FIFA VISUALIZATION

In [1]:

```
import warnings
warnings.filterwarnings("ignore")
```

In [3]:

```
import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt
%matplotlib inline
from collections import Counter
sns.set(style="whitegrid")
```

In [4]:

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

In [10]:

```
Fifa = pd.read_csv("FIFA.csv", encoding="latin1")
```

In [11]:

```
Fifa
```

Out[11]:

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

18207 rows × 89 columns

In [12]:

```
Fifa.head()
```

Out[12]:

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

5 rows × 89 columns

In [13]:

```
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 [14]:

```
Fifa['Body Type'].value_counts()
```

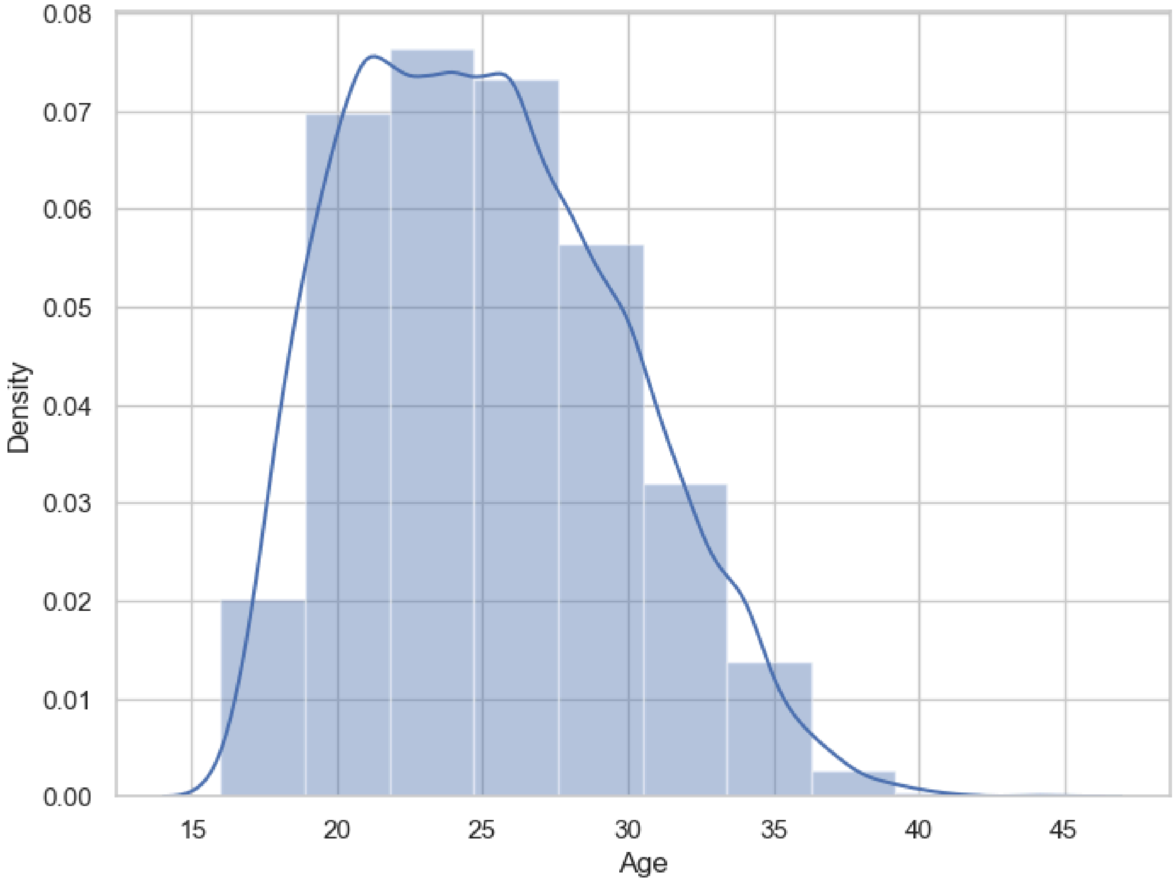
Out[14]:

```
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: Body Type, dtype: int64
```

Explore Age Variable

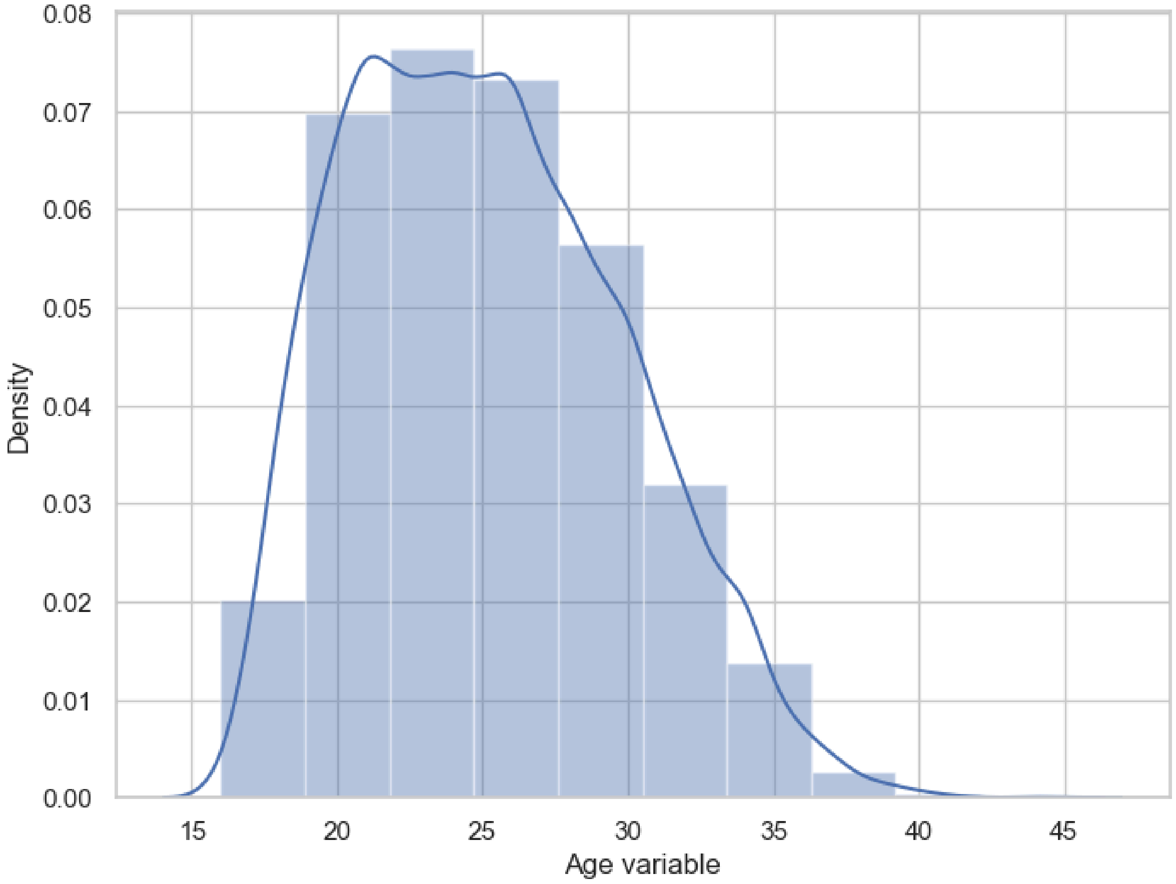
In [15]:

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

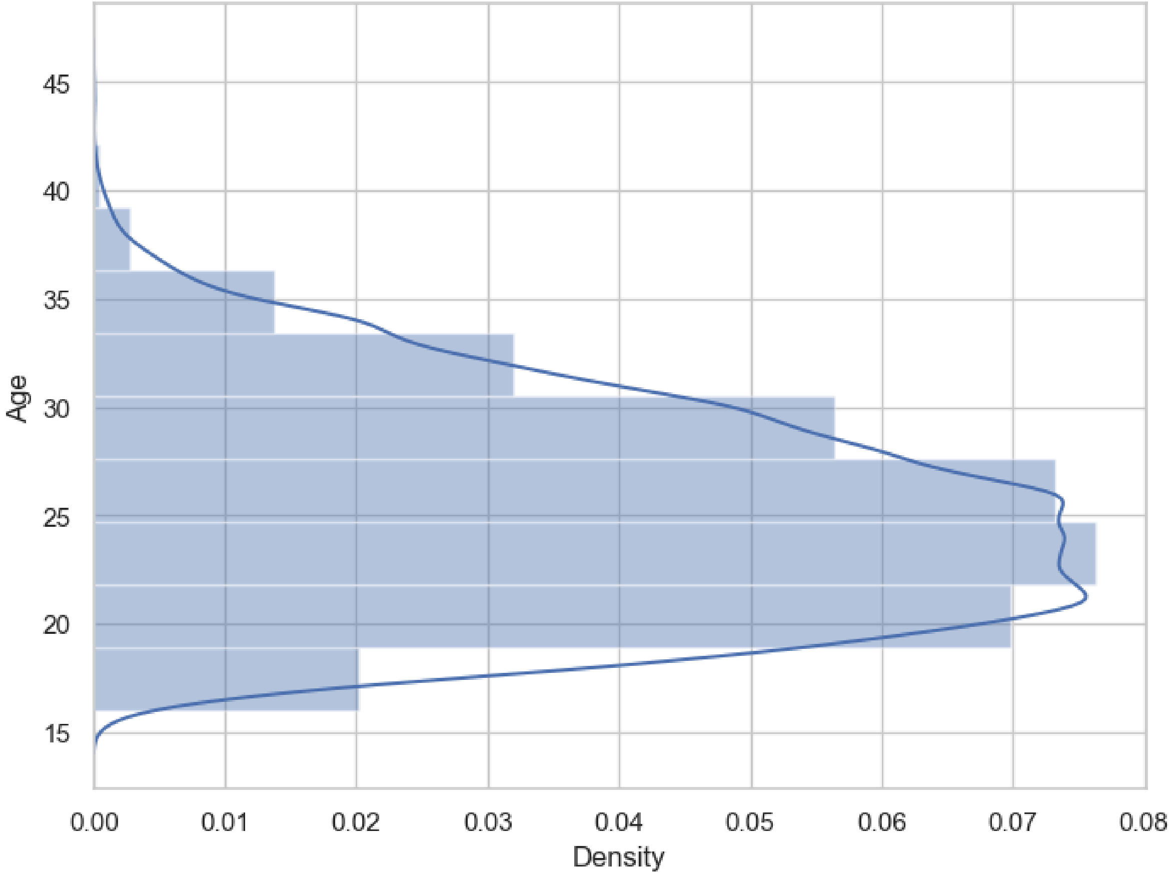


In [16]:

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

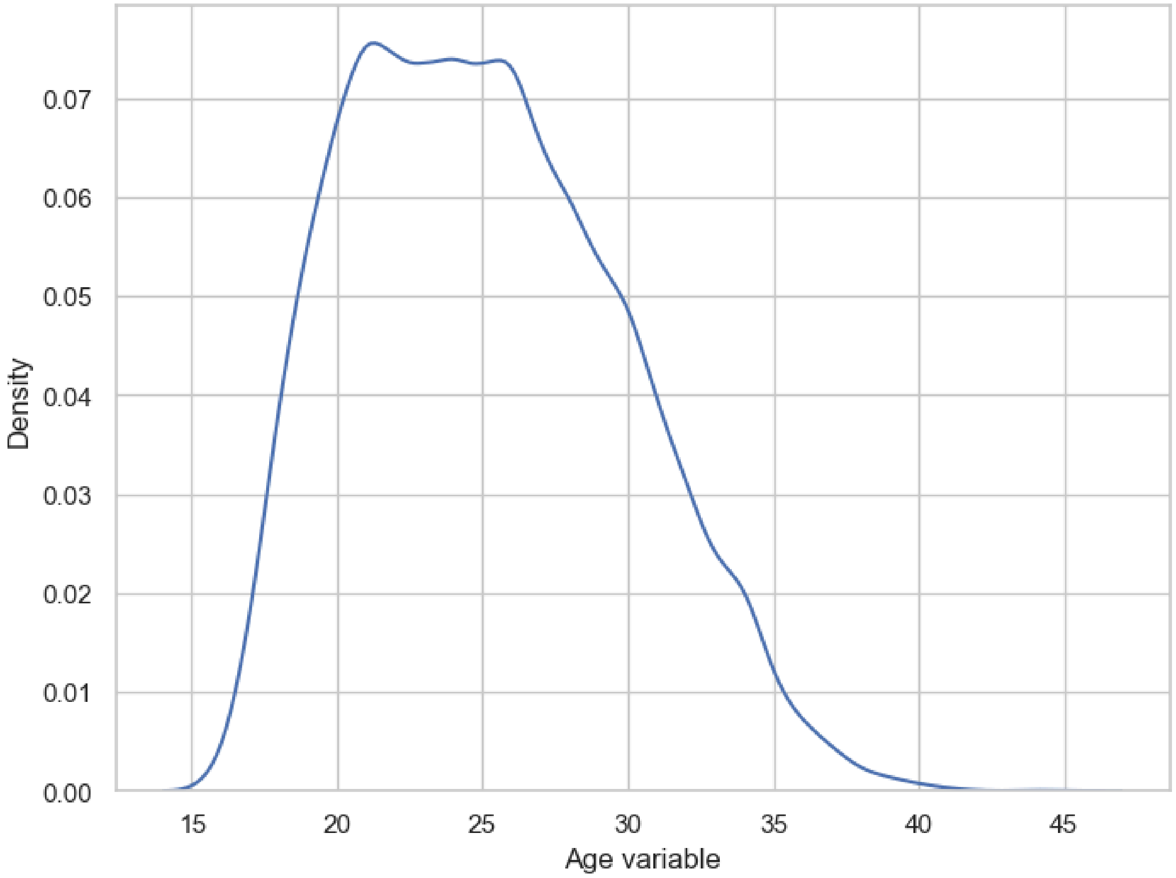


In [17]:
```
f, ax = plt.subplots(figsize=(8,6))
x = Fifa['Age']
ax = sns.distplot(x, bins=10, vertical = True)
plt.show()
```



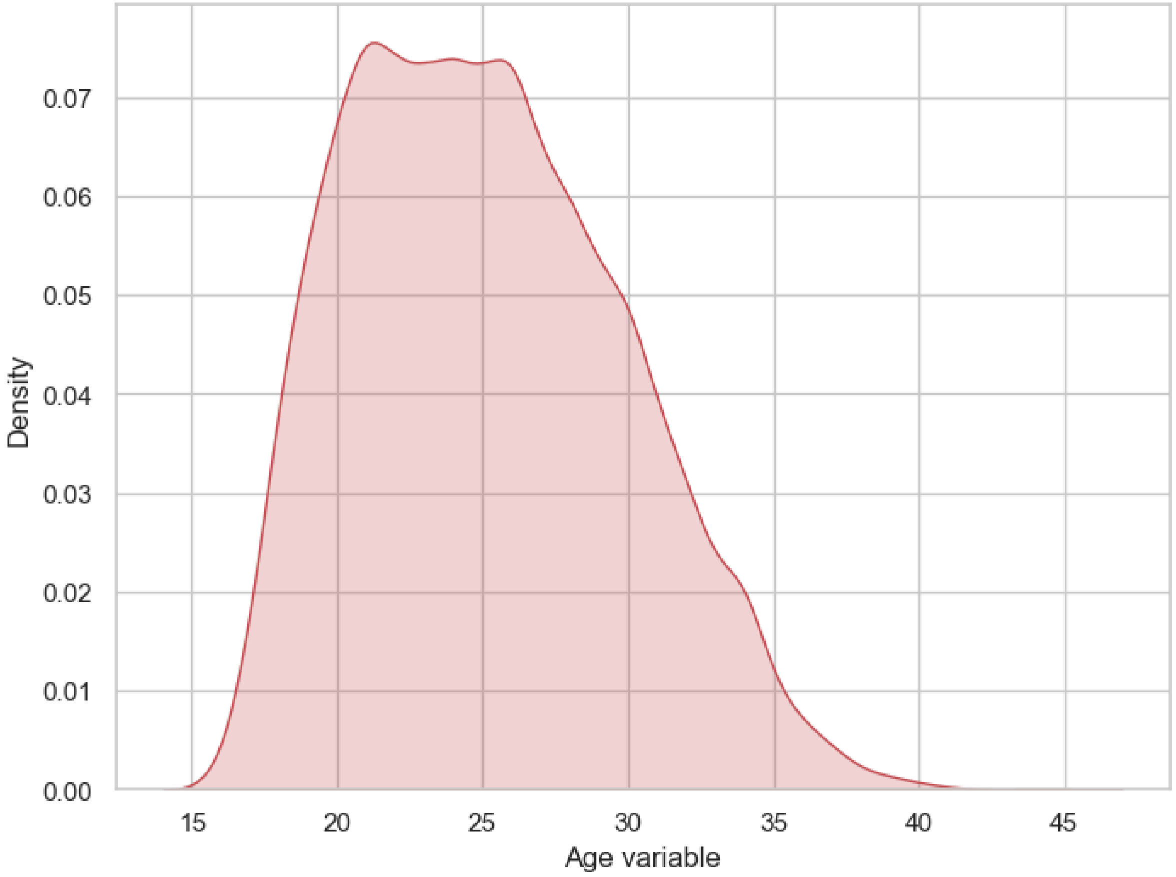
Seabporn Kernel Density Estimation(KDE) Plot

In [18]:
```
f, ax = plt.subplots(figsize=(8,6))
x = Fifa['Age']
x = pd.Series(x, name="Age variable")
ax = sns.kdeplot(x)
plt.show()
```



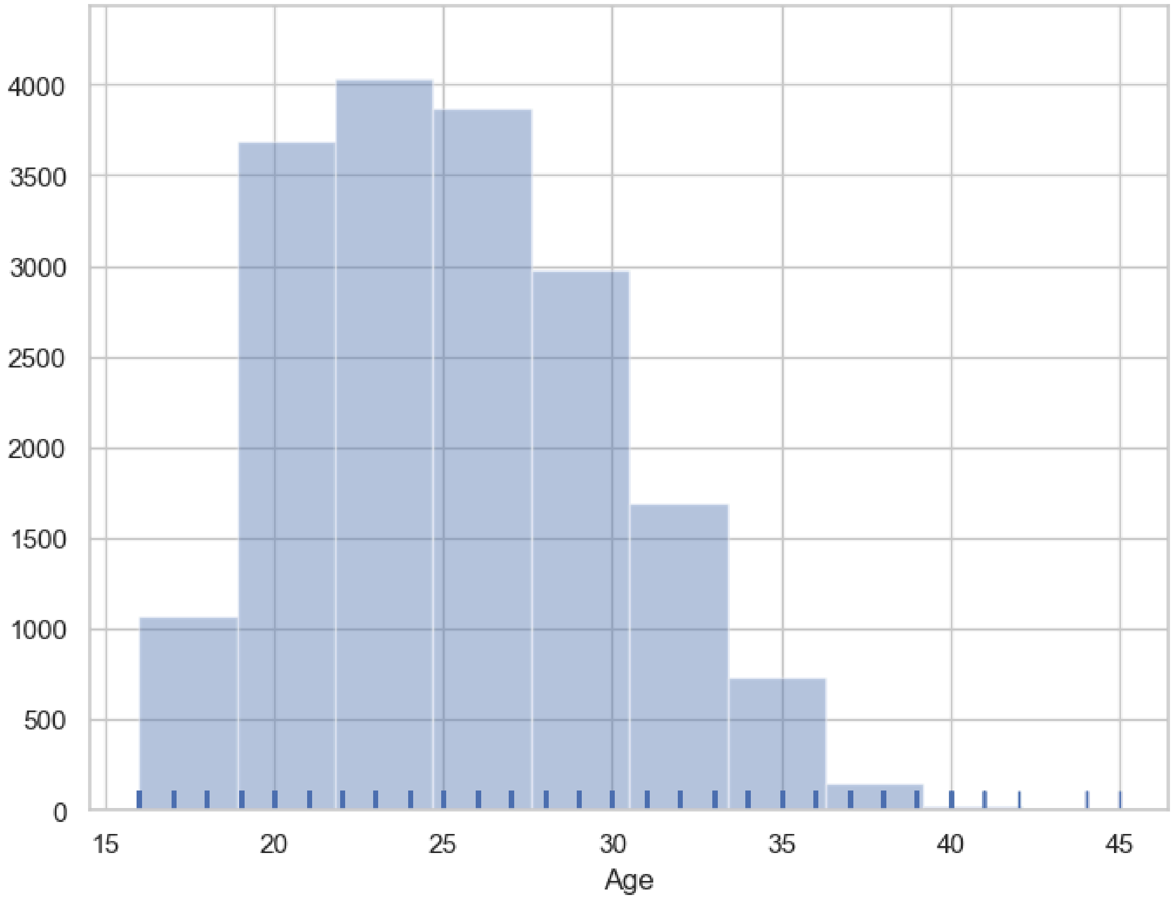
In [19]:

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

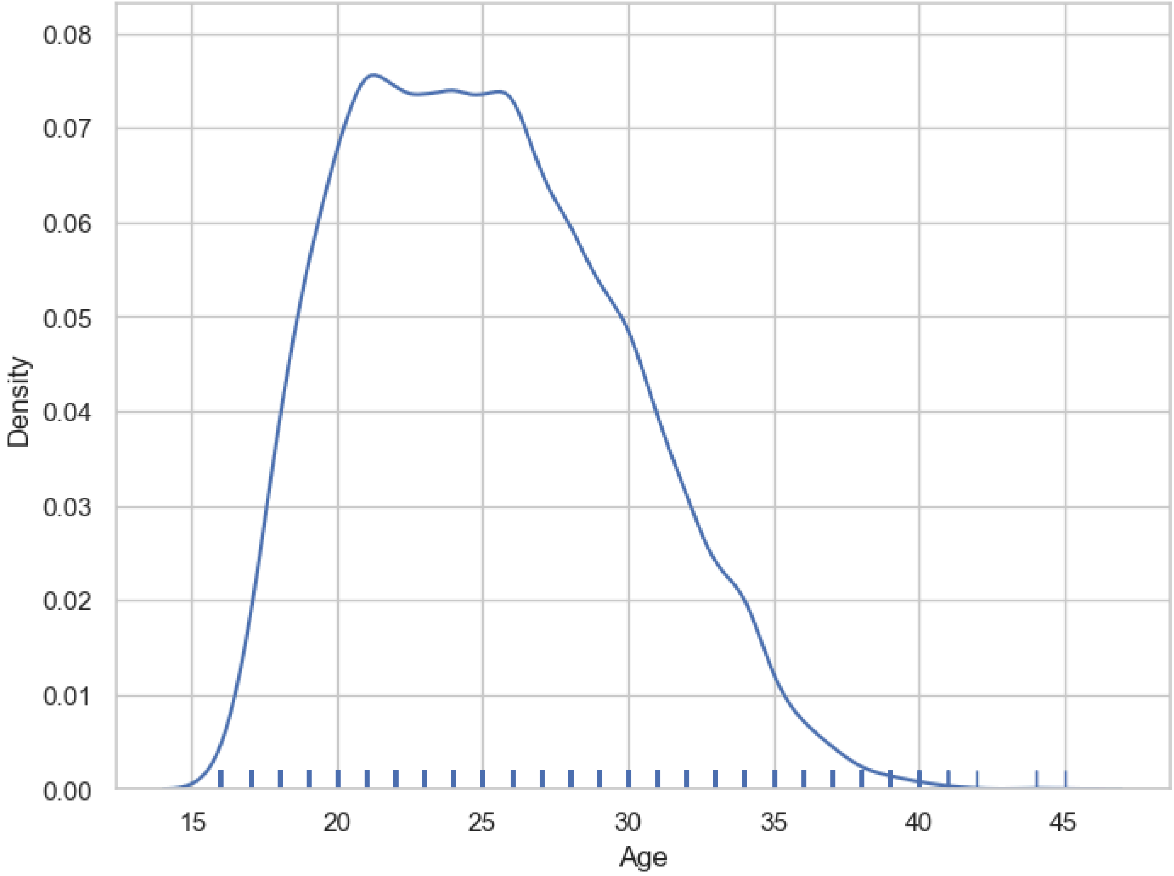


Histograms

```
In [20]: f, ax = plt.subplots(figsize=(8,6))
         x = Fifa['Age']
         ax = sns.distplot(x, kde=False, rug=True, bins=10)
         plt.show()
```



```
In [21]: f, ax = plt.subplots(figsize=(8,6))
         x = Fifa['Age']
         ax = sns.distplot(x, hist=False, rug=True, bins=10)
         plt.show()
```



Preferred Foot Variable

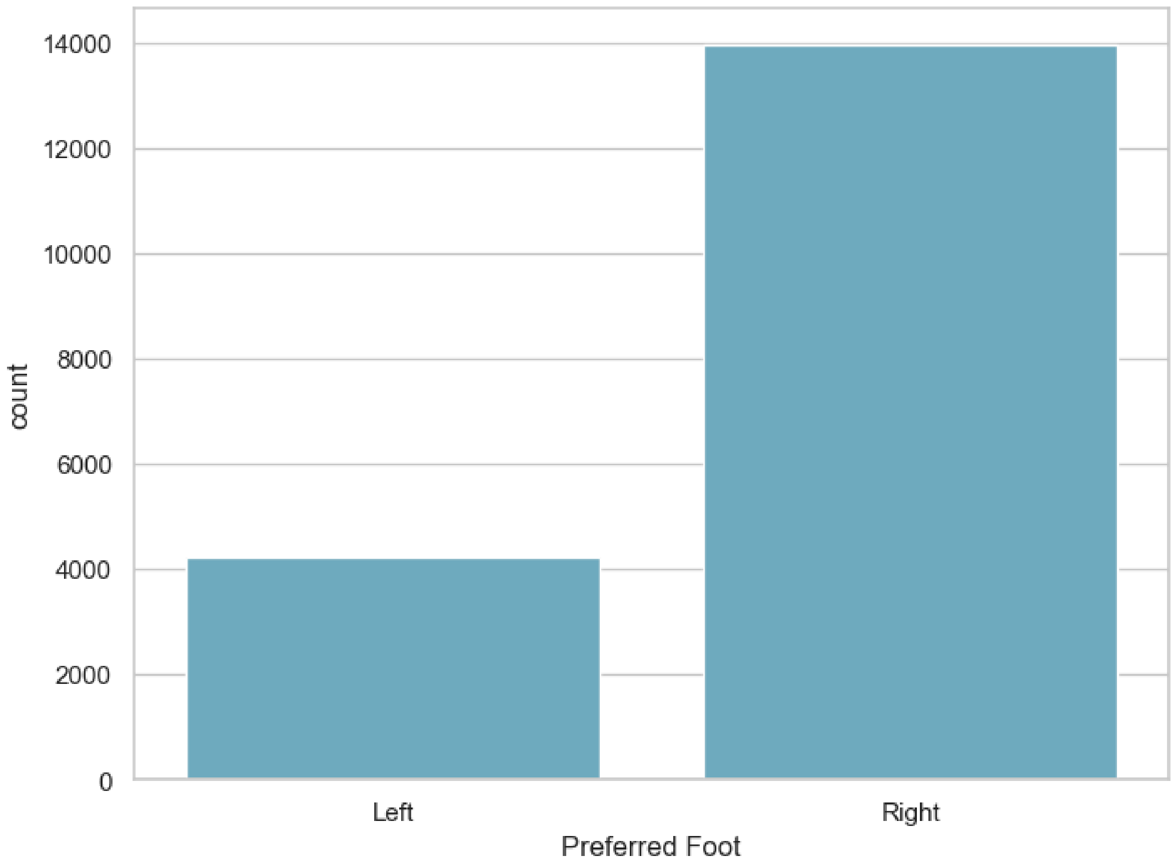
In [23]:
```
Fifa['Preferred Foot'].nunique()
```

Out[23]:
```
2
```

In [24]:
```
Fifa['Preferred Foot'].value_counts()
```

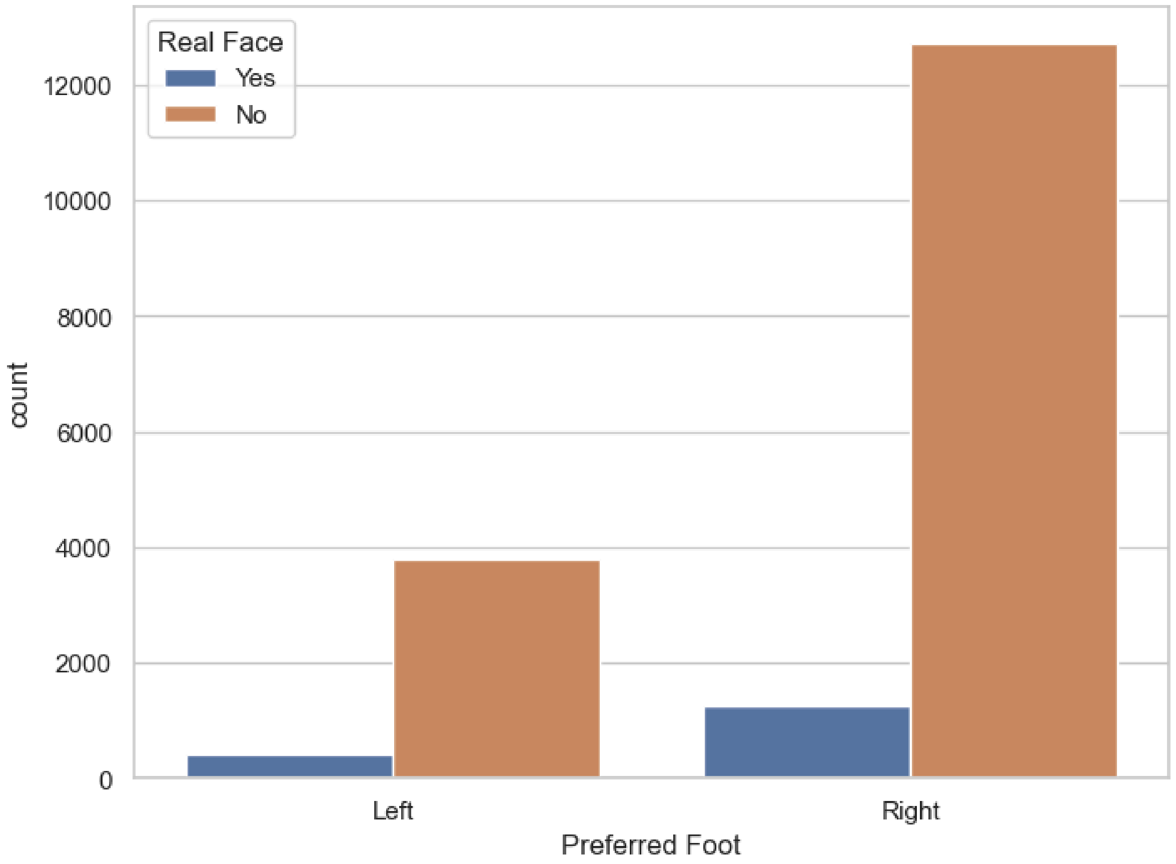
Out[24]:
```
Right    13948
Left      4211
Name: Preferred Foot, dtype: int64
```

In [29]:
```
f, ax = plt.subplots(figsize=(8, 6))

sns.countplot(x="Preferred Foot", data=Fifa, color="c")  # 'g' lowercase works for

plt.show()
```



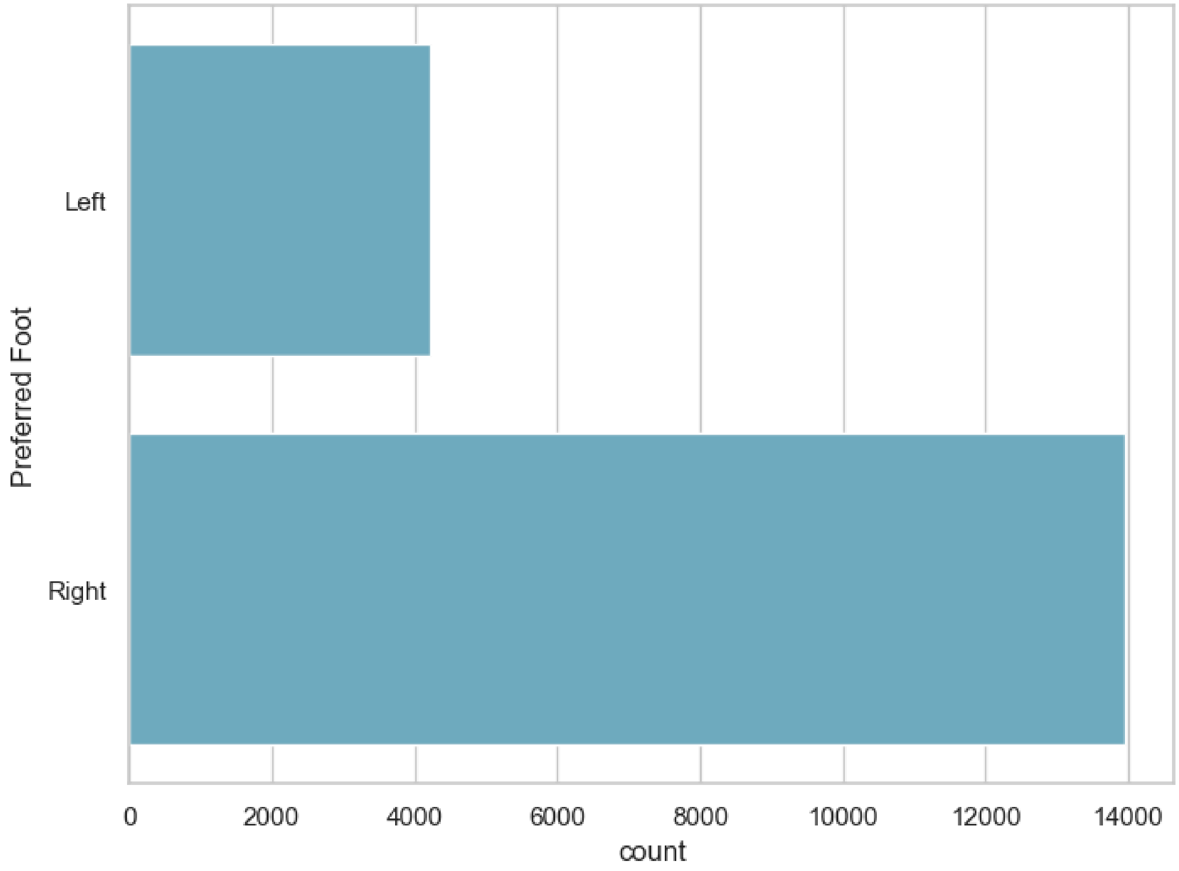
In [31]:

```
f, ax = plt.subplots(figsize=(8, 6))
sns.countplot(x="Preferred Foot", hue="Real Face", data=Fifa)
plt.show()
```



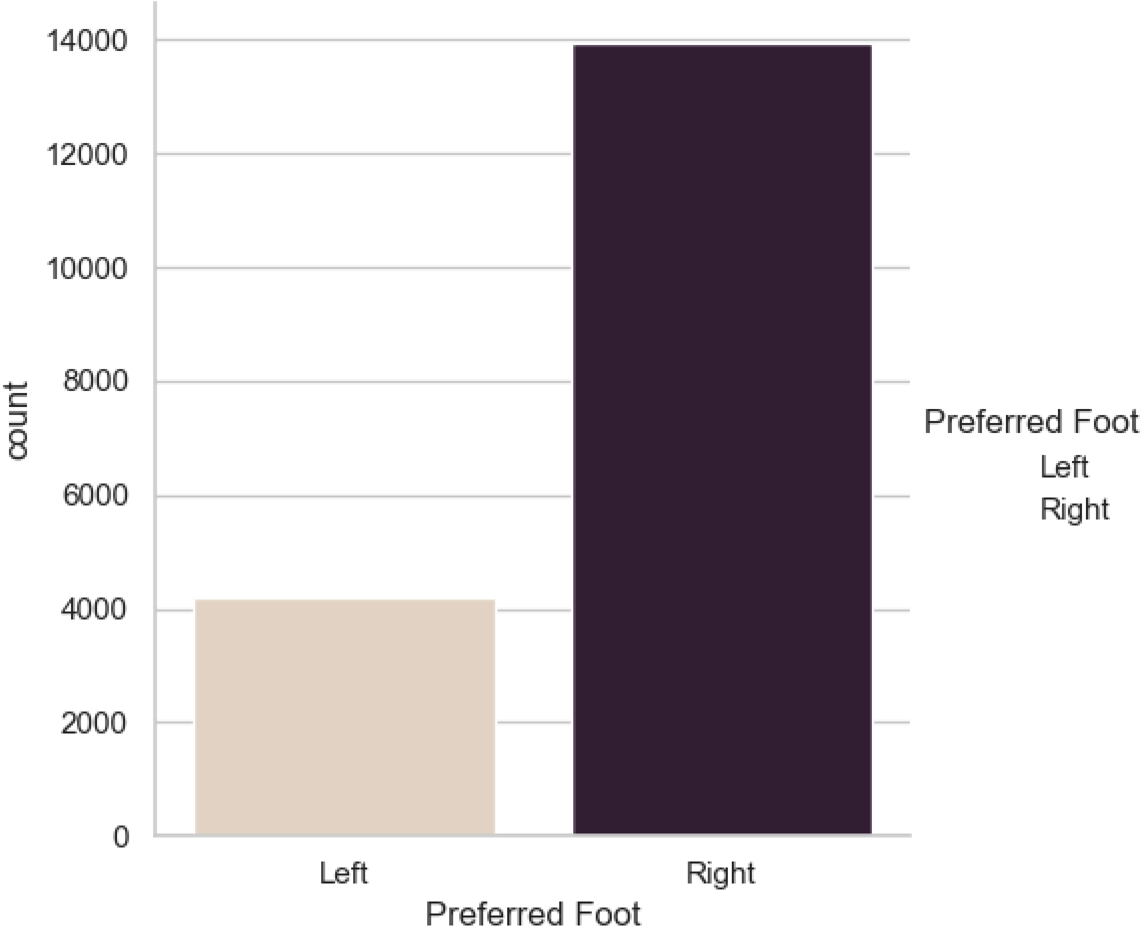
In [32]:

```
f, ax = plt.subplots(figsize=(8, 6))
sns.countplot(y="Preferred Foot", data=Fifa, color="c")
plt.show()
```



Seaborn Catplot() Function

```
In [33]: g = sns.catplot(x="Preferred Foot", kind="count", palette="ch:.25", data=Fifa)
```



INTERNATIONAL REPUTATION

```
In [34]: Fifa['International Reputation'].nunique()
```

```
Out[34]: 5
```

```
In [36]: Fifa['International Reputation'].value_counts()
```

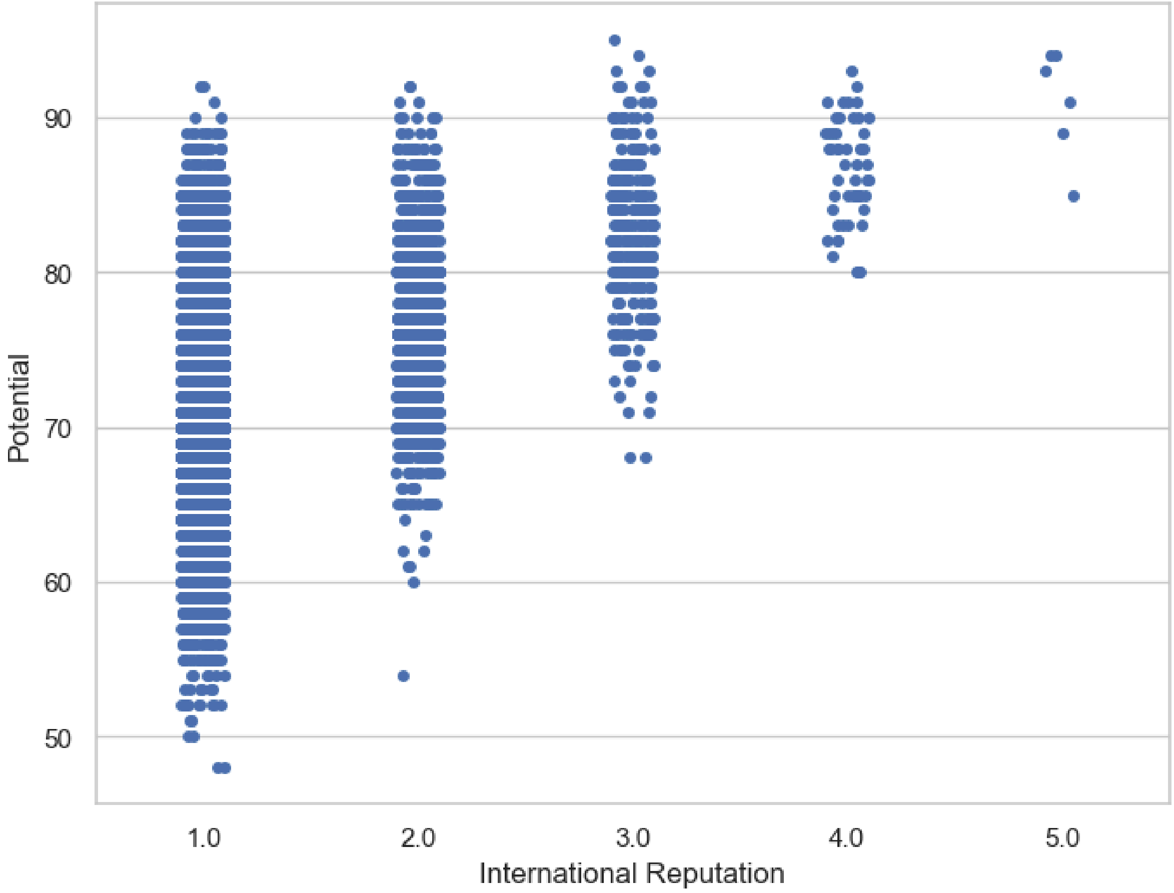
```
Out[36]: 1.0    16532
         2.0     1261
         3.0      309
         4.0       51
         5.0        6
         Name: International Reputation, dtype: int64
```

Stripplot()

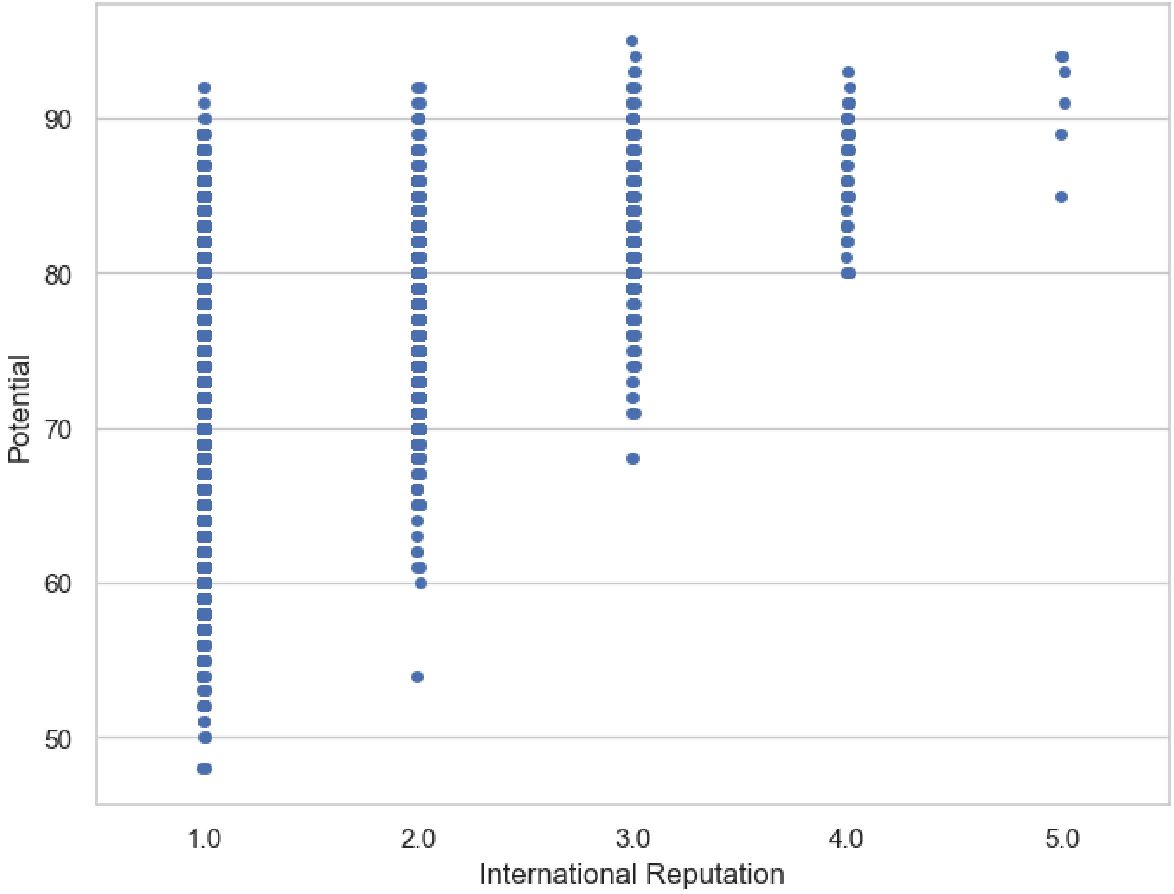
```
In [38]: print(Fifa.dtypes)         # See column data types
         print(Fifa['International Reputation'].unique())
         print(Fifa['Potential'].head())
```

```
Unnamed: 0          int64
ID                  int64
Name               object
Age                 int64
Photo              object
                    ...
GKHandling        float64
GKKicking         float64
GKPositioning     float64
GKReflexes        float64
Release Clause     object
Length: 89, dtype: object
[ 5.  4.  3.  2.  1. nan]
0    94
1    94
2    93
3    93
4    92
Name: Potential, dtype: int64
```

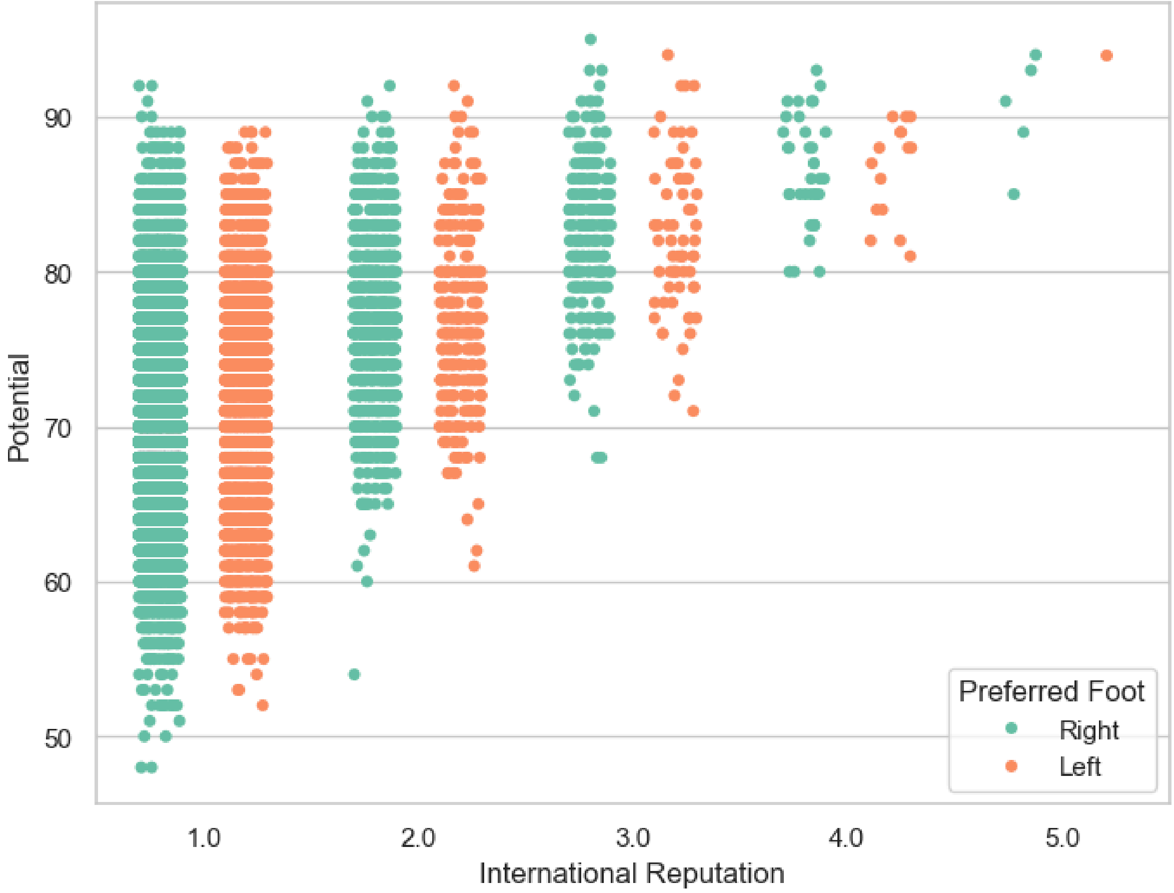
In [41]:
```
f, ax = plt.subplots(figsize=(8, 6))
sns.stripplot(x="International Reputation", y="Potential", data=Fifa)
plt.show()
```



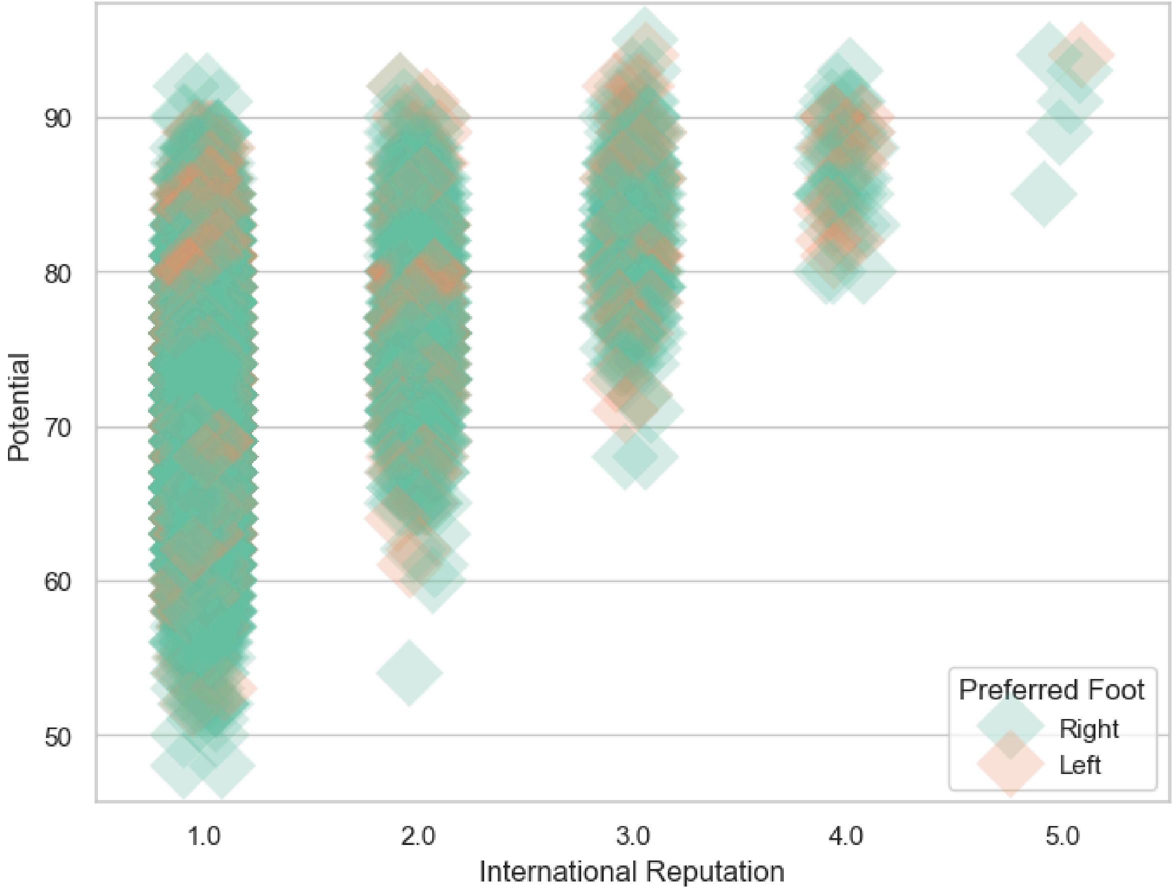
In [42]:
```
f, ax = plt.subplots(figsize=(8, 6))
sns.stripplot(x="International Reputation", y="Potential", data=Fifa, jitter=0.01)
plt.show()
```



```
In [43]: 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()
```

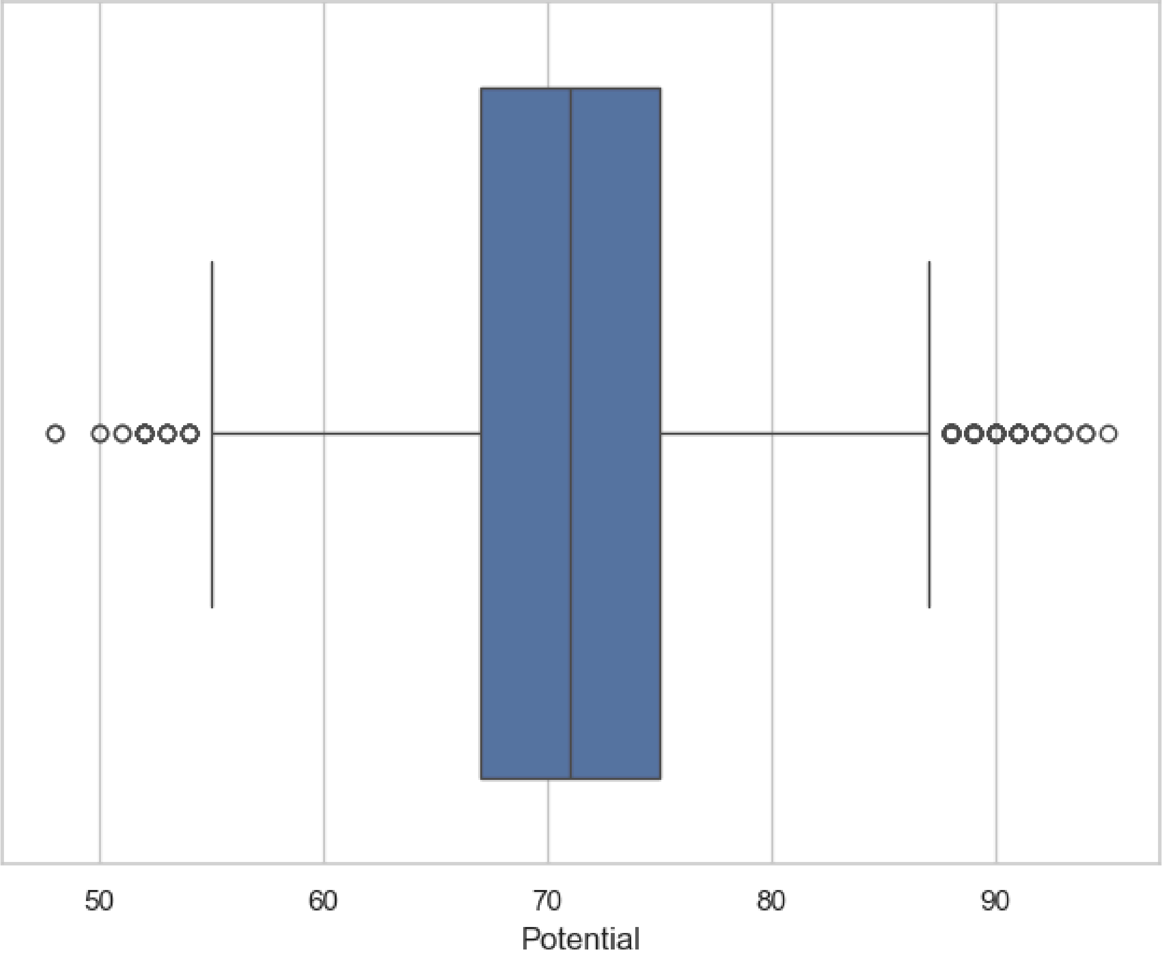


```
In [44]: f, ax = plt.subplots(figsize=(8, 6))
         sns.stripplot(x="International Reputation", y="Potential", hue="Preferred Foot",
                              data=Fifa, palette="Set2", size=20, marker="D",
                              edgecolor="gray", alpha=.25)
         plt.show()
```

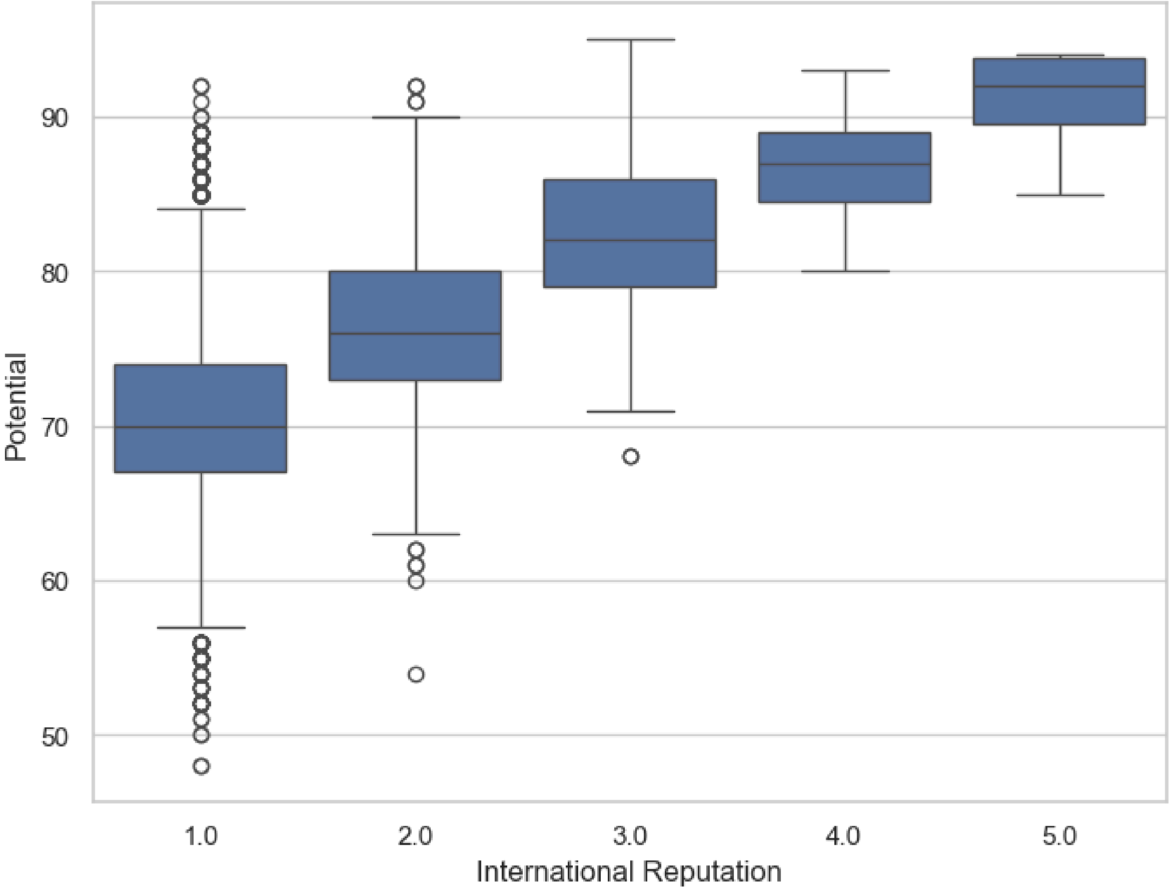


Seaborn boxplot() Function

```
In [45]: f, ax = plt.subplots(figsize=(8, 6))
         sns.boxplot(x=Fifa["Potential"])
         plt.show()
```

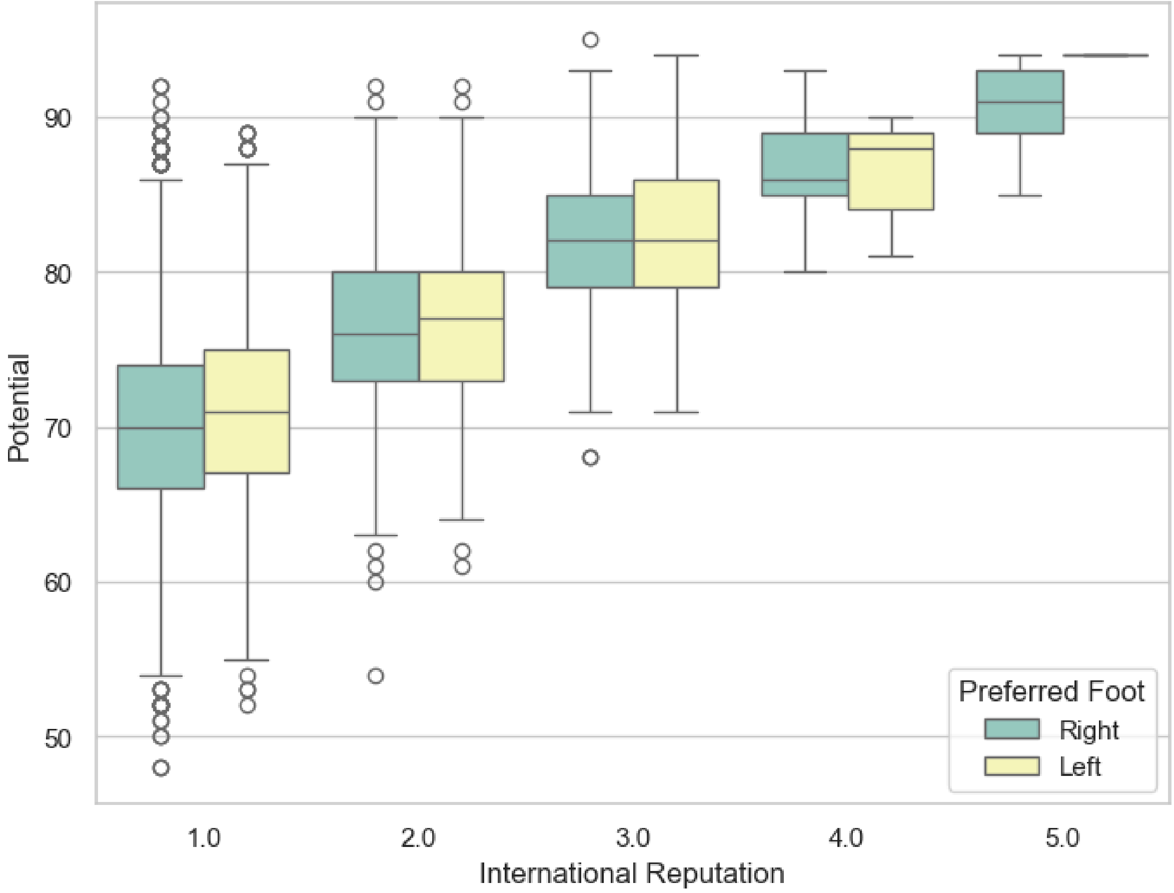


In [47]:
```
f, ax = plt.subplots(figsize=(8, 6))
sns.boxplot(x="International Reputation", y="Potential", data=Fifa)
plt.show()
```



In [48]:

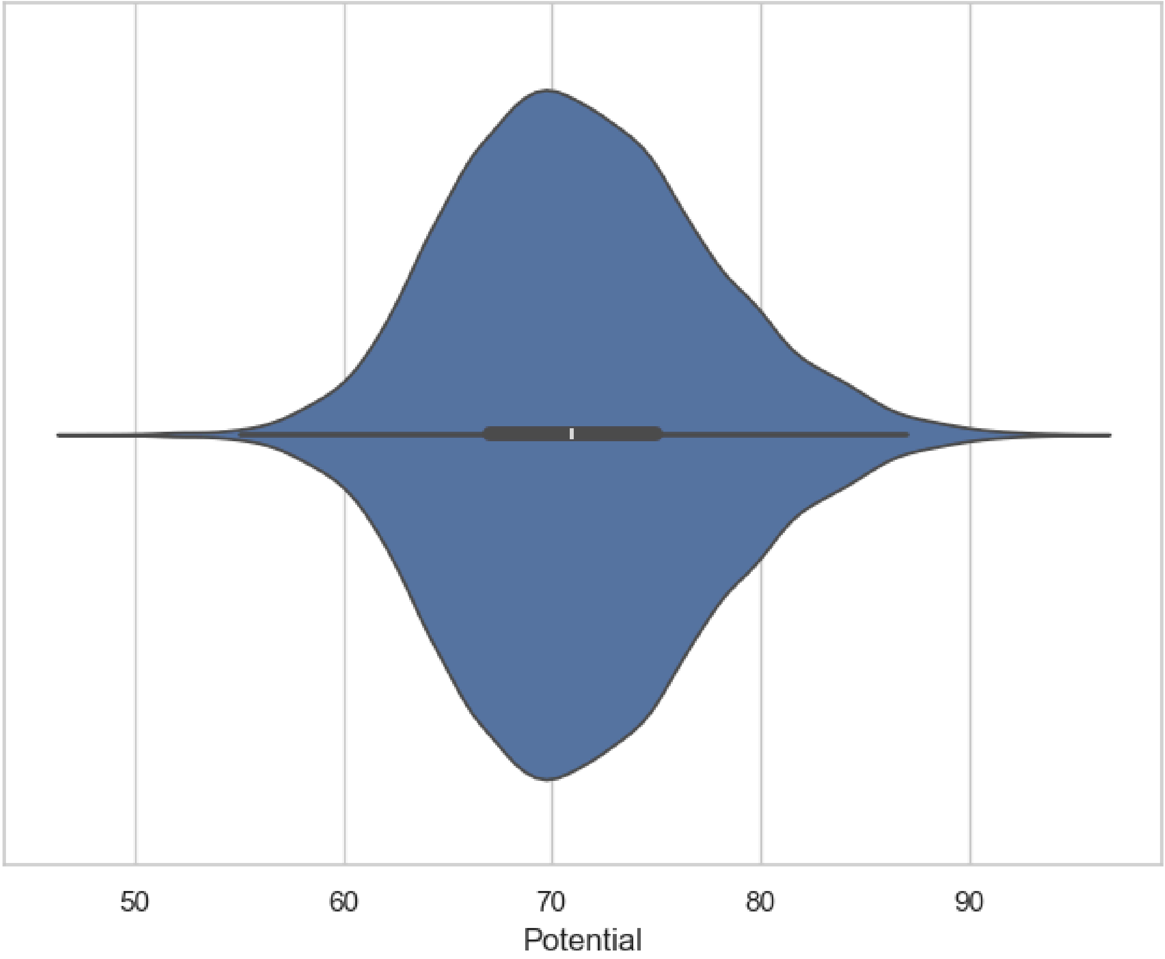
```
f, ax = plt.subplots(figsize=(8, 6))
sns.boxplot(x="International Reputation", y="Potential", hue="Preferred Foot", data
plt.show()
```



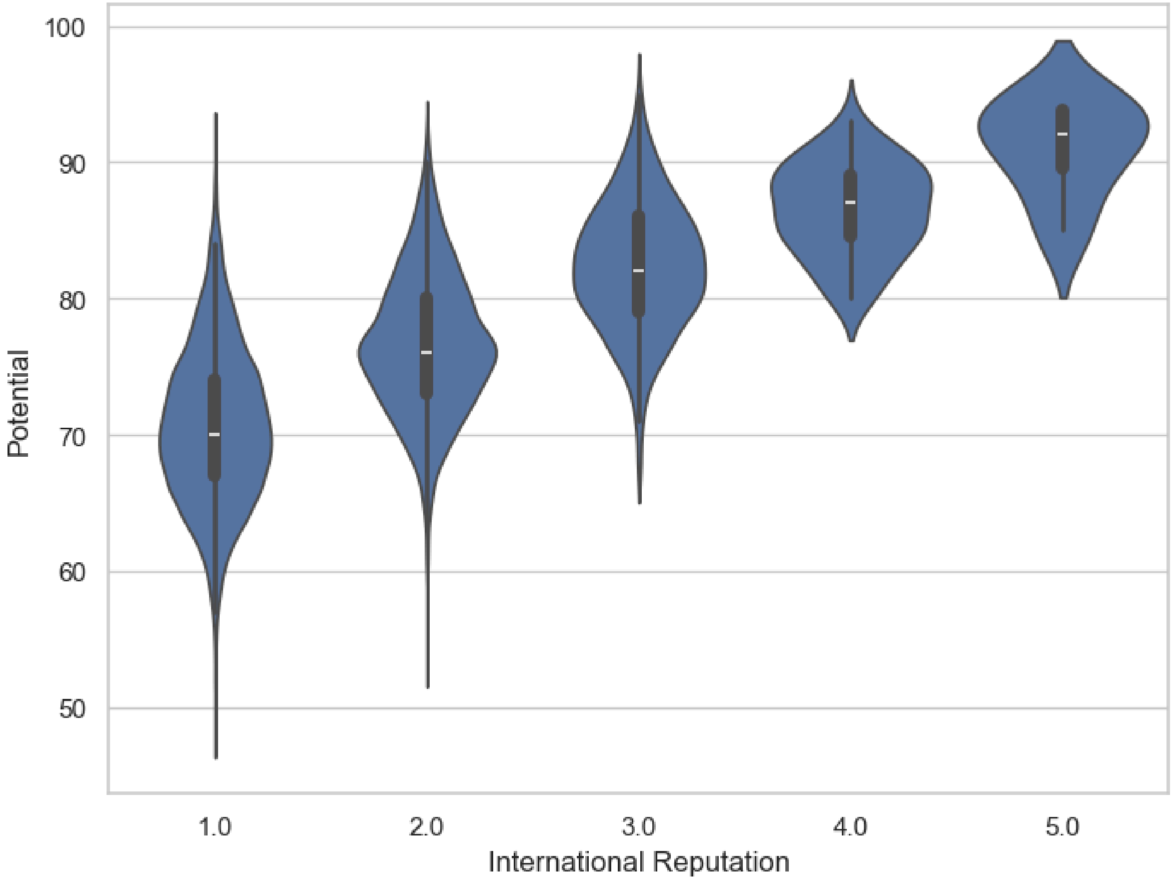
Seaborn Violinplot() Function

In [50]:

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

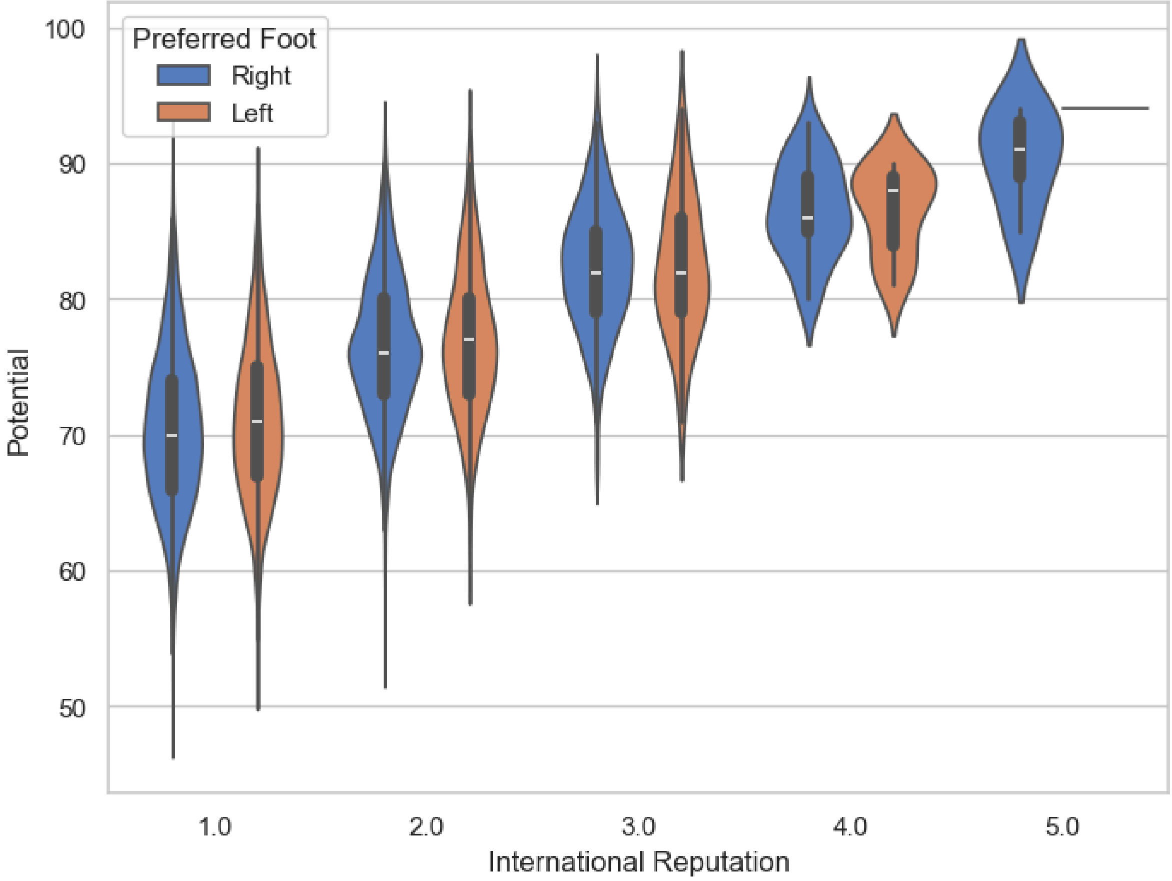


In [51]:
```
f, ax = plt.subplots(figsize=(8, 6))
sns.violinplot(x="International Reputation", y="Potential", data=Fifa)
plt.show()
```



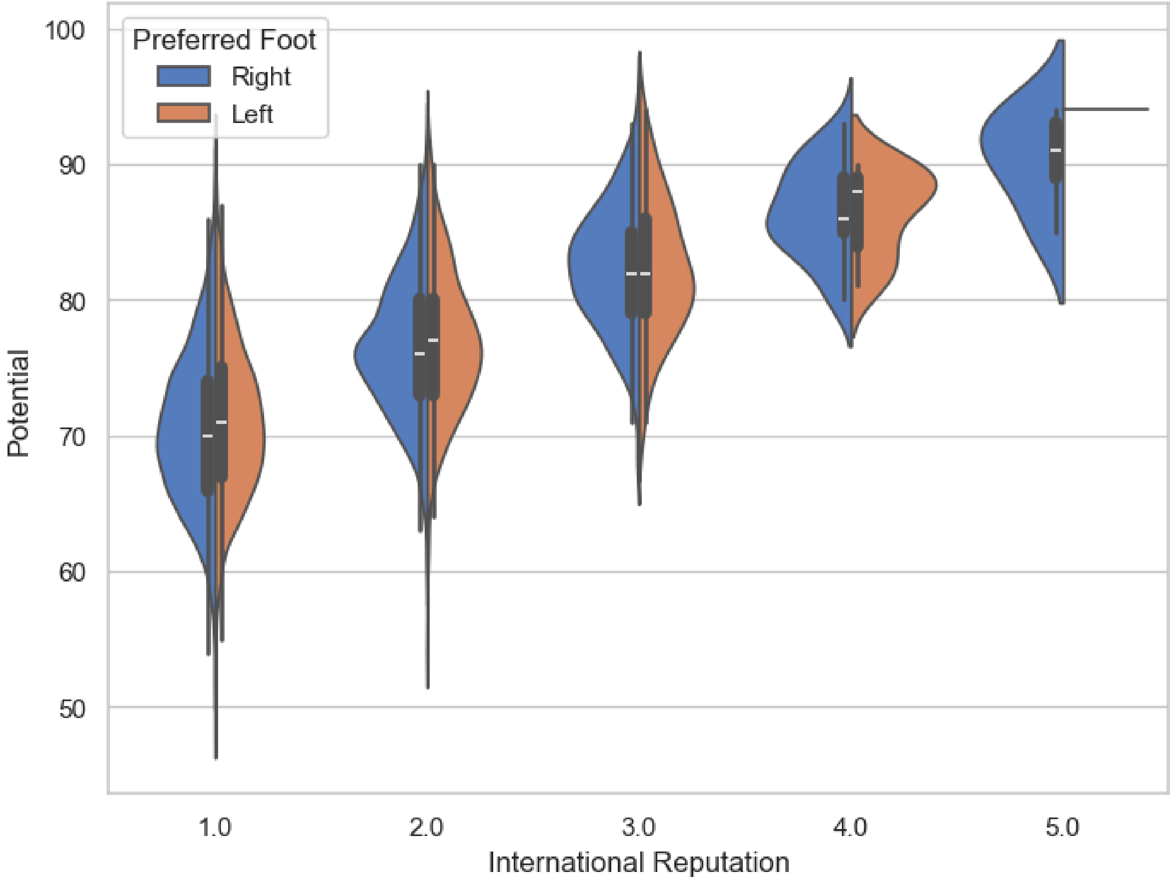
In [52]:

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



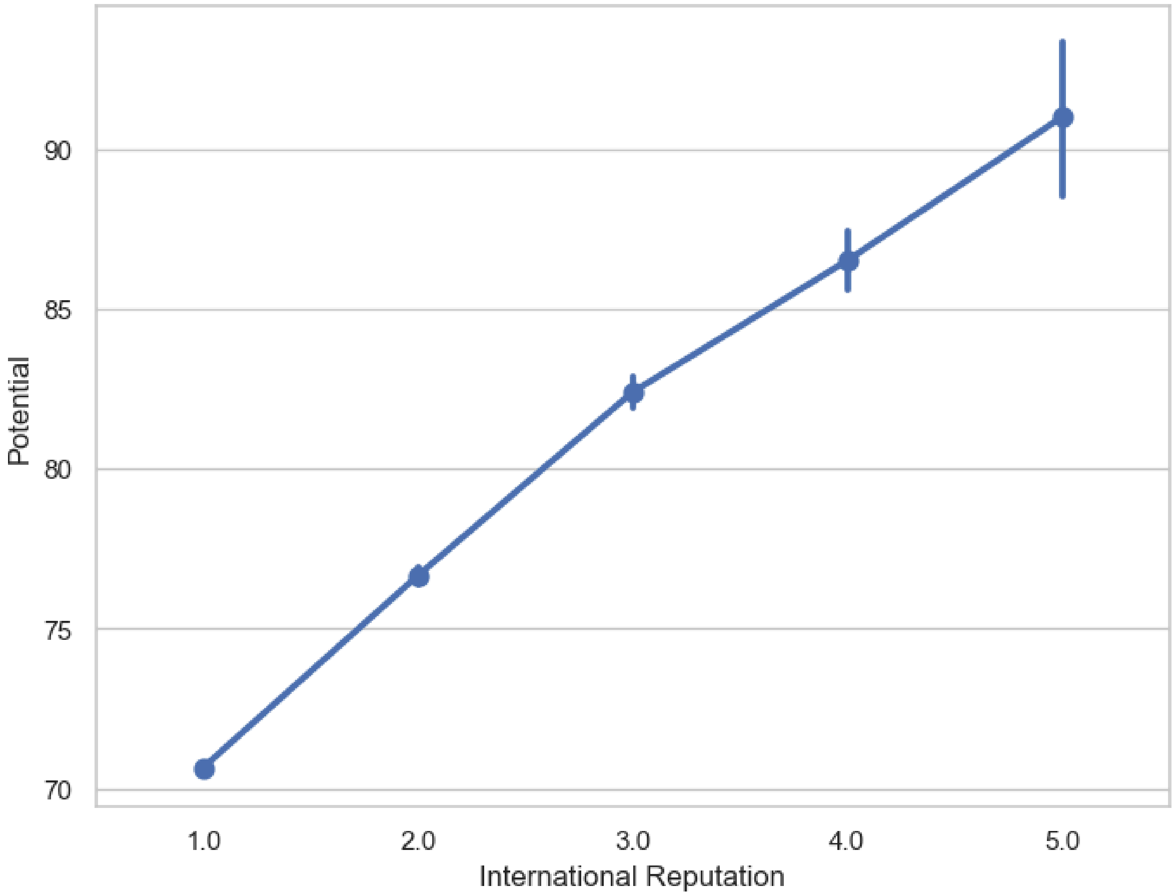
In [53]:

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



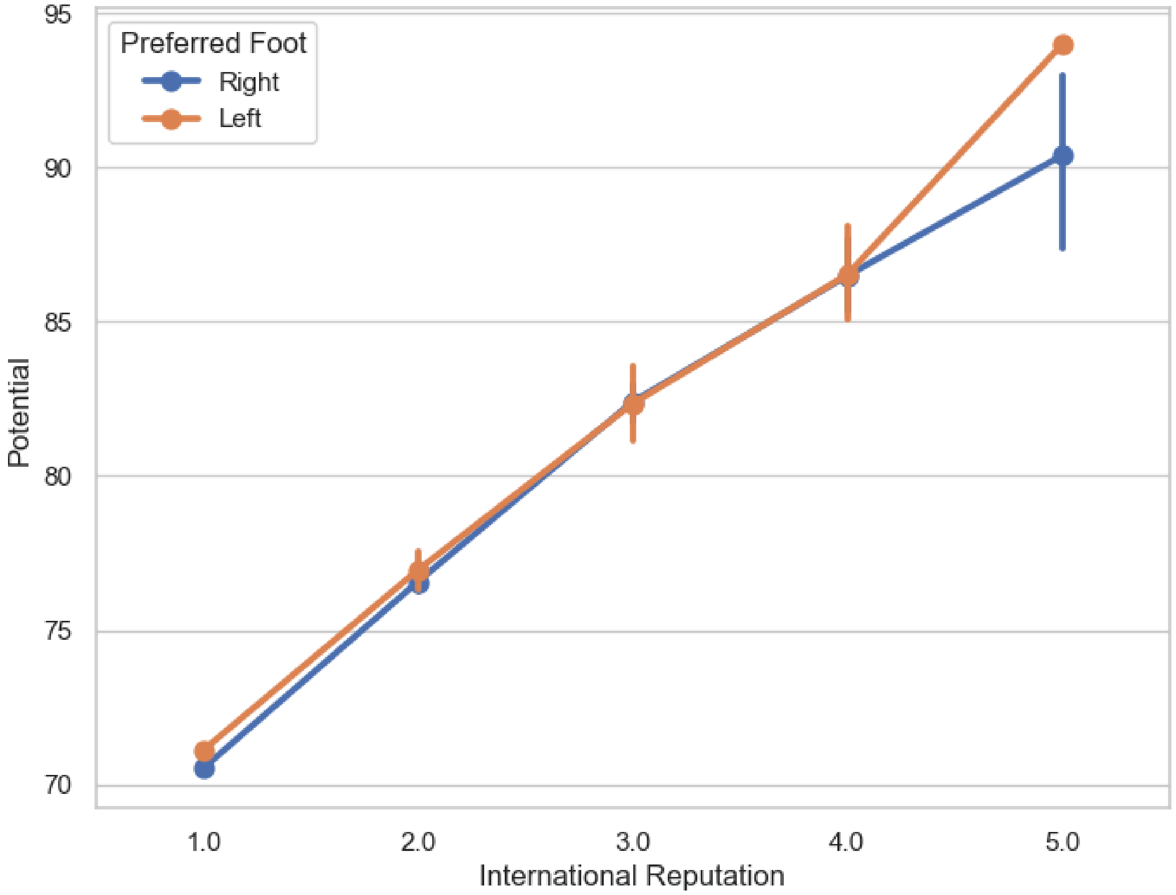
Seaborn Pointplot() Function

In [54]:
```
f, ax = plt.subplots(figsize=(8, 6))
sns.pointplot(x="International Reputation", y="Potential", data=Fifa)
plt.show()
```



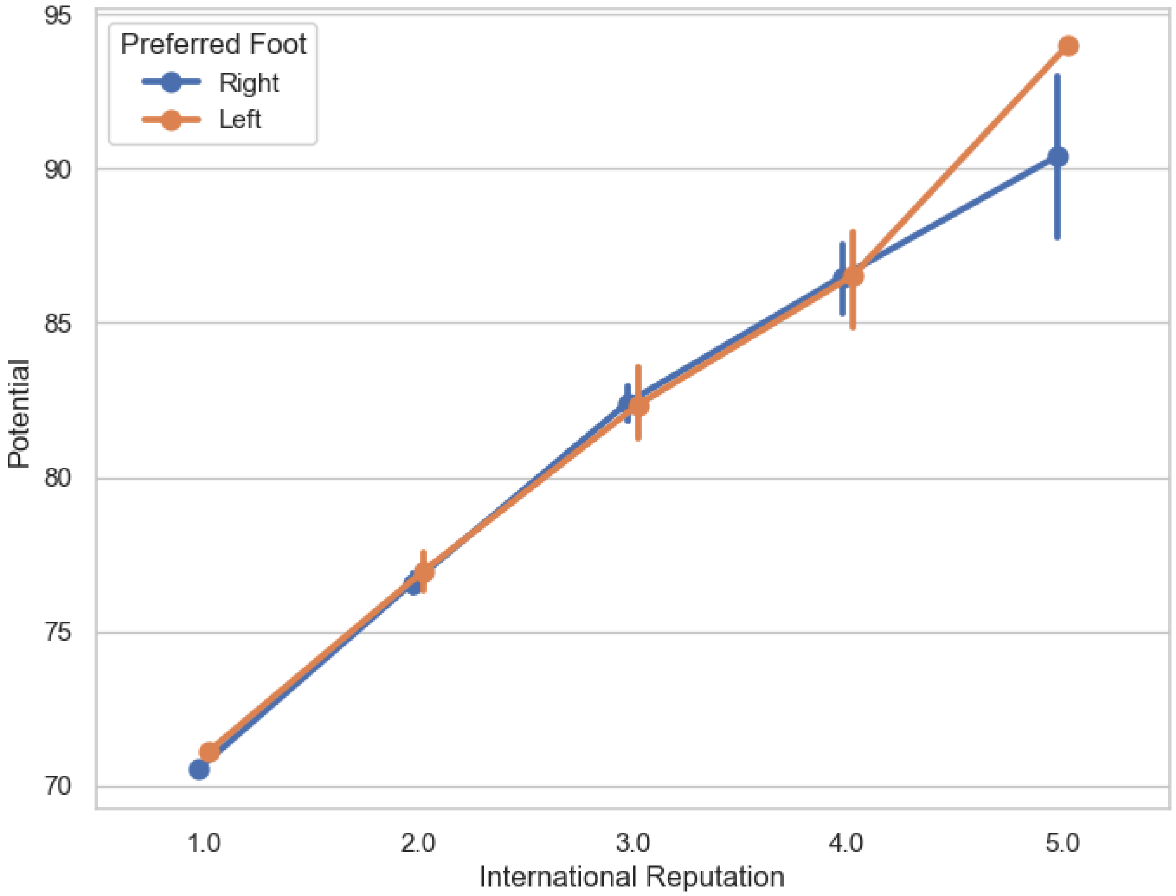
In [55]:

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



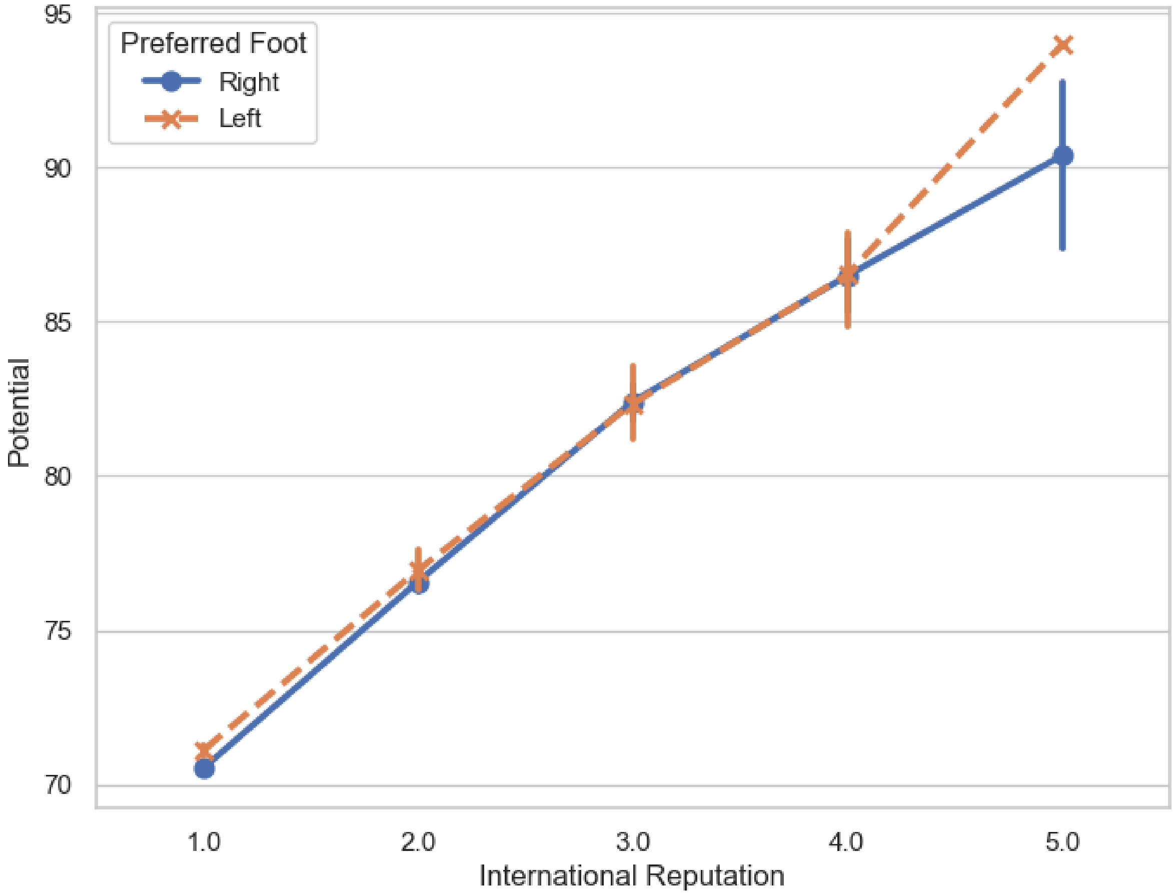
In [56]:

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



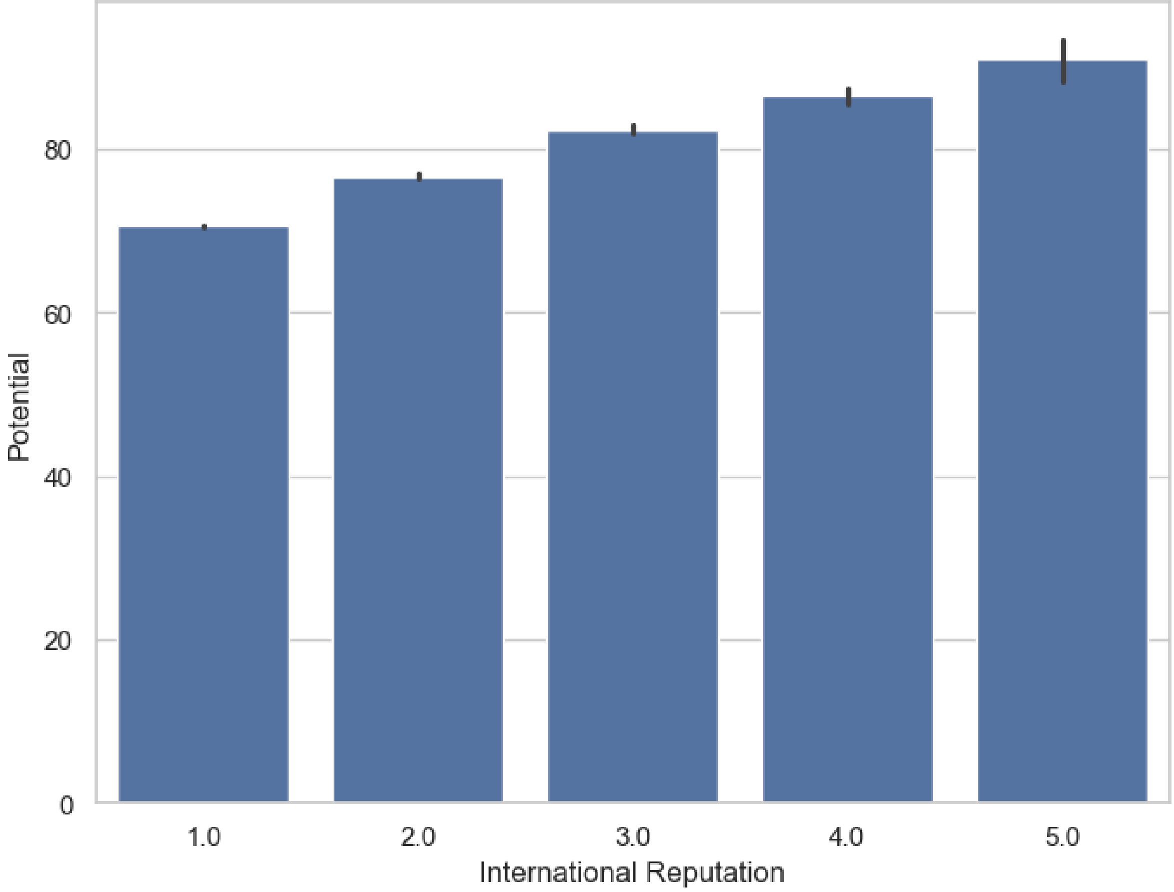
In [57]:

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

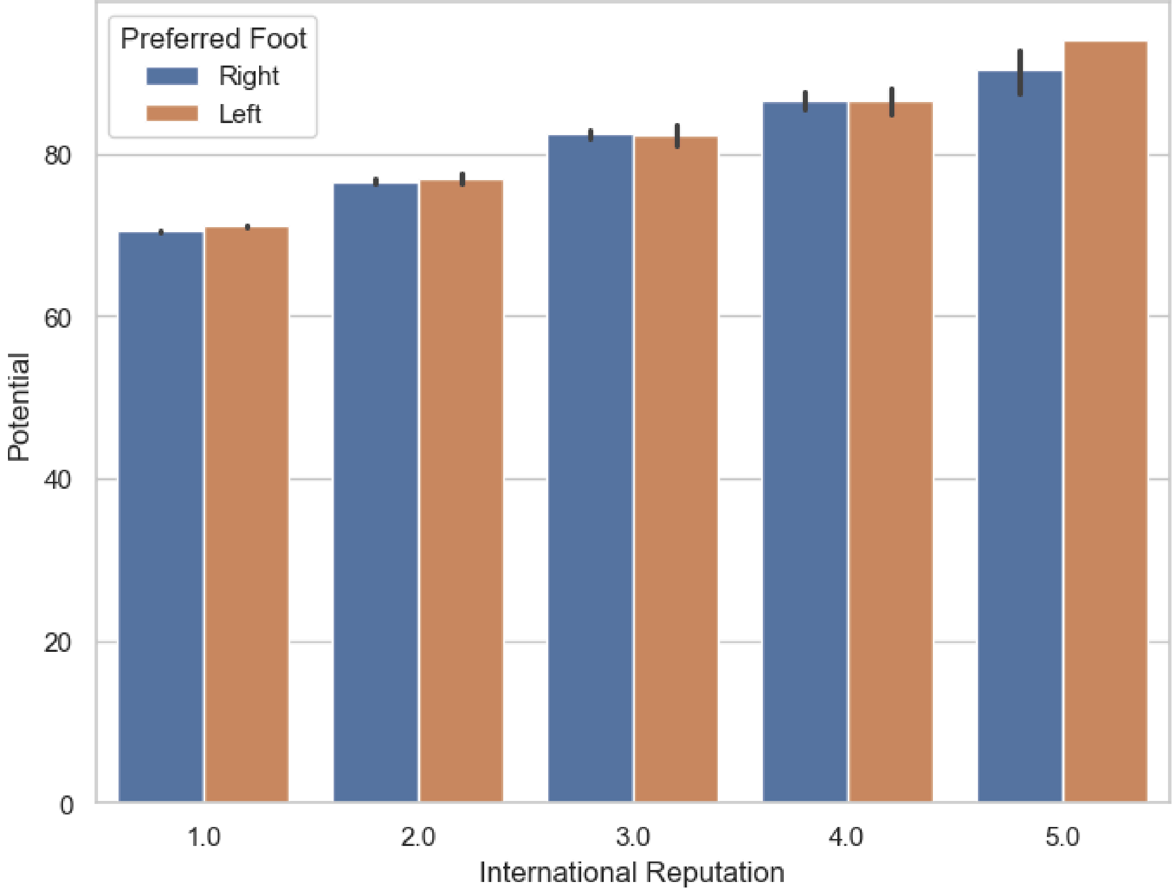


Seaborn Barplot() Function

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

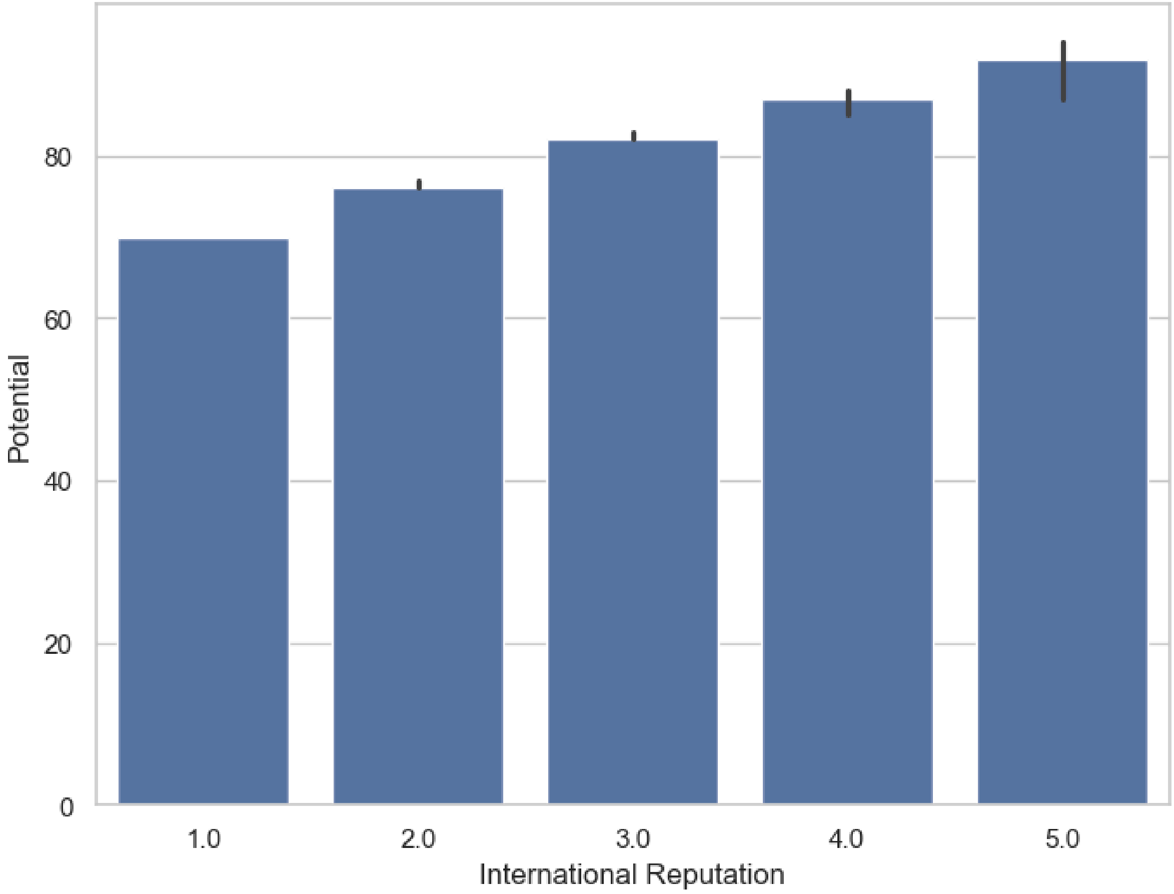


```
In [59]: f, ax = plt.subplots(figsize=(8, 6))
         sns.barplot(x="International Reputation", y="Potential", hue="Preferred Foot", data
         plt.show()
```



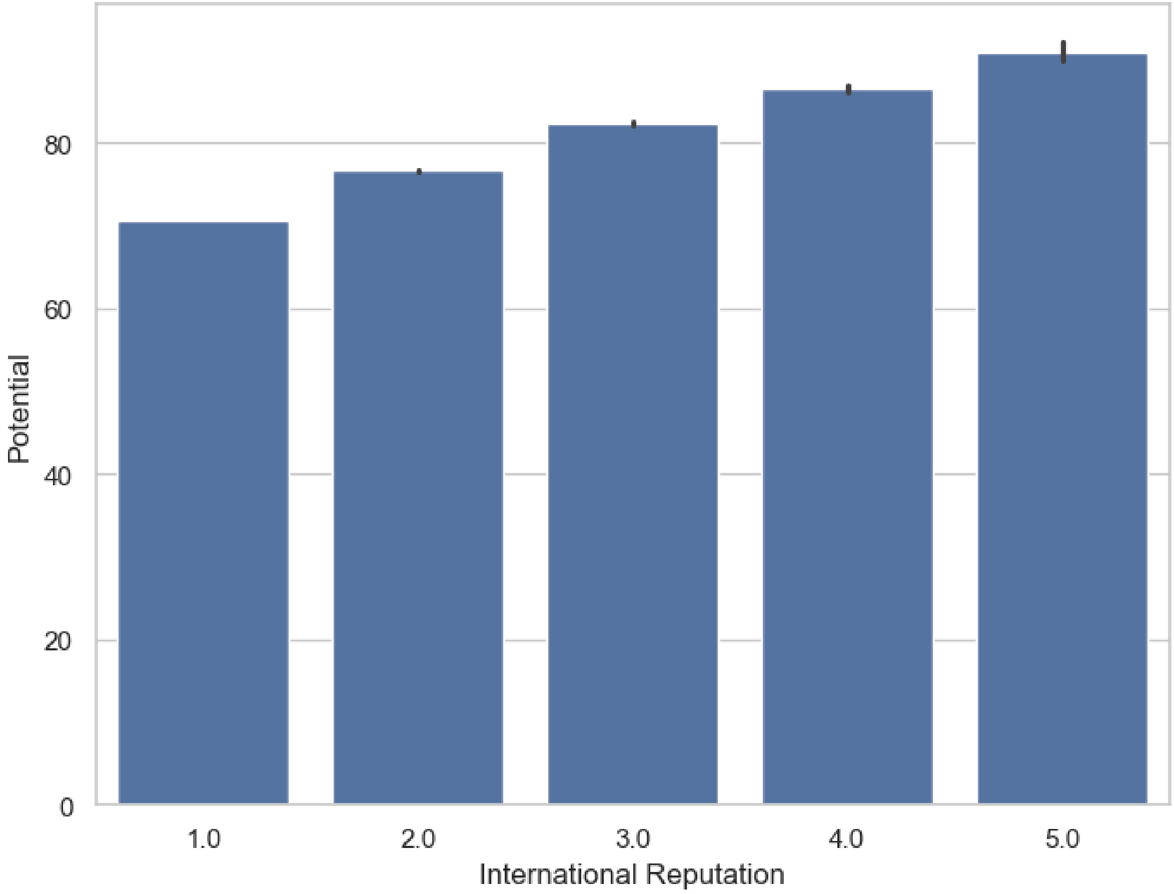
In [60]:

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

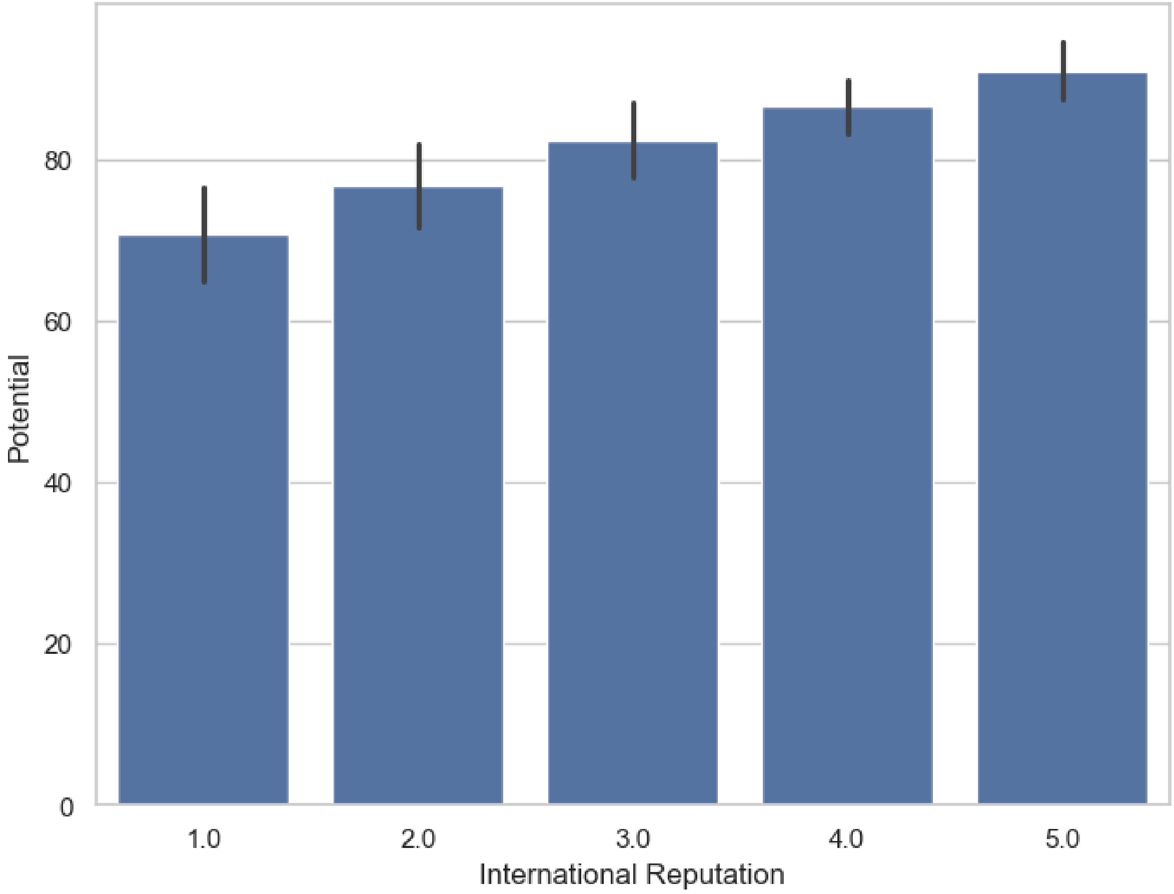


In [62]:

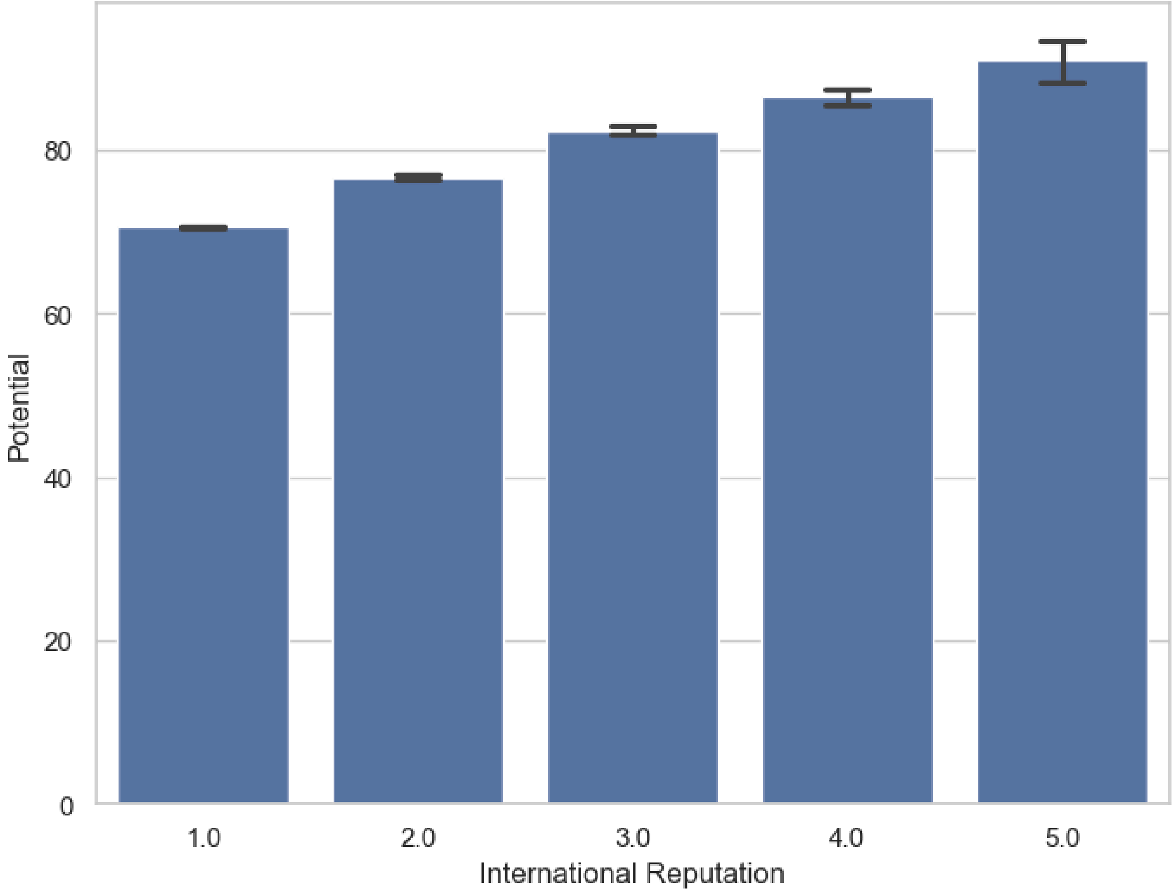
```
f, ax = plt.subplots(figsize=(8, 6))
sns.barplot(x="International Reputation", y="Potential", data=Fifa , ci=68)
plt.show()
```



```
In [63]: f, ax = plt.subplots(figsize=(8, 6))
         sns.barplot(x="International Reputation", y="Potential", data=Fifa, ci="sd")
         plt.show()
```

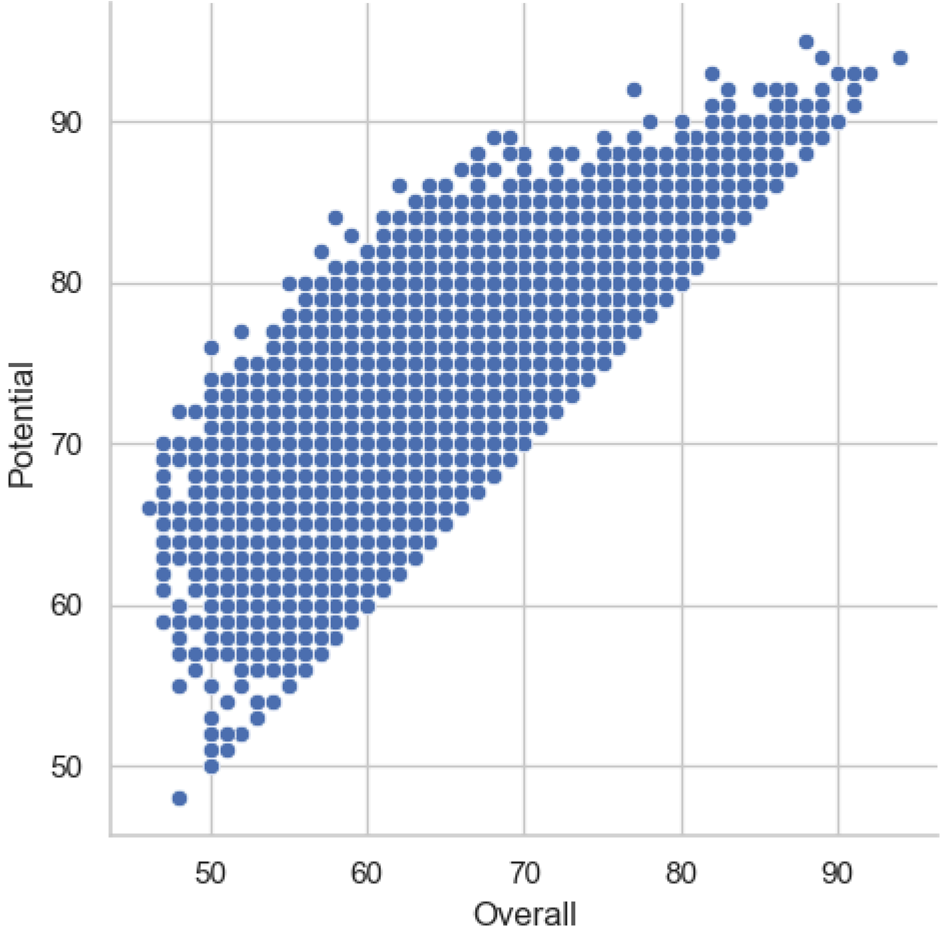


```
In [64]: f, ax = plt.subplots(figsize=(8, 6))
         sns.barplot(x="International Reputation", y="Potential", data=Fifa, capsize=0.2)
         plt.show()
```



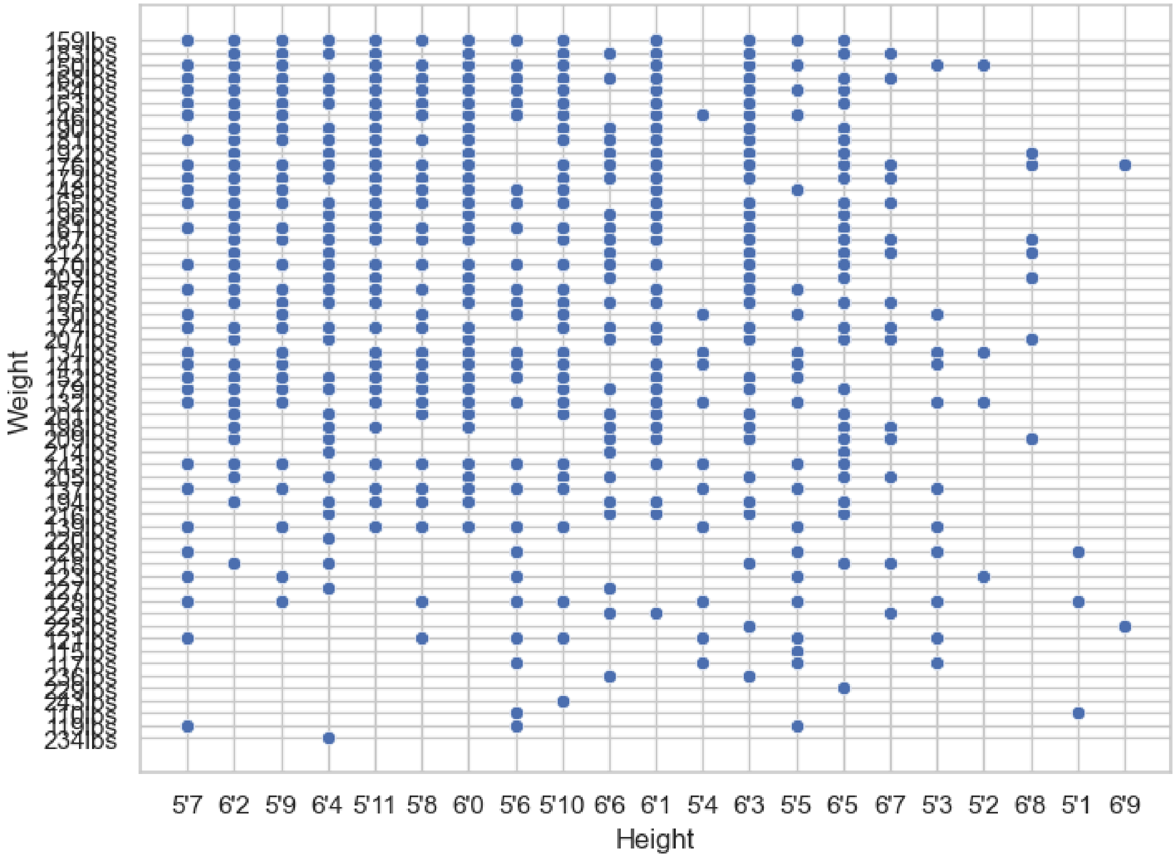
Seaborn replot() Function

```
In [65]: g = sns.relplot(x="Overall", y="Potential", data=Fifa)
```



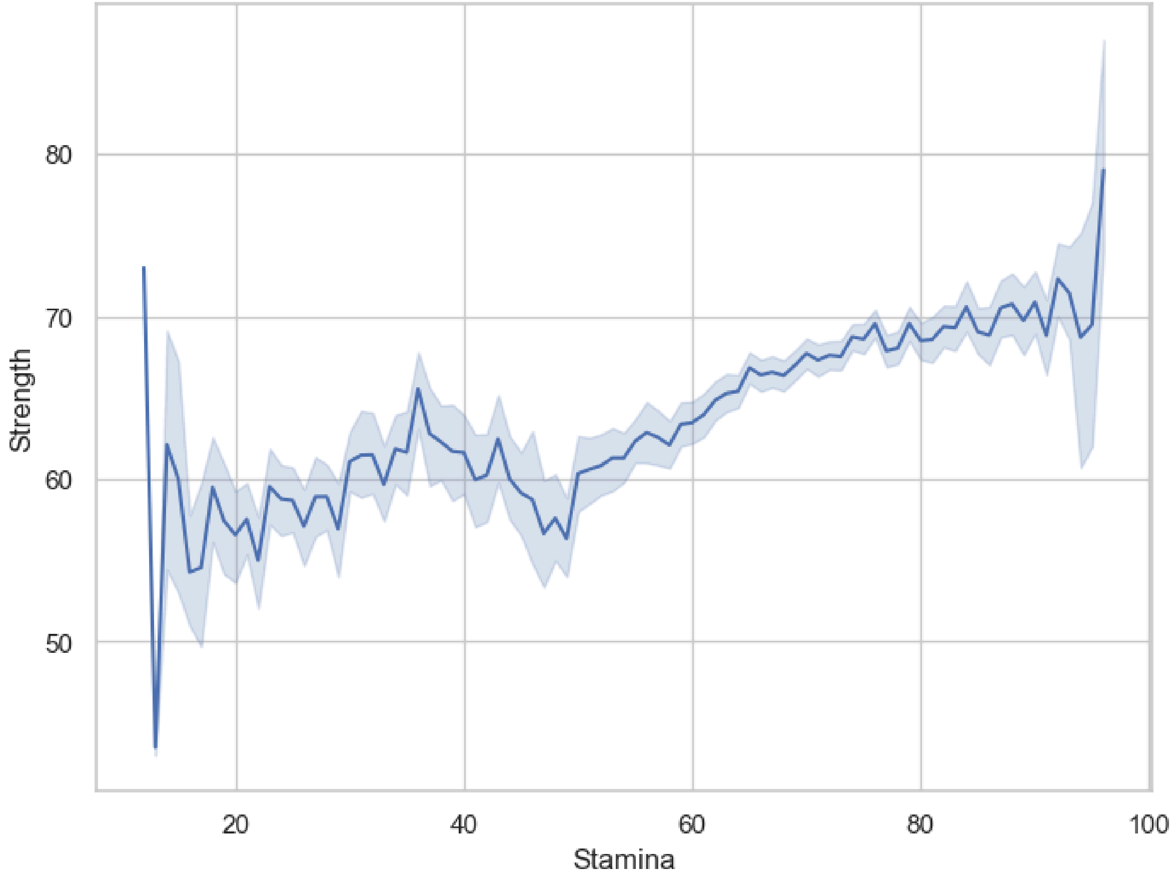
Seaborn Scatterplot() Function

In [66]:
```
f, ax = plt.subplots(figsize=(8, 6))
sns.scatterplot(x="Height", y="Weight", data=Fifa)
plt.show()
```



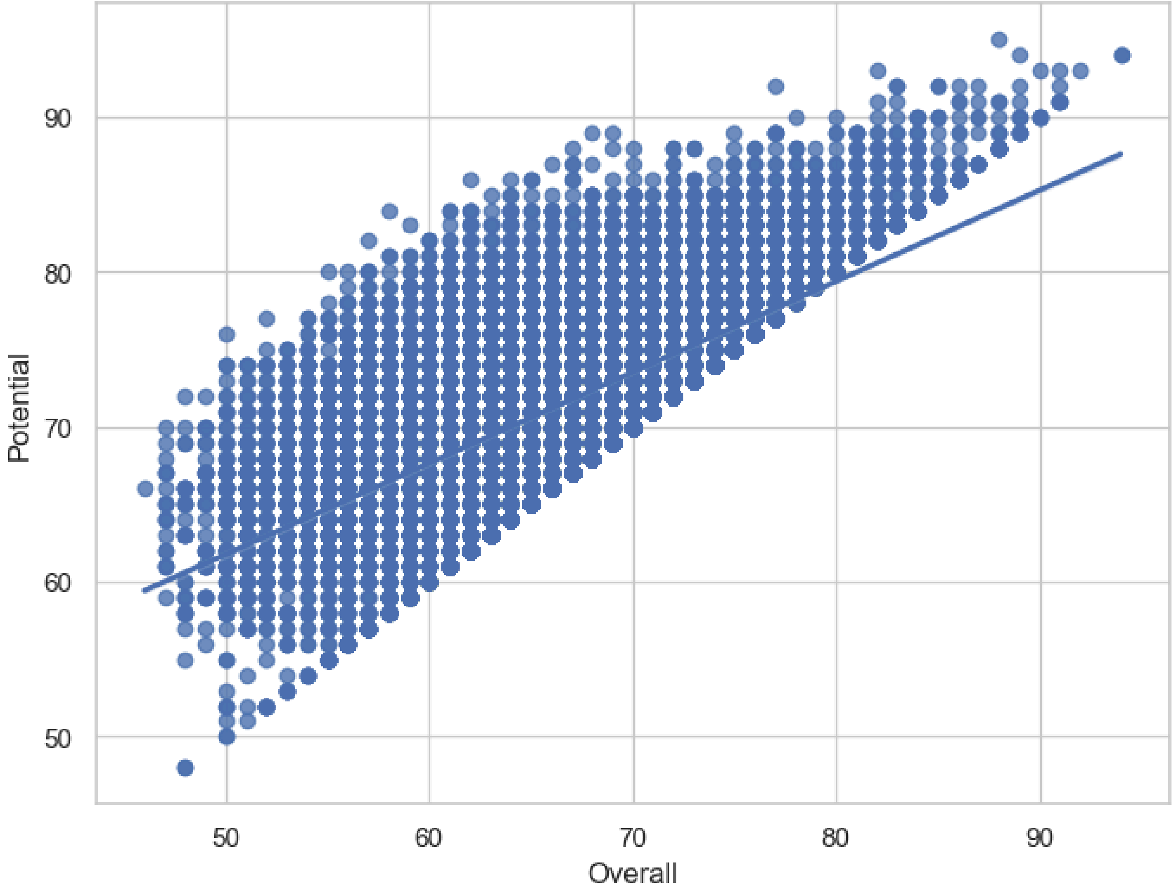
Seaborn lineplot() Function

In [67]:
```
f, ax = plt.subplots(figsize=(8, 6))
ax = sns.lineplot(x="Stamina", y="Strength", data=Fifa)
plt.show()
```

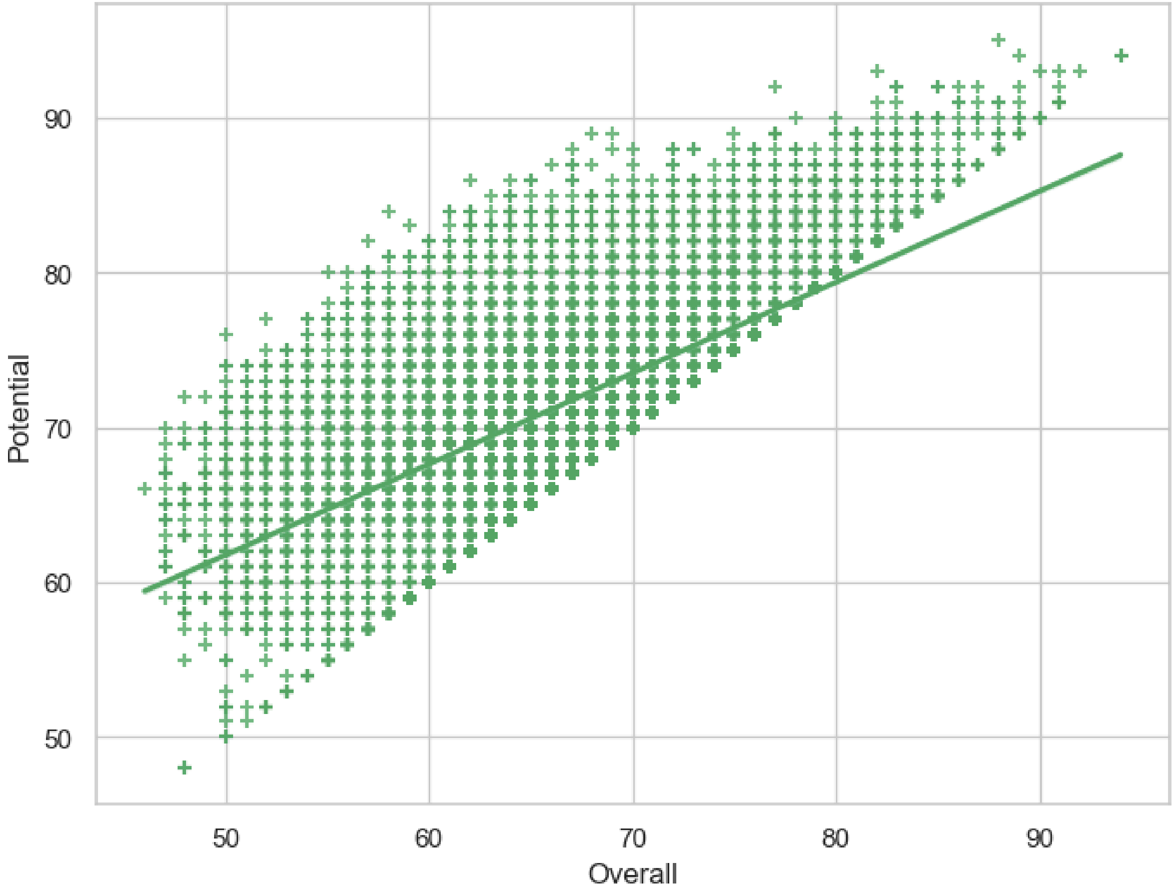


Seaborn regplot() Function

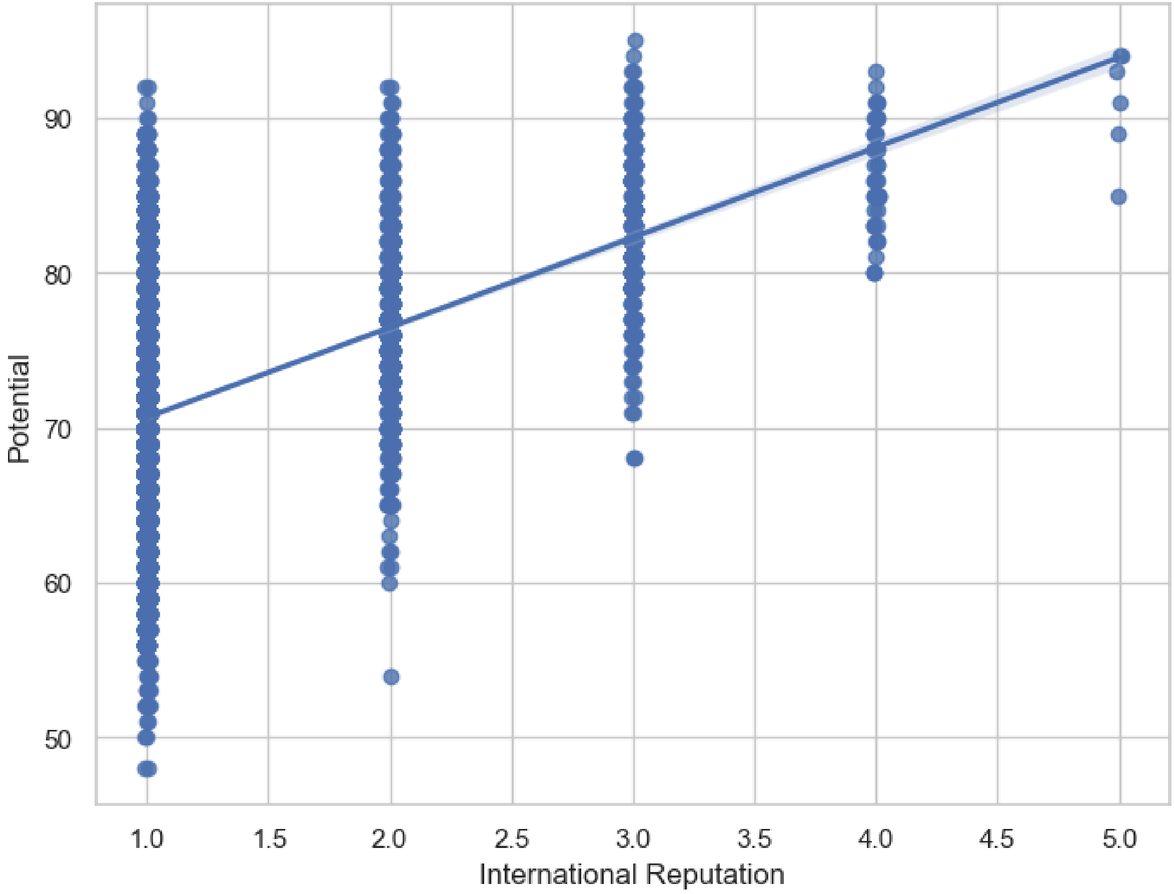
In [68]:
```
f, ax = plt.subplots(figsize=(8, 6))
ax = sns.regplot(x="Overall", y="Potential", data=Fifa)
plt.show()
```



In [69]:
```
f, ax = plt.subplots(figsize=(8, 6))
ax = sns.regplot(x="Overall", y="Potential", data=Fifa, color= "g", marker="+")
plt.show()
```



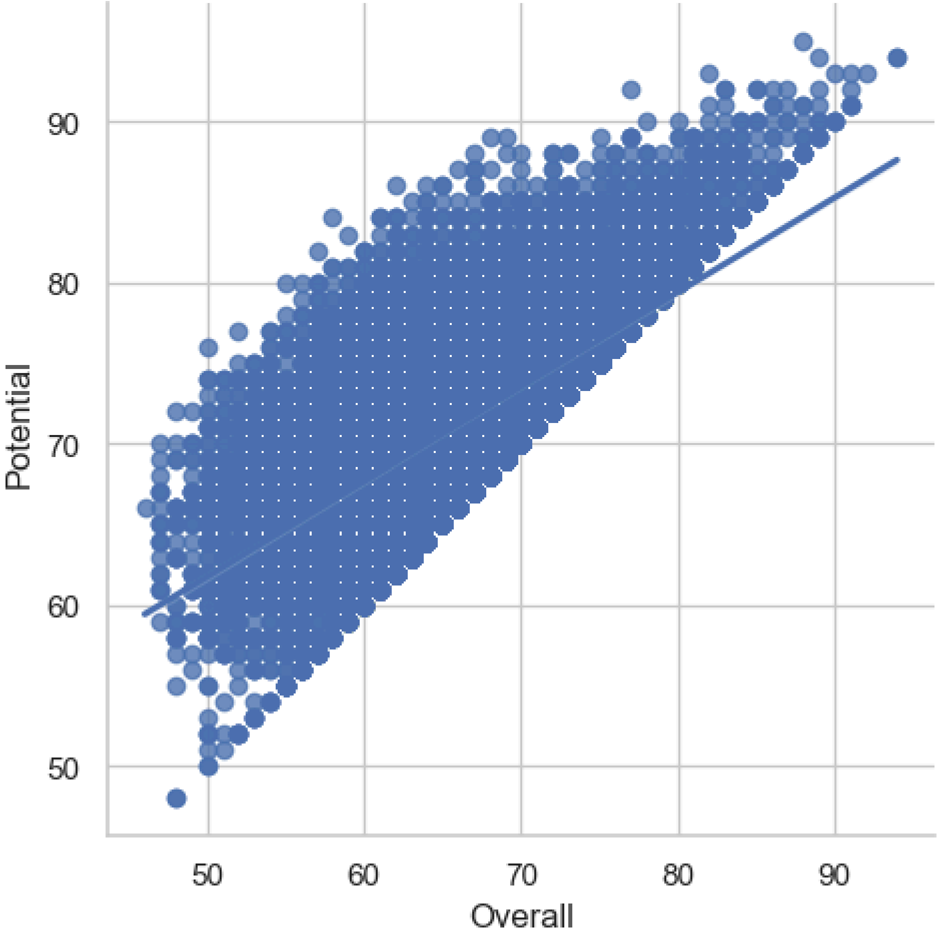
```
In [70]: f, ax = plt.subplots(figsize=(8, 6))
         sns.regplot(x="International Reputation", y="Potential", data=Fifa, x_jitter=.01)
         plt.show()
```



Seaborn lmplot() Function

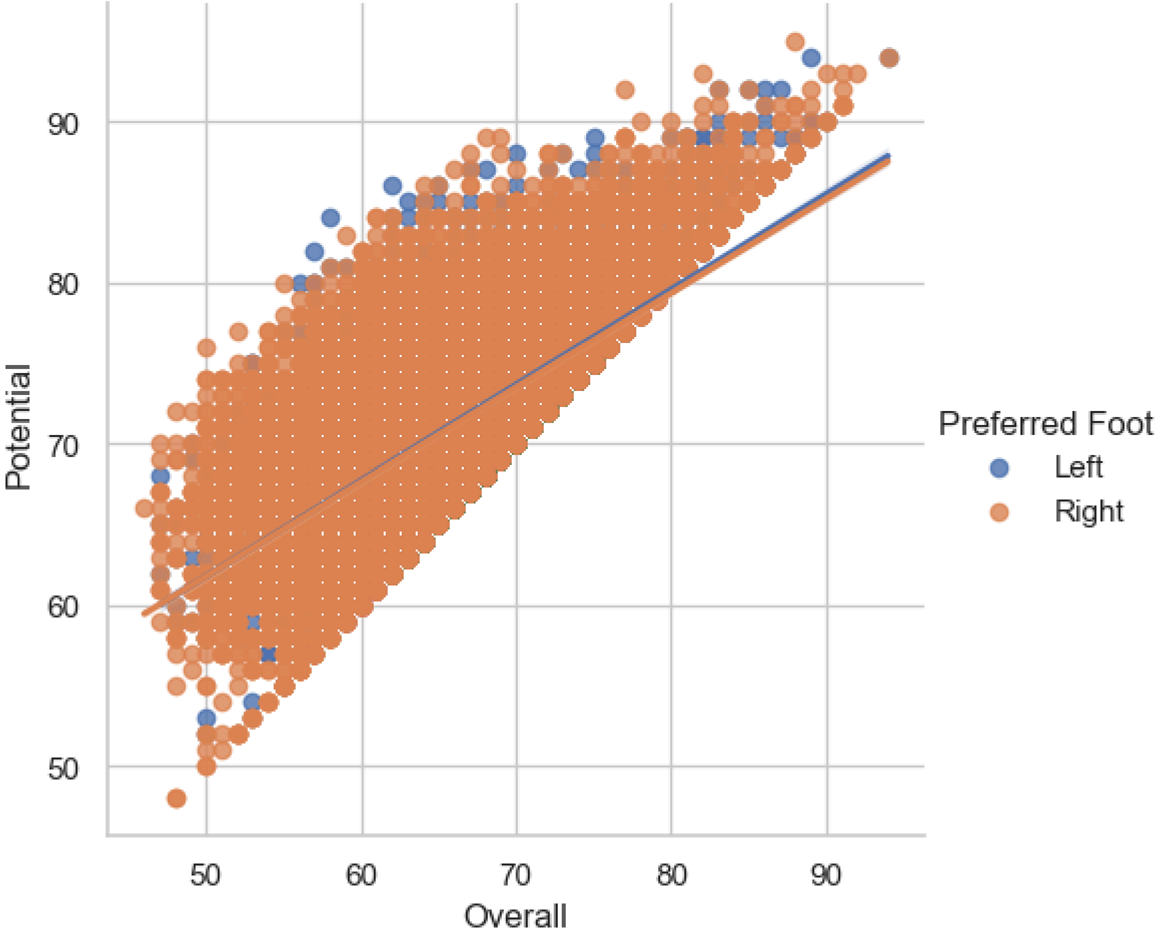
In [71]:

```
g= sns.lmplot(x="Overall", y="Potential", data=Fifa)
```

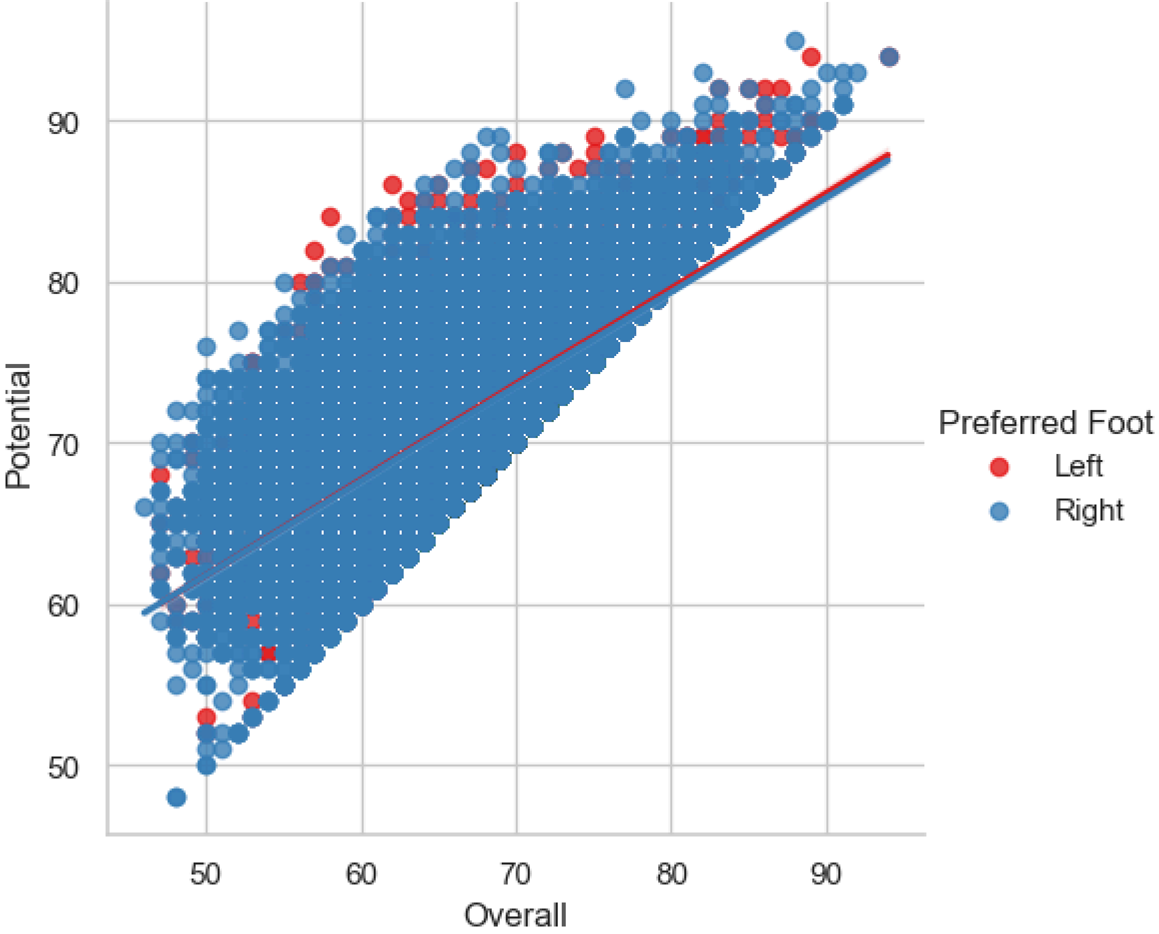


In [74]:

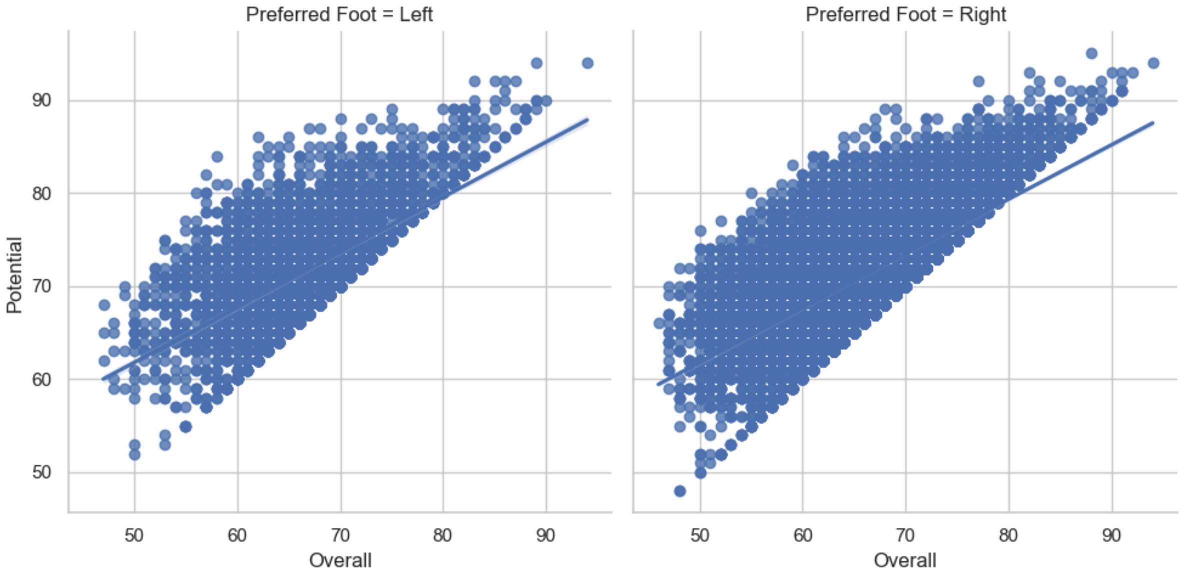
```
g= sns.lmplot(x="Overall", y="Potential", hue="Preferred Foot", data=Fifa)
```



In [75]:
```
g= sns.lmplot(x="Overall", y="Potential", hue="Preferred Foot", data=Fifa, palette=
```

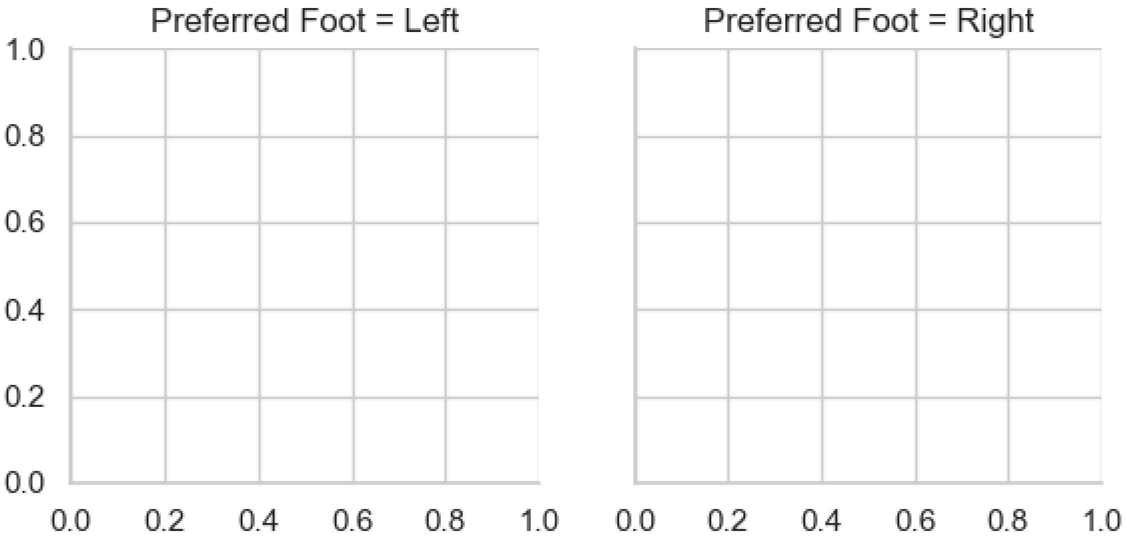


In [76]:
```
g= sns.lmplot(x="Overall", y="Potential", col="Preferred Foot", data=Fifa)
```

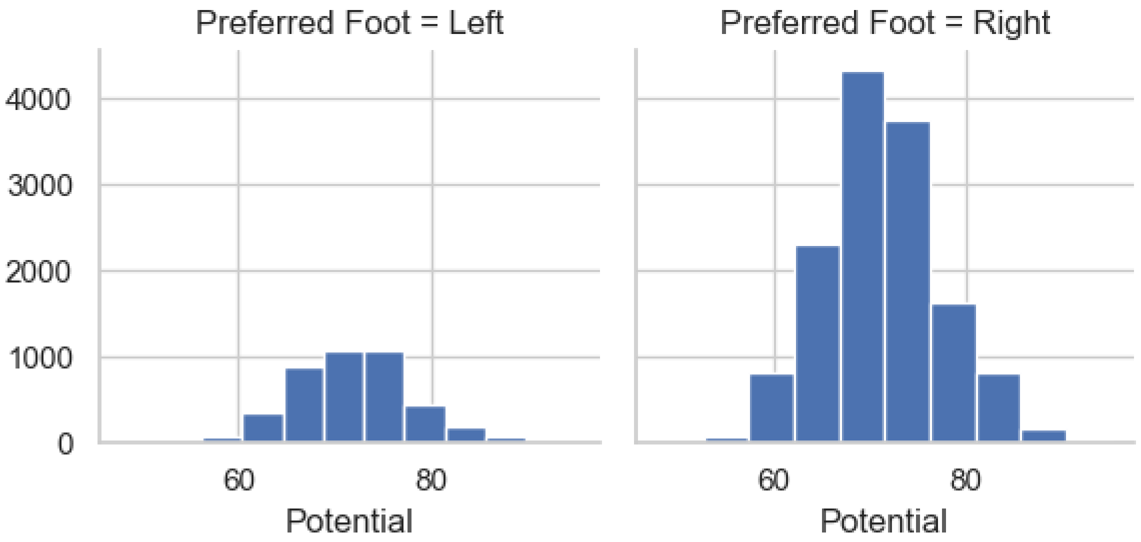


FacetGrid()

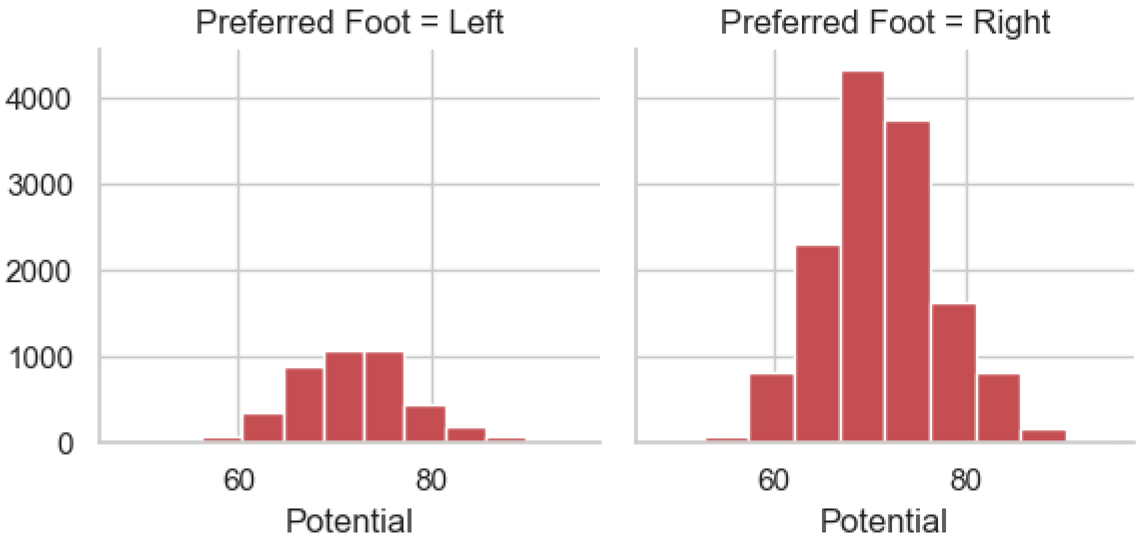
In [77]:
```
g = sns.FacetGrid(Fifa, col="Preferred Foot")
```



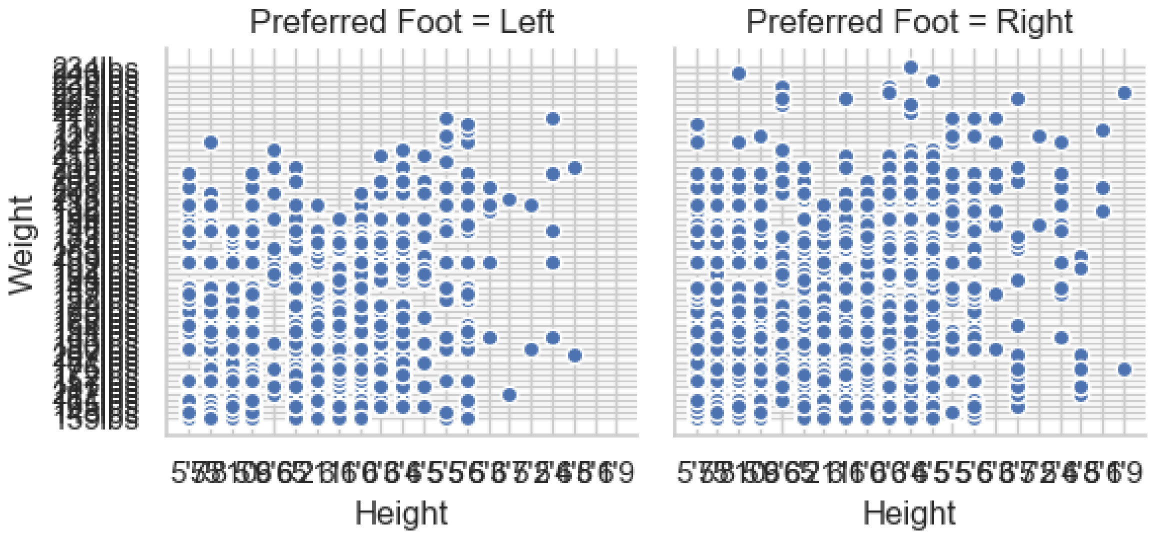
In [78]:
```
g  = sns.FacetGrid(Fifa, col="Preferred Foot")
g = g.map(plt.hist, "Potential")
```



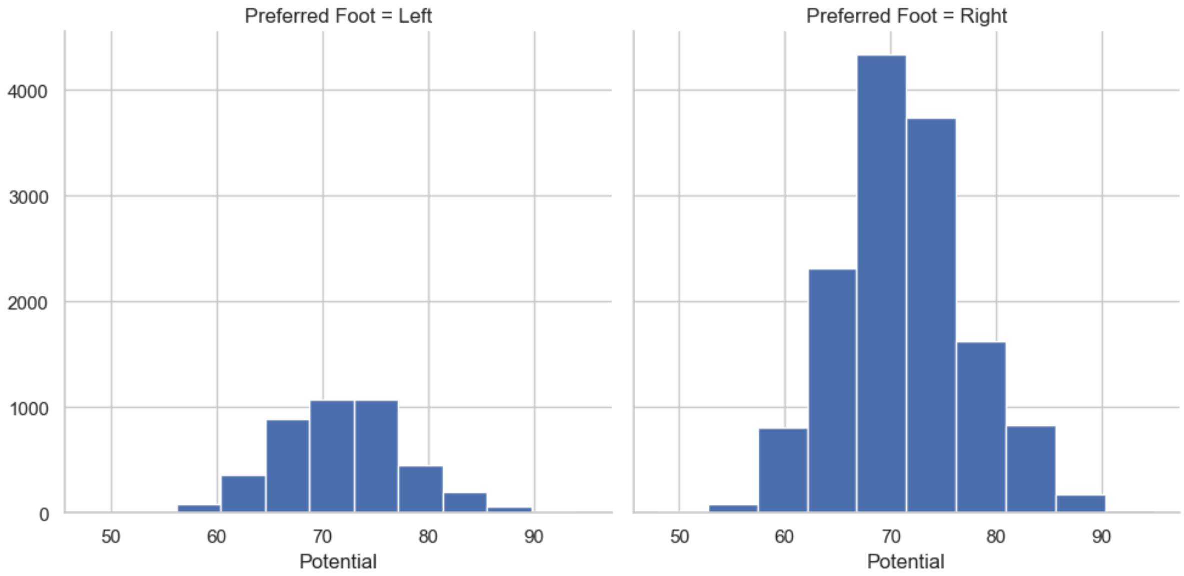
In [80]:
```python
g = sns.FacetGrid(Fifa, col="Preferred Foot")
g = g.map(plt.hist, "Potential", bins=10, color="r")
```



In [81]:
```python
g = sns.FacetGrid(Fifa, col="Preferred Foot")
g = (g.map(plt.scatter, "Height", "Weight", edgecolor="w").add_legend())
```



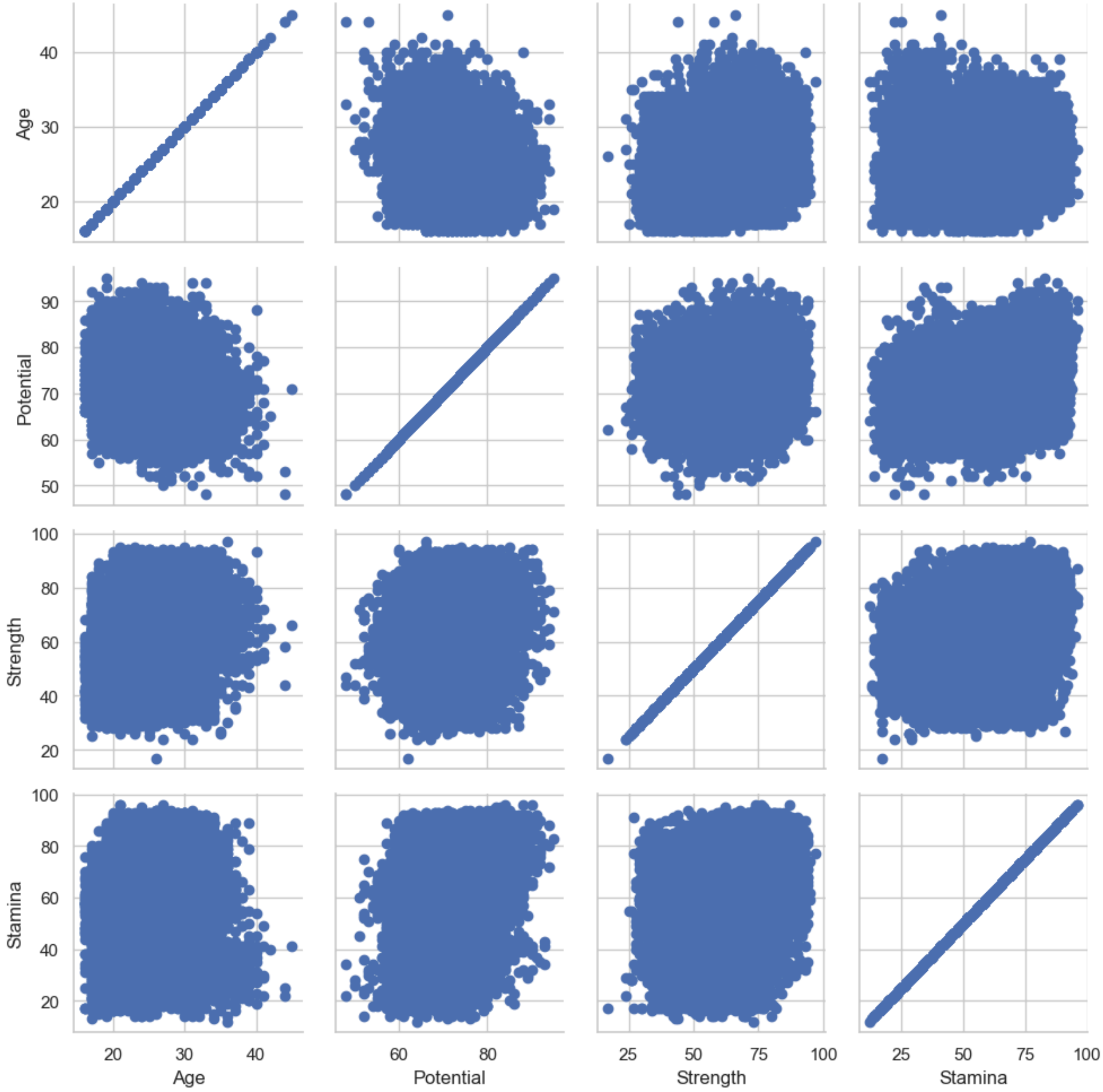
In [82]:
```python
g = sns.FacetGrid(Fifa, col="Preferred Foot", height=5, aspect=1)
g = g.map(plt.hist, "Potential")
```



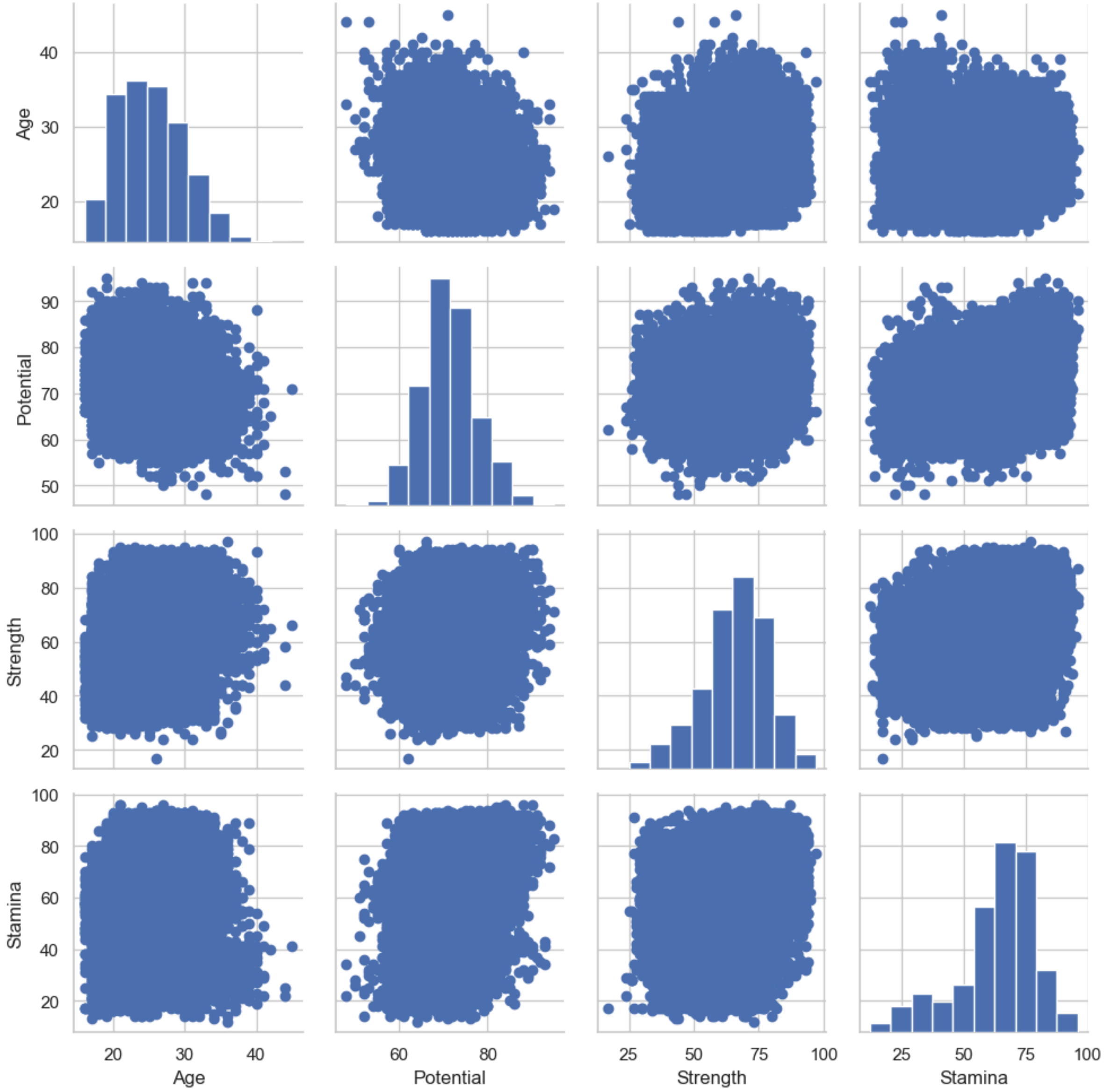
Seaborn Pairgrid() function

In [83]:
```
fifa19_new = Fifa[['Age', 'Potential', 'Strength', 'Stamina', 'Preferred Foot']]
```

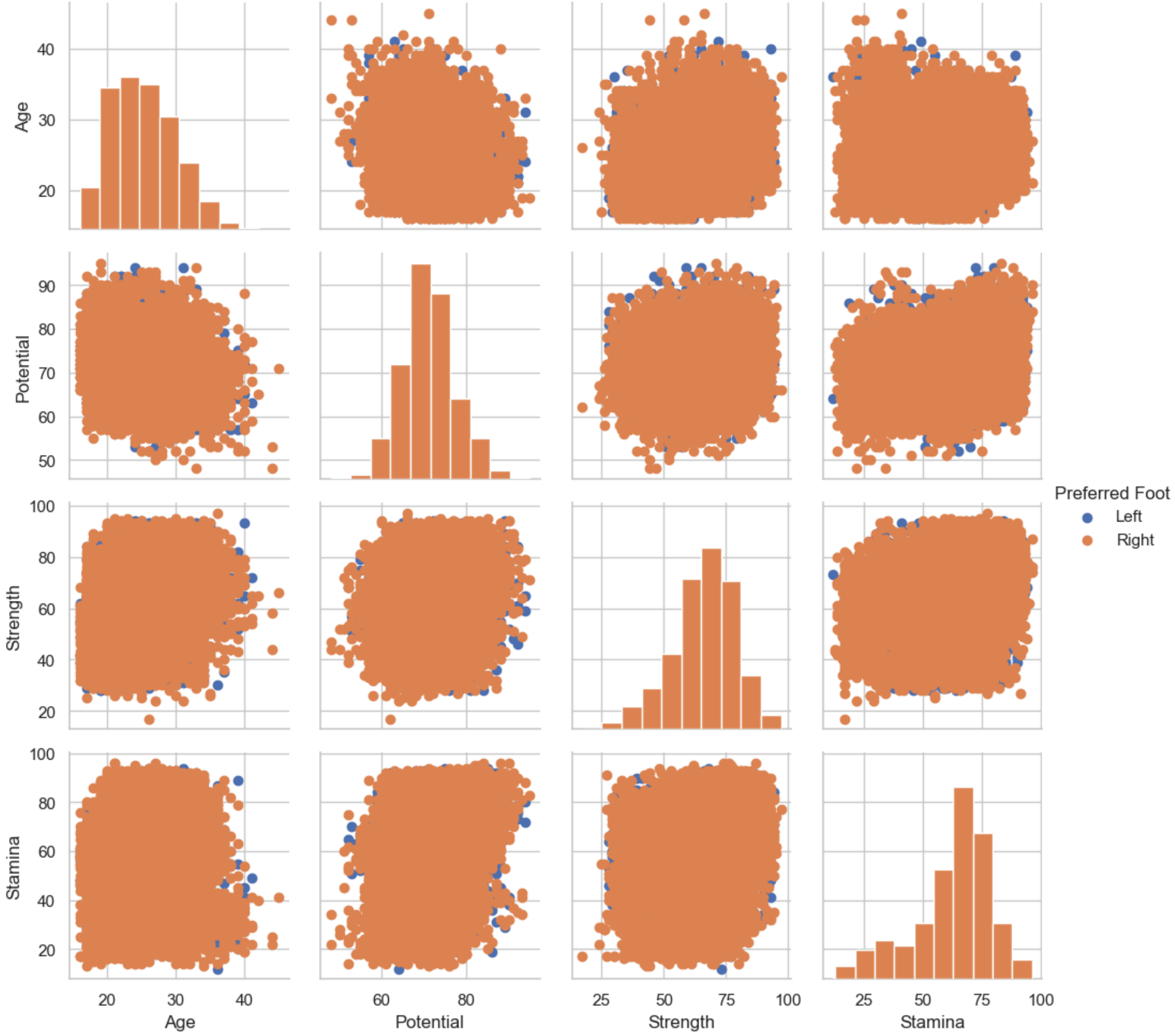
In [85]:
```
g = sns.PairGrid(fifa19_new)
g = g.map(plt.scatter)
```



In [87]:
```
g = sns.PairGrid(fifa19_new)
g = g.map_diag(plt.hist)
g = g.map_offdiag(plt.scatter)
```

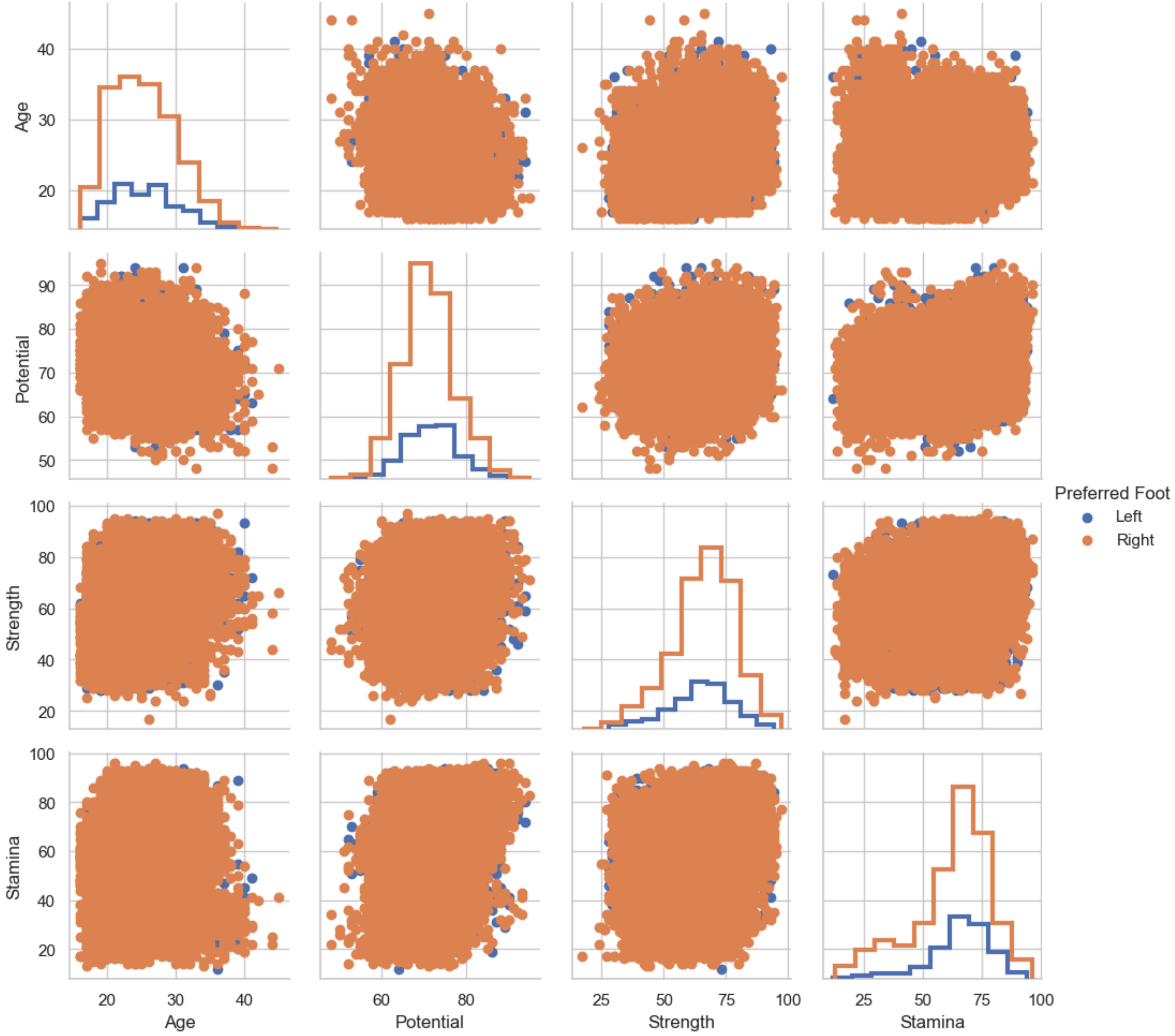


```
In [88]: g = sns.PairGrid(fifa19_new, hue="Preferred Foot")
         g = g.map_diag(plt.hist)
         g = g.map_offdiag(plt.scatter)
         g = g.add_legend()
```

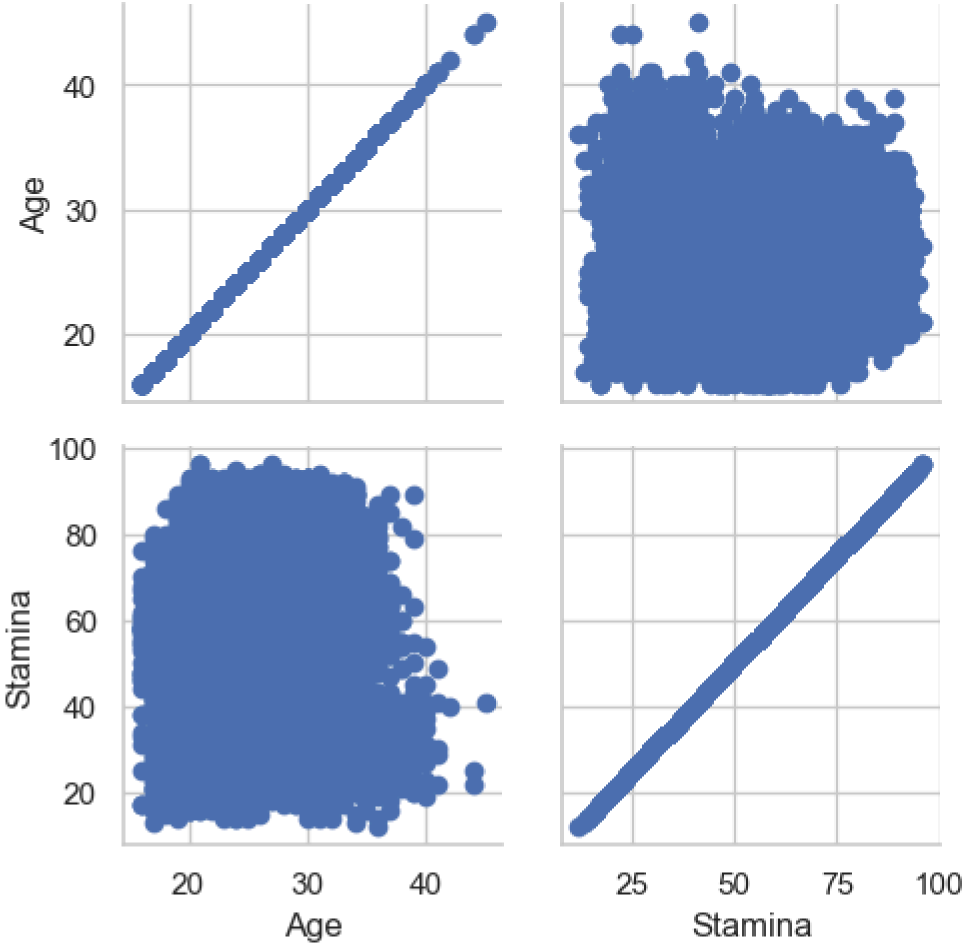


In [89]:

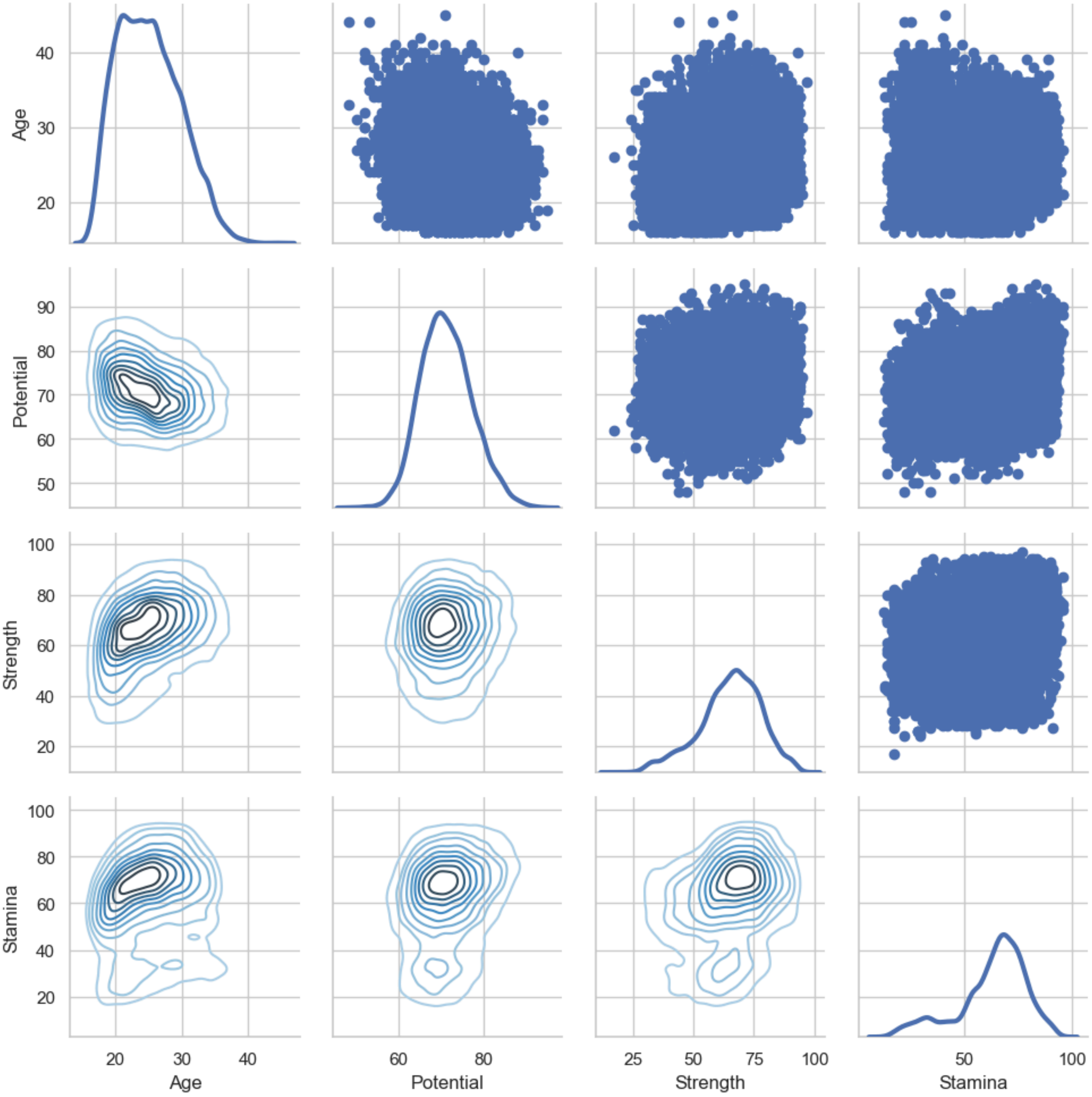
```
g = sns.PairGrid(fifa19_new, hue="Preferred Foot")
g = g.map_diag(plt.hist, histtype="step", linewidth=3)
g = g.map_offdiag(plt.scatter)
g = g.add_legend()
```



```
In [90]: g = sns.PairGrid(fifa19_new, vars=['Age', 'Stamina'])
         g = g.map(plt.scatter)
```

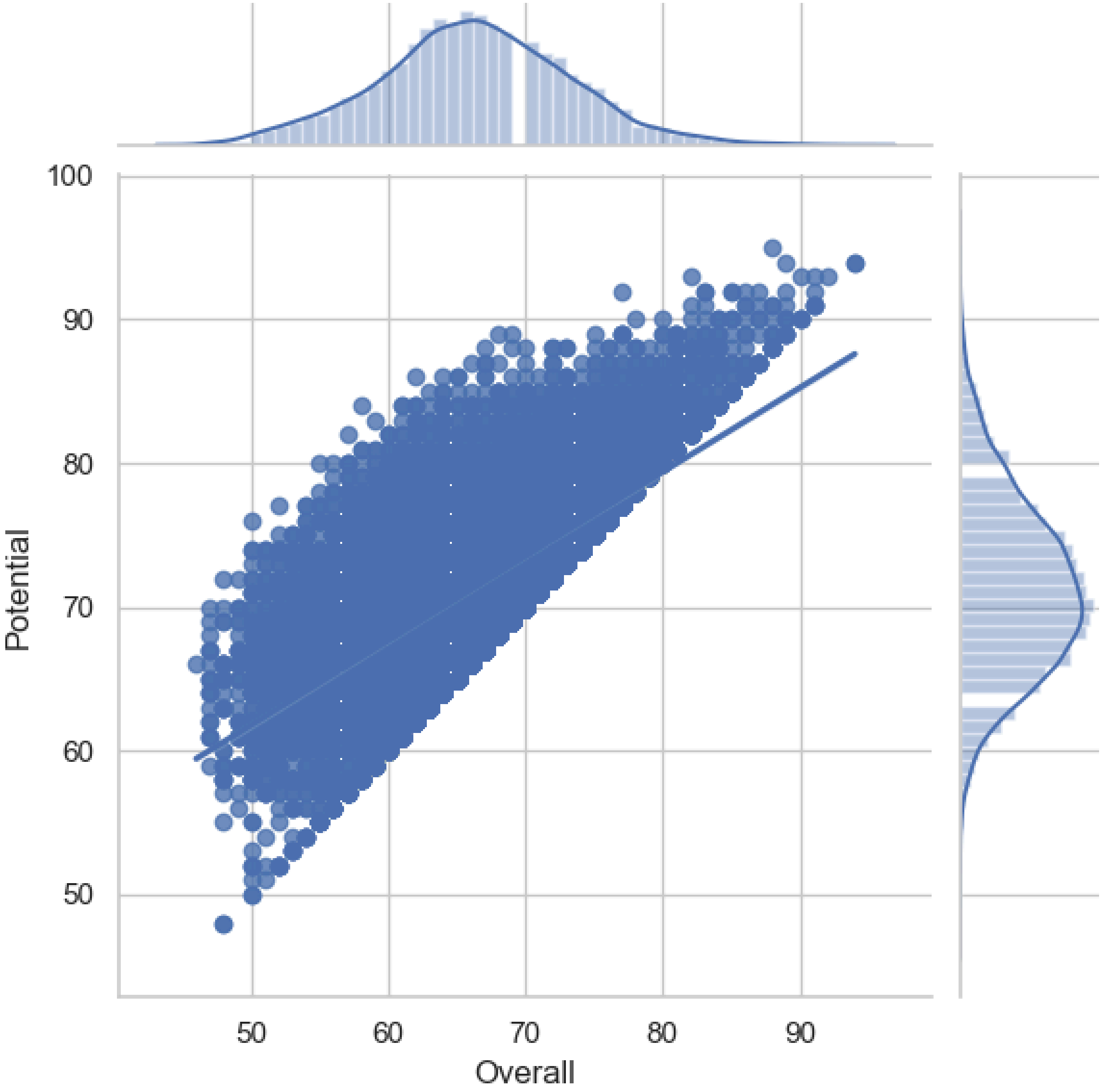


```
In [91]: g = sns.PairGrid(fifa19_new)
         g = g.map_upper(plt.scatter)
         g = g.map_lower(sns.kdeplot, cmap="Blues_d")
         g = g.map_diag(sns.kdeplot, lw=3, legend=False)
```

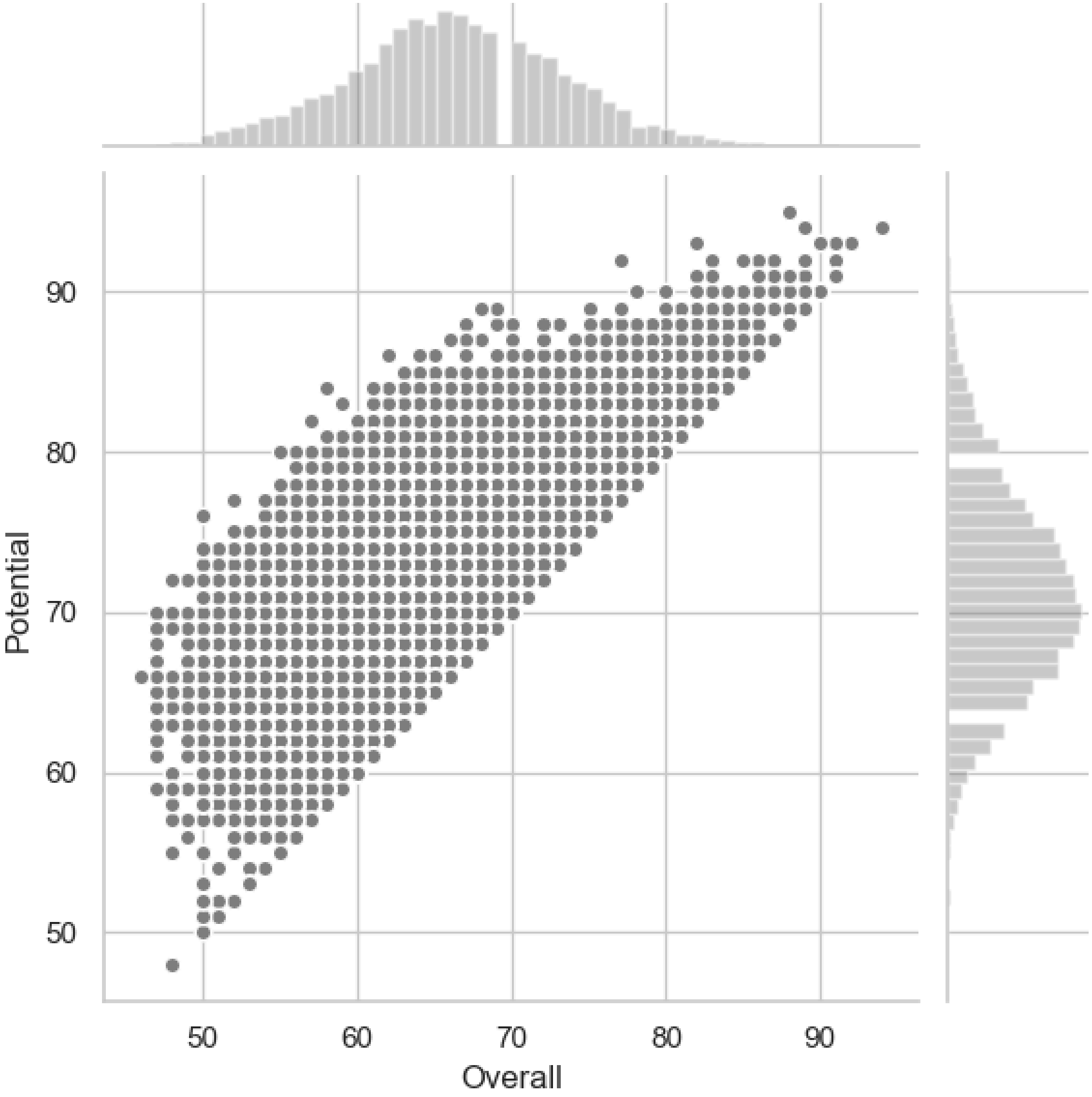


Seaborn Jointgrid() function

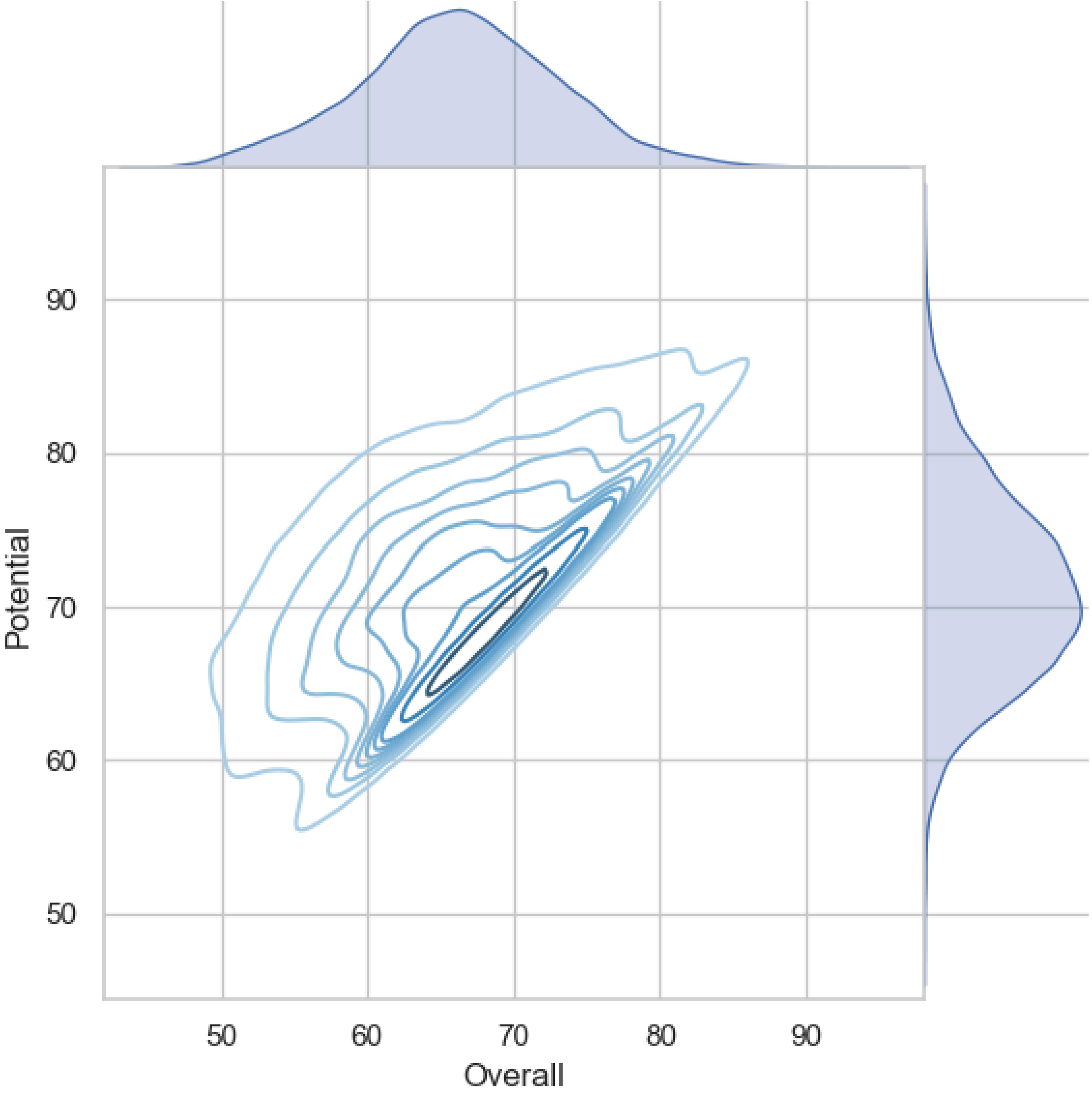
In [93]:
```
g = sns.JointGrid(x="Overall", y="Potential", data=Fifa)
g = g.plot(sns.regplot, sns.distplot)
```



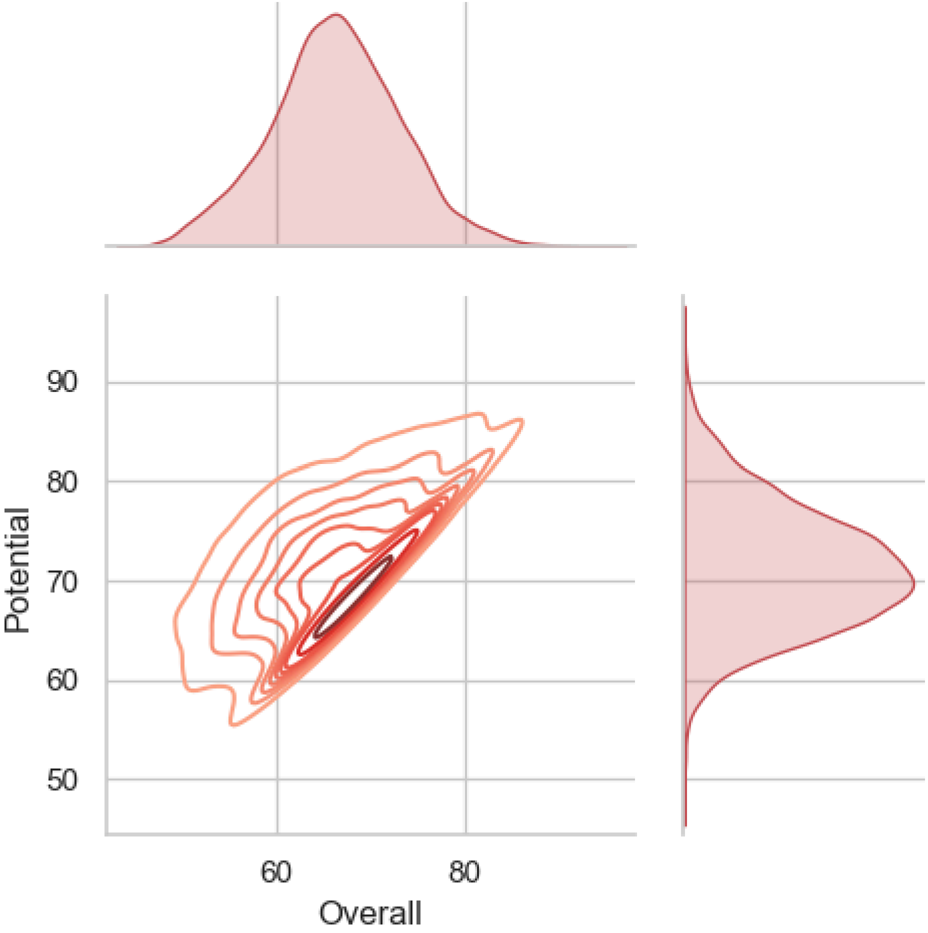
In [94]:
```
g = sns.JointGrid(x="Overall", y="Potential", data=Fifa)
g = g.plot_joint(plt.scatter, color=".5", edgecolor="white")
g = g.plot_marginals(sns.distplot, kde=False, color=".5")
```



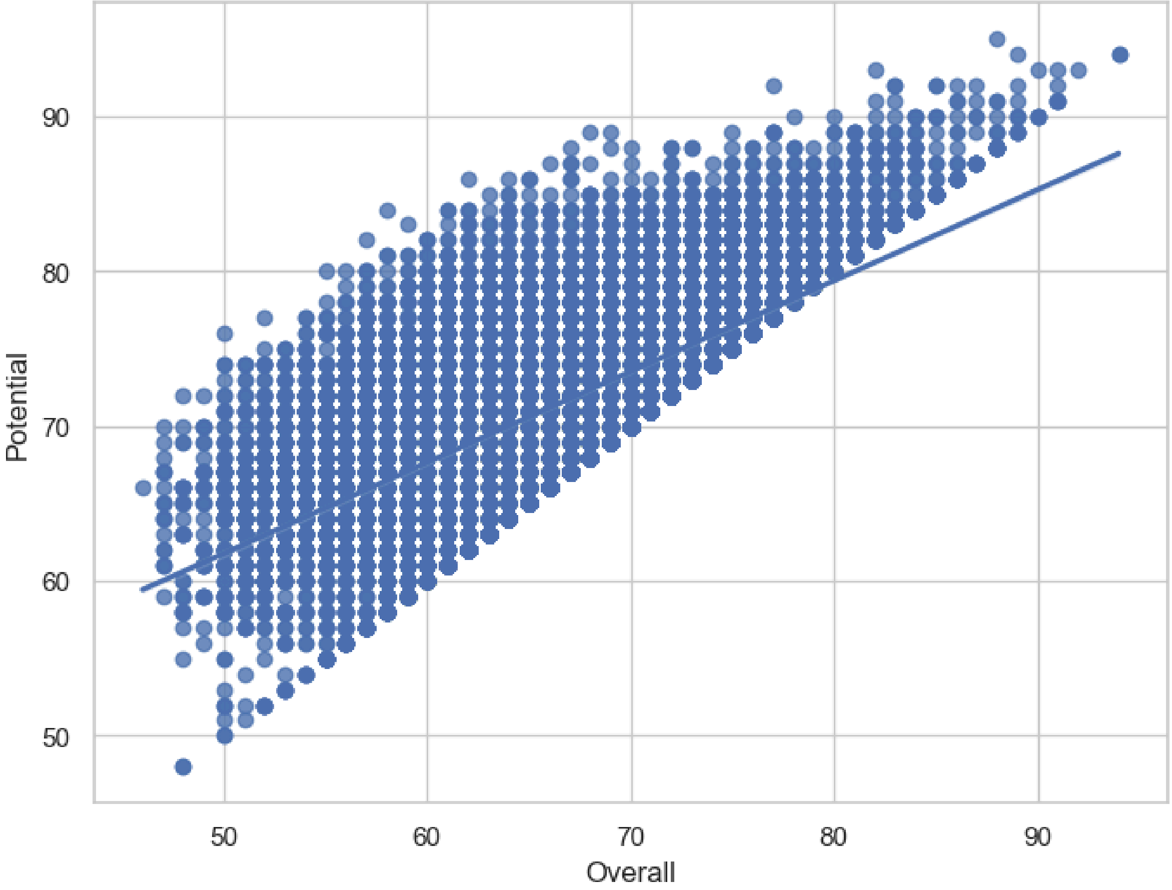
```
In [96]: g= sns.JointGrid(x="Overall", y="Potential", data=Fifa, space=0)
         g = g.plot_joint(sns.kdeplot, cmap="Blues_d")
         g = g.plot_marginals(sns.kdeplot, shade=True)
```



```
In [97]: 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)
```

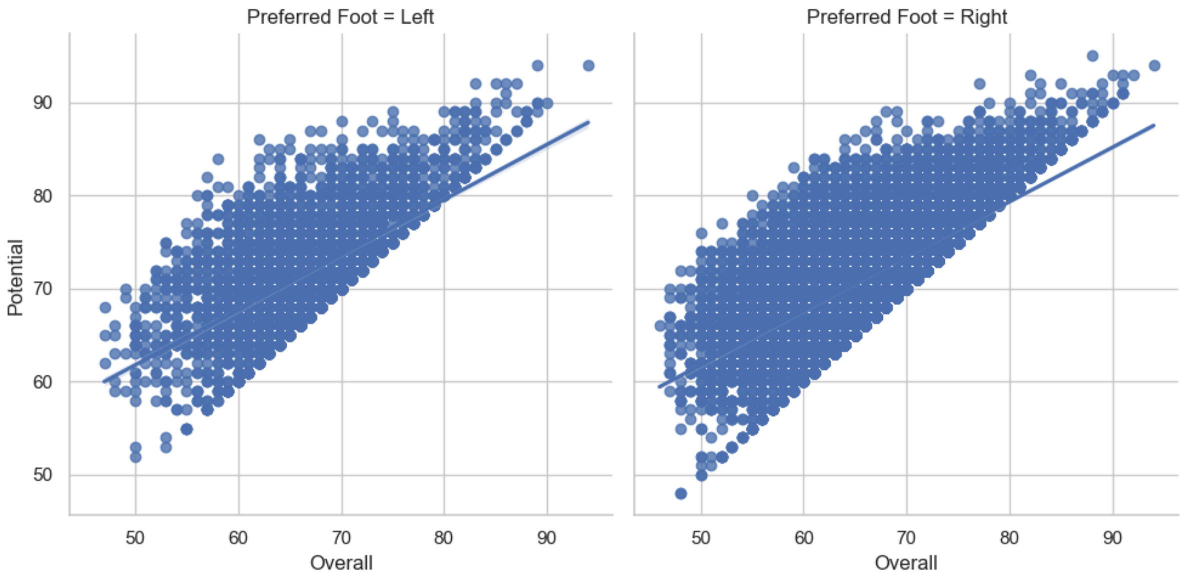


In [98]:
```
f, ax = plt.subplots(figsize=(8, 6))
ax = sns.regplot(x="Overall", y="Potential", data=Fifa);
```



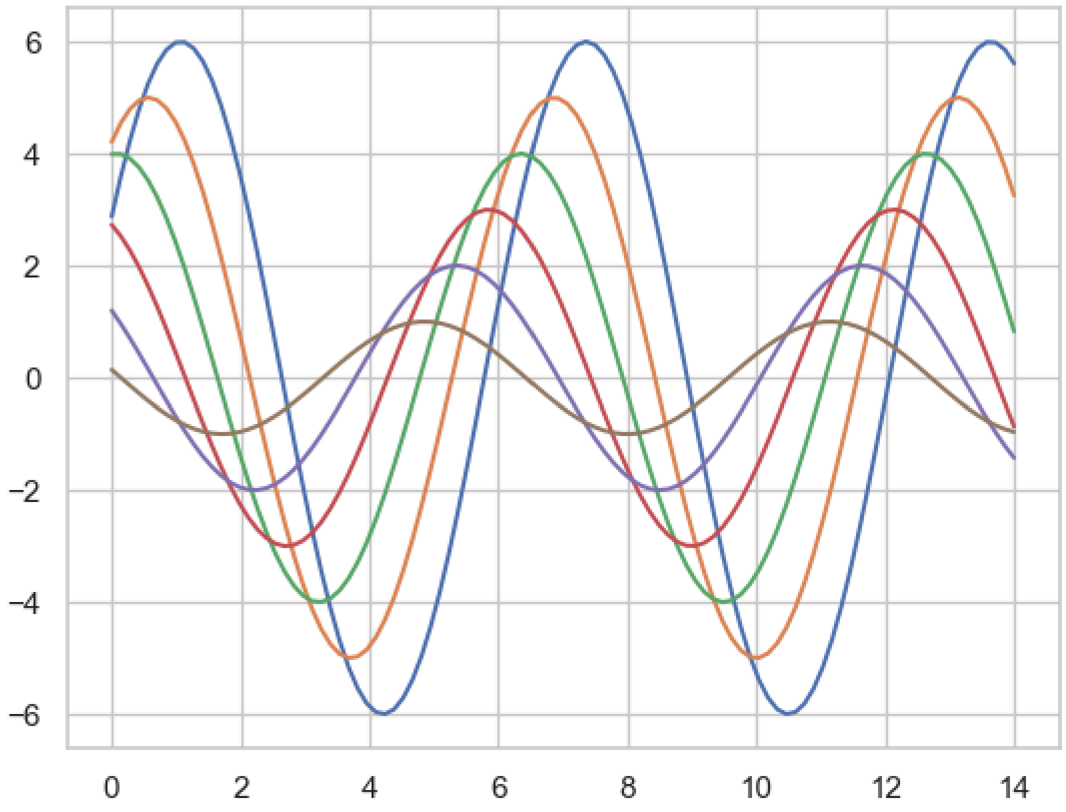
```
In [99]: sns.lmplot(x="Overall", y="Potential", col="Preferred Foot", data=Fifa, col_wrap=2,
```

```
Out[99]: <seaborn.axisgrid.FacetGrid at 0x25adb995890>
```

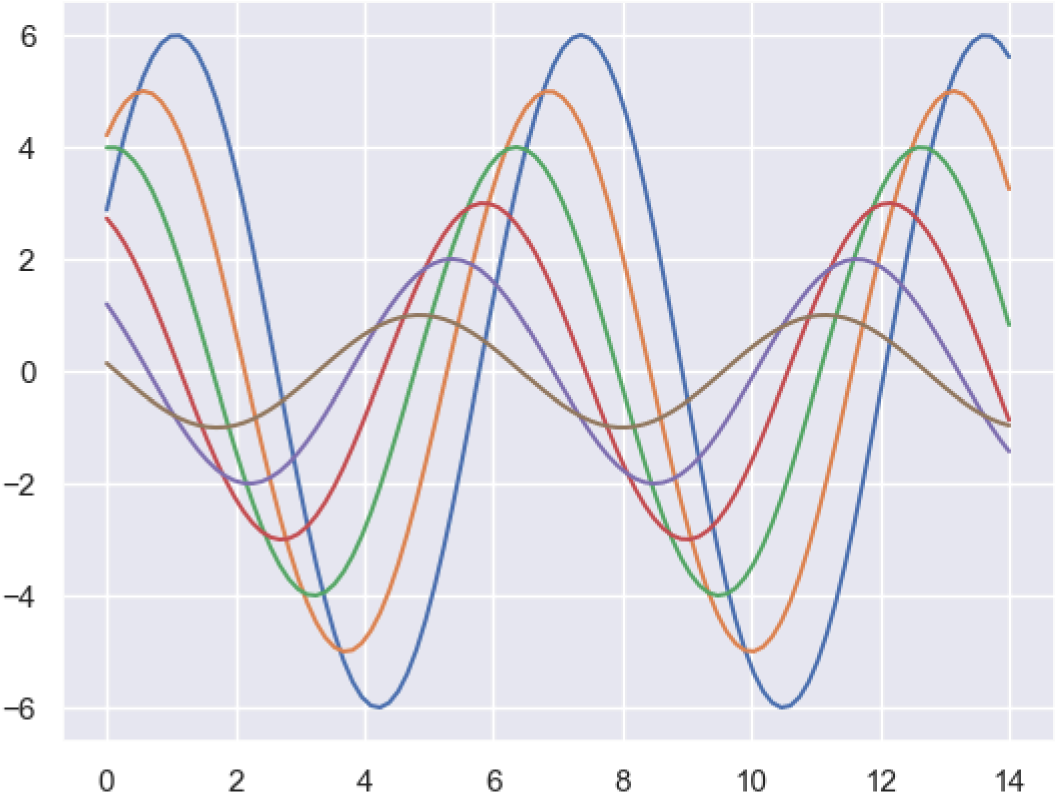


```
In [100…  def sinplot(flip=1):
              x = np.linspace(0, 14, 100)
              for i in range(1, 7):
                  plt.plot(x, np.sin(x + i * .5) * (7 - i) * flip)
```

```
In [101…  sinplot()
```

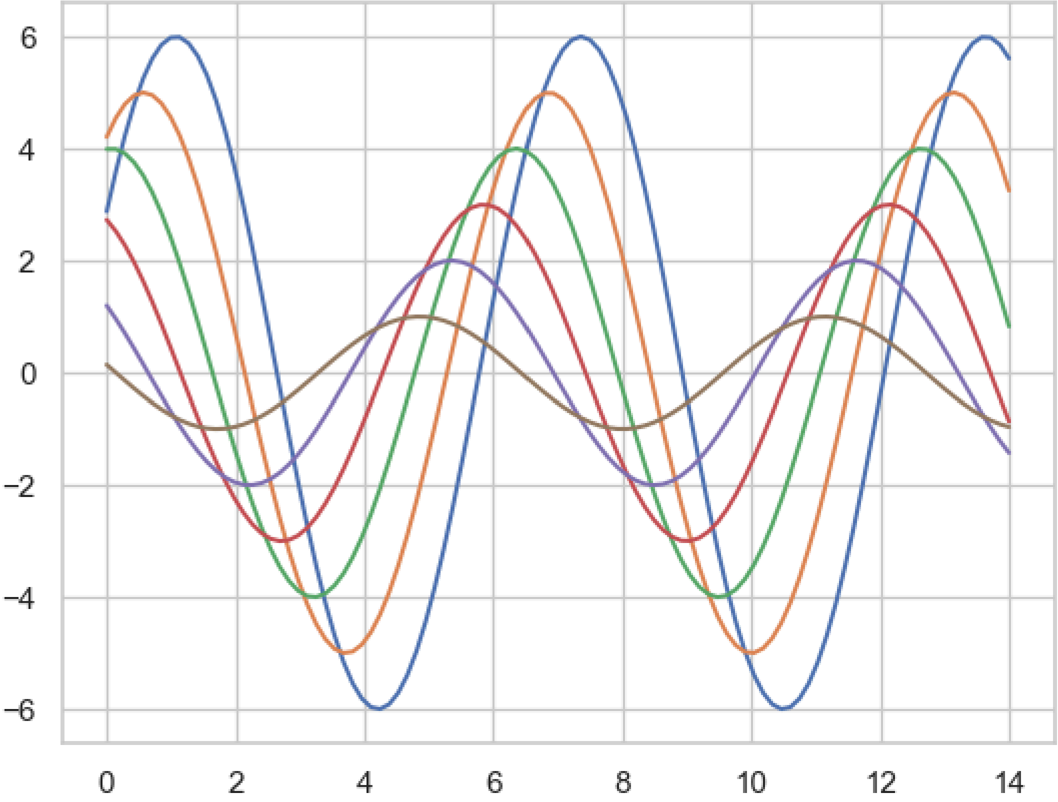


```
In [102…  sns.set()
          sinplot()
```



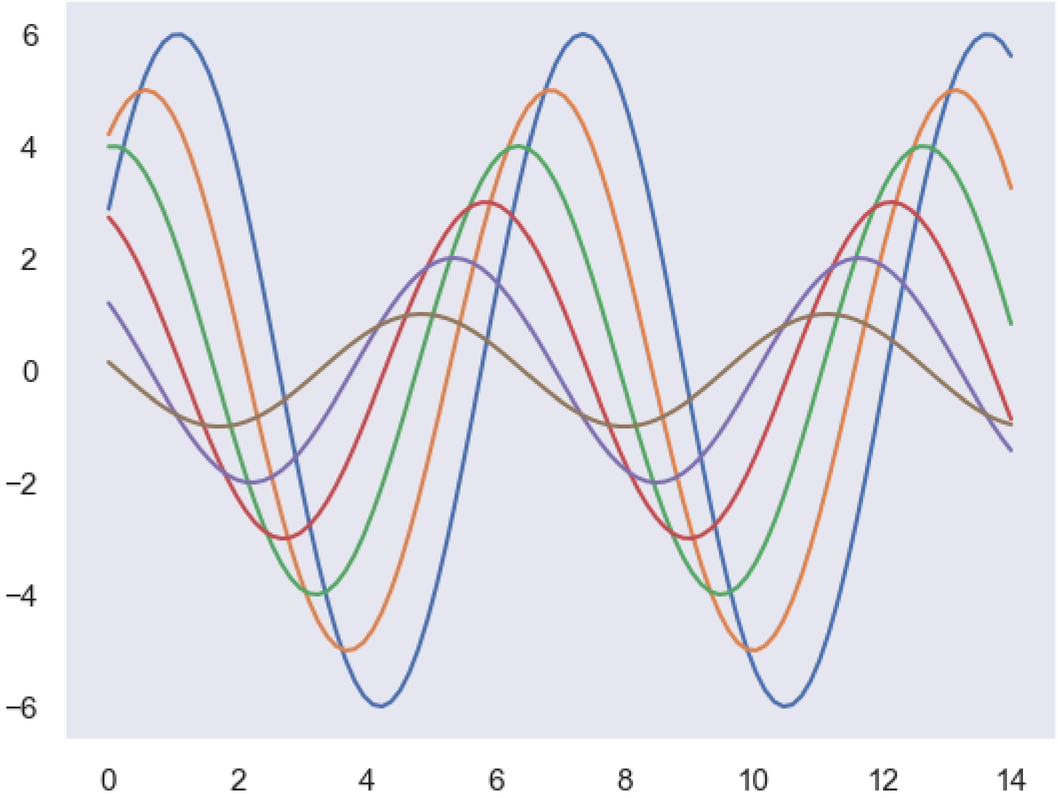
In [103…

```
sns.set_style("whitegrid")
sinplot()
```



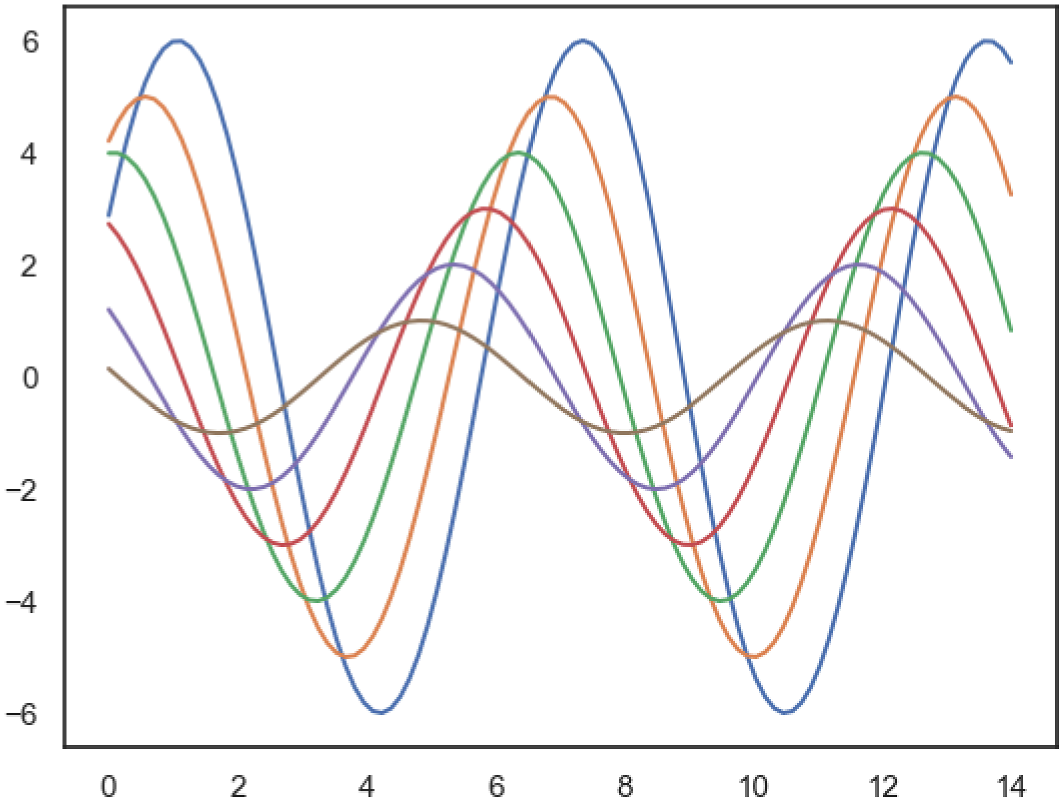
In [104…

```
sns.set_style("dark")
sinplot()
```



In [105…

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



In [ ]: