ICC MEN'S T20 WORLD CUP 2024 ANALYSIS

In [1]:
```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import warnings
warnings.filterwarnings('ignore')
```

In [2]:
```
matches = pd.read_csv('matches.csv')
deliveries = pd.read_csv('deliveries.csv')
```

In [3]:
```
matches.head()
```

Out[3]:

	season	team1	team2	date	match_number	venue	city	toss_winner	toss_decision	player_of_match	umpire1	umpire2	reserve_umpir
0	2024	Canada	United States of America	01-06-2024	1	Grand Prairie Stadium	Dallas	United States of America	field	Aaron Jones	RK Illingworth	Sharfuddoula	L Ruser
1	2024	Papua New Guinea	West Indies	02-06-2024	2	Providence Stadium	Providence	West Indies	field	RL Chase	AT Holdstock	Rashid Riaz	HDP Dharmaser
2	2024	Oman	Namibia	02-06-2024	3	Kensington Oval	Bridgetown	Namibia	field	D Wiese	J Madanagopal	JS Wilson	Asif Yaqoc
3	2024	Sri Lanka	South Africa	03-06-2024	4	Nassau County International Cricket Stadium	New York	Sri Lanka	bat	A Nortje	CM Brown	RA Kettleborough	AG Wha
4	2024	Afghanistan	Uganda	03-06-2024	5	Providence Stadium	Providence	Uganda	field	Fazalhaq Farooqi	Ahsan Raza	HDPK Dharmasena	Rashid Ria

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

Out[4]:

	match_id	season	start_date	venue	innings	ball	batting_team	bowling_team	striker	non_striker	...	extras	wides	noballs	byes	legbyes	penalty	wicket
0	1	2024	01-06-2024	Grand Prairie Stadium, Dallas	1	0.1	Canada	United States of America	A Johnson	NS Dhaliwal	...	0	NaN	NaN	NaN	NaN	NaN	
1	1	2024	01-06-2024	Grand Prairie Stadium, Dallas	1	0.2	Canada	United States of America	A Johnson	NS Dhaliwal	...	0	NaN	NaN	NaN	NaN	NaN	
2	1	2024	01-06-2024	Grand Prairie Stadium, Dallas	1	0.3	Canada	United States of America	A Johnson	NS Dhaliwal	...	1	NaN	NaN	NaN	1.0	NaN	
3	1	2024	01-06-2024	Grand Prairie Stadium, Dallas	1	0.4	Canada	United States of America	NS Dhaliwal	A Johnson	...	0	NaN	NaN	NaN	NaN	NaN	
4	1	2024	01-06-2024	Grand Prairie Stadium, Dallas	1	0.5	Canada	United States of America	NS Dhaliwal	A Johnson	...	0	NaN	NaN	NaN	NaN	NaN	

5 rows × 22 columns

In [5]:
```
matches.shape
```

Out[5]:
```
(52, 18)
```

In [6]:
```
deliveries.shape
```

Out[6]:
```
(11472, 22)
```

In [7]:
```
print(matches.columns)
```

```
Index(['season', 'team1', 'team2', 'date', 'match_number', 'venue', 'city',
       'toss_winner', 'toss_decision', 'player_of_match', 'umpire1', 'umpire2',
       'reserve_umpire', 'match_referee', 'winner', 'winner_runs',
       'winner_wickets', 'match_type'],
      dtype='object')
```

In [8]:
```
print(deliveries.columns)
```

```
Index(['match_id', 'season', 'start_date', 'venue', 'innings', 'ball',
       'batting_team', 'bowling_team', 'striker', 'non_striker', 'bowler',
       'runs_off_bat', 'extras', 'wides', 'noballs', 'byes', 'legbyes',
       'penalty', 'wicket_type', 'player_dismissed', 'other_wicket_type',
       'other_player_dismissed'],
      dtype='object')
```

TEAM RECORDS

In [9]:

```
toss_match_outcome = matches[matches['toss_winner'] == matches['winner']]

toss_win_and_match_win_count = toss_match_outcome.shape[0]
total_matches_count = matches.shape[0]

print(f"Toss winner won the match {toss_win_and_match_win_count} times out of {total_matches_count} matches.")
```

```
Toss winner won the match 28 times out of 52 matches.
```

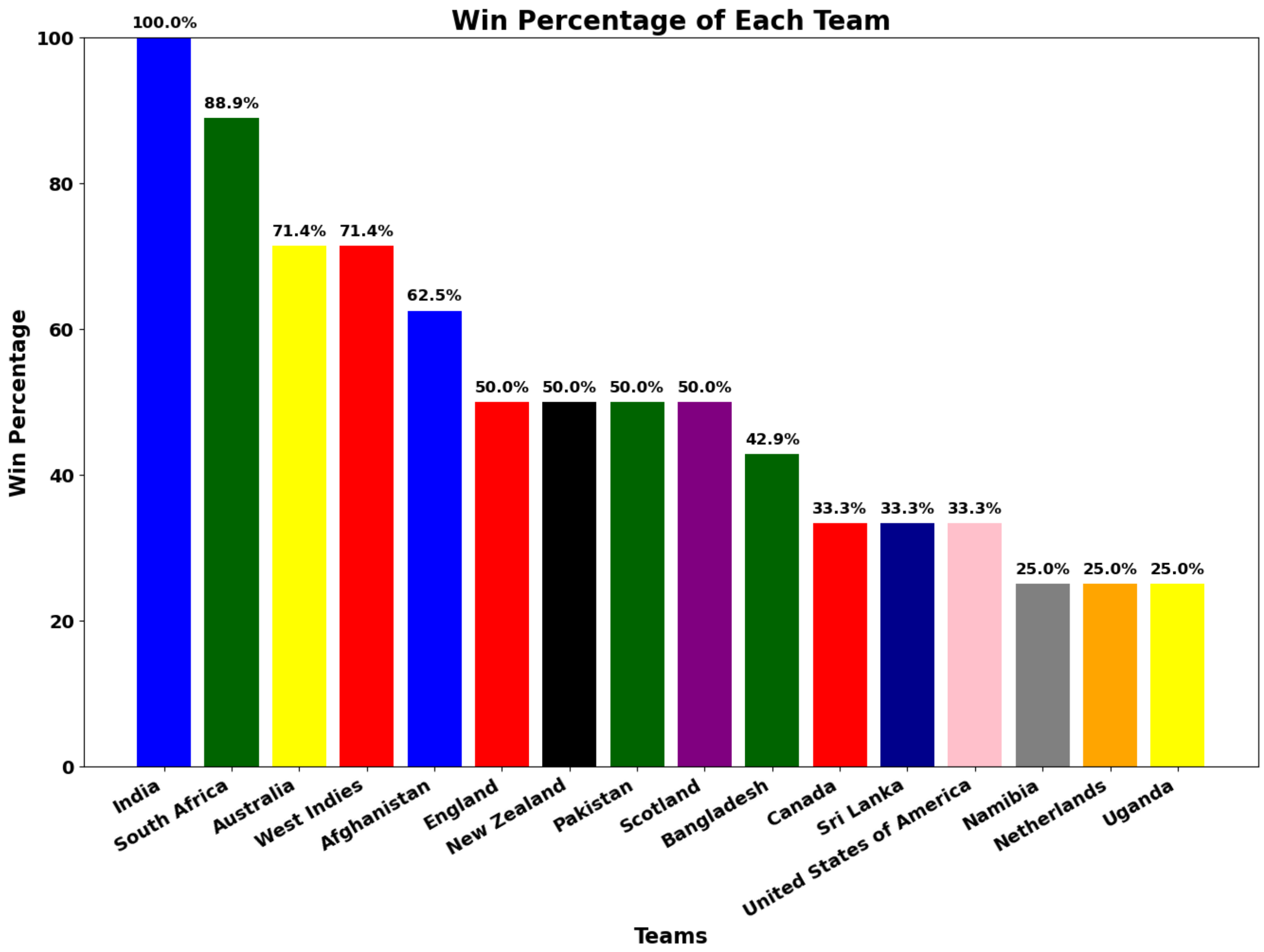
In [10]:

```
batting_first = matches[matches['toss_decision'] == 'bat']
chasing_target = matches[matches['toss_decision'] == 'field']

batting_first_win_percentage = (batting_first[batting_first['winner'] == batting_first['team1']].shape[0] / batting_first.shape[0]) * 100
chasing_win_percentage = (chasing_target[chasing_target['winner'] == chasing_target['team2']].shape[0] / chasing_target.shape[0]) * 100

print(f"Win percentage batting first: {batting_first_win_percentage:.2f}%")
print(f"Win percentage chasing target: {chasing_win_percentage:.2f}%")
```

```
Win percentage batting first: 50.00%
Win percentage chasing target: 54.76%
```

In [11]:

```
all_teams = pd.concat([matches['team1'], matches['team2']])
total_matches = all_teams.value_counts()
team_wins = matches['winner'].value_counts()

win_percentage = (team_wins / total_matches) * 100
win_percentage_sorted = win_percentage.sort_values(ascending=False)
win_percentage_sorted = win_percentage_sorted[win_percentage_sorted > 0]

country_colors = {'India': 'blue','Afghanistan': 'blue','Uganda': 'yellow','Australia': 'yellow','New Zealand': 'black',
                 'South Africa': 'darkgreen','Pakistan': 'darkgreen','Bangladesh': 'darkgreen','West Indies': 'red',
                 'Scotland': 'purple','Netherlands': 'orange','United States of America': 'pink','Sri Lanka': 'darkblue',
                 'Canada': 'red','England': 'red'}

colors = [country_colors.get(team, 'gray') for team in win_percentage_sorted.index]
plt.figure(figsize=(16, 10))
bars = plt.bar(win_percentage_sorted.index, win_percentage_sorted, color=colors)

plt.xlabel('Teams', fontsize=16, weight='bold')
plt.ylabel('Win Percentage', fontsize=16, weight='bold')
plt.title('Win Percentage of Each Team', fontsize=20, weight='bold')
plt.xticks(rotation=30, ha='right', fontsize=14, weight='bold')
plt.yticks(fontsize=14, weight='bold')
plt.ylim(0, 100)

for bar, percentage in zip(bars, win_percentage_sorted):
    plt.text(bar.get_x() + bar.get_width() / 2, bar.get_height() + 1, f'{percentage:.1f}%',
            ha='center', va='bottom', fontsize=12, weight='bold')

plt.show()
```



In [12]:
```
victories_by_runs = matches[matches['winner_runs'].notna()]

largest_victories = victories_by_runs.sort_values(by='winner_runs', ascending=False).head(10)

print('Top victories by runs')
print(largest_victories[['winner', 'winner_runs', 'team1', 'team2']])
```

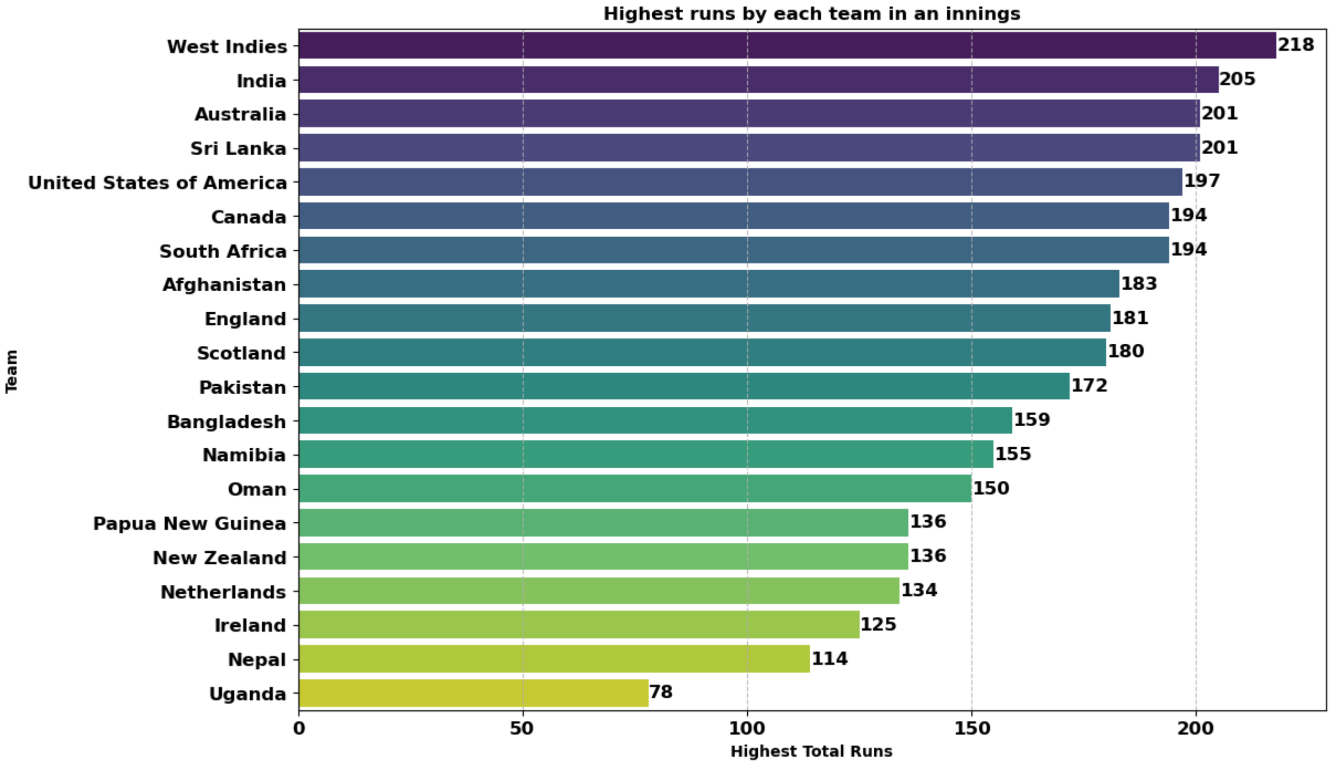
```
Top victories by runs
         winner  winner_runs        team1        team2
17  West Indies        134.0  West Indies       Uganda
4   Afghanistan        125.0  Afghanistan       Uganda
36  West Indies        104.0  West Indies  Afghanistan
13  Afghanistan         84.0  Afghanistan  New Zealand
34    Sri Lanka         83.0    Sri Lanka  Netherlands
50        India         68.0        India      England
43        India         50.0        India   Bangladesh
39        India         47.0        India  Afghanistan
30      England         41.0      England      Namibia
9     Australia         39.0    Australia         Oman
```

In [13]:
```
wicket_victories = matches[matches['winner_wickets'].notnull()]

largest_wicket_victories = wicket_victories.sort_values(by='winner_wickets', ascending=False).head(10)
print('Top victories by wickets')
print(largest_wicket_victories[['winner', 'winner_wickets', 'team1', 'team2']])
```

```
Top victories by wickets
          winner  winner_wickets                     team1         team2
45       England            10.0  United States of America       England
49  South Africa             9.0               Afghanistan  South Africa
22     Australia             9.0                   Namibia     Australia
42   West Indies             9.0  United States of America   West Indies
29   New Zealand             9.0                    Uganda   New Zealand
7          India             8.0                   Ireland         India
38       England             8.0               West Indies       England
26       England             8.0                      Oman       England
35   New Zealand             7.0          Papua New Guinea   New Zealand
27   Afghanistan             7.0          Papua New Guinea   Afghanistan
```

In [14]:

```
deliveries['total_runs'] = (
    deliveries['runs_off_bat'] +
    deliveries['extras'].fillna(0)
)

total_runs_df = deliveries.groupby(['match_id', 'batting_team'])['total_runs'].sum().reset_index()

highest_totals = total_runs_df.groupby('batting_team')['total_runs'].max().reset_index()

highest_totals = highest_totals.sort_values(by='total_runs', ascending=False)

plt.figure(figsize=(12, 8))
sns.barplot(data=highest_totals, x='total_runs', y='batting_team', palette='viridis')

plt.xlabel('Highest Total Runs', weight='bold')
plt.ylabel('Team', weight='bold')
plt.title('Highest runs by each team in an innings', weight='bold')

plt.xticks(fontsize=12, weight='bold')
plt.yticks(fontsize=12, weight='bold')
plt.grid(axis='x', linestyle='--', alpha=0.8)

for index, value in enumerate(highest_totals['total_runs']):
    plt.text(value, index, f'{value}', color='black', va="center", fontsize=12, weight='bold')

plt.show()
```

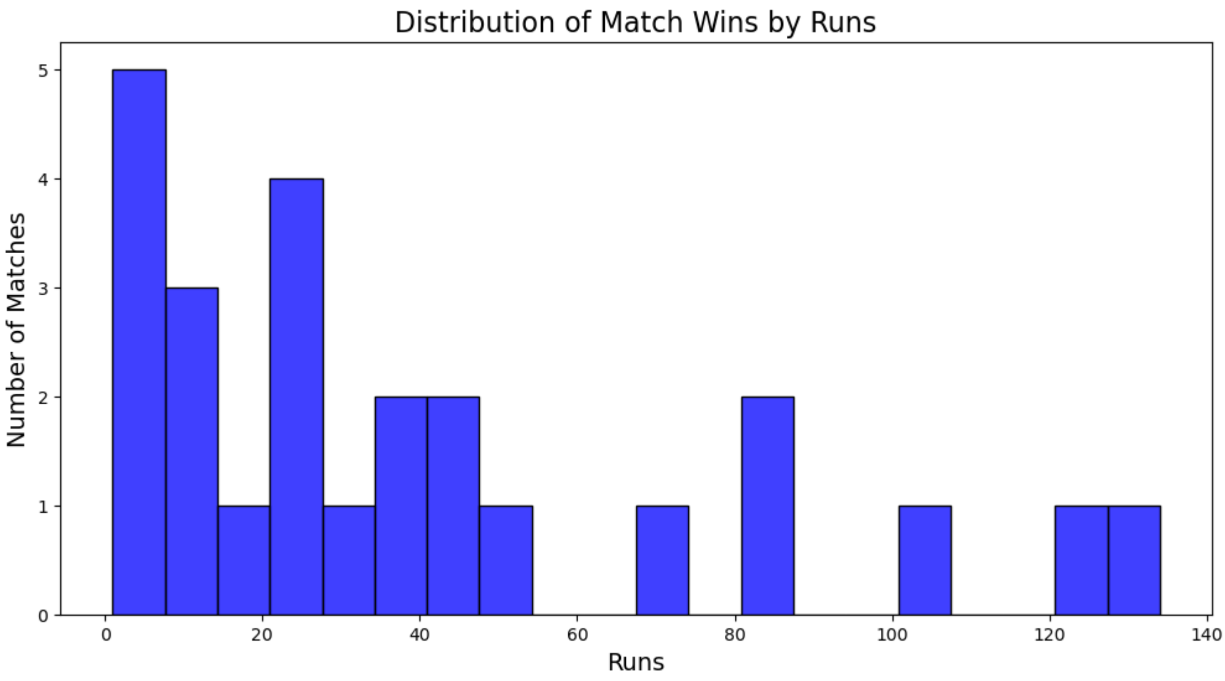


In [15]:

```
matches_won_by_runs = matches.dropna(subset=['winner_runs'])
matches_won_by_wickets = matches.dropna(subset=['winner_wickets'])
```

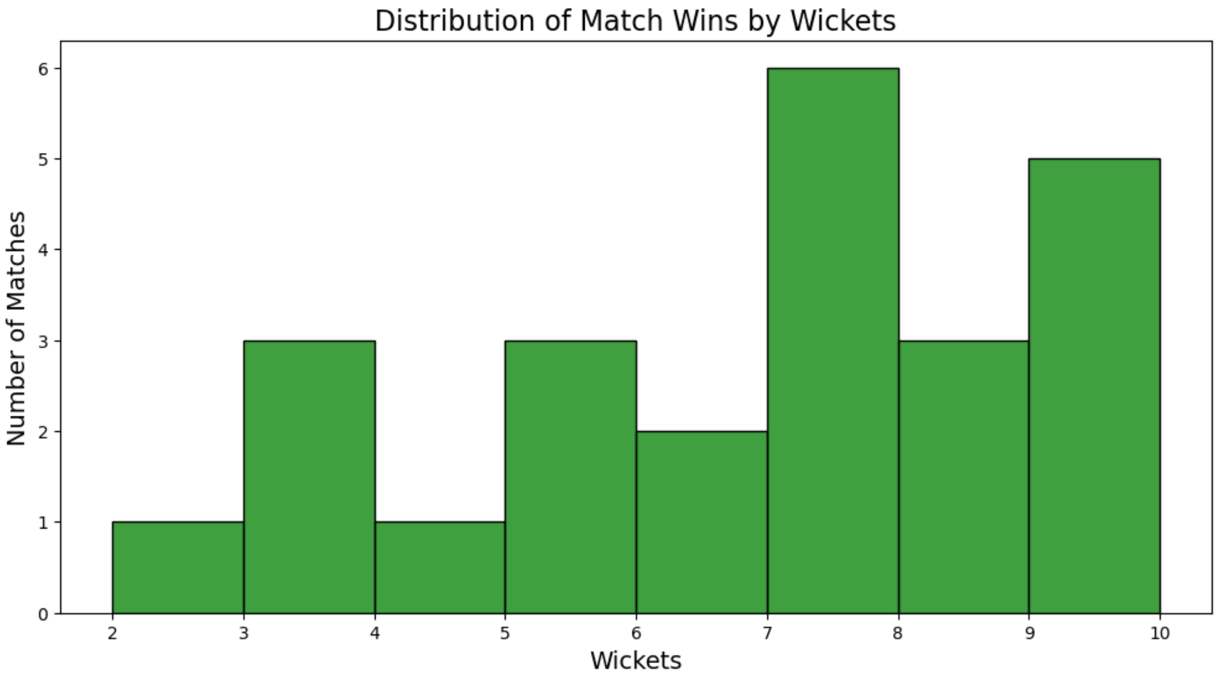
In [16]:

```
plt.figure(figsize=(12, 6))
sns.histplot(matches_won_by_runs['winner_runs'],color='blue', bins=20)
plt.title("Distribution of Match Wins by Runs", fontsize=16)
plt.xlabel("Runs", fontsize=14)
plt.ylabel("Number of Matches", fontsize=14)
plt.show()
```



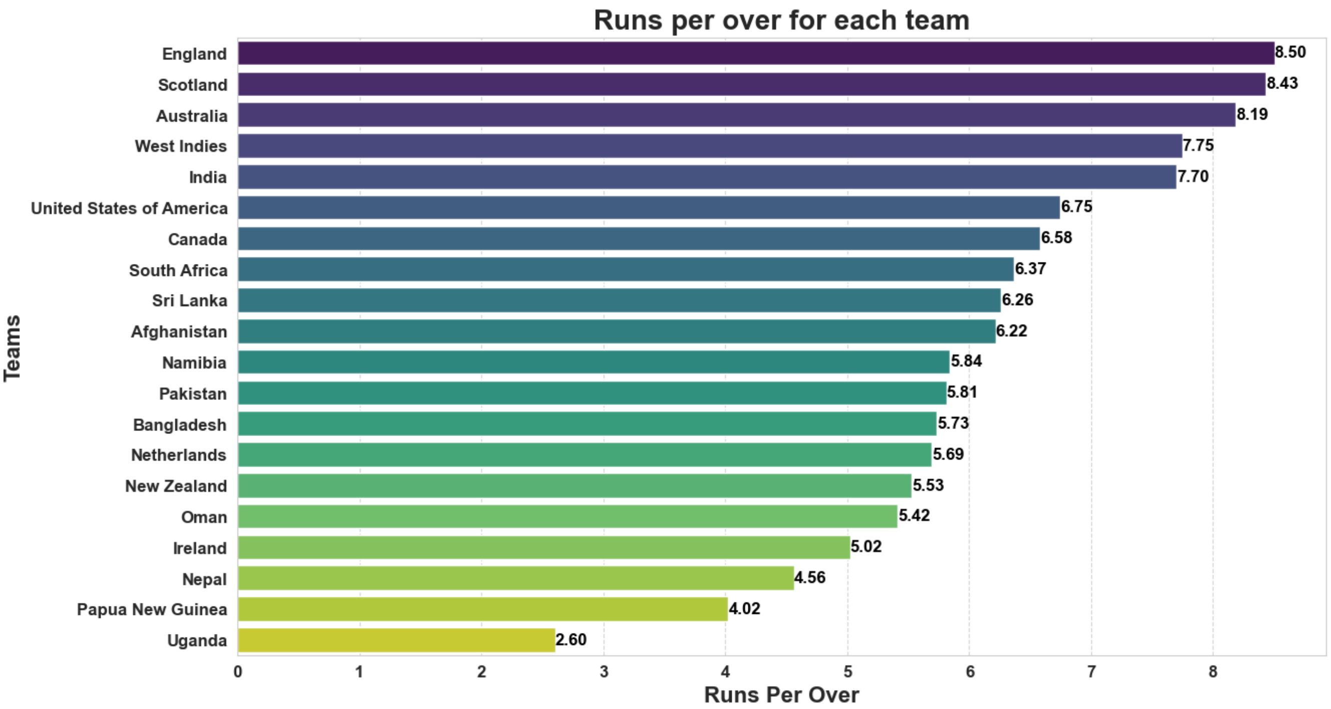
In [17]:

```
plt.figure(figsize=(12, 6))
sns.histplot(matches_won_by_wickets['winner_wickets'],color='green', bins=8)
plt.title("Distribution of Match Wins by Wickets", fontsize=16)
plt.xlabel("Wickets", fontsize=14)
plt.ylabel("Number of Matches", fontsize=14)
plt.show()
```



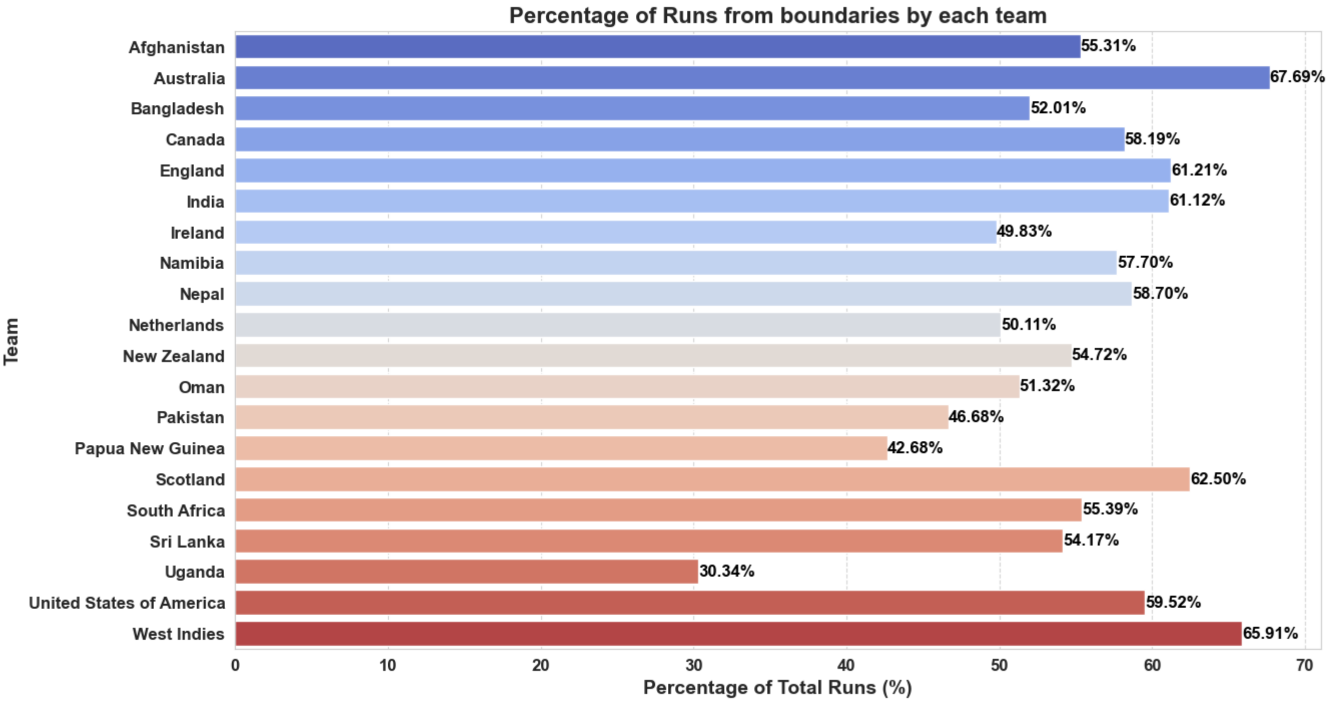
In [18]:

```
team_runs = deliveries.groupby('batting_team')['runs_off_bat'].sum()
team_balls = deliveries.groupby('batting_team').size()

runs_per_over = team_runs / (team_balls / 6)
most_runs_per_over = runs_per_over.sort_values(ascending=False)

plt.figure(figsize=(14, 8))
sns.set_style(style="whitegrid")

barplot = sns.barplot(x=most_runs_per_over.values, y=most_runs_per_over.index, palette='viridis')
plt.title('Runs per over for each team', fontsize=20, weight='bold')
plt.xlabel('Runs Per Over', fontsize=16, weight='bold')
plt.ylabel('Teams', fontsize=16, weight='bold')

plt.xticks(fontsize=12, weight='bold')
plt.yticks(fontsize=12, weight='bold')
plt.grid(axis='x', linestyle='--', alpha=0.8)

for index, value in enumerate(most_runs_per_over.values):
    plt.text(value, index, f'{value:.2f}', va='center', ha='left', fontsize=12, color='black', weight='bold')

plt.show()
```



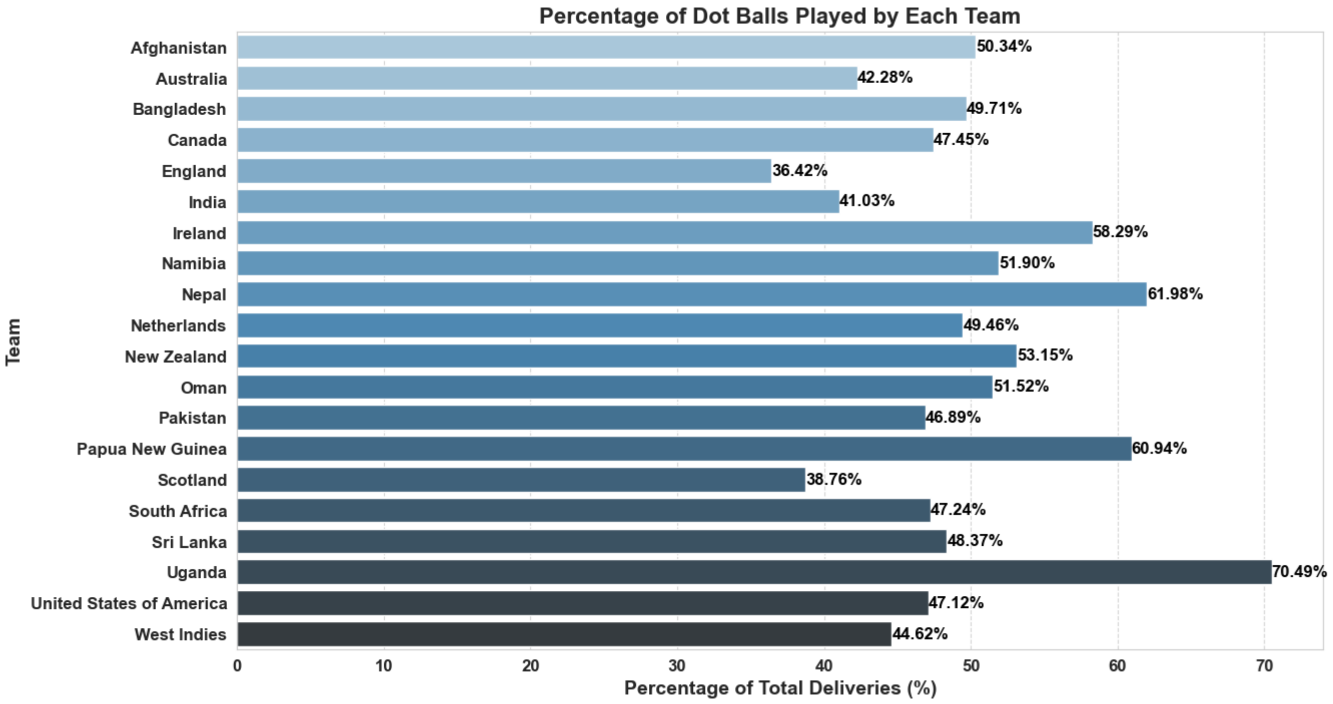
In [19]:

```
team_boundaries_4 = deliveries[deliveries['runs_off_bat'] == 4].groupby('batting_team').size()
team_boundaries_6 = deliveries[deliveries['runs_off_bat'] == 6].groupby('batting_team').size()

team_boundaries = pd.DataFrame({
    '4s': team_boundaries_4,
    '6s': team_boundaries_6
}).fillna(0)

team_total_runs = deliveries.groupby('batting_team')['runs_off_bat'].sum()

team_boundaries['boundary_runs'] = team_boundaries['4s'] * 4 + team_boundaries['6s'] * 6
team_boundaries['boundary_percentage'] = (team_boundaries['boundary_runs'] / team_total_runs) * 100

plt.figure(figsize=(14, 8))
sns.barplot(x=team_boundaries['boundary_percentage'], y=team_boundaries.index, palette="coolwarm")
plt.title("Percentage of Runs from boundaries by each team", fontsize=16, weight='bold')
plt.xlabel("Percentage of Total Runs (%)", fontsize=14, weight='bold')
plt.ylabel("Team", fontsize=14, weight='bold')

plt.xticks(fontsize=12, weight='bold')
plt.yticks(fontsize=12, weight='bold')
plt.grid(axis='x', linestyle='--', alpha=0.8)

for index, value in enumerate(team_boundaries['boundary_percentage']):
    plt.text(value, index, f'{value:.2f}%', color='black', va="center", fontsize=12, weight='bold')

plt.show()
```



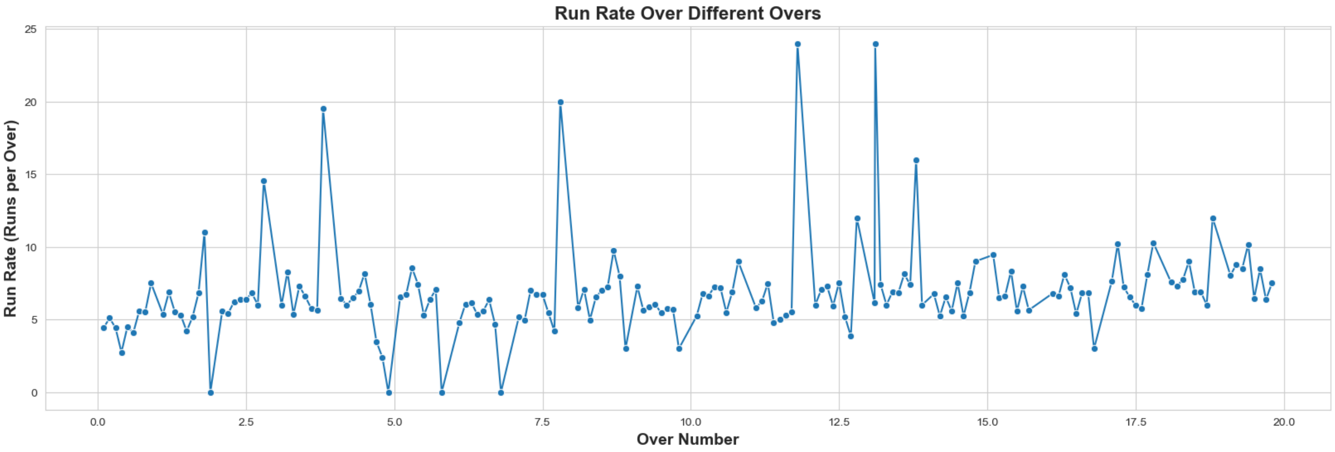
In [20]:

```python
team_dot_balls = deliveries[deliveries['runs_off_bat'] == 0].groupby('batting_team').size()

team_total_deliveries = deliveries.groupby('batting_team').size()

team_dot_ball_percentage = (team_dot_balls / team_total_deliveries) * 100

dot_ball_df = pd.DataFrame({
    'dot_ball_percentage': team_dot_ball_percentage
}).reset_index()

plt.figure(figsize=(14, 8))
sns.barplot(x='dot_ball_percentage', y='batting_team', data=dot_ball_df, palette="Blues_d")
plt.title("Percentage of Dot Balls Played by Each Team", fontsize=16, weight='bold')
plt.xlabel("Percentage of Total Deliveries (%)", fontsize=14, weight='bold')
plt.ylabel("Team", fontsize=14, weight='bold')

plt.xticks(fontsize=12, weight='bold')
plt.yticks(fontsize=12, weight='bold')
plt.grid(axis='x', linestyle='--', alpha=0.8)

for index, value in enumerate(dot_ball_df['dot_ball_percentage']):
    plt.text(value, index, f'{value:.2f}%', color='black', va="center", fontsize=12, weight='bold')

plt.show()
```



In [21]:

```python
overs_data = deliveries.groupby('ball').agg({'runs_off_bat': 'sum', 'ball': 'count'}).rename(columns={'ball': 'deliveries_faced'}).reset_i

overs_data['run_rate'] = (overs_data['runs_off_bat'] / overs_data['deliveries_faced']) * 6

plt.figure(figsize=(20, 6))
sns.lineplot(x=overs_data['ball'], y=overs_data['run_rate'], marker='o')
plt.title("Run Rate Over Different Overs", fontsize=16, weight='bold')
plt.xlabel("Over Number", fontsize=14, weight='bold')
plt.ylabel("Run Rate (Runs per Over)", fontsize=14, weight='bold')
plt.show()
```



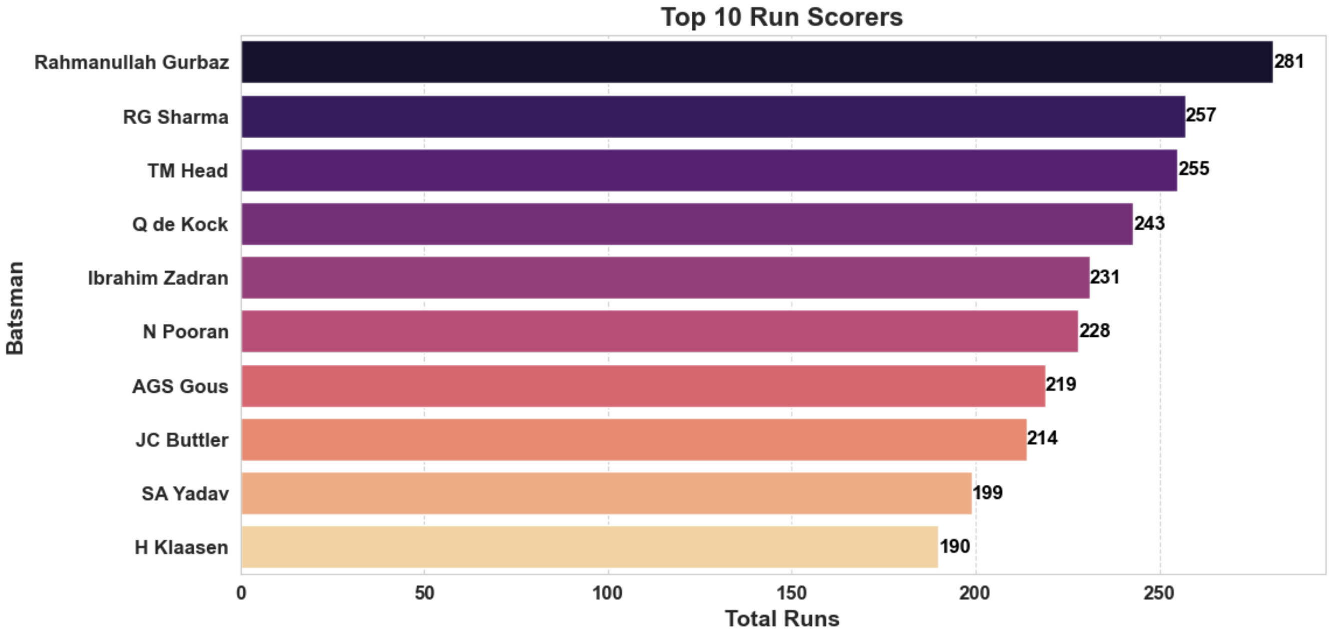
PLAYER'S PERFORMANCE

In [22]:

```
top_run_scorers = deliveries.groupby('striker')['runs_off_bat'].sum().sort_values(ascending=False).head(10)
top_wicket_takers = deliveries[~deliveries['wicket_type'].isna()].groupby('bowler')['wicket_type'].count().sort_values(ascending=False).he
```

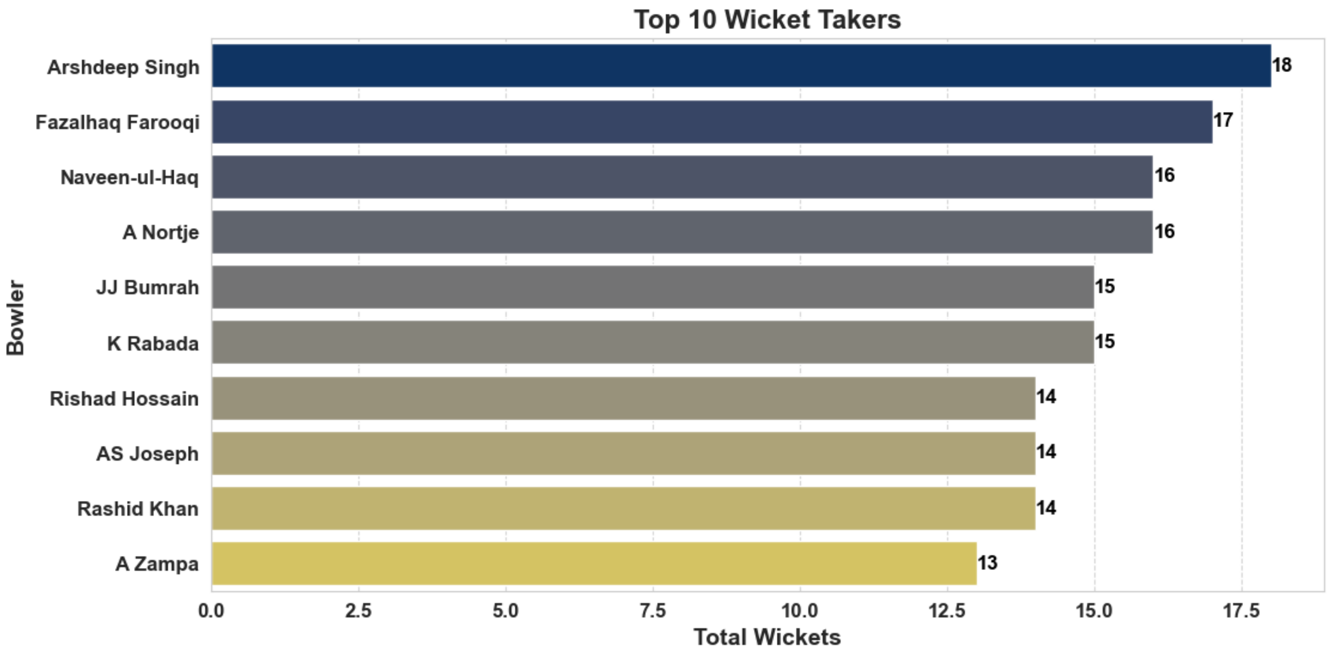
In [23]:

```
plt.figure(figsize=(12, 6))
sns.barplot(y=top_run_scorers.index, x=top_run_scorers.values, palette="magma")
plt.title("Top 10 Run Scorers", fontsize=16, weight='bold')
plt.xlabel("Total Runs", fontsize=14, weight='bold')
plt.ylabel("Batsman", fontsize=14, weight='bold')
plt.xticks(fontsize=12, weight='bold')
plt.yticks(fontsize=12, weight='bold')
plt.grid(axis='x', linestyle='--', alpha=0.8)

for index, value in enumerate(top_run_scorers.values):
    plt.text(value, index, f'{value}', va='center', ha='left', fontsize=12, color='black', weight='bold')

plt.show()
```

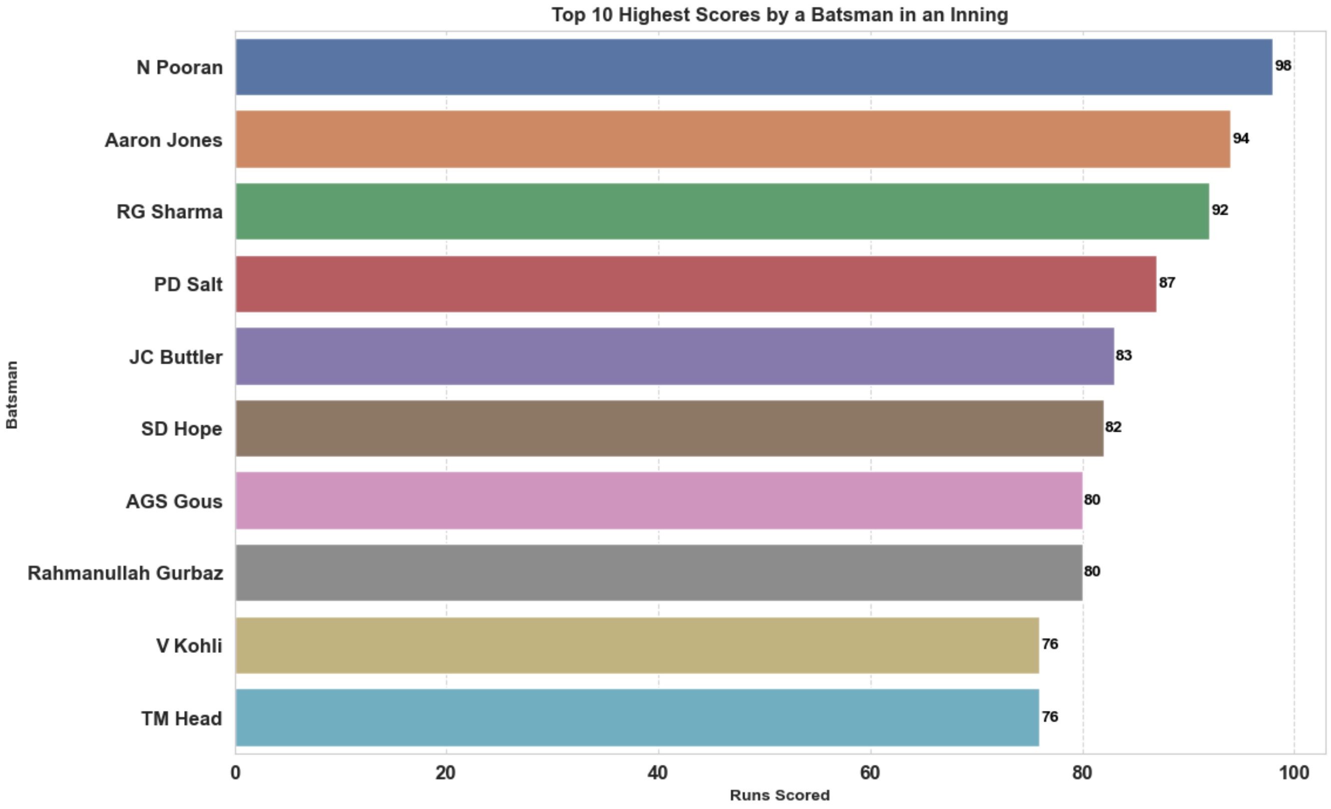


In [24]:

```
plt.figure(figsize=(12, 6))
sns.barplot(y=top_wicket_takers.index, x=top_wicket_takers.values, palette="cividis")
plt.title("Top 10 Wicket Takers", fontsize=16, weight='bold')
plt.xlabel("Total Wickets", fontsize=14, weight='bold')
plt.ylabel("Bowler", fontsize=14, weight='bold')
plt.xticks(fontsize=12, weight='bold')
plt.yticks(fontsize=12, weight='bold')
plt.grid(axis='x', linestyle='--', alpha=0.8)

for index, value in enumerate(top_wicket_takers.values):
    plt.text(value, index, f'{value}', va='center', ha='left', fontsize=12, color='black', weight='bold')

plt.show()
```

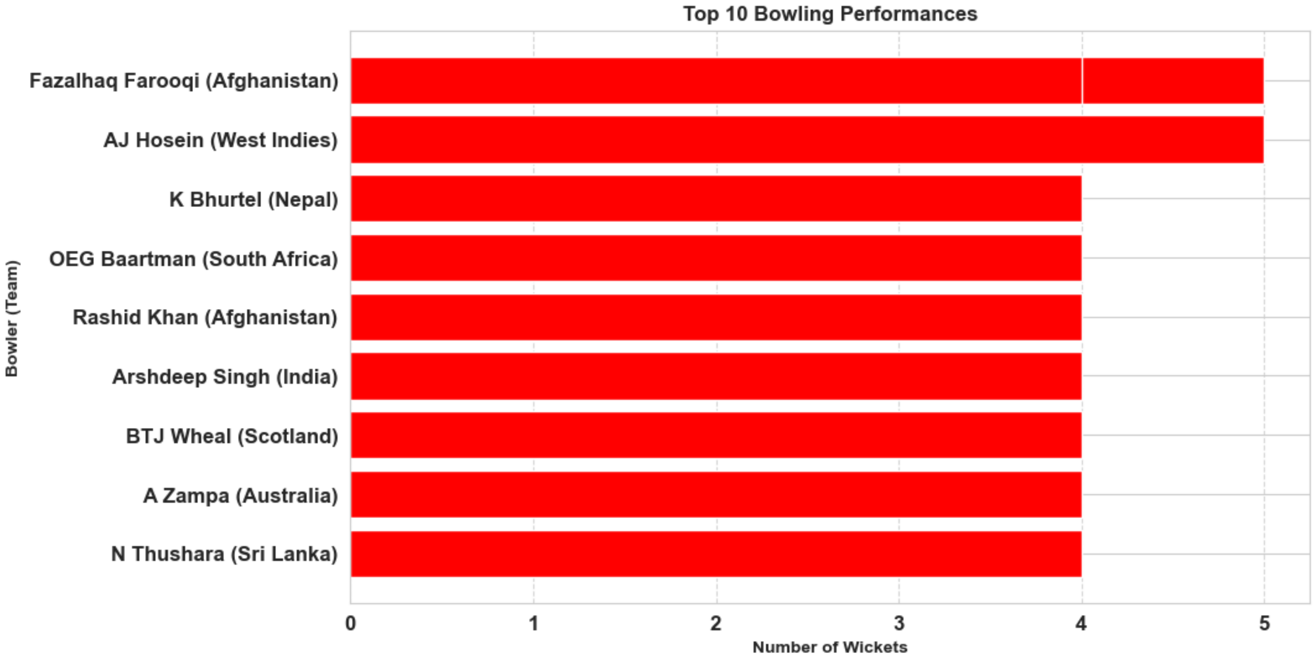


```
In [25]: batsman_scores = deliveries.groupby(['match_id', 'striker'])['runs_off_bat'].sum().reset_index()

         highest_score = batsman_scores.sort_values(by='runs_off_bat', ascending=False).head(1)

         top_scores = batsman_scores.sort_values(by='runs_off_bat', ascending=False).head(10)

         plt.figure(figsize=(12, 8))
         bar_plot = sns.barplot(data=top_scores, x='runs_off_bat', y='striker', palette='deep')
         plt.xlabel('Runs Scored', weight='bold')
         plt.ylabel('Batsman', weight='bold')
         plt.title('Top 10 Highest Scores by a Batsman in an Inning', weight='bold')
         plt.xticks(fontsize=12, weight='bold')
         plt.yticks(fontsize=12, weight='bold')
         plt.grid(axis='x', linestyle='--', alpha=0.8)

         for index, value in enumerate(top_scores['runs_off_bat']):
             bar_plot.text(value + 1, index, str(value), color='black', ha="center", va="center", weight='bold')

         plt.show()
```



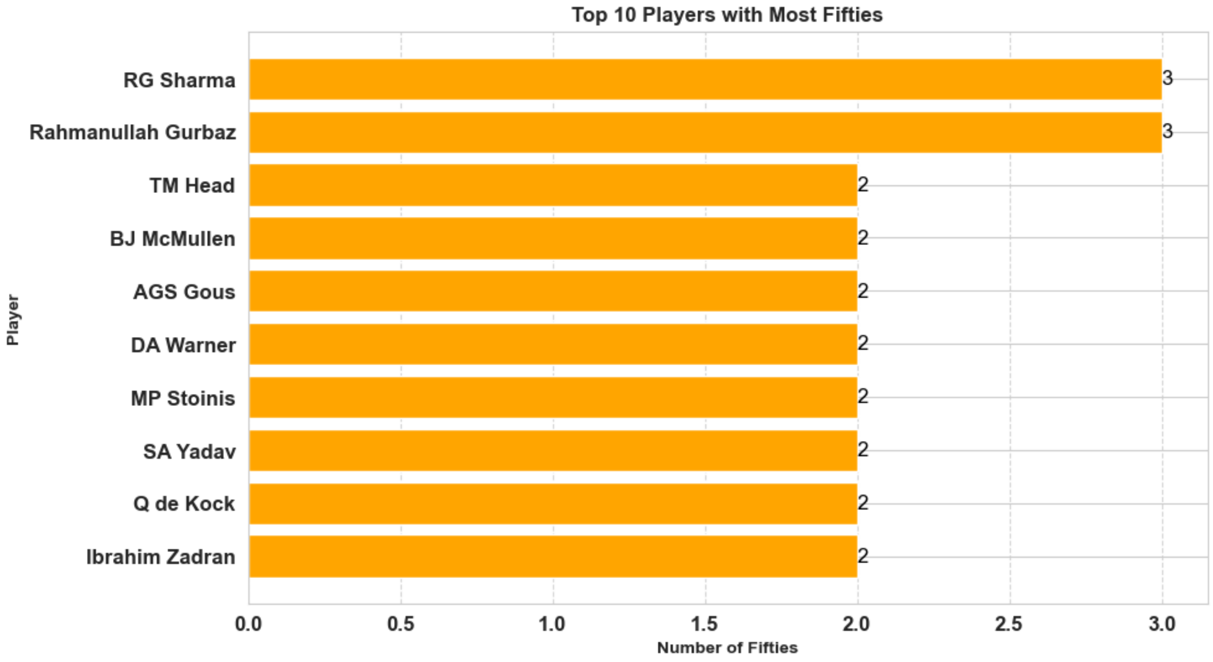
In [26]:

```
wickets = deliveries[deliveries['wicket_type'].notna()]

bowler_wickets = wickets.groupby(['match_id', 'bowling_team', 'venue', 'bowler']).size().reset_index(name='wickets')

top_bowling_performances = bowler_wickets.sort_values(by='wickets', ascending=False)

top_10_bowling = top_bowling_performances.head(10)

plt.figure(figsize=(10, 6))
plt.barh(top_10_bowling['bowler'] + " (" + top_10_bowling['bowling_team'] + ")", top_10_bowling['wickets'], color='red')
plt.xlabel('Number of Wickets', weight='bold')
plt.ylabel('Bowler (Team)', weight='bold')
plt.title('Top 10 Bowling Performances', weight='bold')
plt.xticks(fontsize=12, weight='bold')
plt.yticks(fontsize=12, weight='bold')
plt.grid(axis='x', linestyle='--', alpha=0.8)
plt.gca().invert_yaxis()  # Invert y-axis to have the highest wicket-takers on top
plt.show()
```



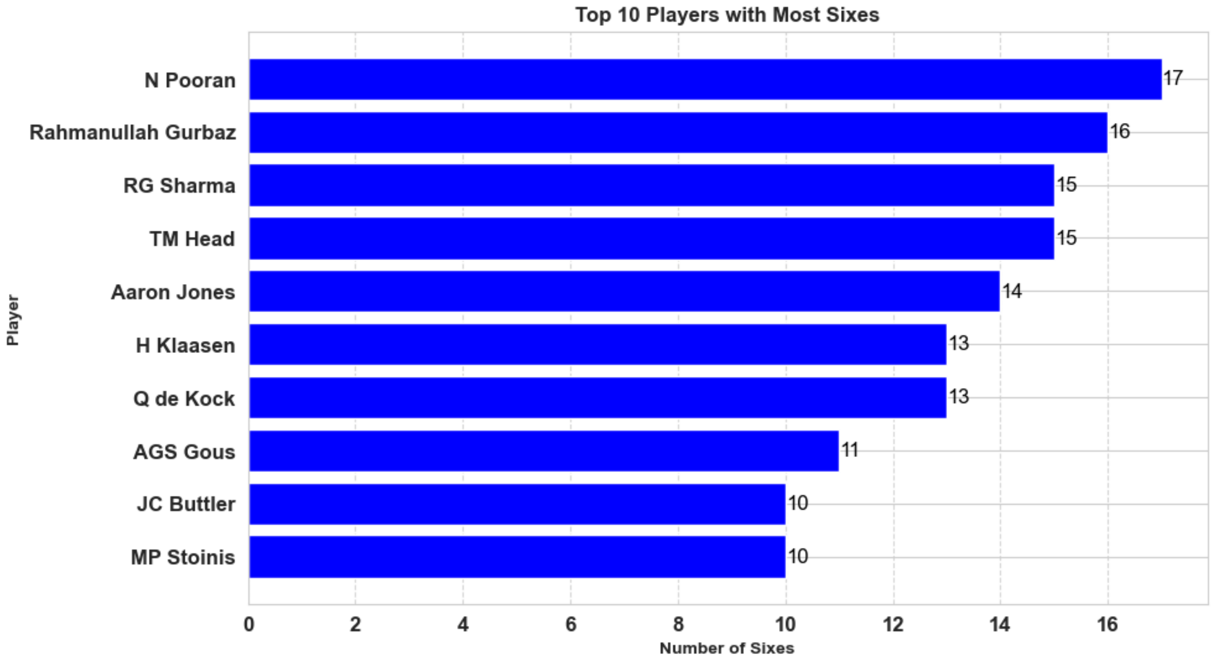
In [27]:

```
fifties = deliveries.groupby(['match_id', 'striker']).agg({'runs_off_bat': 'sum'}).reset_index()
fifties = fifties[(fifties['runs_off_bat'] >= 50) & (fifties['runs_off_bat'] < 100)]

player_fifties = fifties.groupby('striker').size().reset_index(name='fifties')

top_fifty_scorers = player_fifties.sort_values(by='fifties', ascending=False).head(10)

plt.figure(figsize=(10, 6))
bars = plt.barh(top_fifty_scorers['striker'], top_fifty_scorers['fifties'], color='orange')
plt.xlabel('Number of Fifties', weight='bold')
plt.ylabel('Player', weight='bold')
plt.title('Top 10 Players with Most Fifties', weight='bold')
plt.gca().invert_yaxis()
plt.xticks(fontsize=12, weight='bold')
plt.yticks(fontsize=12, weight='bold')
plt.grid(axis='x', linestyle='--', alpha=0.8)
for bar in bars:
    plt.text(bar.get_width(), bar.get_y() + bar.get_height()/2, f'{int(bar.get_width())}',
             va='center', ha='left', color='black', fontsize=12)

plt.show()
```



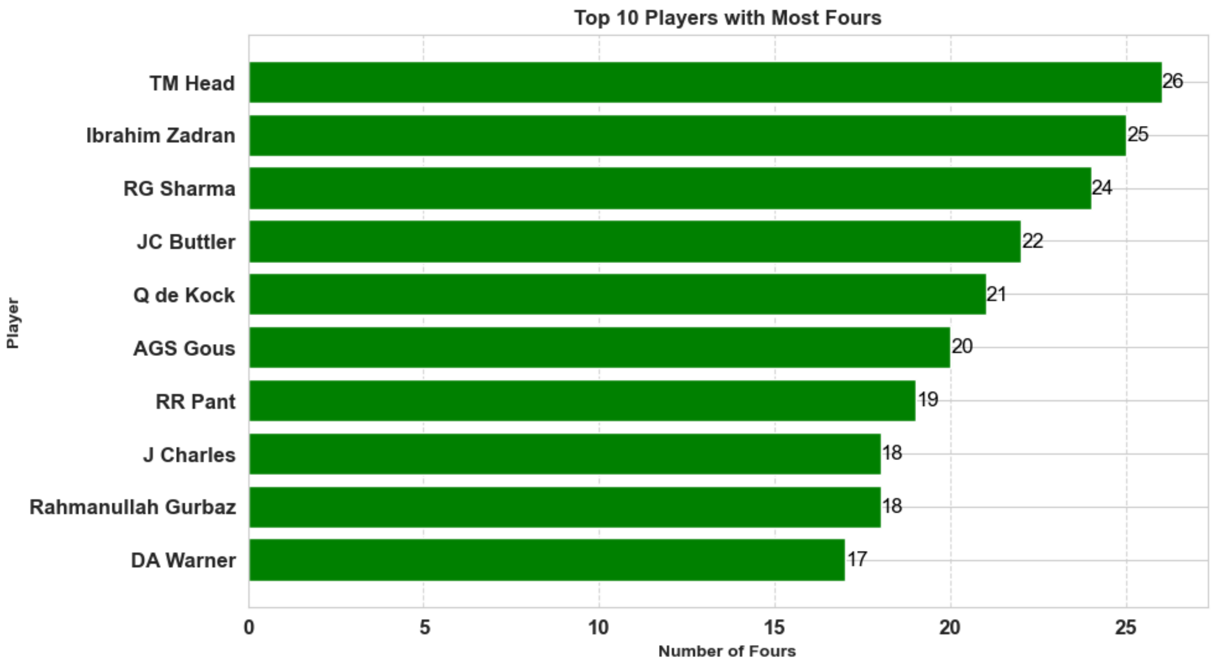
In [28]:

```
sixes_df = deliveries[deliveries['runs_off_bat'] == 6]

player_sixes = sixes_df.groupby('striker').size().reset_index(name='sixes')

top_six_hitters = player_sixes.sort_values(by='sixes', ascending=False).head(10)

plt.figure(figsize=(10, 6))
bars = plt.barh(top_six_hitters['striker'], top_six_hitters['sixes'], color='blue')
plt.xlabel('Number of Sixes', weight='bold')
plt.ylabel('Player', weight='bold')
plt.title('Top 10 Players with Most Sixes', weight='bold')
plt.gca().invert_yaxis()  # Invert y-axis to have the top scorer on top
plt.xticks(fontsize=12, weight='bold')
plt.yticks(fontsize=12, weight='bold')
plt.grid(axis='x', linestyle='--', alpha=0.8)

for bar in bars:
    plt.text(bar.get_width(), bar.get_y() + bar.get_height()/2, f'{int(bar.get_width())}',
             va='center', ha='left', color='black', fontsize=12)

plt.show()
```



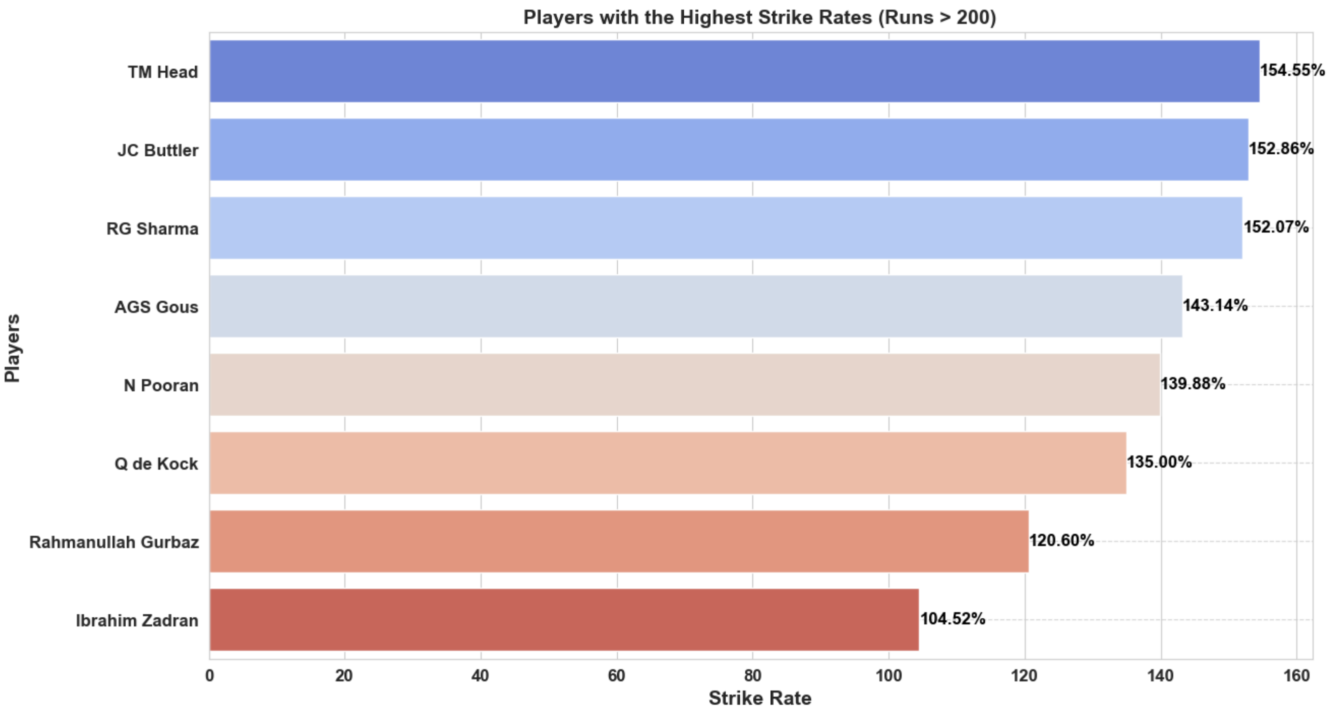
In [29]:

```
fours_df = deliveries[deliveries['runs_off_bat'] == 4]

player_fours = fours_df.groupby('striker').size().reset_index(name='fours')

top_fours_hitters = player_fours.sort_values(by='fours', ascending=False).head(10)

plt.figure(figsize=(10, 6))
bars = plt.barh(top_fours_hitters['striker'], top_fours_hitters['fours'], color='green')
plt.xlabel('Number of Fours', weight='bold')
plt.ylabel('Player', weight='bold')
plt.title('Top 10 Players with Most Fours', weight='bold')
plt.gca().invert_yaxis()
plt.xticks(fontsize=12, weight='bold')
plt.yticks(fontsize=12, weight='bold')
plt.grid(axis='x', linestyle='--', alpha=0.8)

for bar in bars:
    plt.text(bar.get_width(), bar.get_y() + bar.get_height()/2, f'{int(bar.get_width())}',
             va='center', ha='left', color='black', fontsize=12)

plt.show()
```



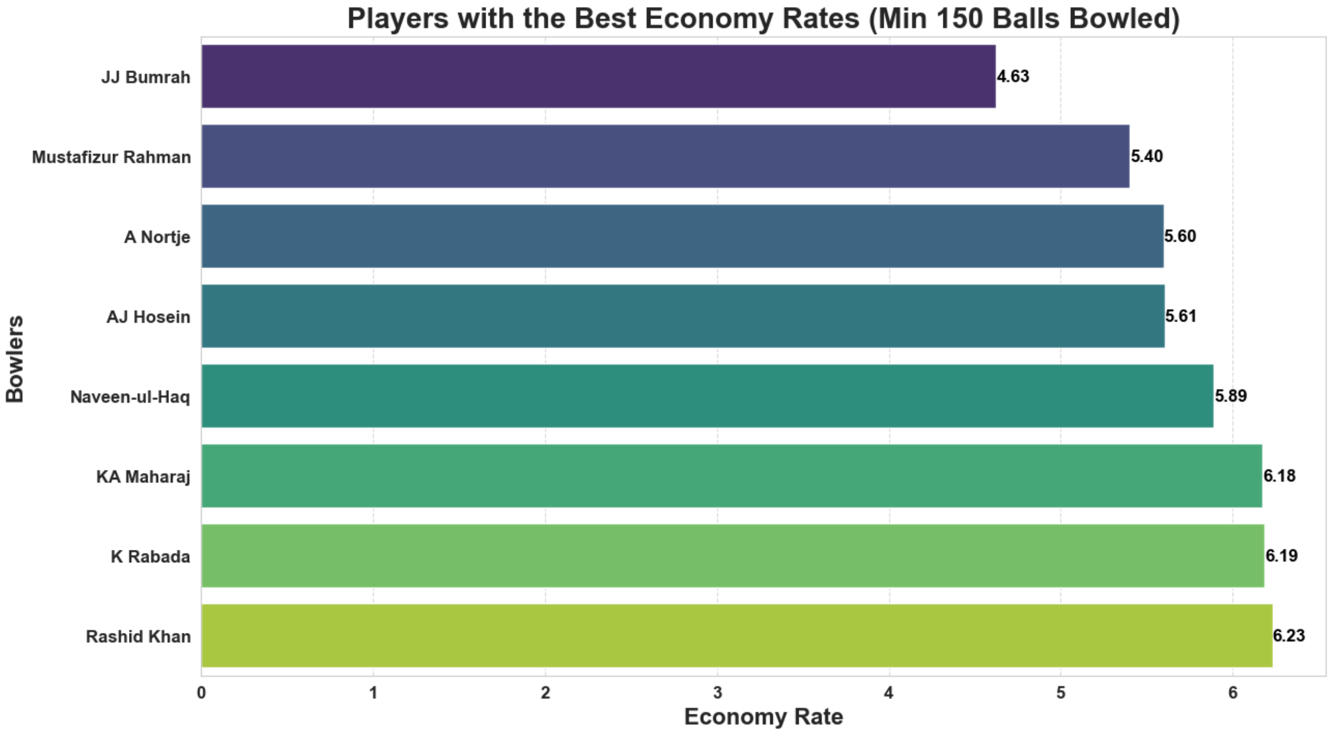
In [30]:

```
player_runs = deliveries.groupby('striker')['runs_off_bat'].sum()

player_balls = deliveries.groupby('striker').size()

top_strike_rate_players = (player_runs / player_balls) * 100

players_above_200_runs = player_runs[player_runs > 200]

filtered_strike_rates = top_strike_rate_players[players_above_200_runs.index]

top_strike_rate_players = filtered_strike_rates.sort_values(ascending=False)

plt.figure(figsize=(14, 8))
barplot = sns.barplot(x=top_strike_rate_players.values, y=top_strike_rate_players.index, palette='coolwarm')

for index, value in enumerate(top_strike_rate_players):
    plt.text(value, index, f'{value:.2f}%', color='black', va="center", fontsize=12, weight='bold')

plt.title('Players with the Highest Strike Rates (Runs > 200)', fontsize=14, weight='bold')
plt.xlabel('Strike Rate', fontsize=14, weight='bold')
plt.ylabel('Players', fontsize=14, weight='bold')
plt.xticks(fontsize=12, weight='bold')
plt.yticks(fontsize=12, weight='bold')
plt.grid(axis='y', linestyle='--', alpha=0.8)

plt.show()
```



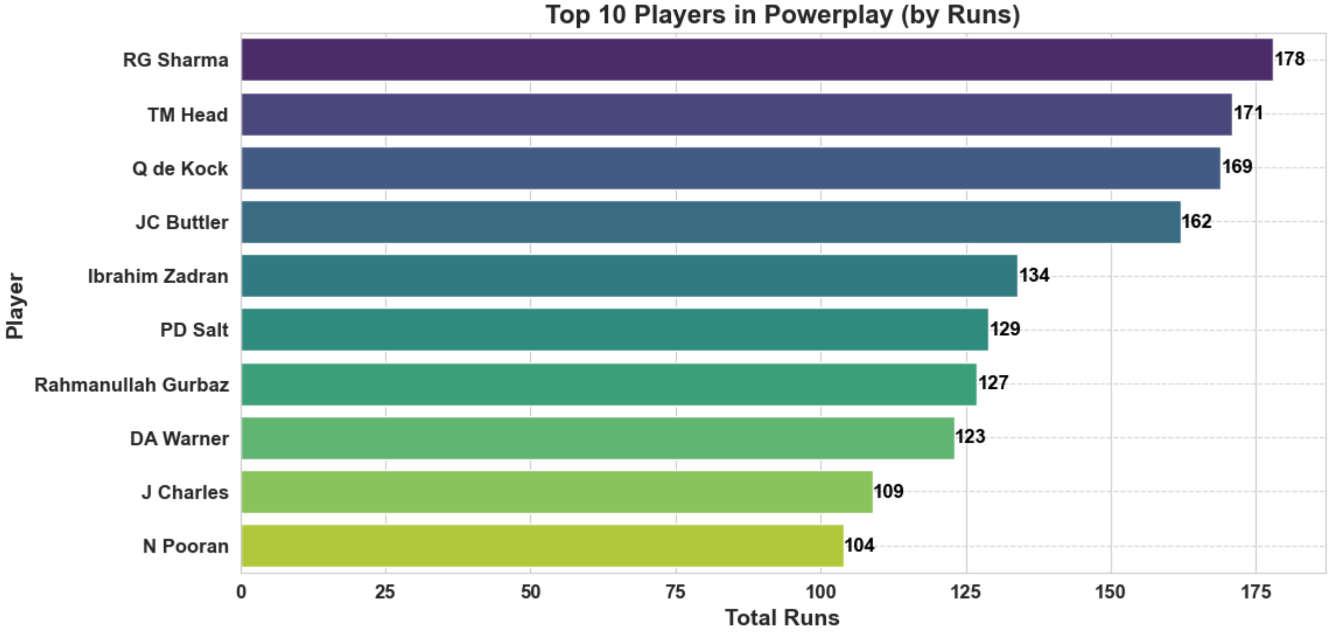
In [31]:

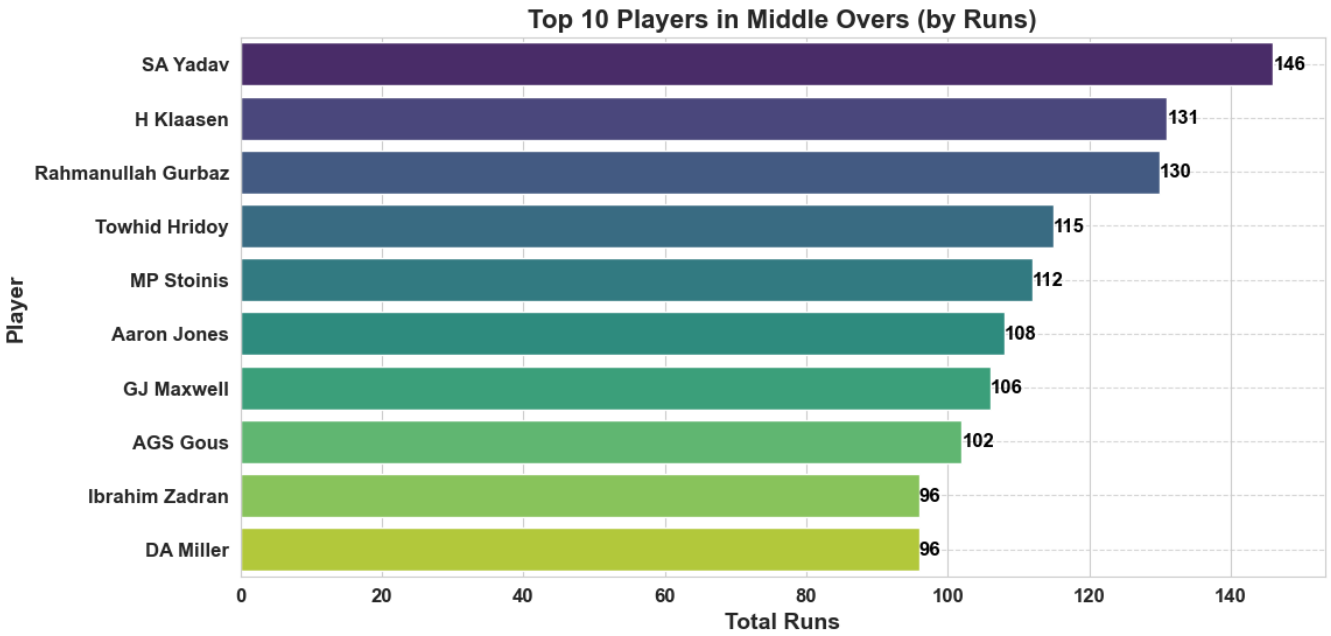
```
balls_bowled = deliveries.groupby('bowler').size()
runs_conceded = deliveries.groupby('bowler')['runs_off_bat'].sum() + deliveries.groupby('bowler')['extras'].sum()

economy_rate = (runs_conceded / (balls_bowled / 6))

filtered_economy_rate = economy_rate[balls_bowled >= 150]

best_economy_rates = filtered_economy_rate.sort_values().head(8)

plt.figure(figsize=(14, 8))
sns.set_style(style="whitegrid")

barplot = sns.barplot(x=best_economy_rates.values, y=best_economy_rates.index, palette='viridis')
plt.title('Players with the Best Economy Rates (Min 150 Balls Bowled)', fontsize=20, weight='bold')
plt.xlabel('Economy Rate', fontsize=16, weight='bold')
plt.ylabel('Bowlers', fontsize=16, weight='bold')

for index, value in enumerate(best_economy_rates.values):
    plt.text(value, index, f'{value:.2f}', va='center', ha='left', fontsize=12, color='black', weight='bold')

plt.xticks(fontsize=12, weight='bold')
plt.yticks(fontsize=12, weight='bold')
plt.grid(axis='x', linestyle='--', alpha=0.7)

plt.show()
```

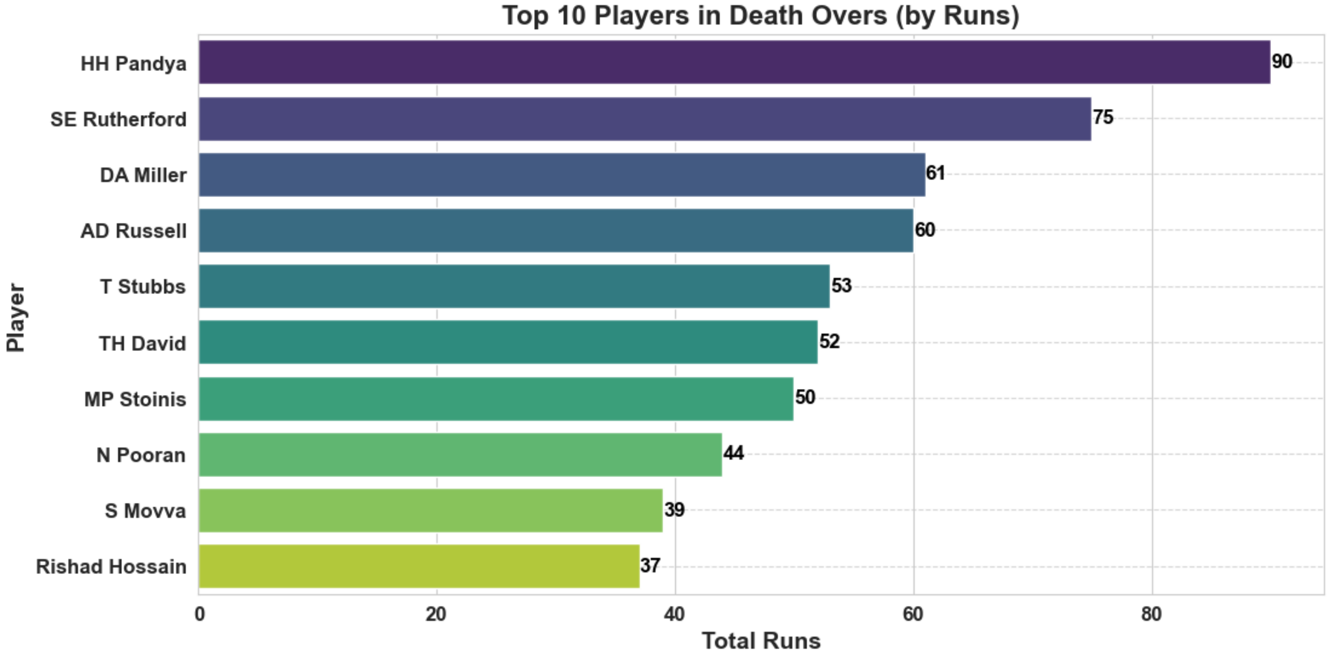


In [32]:

```
powerplay_filter = (deliveries['ball'] >= 0.1) & (deliveries['ball'] <= 6.6)
middle_overs_filter = (deliveries['ball'] >= 7.1) & (deliveries['ball'] <= 15.6)
death_overs_filter = (deliveries['ball'] >= 16.1) & (deliveries['ball'] <= 20.6)

powerplay = deliveries[powerplay_filter]
middle_overs = deliveries[middle_overs_filter]
death_overs = deliveries[death_overs_filter]

def top_10_players(df, phase_name):

    player_runs = df.groupby('striker')['runs_off_bat'].sum()
    player_balls = df.groupby('striker').size()

    player_strike_rate = (player_runs / player_balls) * 100

    player_stats = pd.DataFrame({'runs': player_runs,'strike_rate': player_strike_rate})

    player_stats = player_stats[player_stats['runs'] > 30]

    player_stats_sorted = player_stats.sort_values(by=['runs', 'strike_rate'], ascending=False).head(10)

    plt.figure(figsize=(12, 6))
    sns.barplot(x=player_stats_sorted['runs'], y=player_stats_sorted.index, palette="viridis")
    plt.title(f"Top 10 Players in {phase_name} (by Runs)", fontsize=16, weight='bold')
    plt.xlabel("Total Runs", fontsize=14, weight='bold')
    plt.ylabel("Player", fontsize=14, weight='bold')
    plt.xticks(fontsize=12, weight='bold')
    plt.yticks(fontsize=12, weight='bold')
    plt.grid(axis='y', linestyle='--', alpha=0.8)

    for index, value in enumerate(player_stats_sorted['runs']):
        plt.text(value, index, f'{value}', color='black', va="center", fontsize=12, weight='bold')
    plt.show()

    return player_stats_sorted

powerplay_top_10 = top_10_players(powerplay, "Powerplay")

middle_overs_top_10 = top_10_players(middle_overs, "Middle Overs")

death_overs_top_10 = top_10_players(death_overs, "Death Overs")
```




Top 10 Players in Middle Overs (by Runs)
Player
SA Yadav
146
H Klaasen
131
Rahmanullah Gurbaz
130
Towhid Hridoy
115
MP Stoinis
112
Aaron Jones
108
GJ Maxwell
106
AGS Gous
102
Ibrahim Zadran
96
DA Miller
96
0
20
40
60
80
100
120
140
Total Runs


Top 10 Players in Death Overs (by Runs)
Player
HH Pandya
90
SE Rutherford
75
DA Miller
61
AD Russell
60
T Stubbs
53
TH David
52
MP Stoinis
50
N Pooran
44
S Movva
39
Rishad Hossain
37
0
20
40
60
80
Total Runs

In [ ]: