NBA

"Evolution of Players: A Season-by-Season Analysis"

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Introduction

This presentation explores how NBA players and teams have evolved over the seasons – focusing on age, nationality, education, physical attributes, and how these factors influence performance.

Player Age:

Tables and charts illustrate changes in the average age of NBA players over time. The data suggests a gradual decrease in player age.

- **Table 1** and **Chart 1** show seasonal age trends.
- **Table 2** lists the youngest and oldest players by season.
- **Table 3** identifies teams with the youngest and oldest rosters.

tab.1

season	average_age	youngest_age	oldest_age
1996-97	27.96	18.0	43.0
1997-98	28.08	19.0	41.0
1998-99	28.00	19.0	41.0
1999-00	28.11	19.0	39.0
2000-01	28.10	19.0	40.0
2001-02	27.67	19.0	40.0
2002-03	27.53	20.0	41.0
2003-04	27.46	19.0	41.0
2004-05	27.30	19.0	42.0
2005-06	26.89	18.0	40.0
2006-07	26.86	19.0	44.0
2007-08	27.19	19.0	42.0
2008-09	26.94	19.0	43.0
2009-10	27.08	20.0	39.0
2010-11	27.13	19.0	39.0
2011-12	27.09	19.0	39.0
2012-13	27.07	19.0	40.0
2013-14	26.96	19.0	40.0
2014-15	26.98	19.0	39.0
2015-16	27.05	19.0	40.0
2016-17	26.85	19.0	40.0
2017-18	26.52	19.0	41.0
2018-19	26.35	19.0	42.0
2019-20	26.01	19.0	43.0
2020-21	25.99	19.0	41.0
2021-22	26.17	19.0	42.0
2022-23	26.15	19.0	43.0

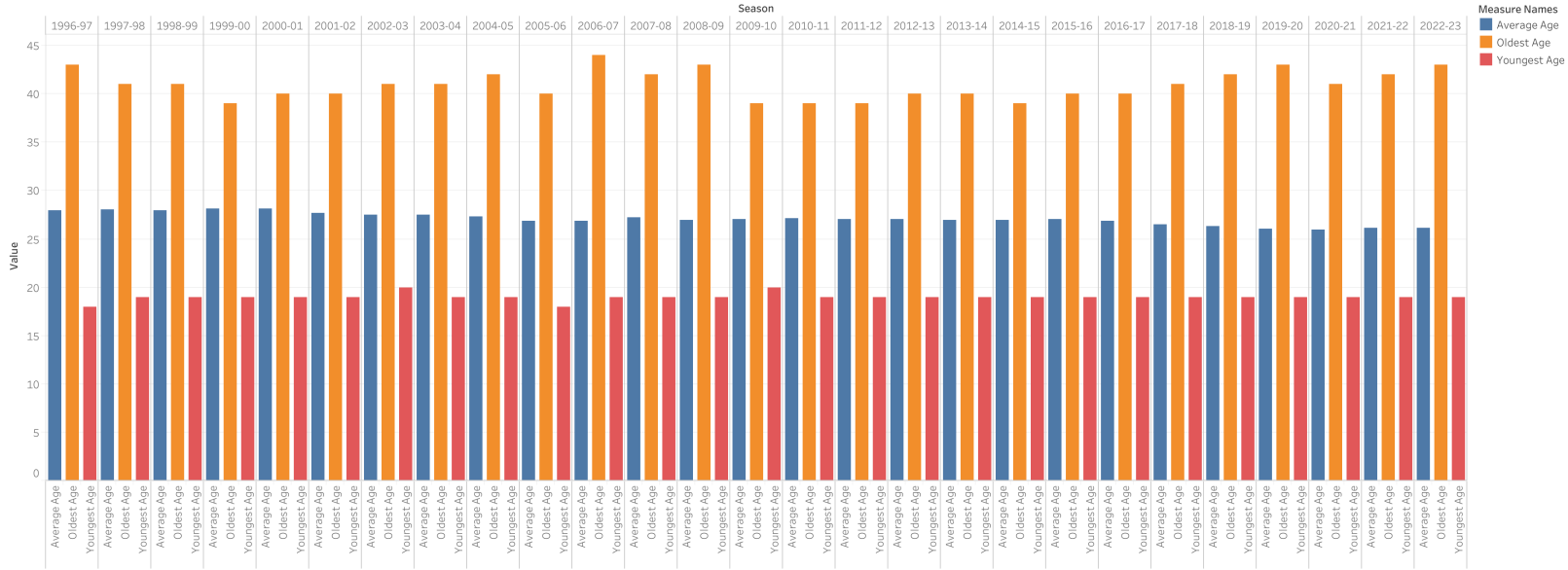
tab.2

season	player_name	age
1996-97	Jermaine O'Neal	18.0
1996-97	Kobe Bryant	18.0
2005-06	Andrew Bynum	18.0
2006-07	Kevin Willis	44.0

tab.3

season	team_abbreviation	avg_team_age
2012-13	NYK	32.06
2022-23	OKC	23.19

Wyk. 1



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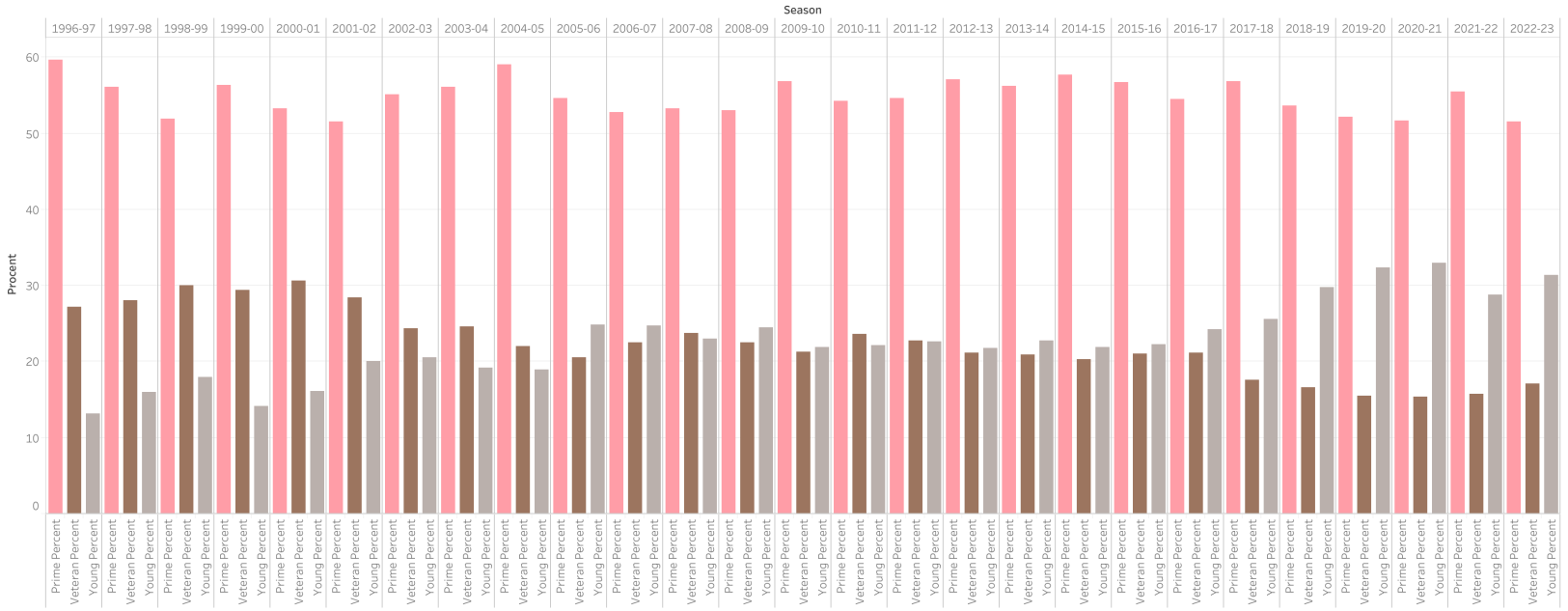


Further breakdown (**Chart 2**, **Table 4**) categorizes players into:

- **Young (<24 years)**
- **Prime (24–30 years)**
- **Veterans (>30 years)**

Over time, the number of veteran players has decreased, while younger players make up an increasing share of the league.

Table 5 highlights the seasons with the highest proportions of each age group.

tab.4

season	young_percent	prime_percent	veteran_percent
1996-97	13.15	59.64	27.21
1997-98	15.95	56.04	28.02
1998-99	18.00	51.94	30.07
1999-00	14.16	56.39	29.45
2000-01	16.10	53.29	30.61
2001-02	20.00	51.59	28.41
2002-03	20.56	55.14	24.30
2003-04	19.23	56.11	24.66
2004-05	18.97	59.05	21.98
2005-06	24.89	54.59	20.52
2006-07	24.67	52.84	22.49
2007-08	23.06	53.22	23.73
2008-09	24.49	53.03	22.47
2009-10	21.95	56.79	21.27
2010-11	22.12	54.20	23.67
2011-12	22.59	54.60	22.80
2012-13	21.75	57.14	21.11
2013-14	22.82	56.22	20.95
2014-15	21.95	57.72	20.33
2015-16	22.27	56.72	21.01
2016-17	24.28	54.53	21.19
2017-18	25.56	56.85	17.59
2018-19	29.81	53.58	16.60
2019-20	32.33	52.17	15.50
2020-21	32.96	51.67	15.37
2021-22	28.76	55.54	15.70
2022-23	31.35	51.58	17.07

tab.5.

age_group	age_group	percentage
Prime (24-30)	1996-97	59.64
Young (<24)	2020-21	32.96
Veteran (>30)	2000-01	30.61

tab.6

season	best_age_group	avg_points_per_player
1996-97	Veteran	8.19
1997-98	Veteran	8.11
1998-99	Young	7.48
1999-00	Young	8.32
2000-01	Prime	8.32
2001-02	Prime	8.82
2002-03	Prime	8.46
2003-04	Prime	8.15
2004-05	Prime	8.76
2005-06	Prime	9.14
2006-07	Prime	9.26
2007-08	Prime	9.18
2008-09	Prime	9.27
2009-10	Young	8.78
2010-11	Prime	8.54
2011-12	Prime	8.31
2012-13	Prime	8.20
2013-14	Prime	8.79
2014-15	Prime	8.52
2015-16	Prime	9.03
2016-17	Prime	9.18
2017-18	Prime	8.54
2018-19	Prime	9.47
2019-20	Prime	9.28
2020-21	Veteran	10.52
2021-22	Veteran	9.83
2022-23	Veteran	10.30

tab.7.

age_group	avg_points_per_player
Prime	8.67

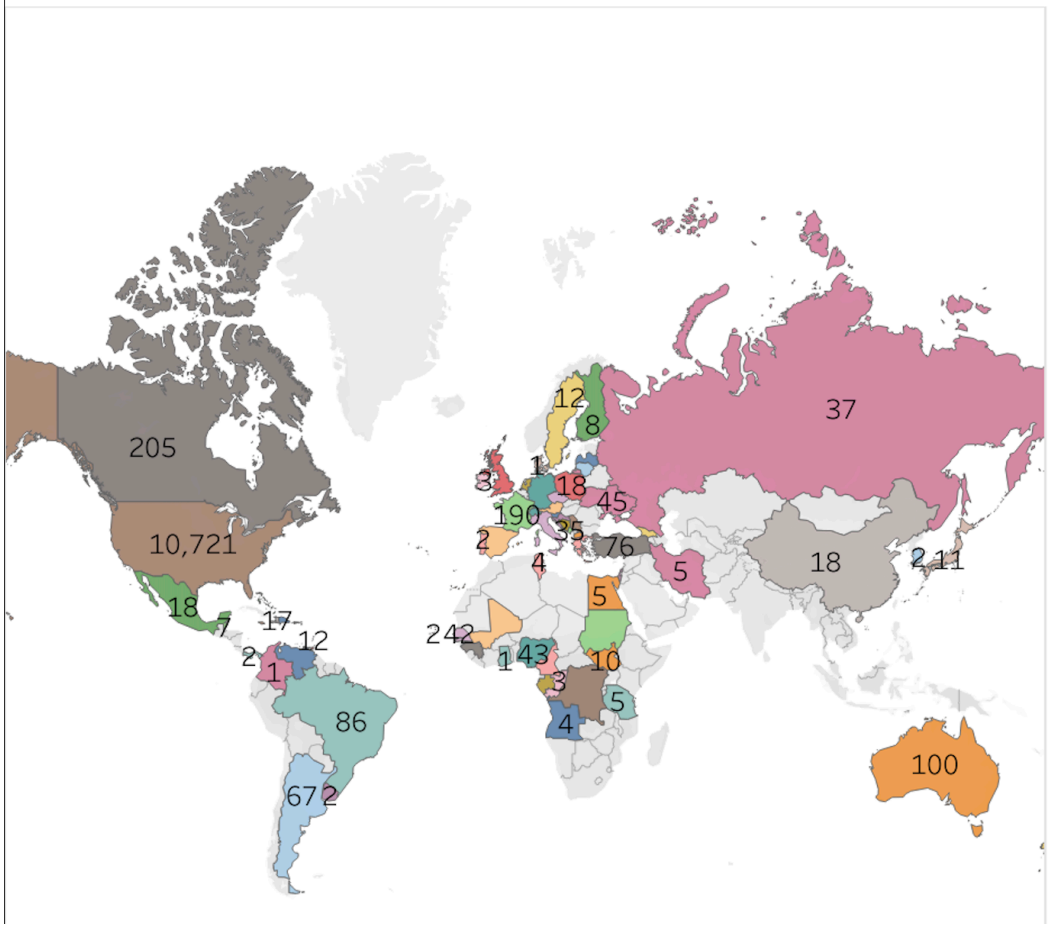
Age and Performance

Table 6 evaluates scoring efficiency by age group per season.

Findings:

- Players aged 24–30 (“prime years”) are generally the most effective scorers (**Table 7**).
- In recent seasons, however, veteran players have shown higher efficiency, which could argue for more strategic investment in experienced players.

wyk. 3



Nationality:

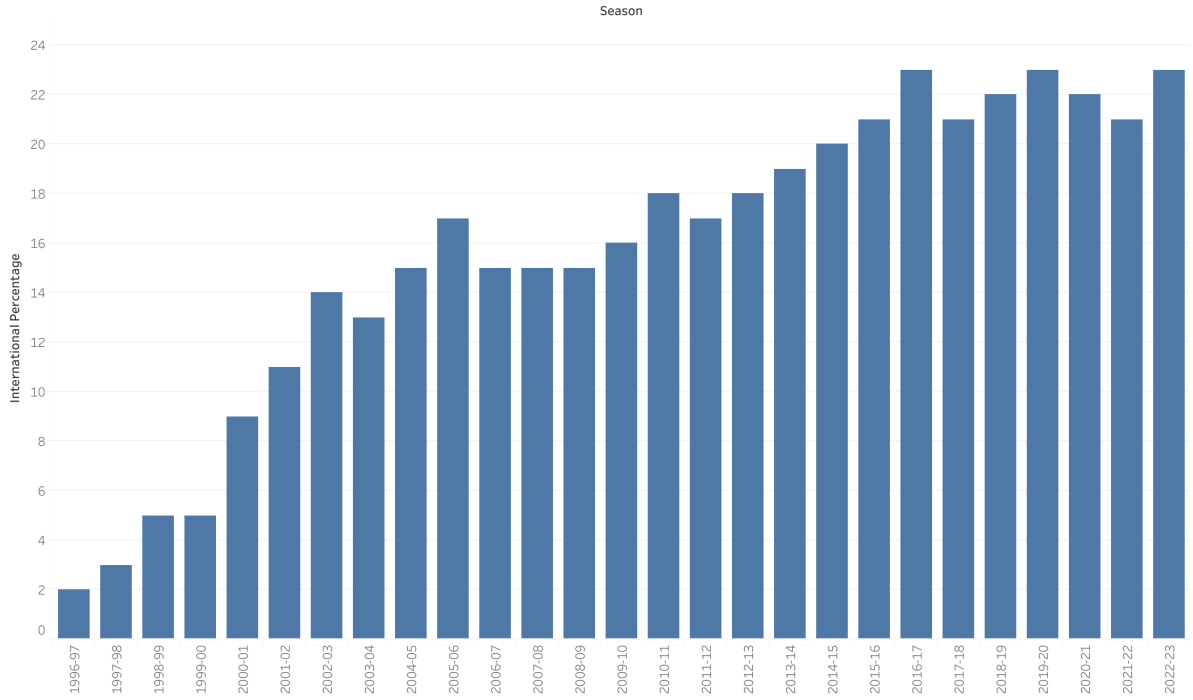
As shown on the accompanying map and in **Table 8**, international representation in the NBA has grown significantly.

In 1996–97, only 2% of players were international. By 2022–23, that figure reached 23%.

tab.8

season	number_of_players	international_players	international_percentage
1996-97	441	9	2
1997-98	439	14	3
1998-99	439	22	5
1999-00	438	24	5
2000-01	441	40	9
2001-02	440	51	11
2002-03	428	62	14
2003-04	442	61	13
2004-05	464	74	15
2005-06	458	80	17
2006-07	458	71	15
2007-08	451	70	15
2008-09	445	70	15
2009-10	442	75	16
2010-11	452	83	18
2011-12	478	83	17
2012-13	469	85	18
2013-14	482	92	19
2014-15	492	101	20
2015-16	476	101	21
2016-17	486	115	23
2017-18	540	114	21
2018-19	530	118	22
2019-20	529	125	23
2020-21	540	124	22
2021-22	605	133	21
2022-23	539	126	23

wyk.4



tab.9

season	school	number_of_players
1996-97	North Carolina	14
1997-98	North Carolina	13
1998-99	North Carolina	15
1999-00	North Carolina	14
2000-01	North Carolina	13
2001-02	North Carolina	14
2002-03	North Carolina	13
2003-04	Kentucky	12
2004-05	Kentucky	12
2005-06	Kentucky	11
2005-06	Duke	11
2005-06	Kansas	11
2006-07	Connecticut	14
2007-08	Duke	13
2007-08	Connecticut	13
2008-09	Duke	14
2009-10	UCLA	14
2009-10	Duke	14
2010-11	UCLA	14
2011-12	Kentucky	17
2012-13	Kentucky	21
2013-14	Kentucky	22
2014-15	Duke	20
2015-16	Kentucky	23
2016-17	Kentucky	26
2017-18	Kentucky	28
2018-19	Kentucky	30
2019-20	Duke	26
2019-20	Kentucky	26
2020-21	Kentucky	30
2021-22	Kentucky	29
2022-23	Kentucky	27

Education:

Table 9 tracks the colleges attended by NBA players, with North Carolina and Kentucky consistently producing the most players.

Table 10 reveals:

- Players who did **not** attend college average one point more per game than those who did.
- Although most players in the 1990s attended college, a shift occurred in the 2000s. Recently, college attendance among players has started increasing again.

tab10.

school_category	number_of_players	avg_points_per_player	total_points
With School	10990	8.07	88734.60
No School	1854	9.03	16747.70

wyk.5

wyk.6

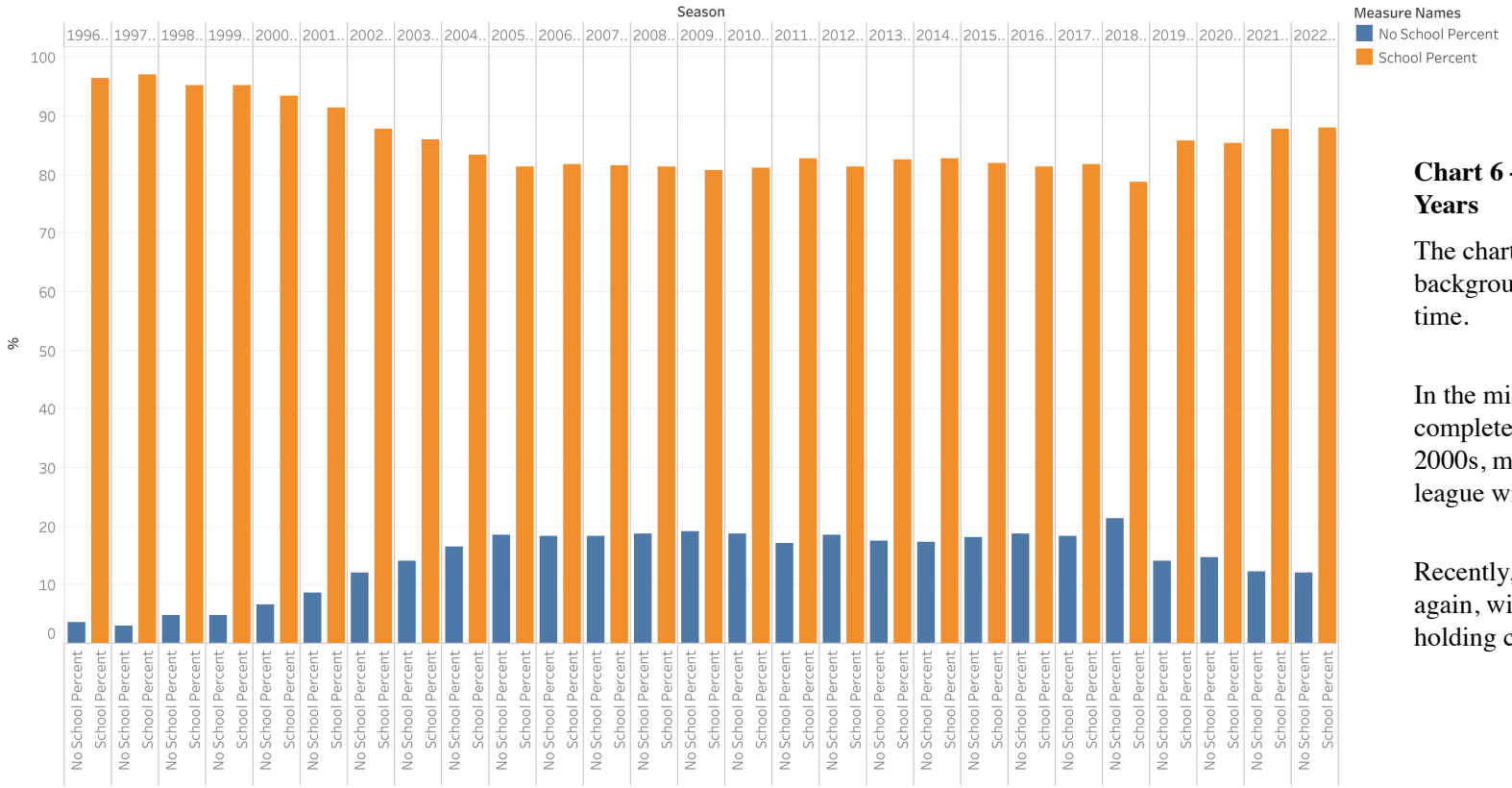


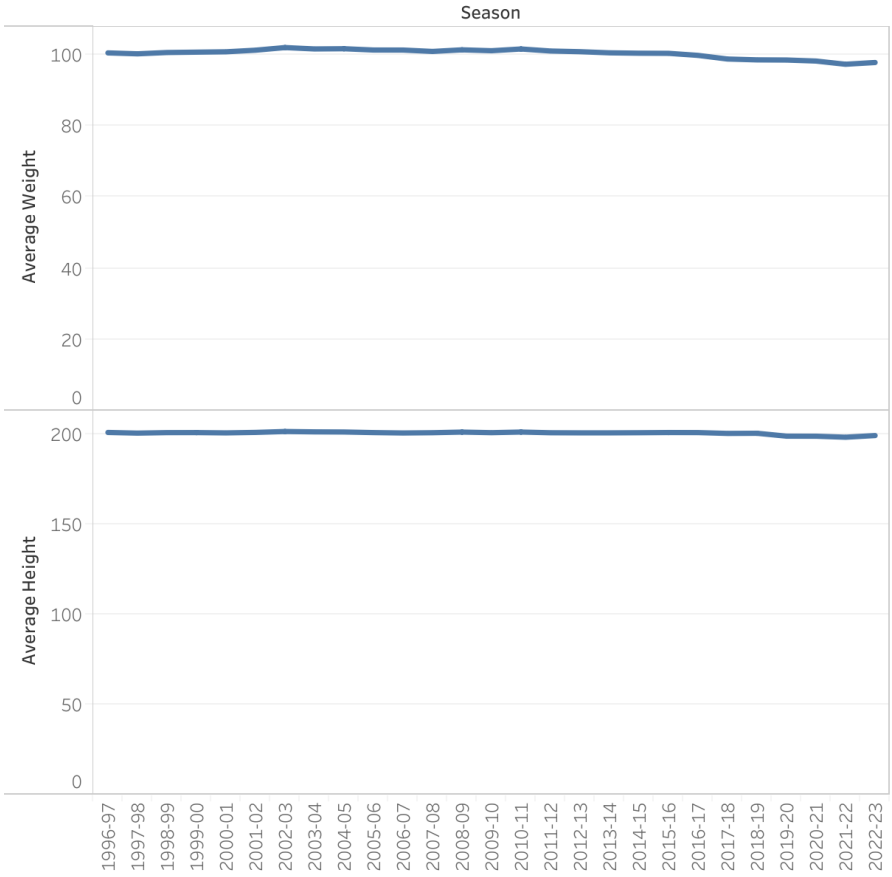
Chart 6 – Education Trends Over the Years

The chart highlights how the educational background of NBA players has shifted over time.

In the mid-1990s, most players had completed college. However, in the early 2000s, more athletes began entering the league without higher education.

Recently, the trend has started to reverse again, with an increasing number of players holding college degrees.

wyk.7



Physical Attributes:

Table 11 and **Chart 7** show:

- Average **height** has remained steady (around 200–201 cm).
- Average **weight** has decreased by about 3 kg over the years.

tab.11.

season	average_height	average_weight
1996-97	200.99	100.53
1997-98	200.62	100.27
1998-99	200.90	100.64
1999-00	200.92	100.74
2000-01	200.75	100.84
2001-02	201.02	101.29
2002-03	201.52	102.03
2003-04	201.32	101.64
2004-05	201.25	101.70
2005-06	200.92	101.34
2006-07	200.70	101.33
2007-08	200.85	100.94
2008-09	201.20	101.39
2009-10	200.87	101.14
2010-11	201.22	101.63
2011-12	200.83	101.06
2012-13	200.77	100.87
2013-14	200.77	100.55
2014-15	200.84	100.44
2015-16	200.95	100.41
2016-17	200.92	99.83
2017-18	200.46	98.81
2018-19	200.54	98.57
2019-20	198.94	98.53
2020-21	198.91	98.24
2021-22	198.35	97.34
2022-23	199.27	97.83

Summary of Correlations (Table 12):

- **Height-to-points correlation:** –0.58
- **Weight-to-points correlation:** –0.61
- **Age-to-points correlation:** –0.77

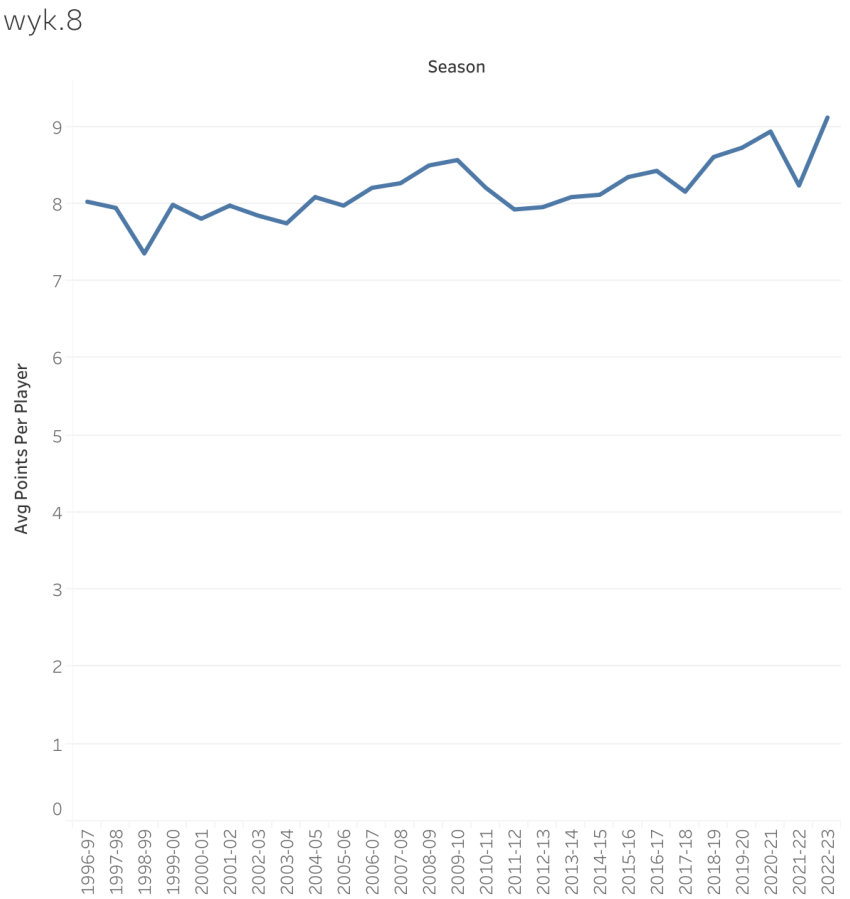
Interpretation:

Height and weight show a moderate correlation with scoring — they influence performance, but aren't the only factors. Age, however, has a stronger negative impact, indicating players tend to score less as they get older. Still, the **24–30 age group** remains the most effective overall.

This is not the only factor at play. As shown in **Chart 8**, the **average number of points per game has increased** in recent years. This may also be due to the **growing number of international players** entering the NBA, bringing new dynamics and styles of play.

tab.12-1

correlation_height_points	correlation_weight_points	correlation_age_points
-0.58	-0.61	-0.77



Top Scorers by Season (Table 13):

The final table lists the leading scorer for each season, highlighting the league's top individual performers – from Michael Jordan to Joel Embiid.

tab.13

season	player_name	pts
1996-97	Michael Jordan	29.6
1997-98	Michael Jordan	28.7
1998-99	Allen Iverson	26.8
1999-00	Shaquille O'Neal	29.7
2000-01	Allen Iverson	31.1
2001-02	Allen Iverson	31.4
2002-03	Tracy McGrady	32.1
2003-04	Tracy McGrady	28.0
2004-05	Allen Iverson	30.7
2005-06	Kobe Bryant	35.4
2006-07	Kobe Bryant	31.6
2007-08	LeBron James	30.0
2008-09	Dwyane Wade	30.2
2009-10	Kevin Durant	30.1
2010-11	Kevin Durant	27.7
2011-12	Kevin Durant	28.0
2012-13	Carmelo Anthony	28.7
2013-14	Kevin Durant	32.0
2014-15	Russell Westbrook	28.1
2015-16	Stephen Curry	30.1
2016-17	Russell Westbrook	31.6
2017-18	James Harden	30.4
2018-19	James Harden	36.1
2019-20	James Harden	34.3
2020-21	Stephen Curry	32.0
2021-22	Joel Embiid	30.6
2022-23	Joel Embiid	33.1