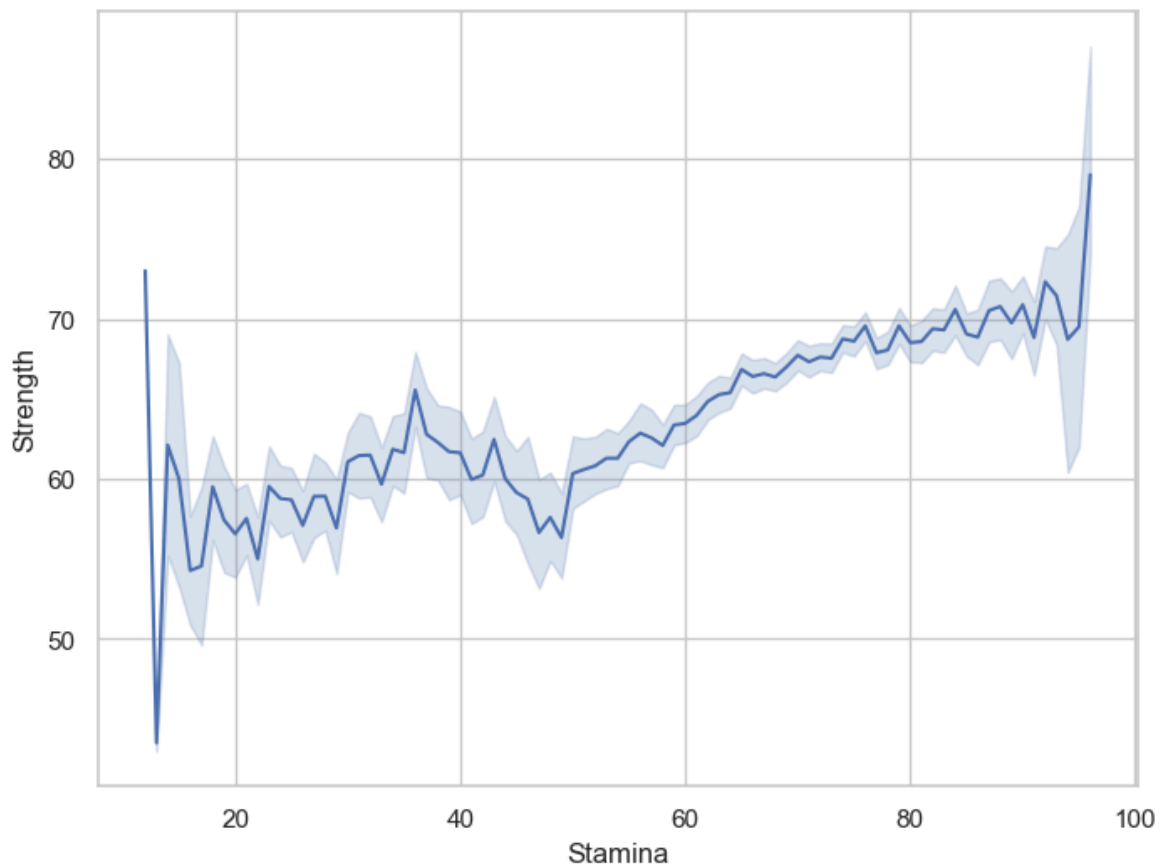


```
In [108...  f, ax = plt.subplots(figsize=(8, 6))
            ax = sns.regplot(x="Overall", y="Potential", data=fifa19)
            plt.show()
```
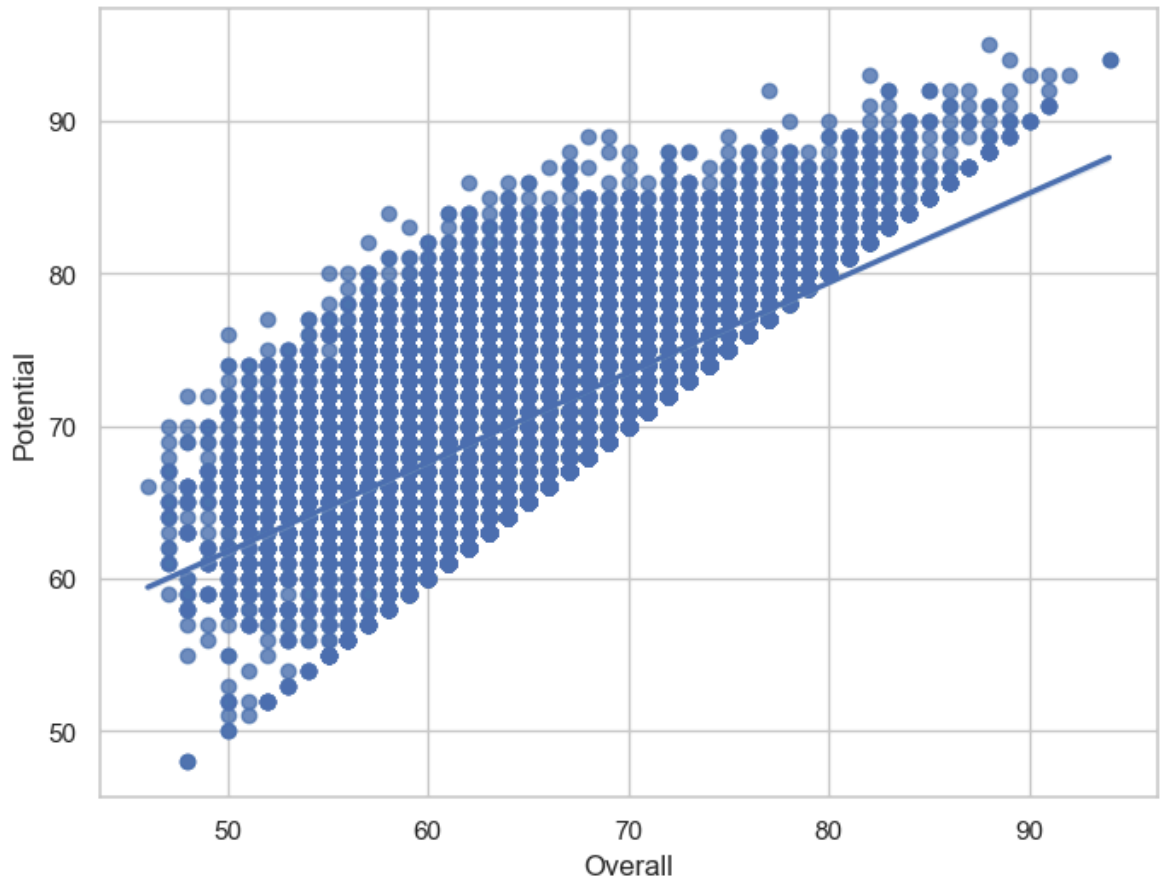
```python
f, ax = plt.subplots(figsize=(8, 6))
ax = sns.regplot(x="Overall", y="Potential", data=fifa19, color= "g", marker="+"
plt.show()
```
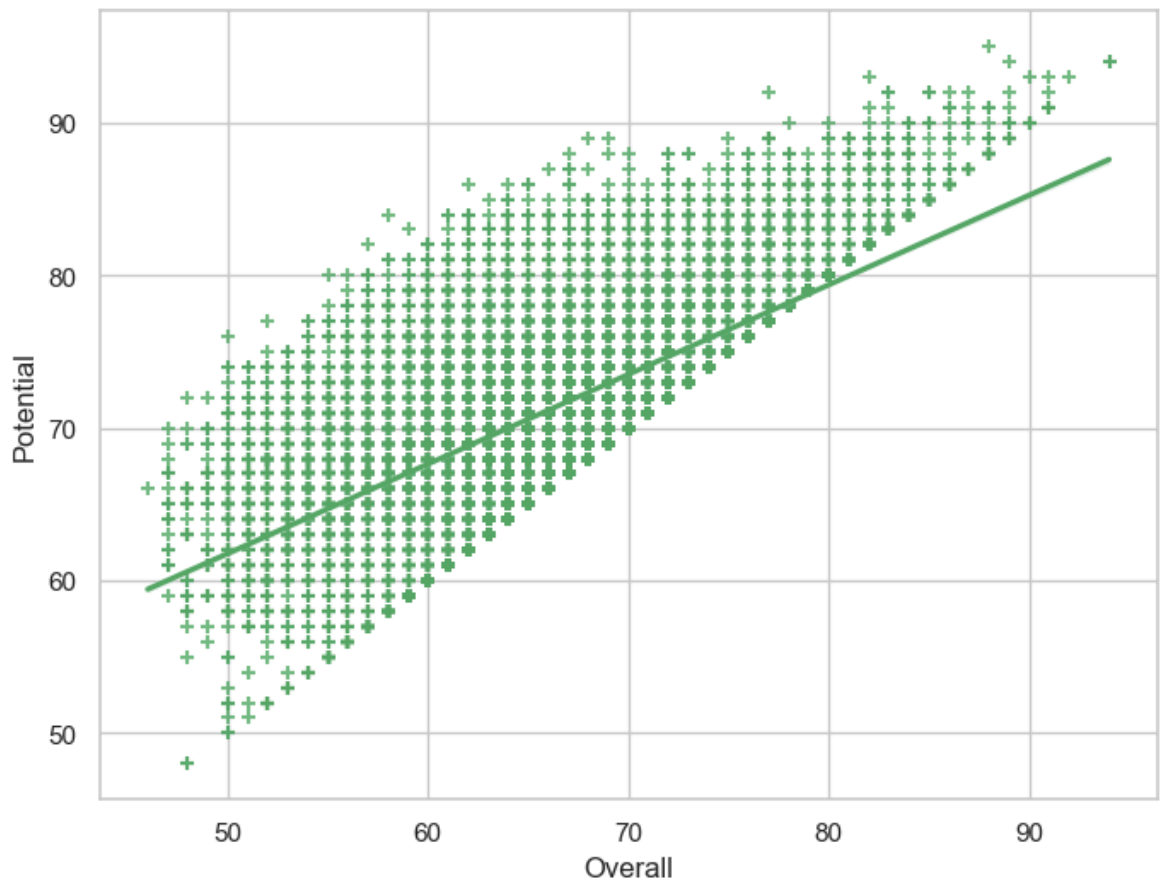
```
f, ax = plt.subplots(figsize=(8, 6))
sns.regplot(x="International Reputation", y="Potential", data=fifa19, x_jitter=.
plt.show()
```
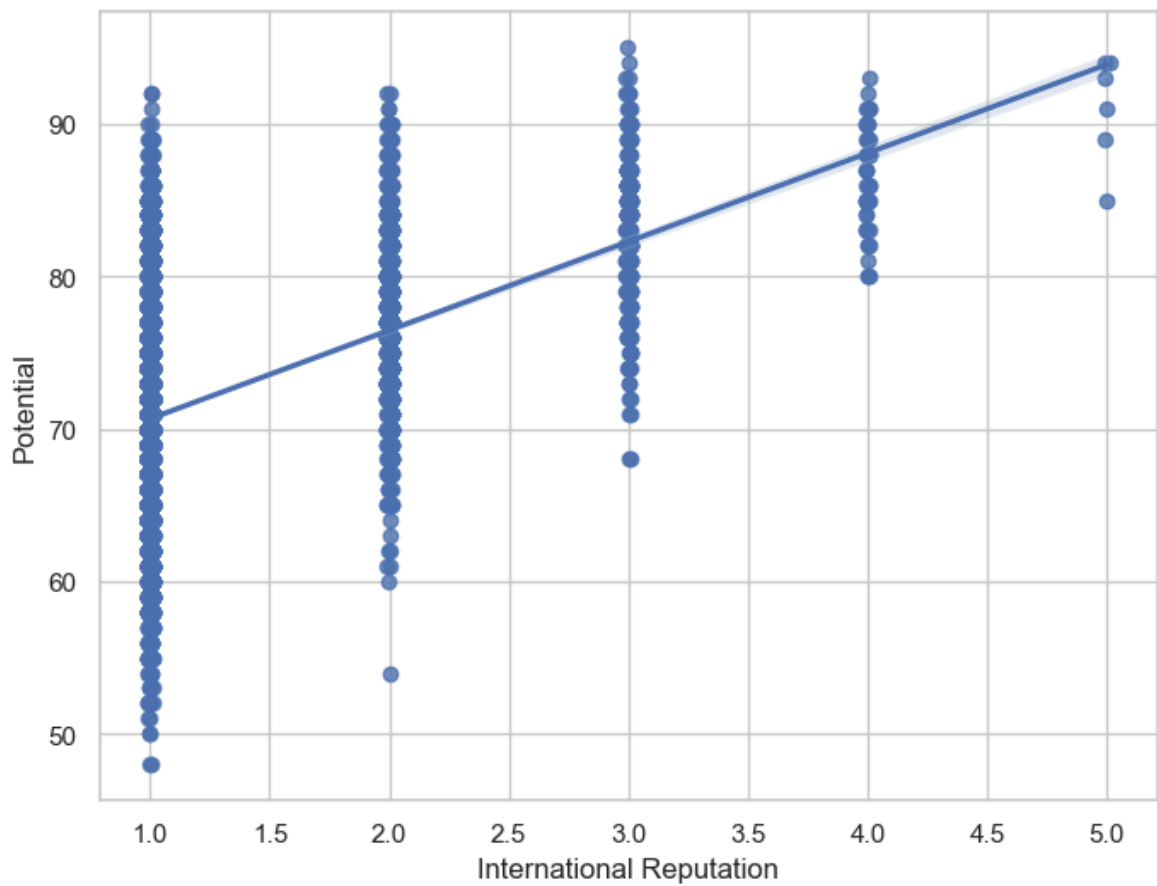
```
g= sns.lmplot(x="Overall", y="Potential", data=fifa19)
plt.show()
```
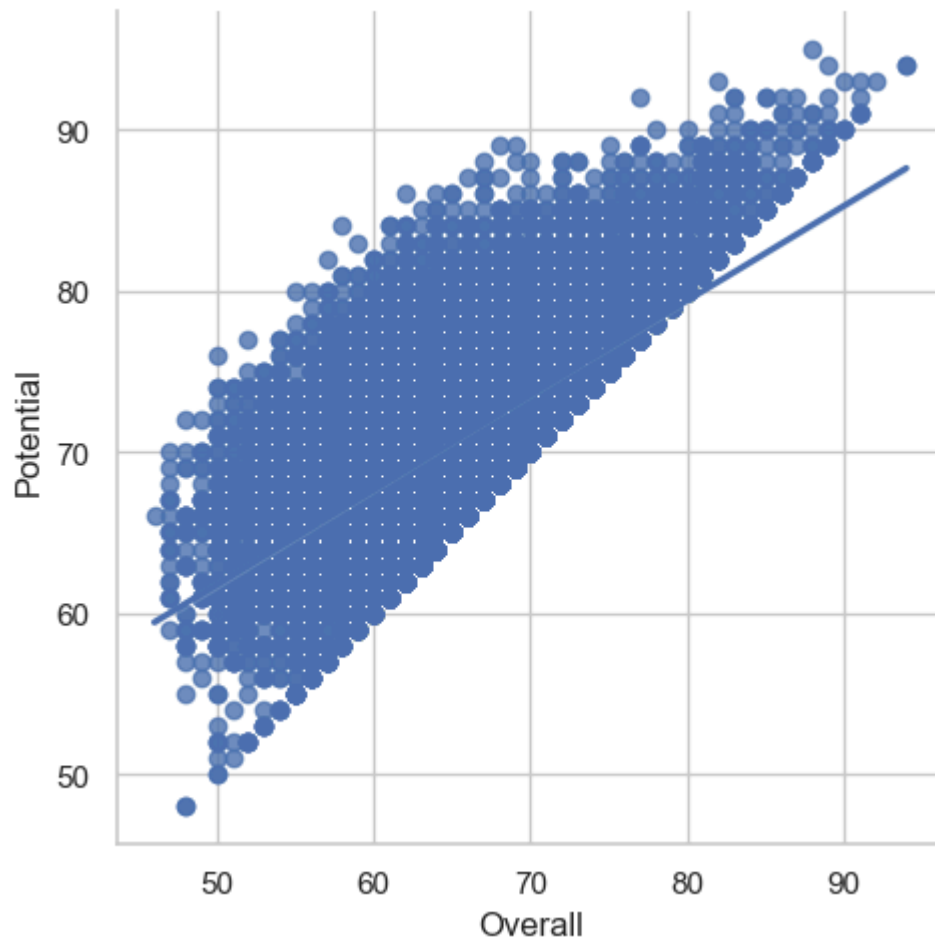
In [116...
```python
g= sns.lmplot(x="Overall", y="Potential", hue="Preferred Foot", data=fifa19)
plt.show()
```
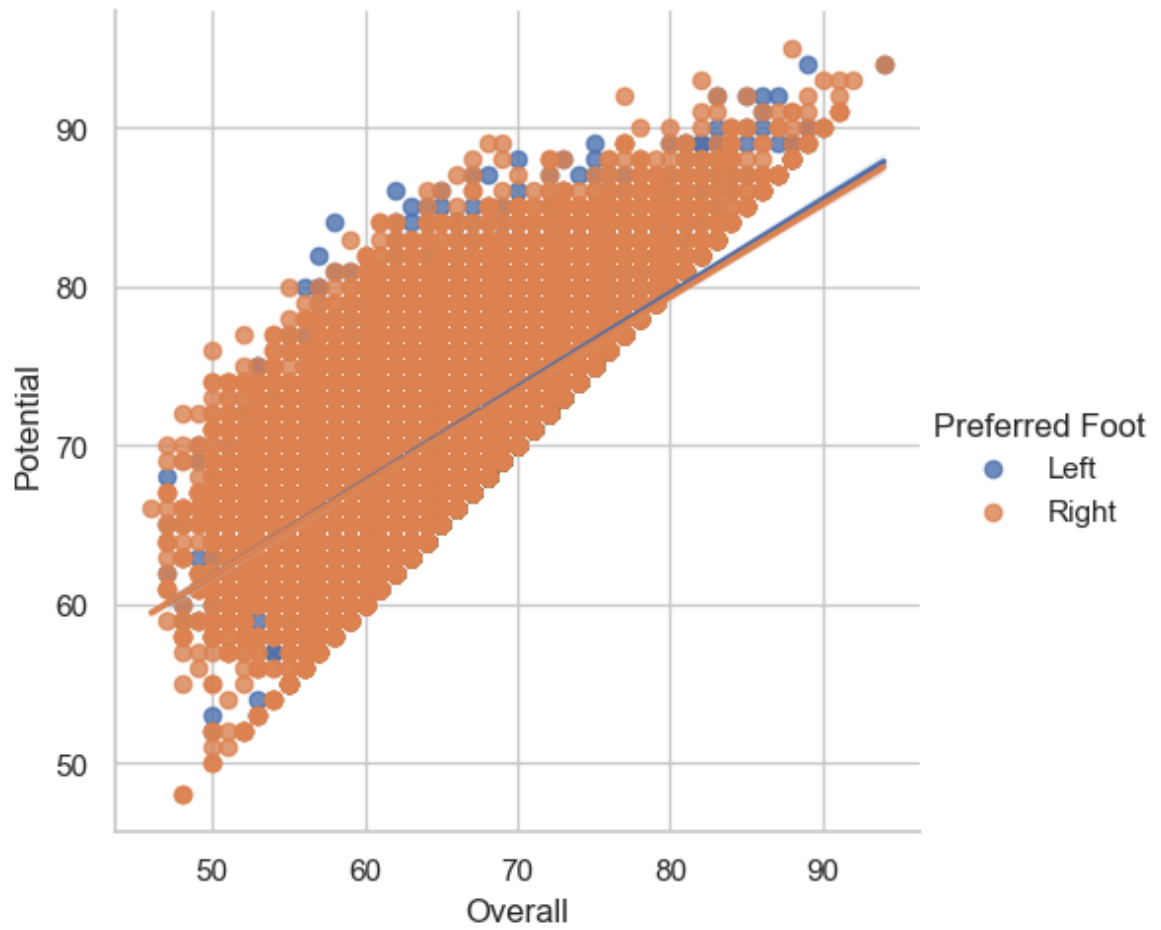
In [118...
```
g= sns.lmplot(x="Overall", y="Potential", hue="Preferred Foot", data=fifa19, pal
plt.show()
```
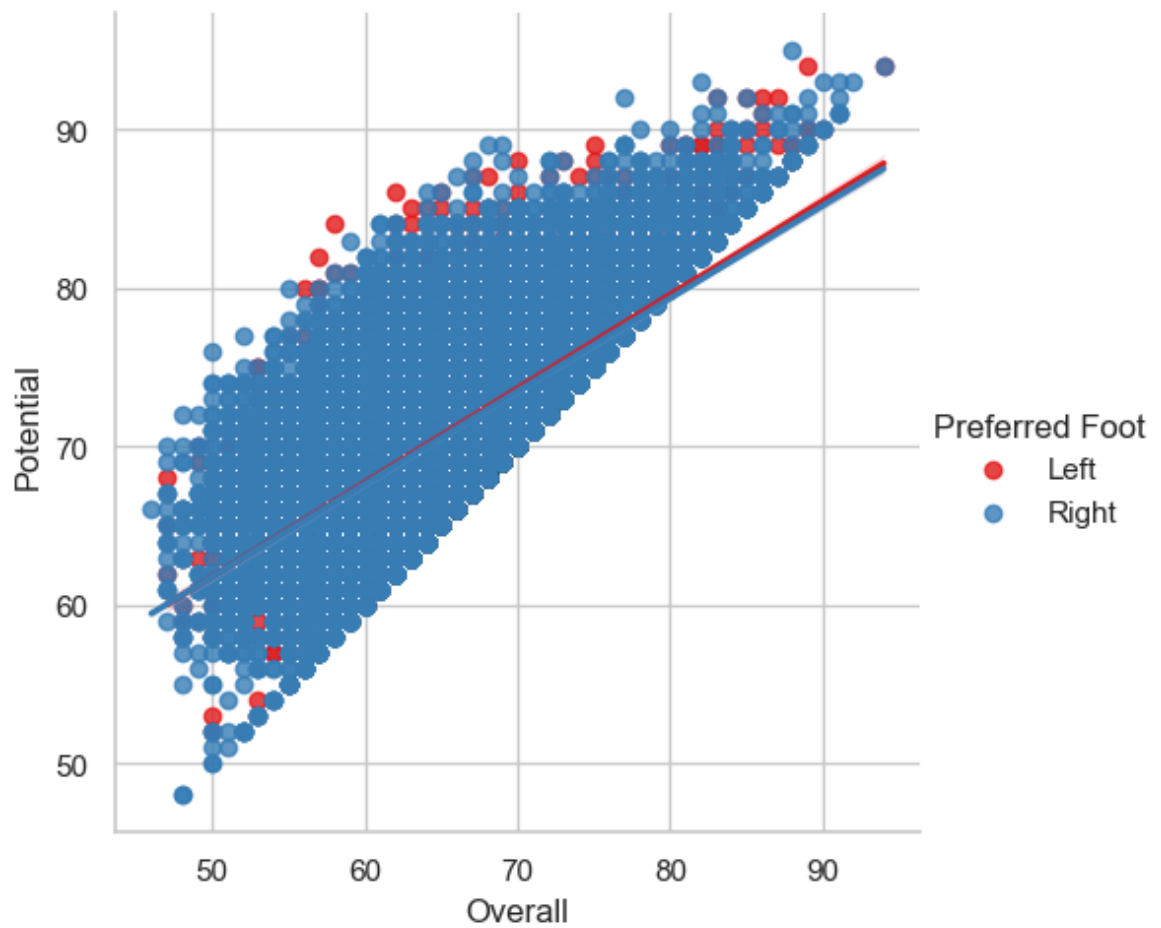
```
g= sns.lmplot(x="Overall", y="Potential", col="Preferred Foot", data=fifa19)
plt.show()
```

```
g = sns.FacetGrid(fifa19, col="Preferred Foot")
plt.show()
```
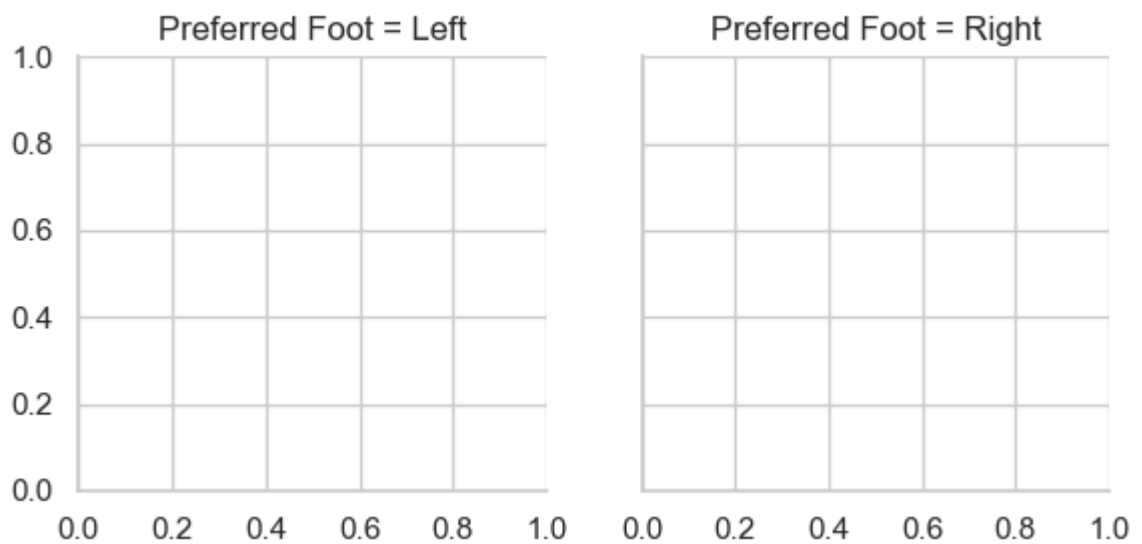
```
g = sns.FacetGrid(fifa19, col="Preferred Foot")
g = g.map(plt.hist, "Potential")
plt.show()
```
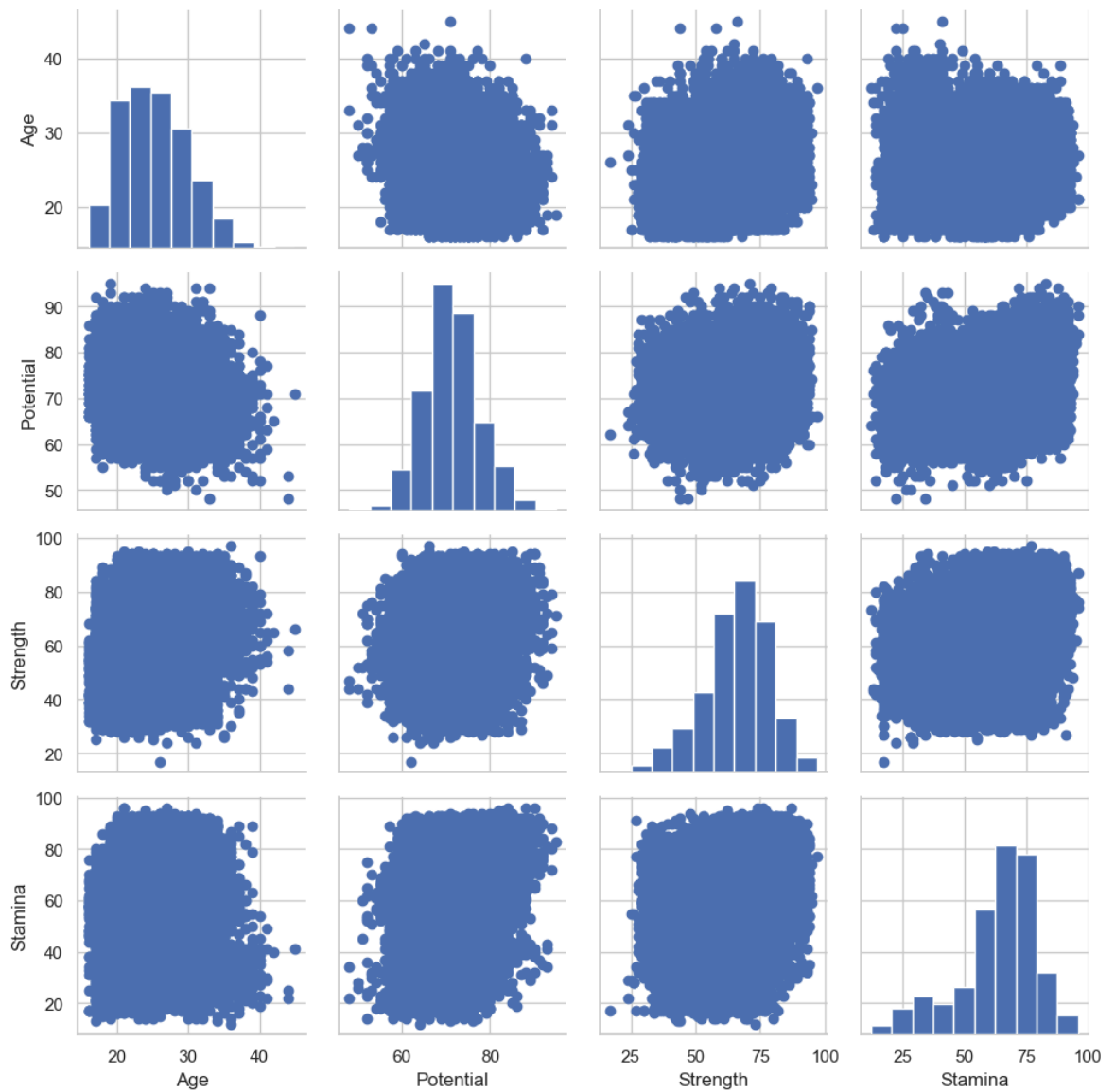
Preferred Foot = Left   Preferred Foot = Right

Preferred Foot = Left   Preferred Foot = Right
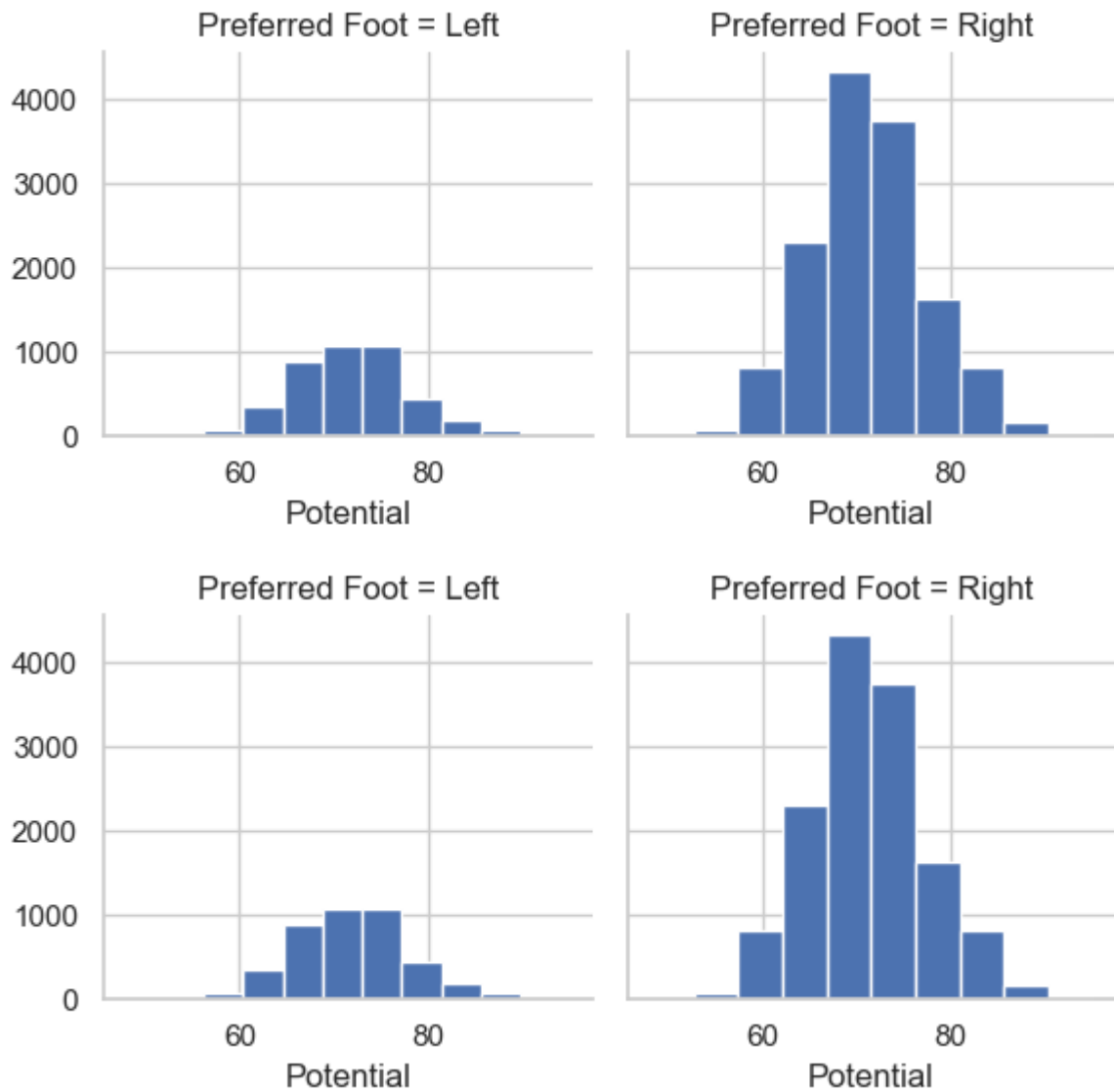
```
In [128...  g = sns.FacetGrid(fifa19, col="Preferred Foot")
            g = g.map(plt.hist, "Potential", bins=10, color="r")
            plt.show()
```


Preferred Foot = Left   Preferred Foot = Right
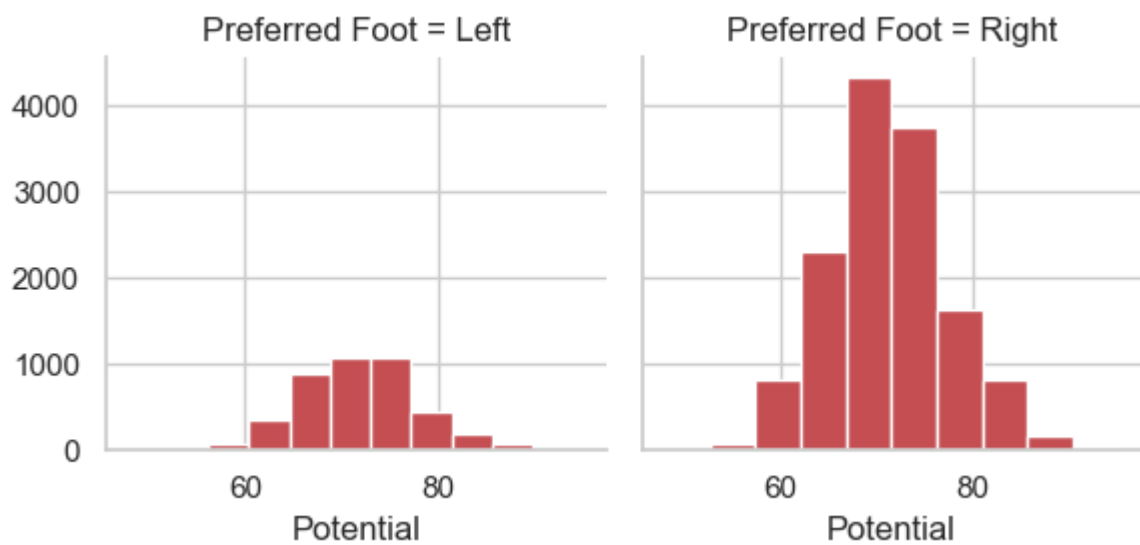
```
In [130...  g = sns.FacetGrid(fifa19, col="Preferred Foot")
            g = (g.map(plt.scatter, "Height", "Weight", edgecolor="w").add_legend())
            plt.show()
```

Weight / Height scatter plots faceted by Preferred Foot (Left, Right)
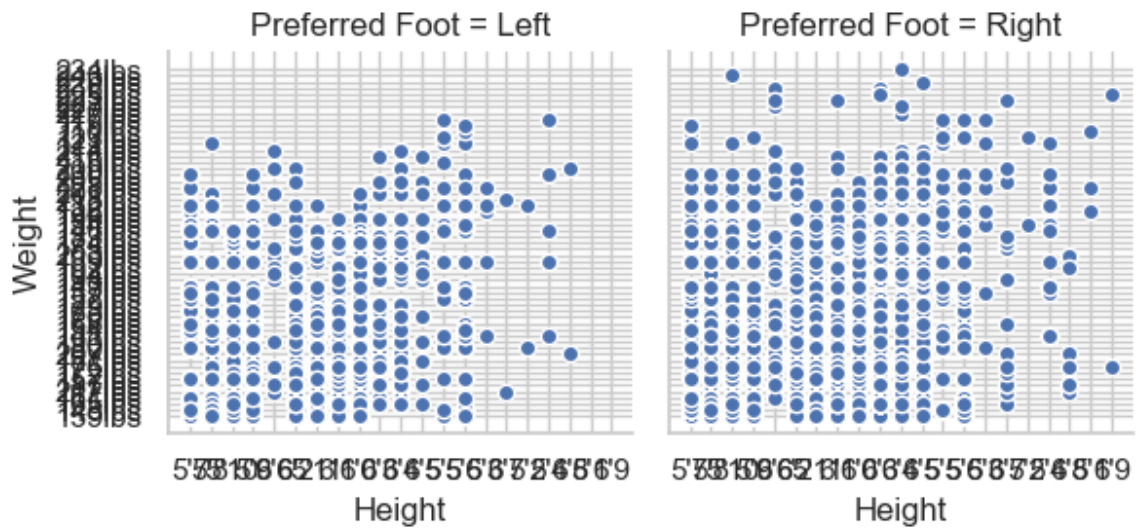
```
g = sns.FacetGrid(fifa19, col="Preferred Foot", height=5, aspect=1)
g = g.map(plt.hist, "Potential")
plt.show()
```
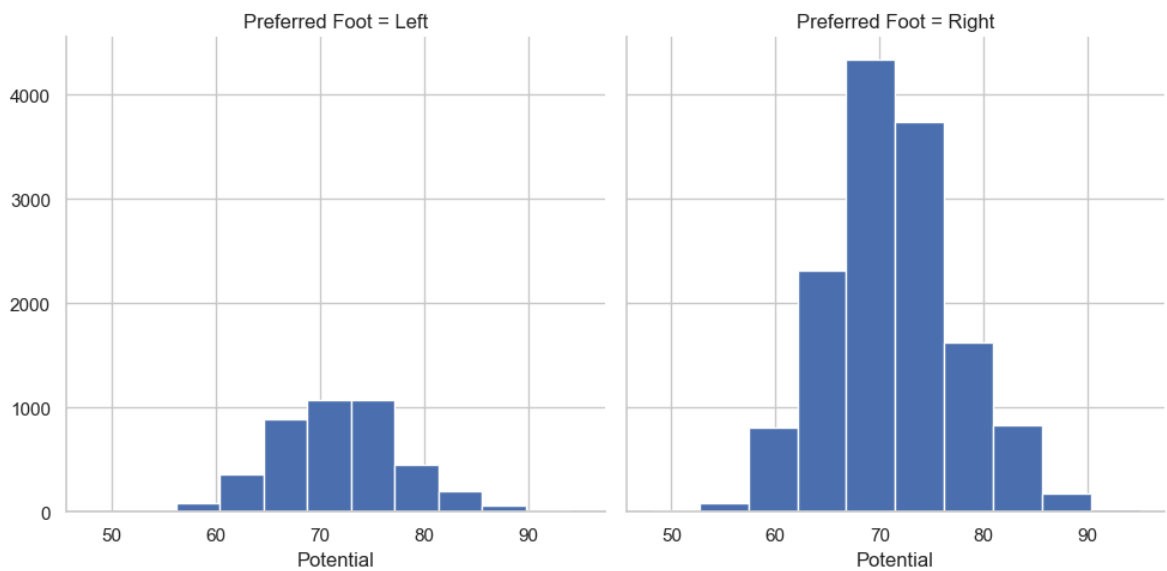


```
fifa19_new = fifa19[['Age', 'Potential', 'Strength', 'Stamina', 'Preferred Foot'
```

```
g = sns.PairGrid(fifa19_new)
g = g.map(plt.scatter)
plt.show()
```
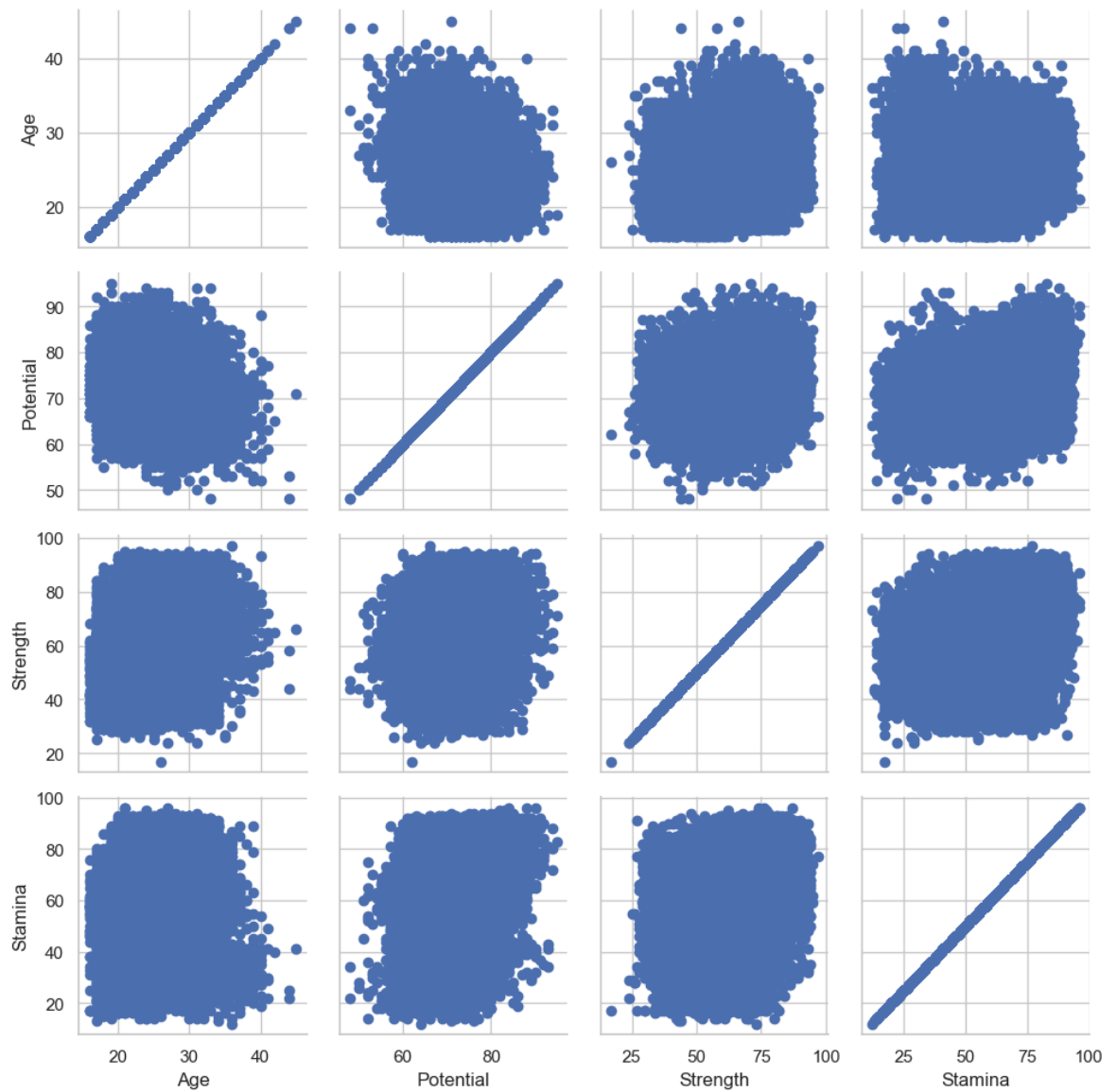
```
g = sns.PairGrid(fifa19_new)
g = g.map_diag(plt.hist)
g = g.map_offdiag(plt.scatter)
plt.show()
```
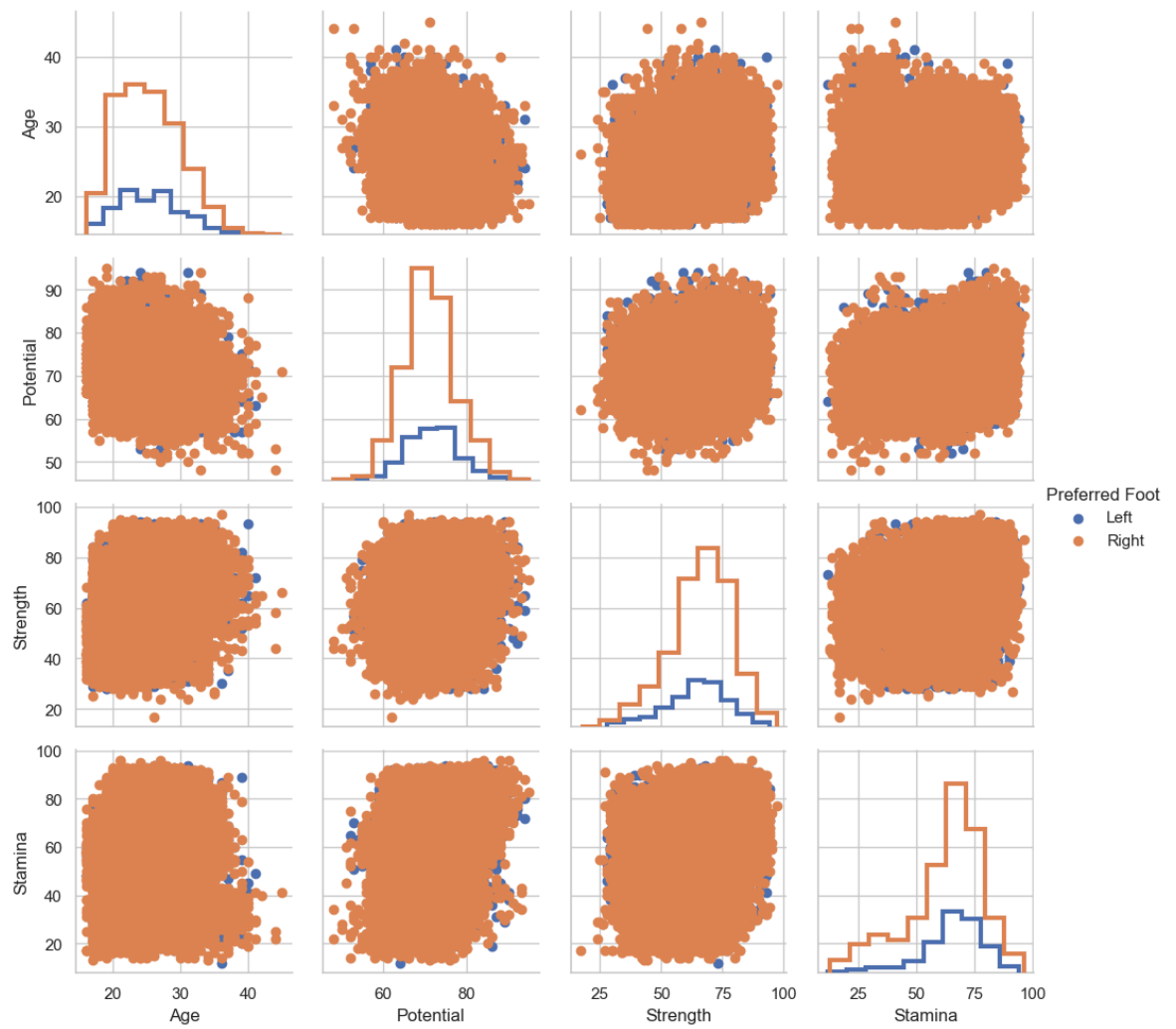
```
g = sns.PairGrid(fifa19_new, hue="Preferred Foot")
g = g.map_diag(plt.hist)
g = g.map_offdiag(plt.scatter)
g = g.add_legend()
plt.show()
```
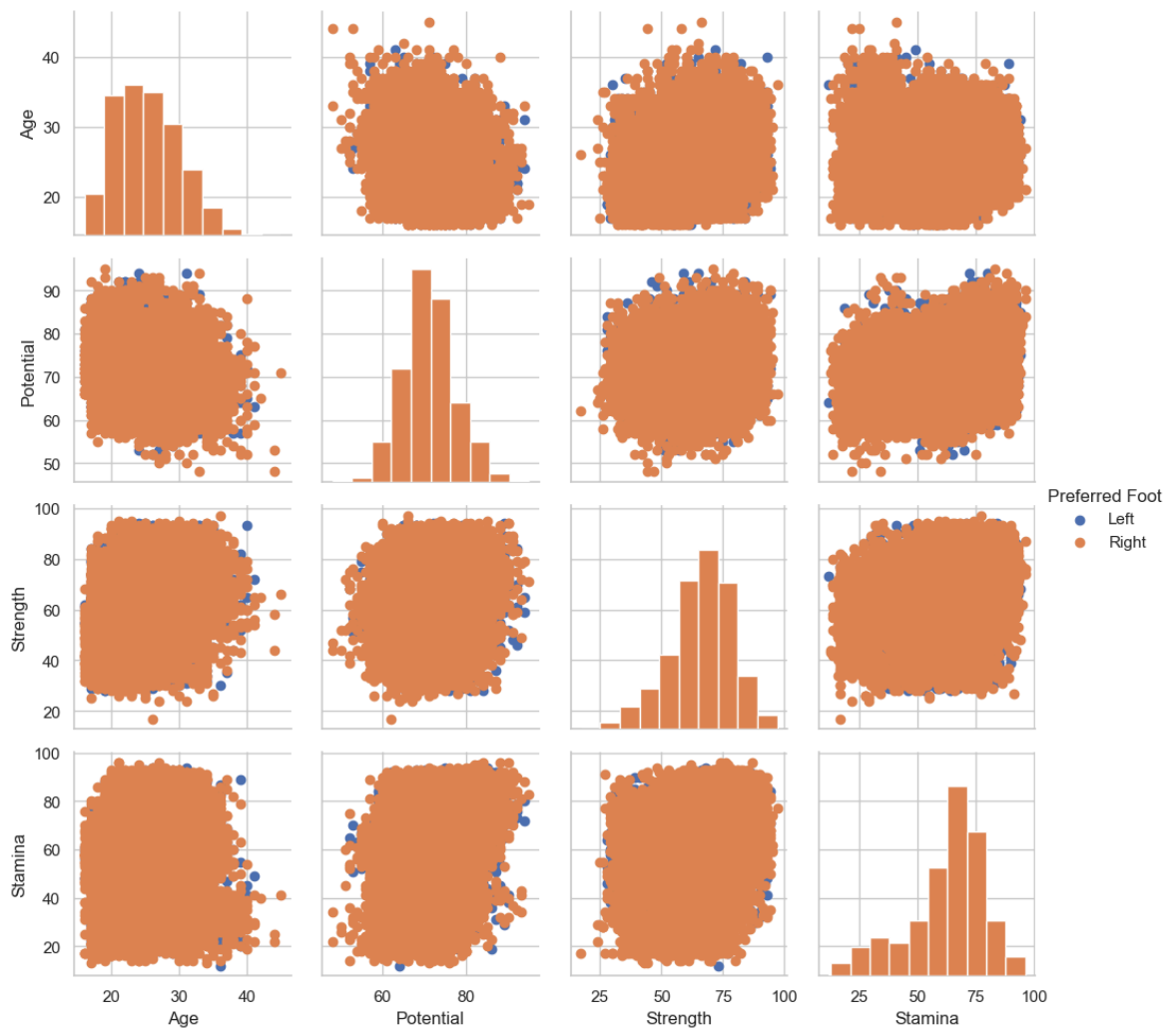
```
In [142...  g = sns.PairGrid(fifa19_new, hue="Preferred Foot")
            g = g.map_diag(plt.hist, histtype="step", linewidth=3)
            g = g.map_offdiag(plt.scatter)
            g = g.add_legend()
            plt.show()
```

```
g = sns.PairGrid(fifa19_new, vars=['Age', 'Stamina'])
g = g.map(plt.scatter)
plt.show()
```
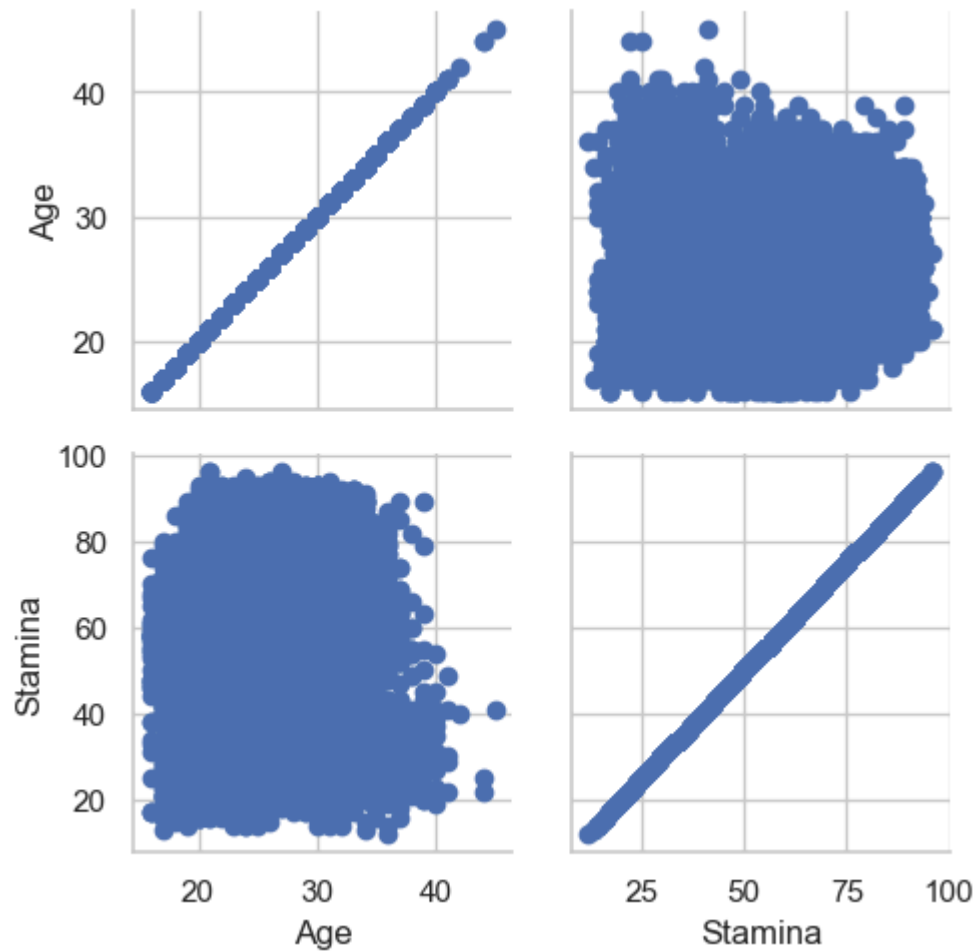
```
g = sns.PairGrid(fifa19_new)
g = g.map_upper(plt.scatter)
g = g.map_lower(sns.kdeplot, cmap="Blues_d")
g = g.map_diag(sns.kdeplot, lw=3, legend=False)
plt.show()
```
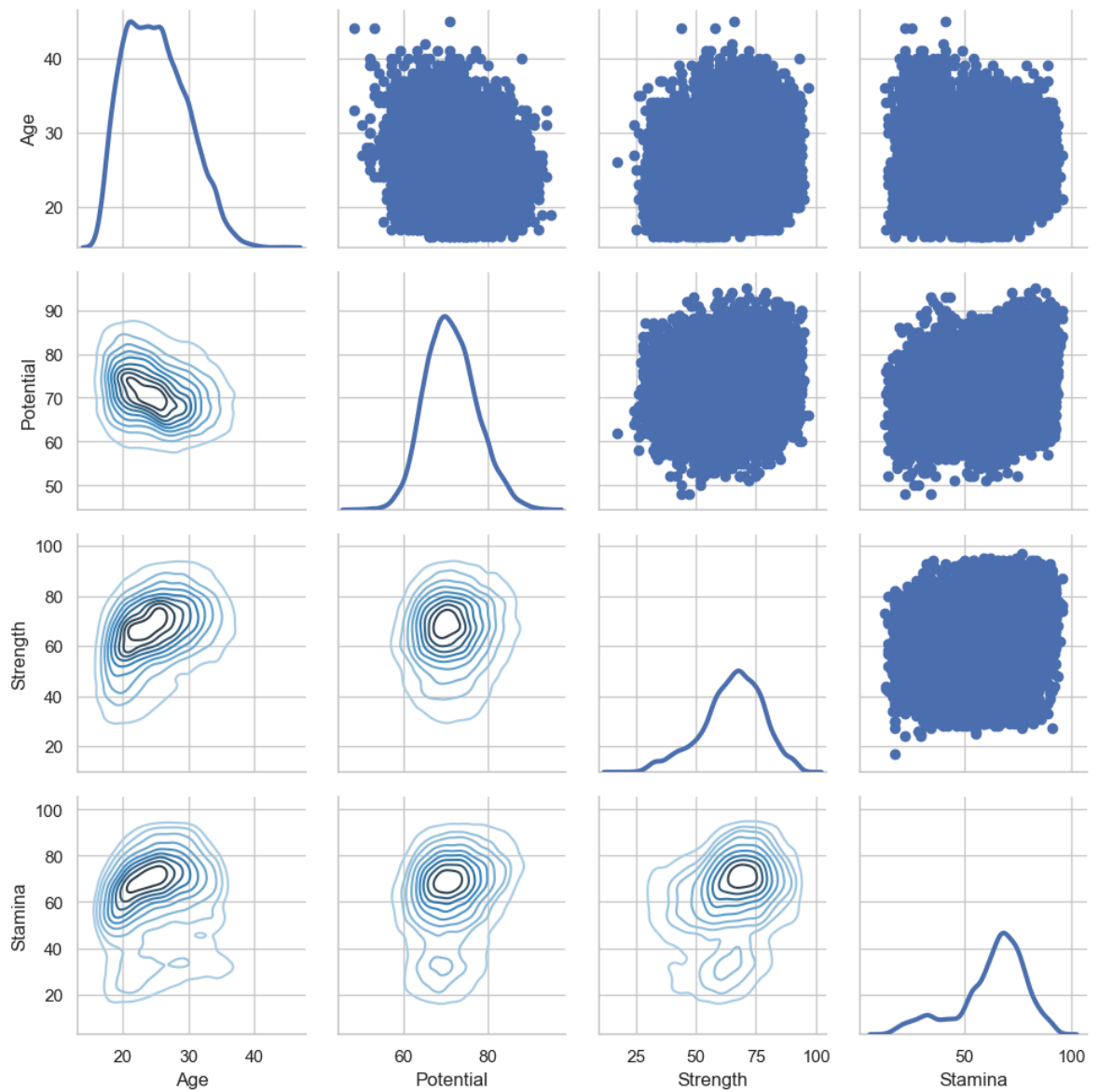
```
g = sns.JointGrid(x="Overall", y="Potential", data=fifa19)
g = g.plot(sns.regplot, sns.distplot)
plt.show()
```
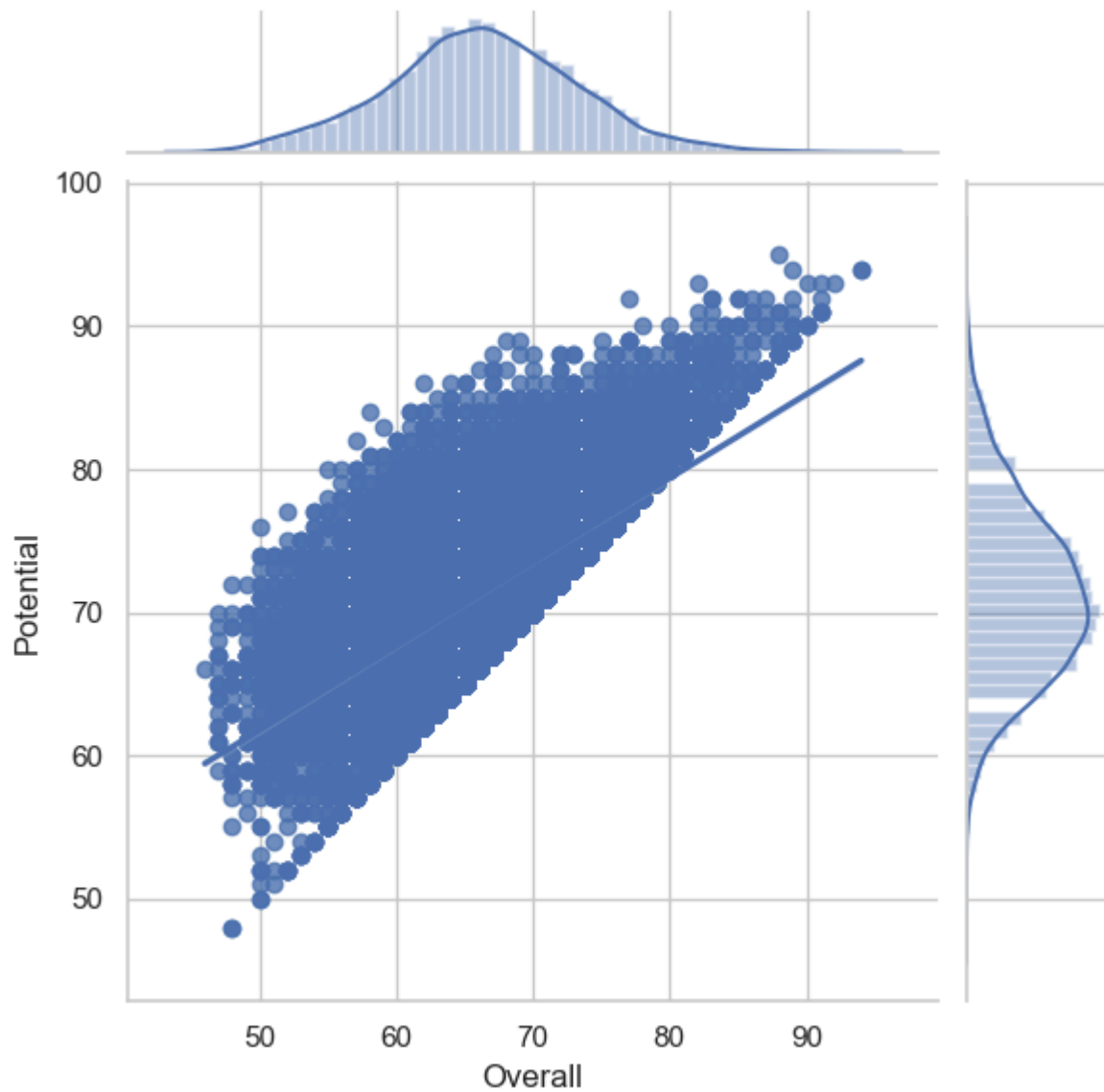
In [148...
```python
import matplotlib.pyplot as plt
```

In [152...
```python
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")
plt.show()
```
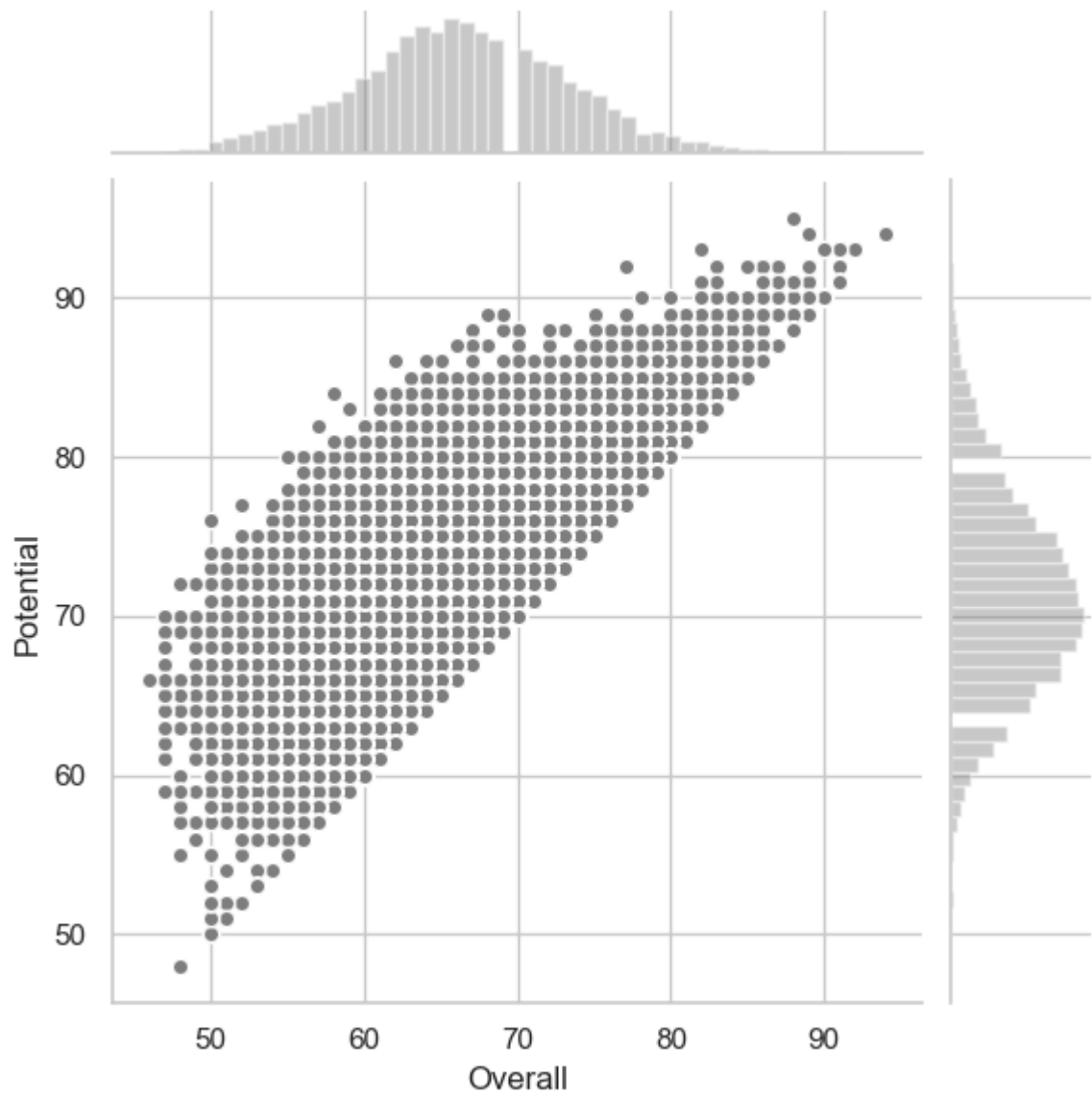
```
In [154...   g = sns.JointGrid(x="Overall", y="Potential", data=fifa19, space=0)
            g = g.plot_joint(sns.kdeplot, cmap="Blues_d")
            g = g.plot_marginals(sns.kdeplot, shade=True)
            plt.show()
```
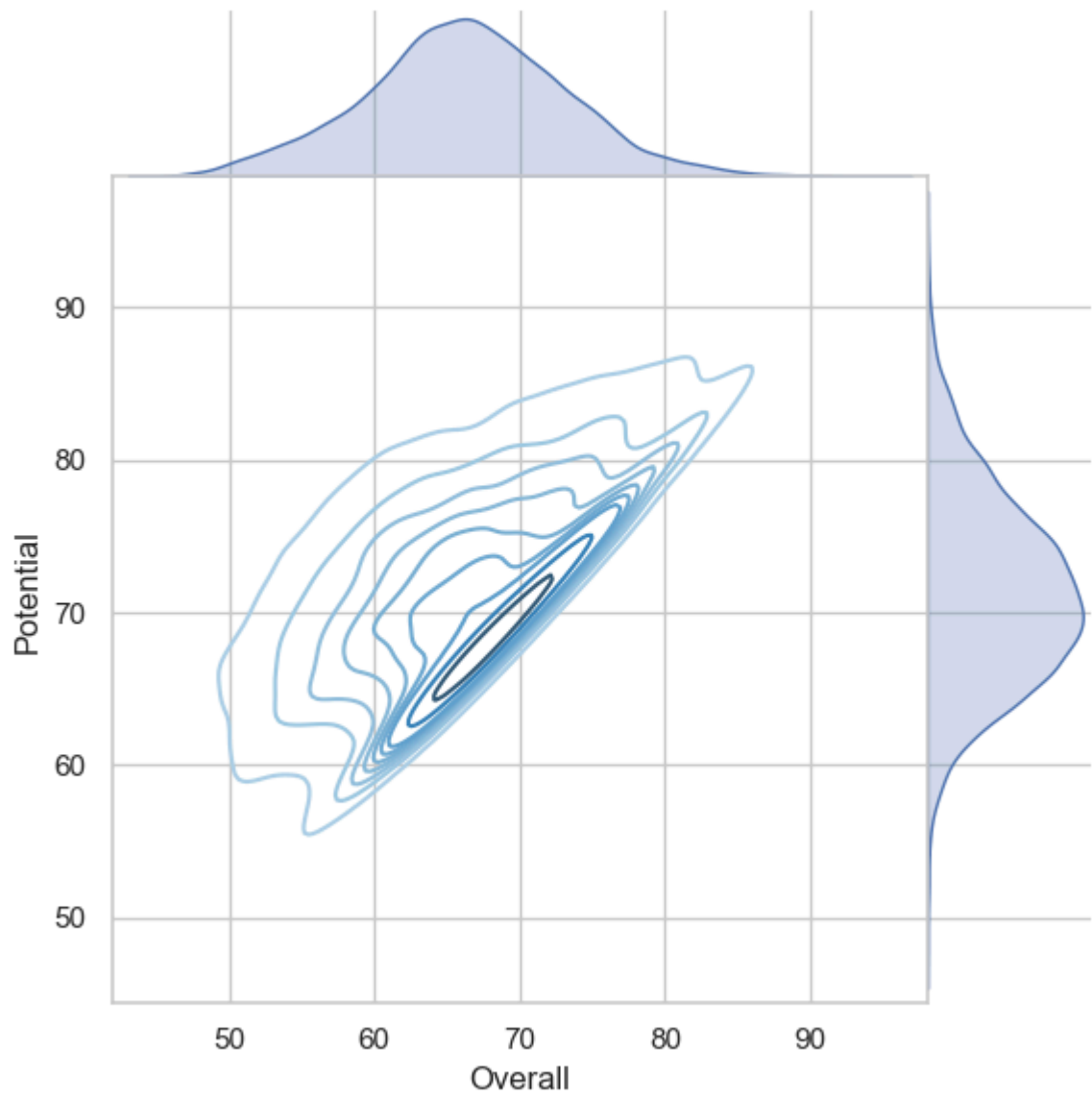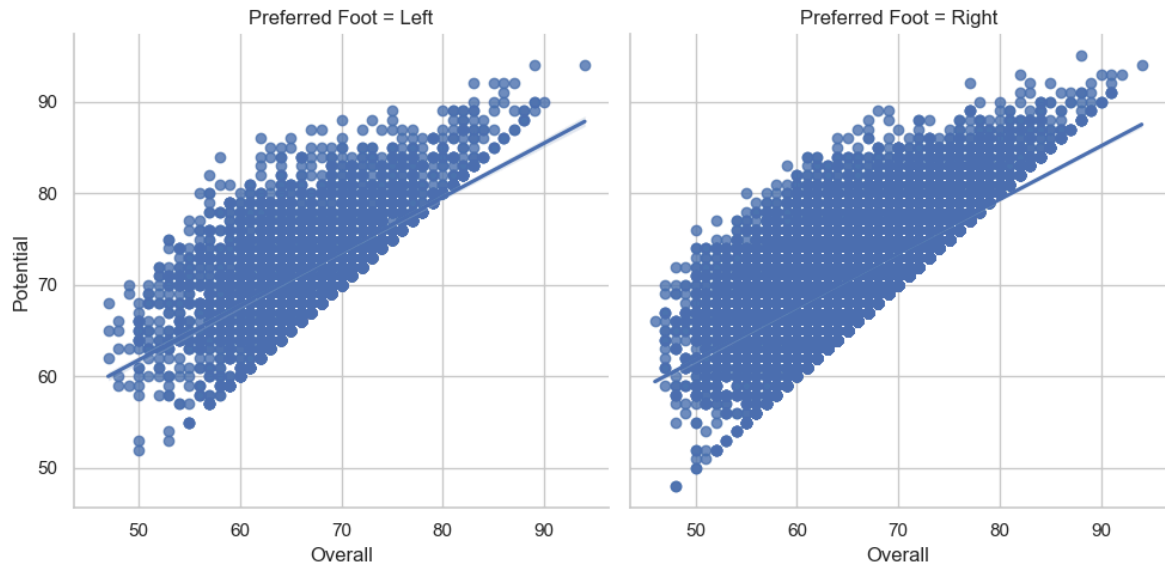
```python
g = sns.JointGrid(x="Overall", y="Potential", data=fifa19, height=5, ratio=2)
g = g.plot_joint(sns.kdeplot, cmap="Reds_d")
g = g.plot_marginals(sns.kdeplot, color="r", shade=True)
plt.show()
```
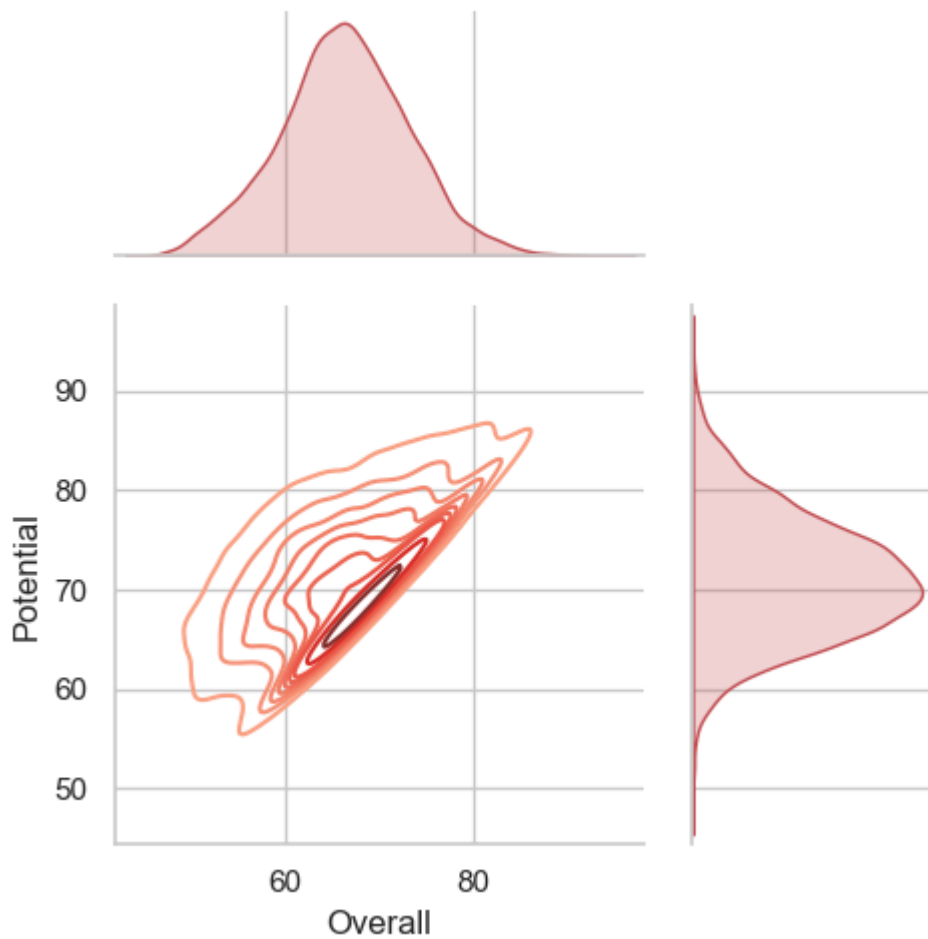
```
f, ax = plt.subplots(figsize=(8, 6))
ax = sns.regplot(x="Overall", y="Potential", data=fifa19);
plt.show()
```
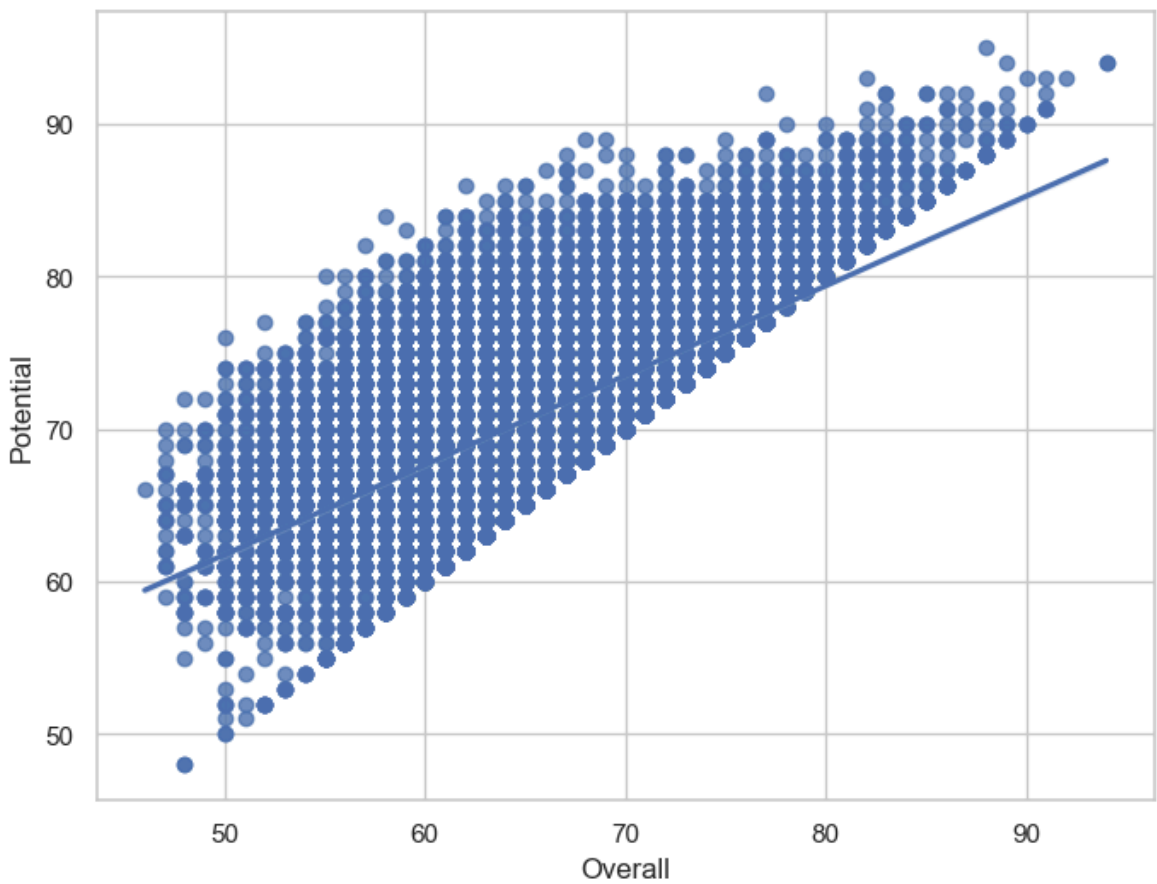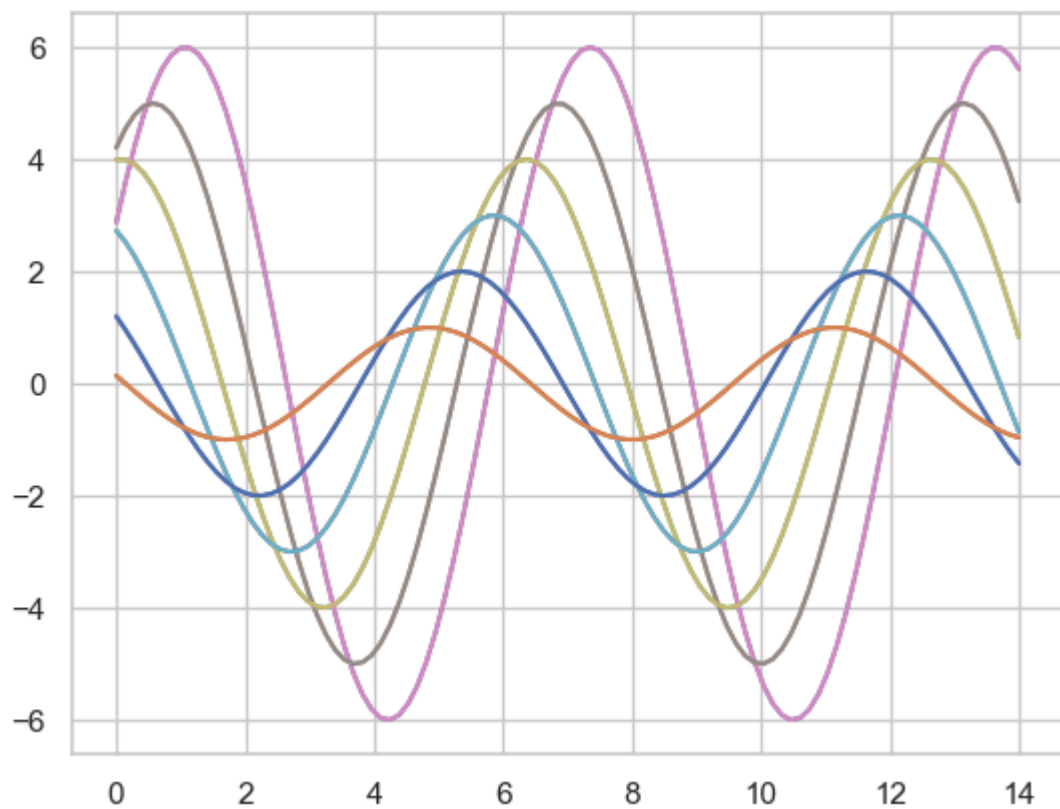
```
In [160…   sns.lmplot(x="Overall", y="Potential", col="Preferred Foot", data=fifa19, col_wr
           plt.show()
```
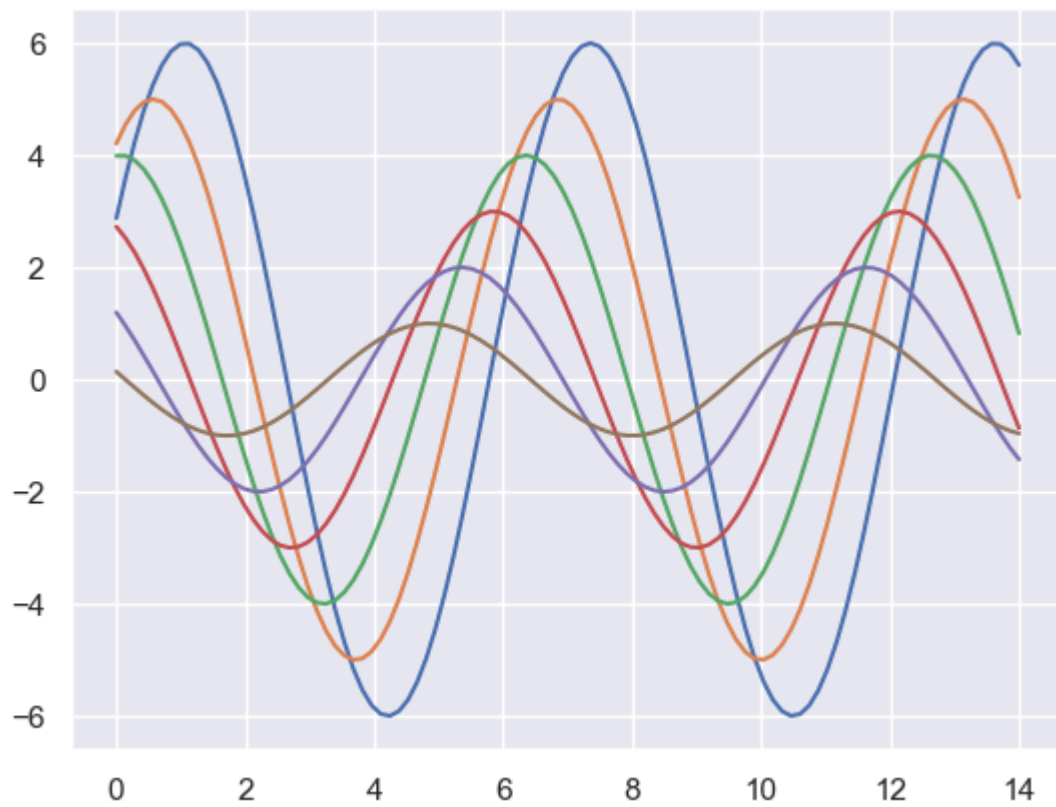


```
In [162…   def sinplot(flip=1):
               x = np.linspace(0, 14, 100)
               for i in range(1, 7):
                   plt.plot(x, np.sin(x + i * .5) * (7 - i) * flip)
```
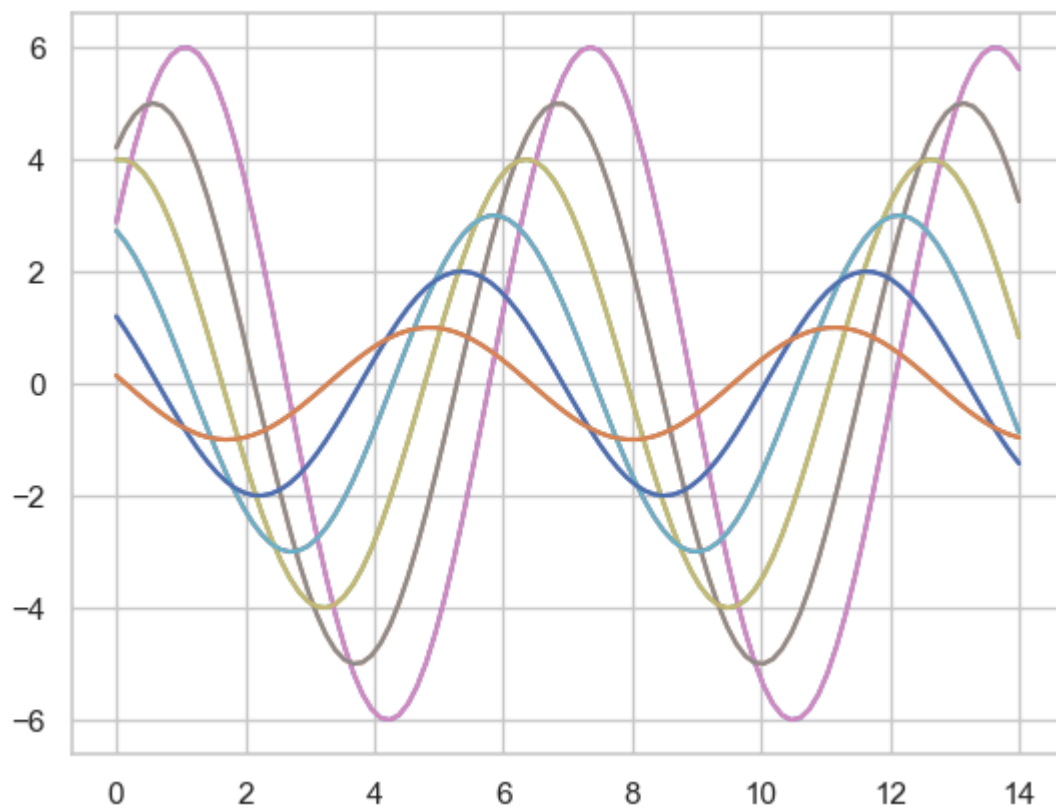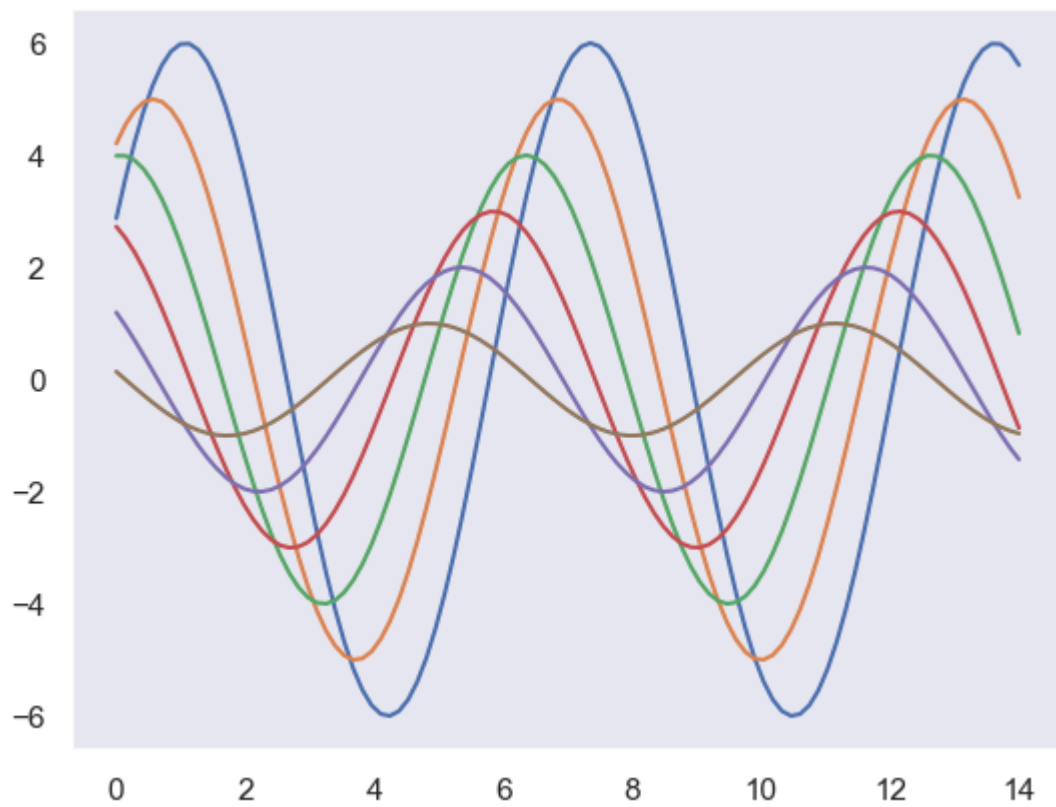
```
In [166…   sinplot()
           plt.show()
```



```
In [168…   sns.set()
           sinplot()
           plt.show()
```
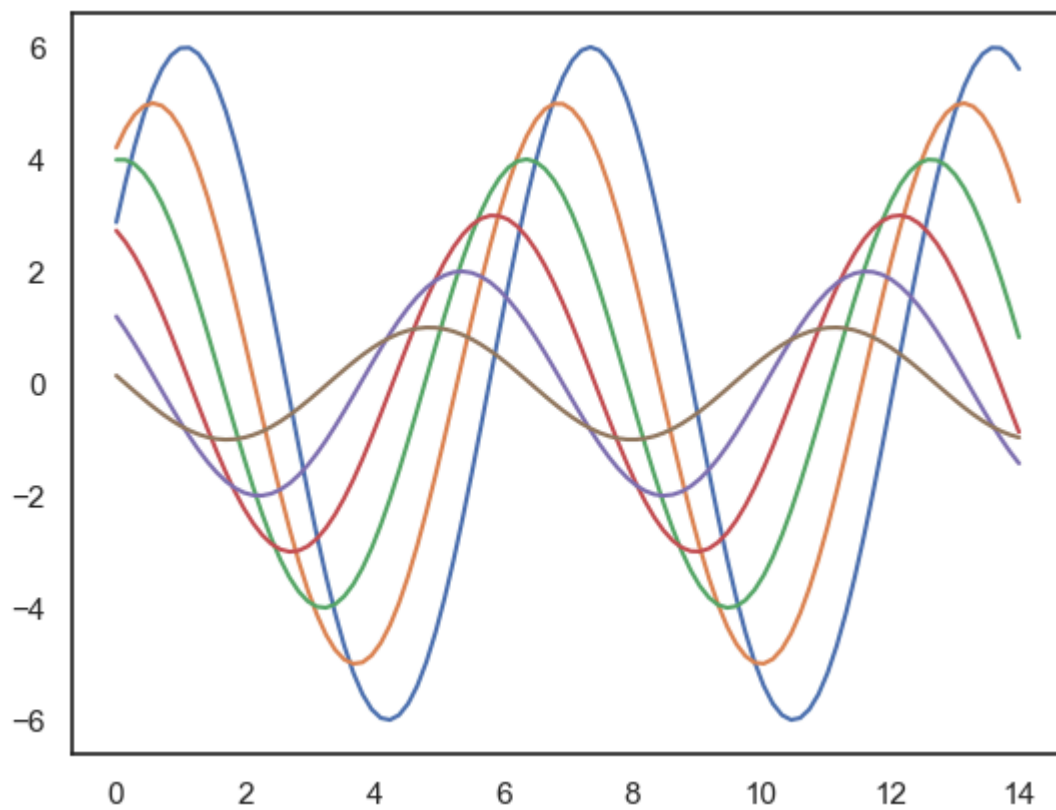
```
sns.set_style("whitegrid")
sinplot()
plt.show()
```
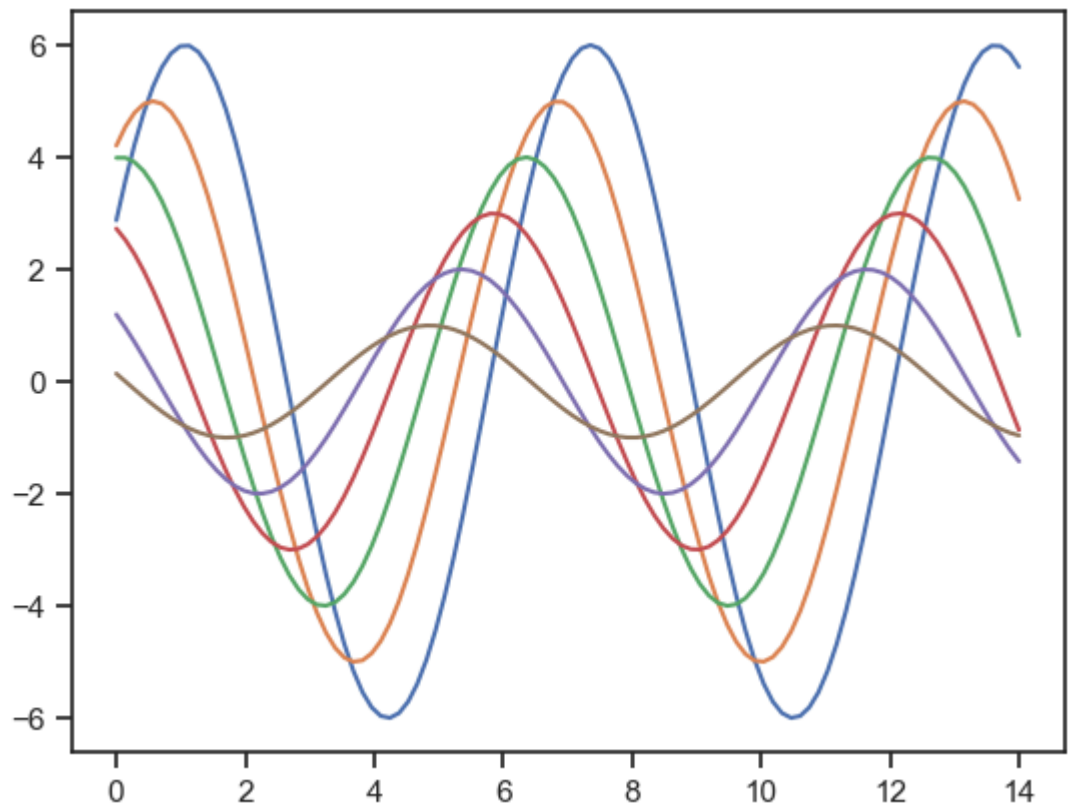
In [172...

In [174...
```
sns.set_style("dark")
sinplot()
plt.show()
```

```
sns.set_style("white")
sinplot()
plt.show()
```



```
sns.set_style("ticks")
sinplot()
plt.show()
```

In [ ]: