

Unmasking a Similarity Among NHL's Top Goalies, 1982-83 to 2022-23

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ABSTRACT

The authors examine the average height, weight, and body mass index (BMI) of number-one goaltenders across five decades, analyzing data from 137 goalies in five selected seasons. The findings reveal significant trends in goaltender size over the years, with goaltenders becoming taller and heavier, particularly since the early 2000s. However, despite these increases in height and weight, BMI has remained relatively stable and, in some cases, has even decreased. Comparisons between NHL teams that advanced to the playoffs and those that do not show minimal differences in goaltender size, indicating that size may not be a determinant of playoff success. The study sheds light on the nuanced relationship between goaltender size, playing style, and performance in professional hockey.

Introduction

When a goalie in professional ice hockey is upended and lands on his back, they all look alike, like a turtle sliding helplessly on its shell, with four limbs pointing up, two with oversized leg pads, one with a catching glove, and one possibly still clutching a hockey stick. Standing before their net, goalies come in many different shapes, sizes, and playing styles.

The three most popular styles in the National Hockey League (NHL) are stand-up goaltending, butterfly, and a hybrid of the two aforementioned styles [2, 3]. The stand-up style, once favored by goaltenders in the 1980s and '90s, exposes the bottom half of the net. The butterfly style, popular since 2000, requires goalies to drop to their knees when making saves. In that position and arms extended like wings, they resemble the shape of a butterfly. Hybrid goaltending is a combination of the stand-up and butterfly styles.

Larger goalies obviously cover more areas of the net which measures 180 centimeters (or 6 feet) in width and 120 centimeters (or 4 feet) in height. As the style of play changed over time, did the shape and size of goalies also change? The focus of this paper is whether the average height, weight, and body mass index (hereafter BMI) of number one goalies on NHL teams changed over the last forty years.

The Data

The data on the height (in centimeters) and weight (in kilograms) of each NHL team's number one goalie were collected from [4] in five different seasons: 1982-83 (21 teams), 1992-93 (24 teams), 2002-03 (30 teams), 2012-13 (30 teams), and 2022-23 (32 teams). When height is measured in centimeters and weight is measured in kilograms, BMI is defined as follows:

$$(1) \quad \text{BMI} = \left[\frac{\text{weight}}{\text{height}^2} \right] \times 10000$$

That is, BMI is the ratio of a person’s weight in kilograms divided by the square of one’s height in centimeters. This ratio is then multiplied by 10,000. If weight is measured in pounds and height is measured in inches, BMI is then equal to this ratio multiplied by 703. In the general population for adults 20 years old and older, a BMI of 25.0 to 29.9 would be classified as “overweight”; a BMI of 30.0 and above would be “obese.” Athletes, in general, and NHL goalies, in particular, usually have a high BMI because of increased muscularity rather than increased body fatness. And, taller and heavier goalies may have the same BMI as shorter and leaner goalies only because weight increases proportionally to one’s height squared.

Some NHL goalies are Bunyanesque. The three tallest goalies in our sample of 137 goalies at 198 centimeters (6 feet, 6 inches) were Anders Lindback (Tampa Bay Lightning, 2012-13), Devan Dubnyk (Edmonton Oilers, 2012-13), and Jacob Markstrom (Florida Panthers, 2012-13 and Calgary Flames, 2022-23). Some are not. The two shortest goalies at 170 centimeters (5 feet, 7 inches) were Richard Brodeur (Vancouver Canucks, 1982-83) and Tommy Soderstrom (Philadelphia Flyers, 1992-93). The heaviest goalie at 107 kilograms (235.9 pounds) was Frederik Andersen (Carolina Hurricanes, 2022-23); the lightest goalie at 70 kilograms (154.3 pounds) was Jon Casey (Minnesota North Stars, 1992-93).

Methodology

To test whether the average height (weight or BMI) of all teams’ number one goalies in one season is equal to the corresponding average in another season, we run a series of two-sample *t*-tests. If, for example, we were interested in testing the claim that there is no difference in the average height (μ) of number one goalies in 1982-83 and their counterparts in 2022-23, the null hypothesis is

$$(2) \quad H_0: \mu_{1982-83} = \mu_{2022-23}$$

The two-tailed alternative hypothesis states that the two averages are different, that is, number goalies across the 32 teams in 2022-23 might be taller or shorter, on average, than their counterparts across the 21 teams in 1982-83. The two-tailed or two-sided alternative hypothesis would be

$$(3) \quad H_A: \mu_{1982-83} \neq \mu_{2022-23}$$

For all ten different two-tailed *t*-tests, we compare the two-sided *p*-value to a 5% level of significance. If this *p*-value is less than $\alpha = 0.05$, then the null hypothesis H_0 can be rejected; otherwise, we cannot reject H_0 at the 5% level.

For each of the five selected seasons, we ran a two-sided *t*-test comparing the average height (weight and BMI) of the sixteen teams that advanced to the playoffs that year against the corresponding average of the remaining teams in the league that did not.

The Results

Decennial comparisons of height, weight, and BMI of the NHL’s top goaltenders on all teams are presented, respectively, in Tables 1, 2, and 3.

Table 1. Height Comparisons Among NHL Goalies by Decade, 1982-83 to 2022-23

	Averages (centimeters)	<i>p</i> -value on
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Group 1	Group 2	Group 1	Group 2	difference
1982-83	1992-93	178.24	180.71	0.165
1982-83	2002-03	178.24	185.23	<0.001
1982-83	2012-13	178.24	188.97	<0.001
1982-83	2022-23	178.24	190.84	<0.001
1992-93	2002-03	180.71	185.23	0.004
1992-93	2012-13	180.71	188.97	<0.001
1992-93	2022-23	180.71	190.84	<0.001
2002-03	2012-13	185.23	188.97	0.001
2002-03	2022-23	185.23	190.84	<0.001
2012-13	2022-23	188.97	190.84	0.082

Table 2. Weight Comparisons Among NHL Goalies by Decade, 1982-83 to 2022-23

Group 1	Group 2	Averages (kilograms)		<i>p</i> -value on difference
		Group 1	Group 2	
1982-83	1992-93	80.38	83.92	0.038
1982-83	2002-03	80.38	88.90	<0.001
1982-83	2012-13	80.38	91.87	<0.001
1982-83	2022-23	80.38	90.63	<0.001
1992-93	2002-03	83.92	88.90	0.009
1992-93	2012-13	83.92	91.87	<0.001

1992-93	2022-23	83.92	90.63	<0.001
2002-03	2012-13	88.90	91.87	0.106
2002-03	2022-23	88.90	90.63	0.331
2012-13	2022-23	91.87	90.63	0.490

Table 3. Body Mass Index Comparisons Among NHL Goalies by Decade, 1982-83 to 2022-23

Group 1	Group 2	Averages		<i>p</i> -value on difference
		Group 1	Group 2	
1982-83	1992-93	25.30	25.71	0.317
1982-83	2002-03	25.30	25.91	0.168
1982-83	2012-13	25.30	25.73	0.346
1982-83	2022-23	25.30	24.86	0.223
1992-93	2002-03	25.71	25.91	0.672
1992-93	2012-13	25.71	25.73	0.954
1992-93	2022-23	25.71	24.86	0.044
2002-03	2012-13	25.91	25.73	0.722
2002-03	2022-23	25.91	24.86	0.015
2012-13	2022-23	25.73	24.86	0.047

Height comparisons in Table 1 show significantly taller number one goalies beginning in 2002-03. They are, on average, taller still in 2012-13 than they were ten years earlier ($p = 0.001$). Average height increases again over the next decade for the number one goalies on the 32 teams in 2022-23 (190.84 centimeters or 75.1 inches v. 188.97 centimeters or 74.4 inches), but the difference between the two averages is not, in this case, statistically significant ($p = 0.082$).

Insofar as the average weight of number one goalies is concerned, the results presented in Table 2 show significantly heavier goalies beginning in 1992-93 and, again, from 1992-93 to 2002-03 ($p = 0.009$). Although heavier, on average, in 2012-13 than in 2002-03 (91.87 kilograms or 202.5 pounds v. 88.90 kilograms or 196 pounds), this difference is not statistically discernible ($p = 0.106$). Average weight falls a little over one kilogram (2.2 pounds) from 2012-13 to 2022-23, but this change too is not statistically discernible ($p = 0.490$).

The most surprising result in Table 3 is that the taller and heavier number one goalies have an offsetting effect on their overall measurements of BMI. When the end-of-period 2022-23 average BMI (24.86) is compared to the corresponding 1992-93 average (25.71), there is evidence of a discernible decrease in BMI ($p = 0.044$). The 2022-23 average BMI is also smaller than the corresponding average in 2012-13 (25.73, $p = 0.047$) as well as smaller than the corresponding average in 2002-03 (25.91, $p = 0.015$).

In summary, the decennial comparisons of number one goalies on all NHL teams between 1982-83 and 2022-23 conjure up images of goalies more Bunyanesque, taller and heavier, but whose BMIs changed very little over forty years.

Table 4. Height, Weight, and Body Mass Index Comparisons, NHL Teams That Advanced and Did Not Advance to the Playoffs, by Decade, 1982-83 to 2022-23

Season	Averages		<i>p</i> -value on difference
	Advanced	Did Not Advance	
Height (centimeters)			
1982-83	178.56	177.20	0.581
1992-93	181.69	178.75	0.324
2002-03	185.25	185.21	0.982
2012-13	186.88	191.36	0.003
2022-23	191.25	190.44	0.571
Weight (kilograms)			
1982-83	80.94	78.60	0.301
1992-93	85.13	81.50	0.198

2002-03	88.44	89.43	0.701
2012-13	91.00	92.86	0.484
2022-23	91.25	90.00	0.620

Body Mass Index

1982-83	25.38	25.06	0.527
1992-93	25.81	25.50	0.663
2002-03	25.77	26.07	0.667
2012-13	26.07	25.35	0.321
2022-23	24.92	24.80	0.824

One might wonder whether NHL teams that advanced to the playoffs (sixteen in each of the five selected years) had number one goalies that looked any different from their counterparts on teams that did not make the playoffs. Table 4 shows fifteen comparisons (five each for height, weight, and BMI). In only one instance was there a statistically significant difference between the two groups of teams. In 2012-13, the top sixteen teams had number one goalies that were, on average, about 4.48 centimeters or 1.8 inches shorter ($p = 0.003$). Otherwise, there were no differences between the two groups of teams insofar as the average height, weight, or BMI of their number one goalies was concerned.

Concluding Remarks

Decennial comparisons of number one ranked NHL goalies on each team from 1982-83 to 2022-23 reveal significantly taller and heavier goalies. Surprisingly, although taller and heavier, BMIs have rarely changed. In recent decades, BMIs have actually decreased. And, comparisons of the number one ranked goalies on the sixteen NHL teams that advanced to the postseason revealed in practically all cases no discernible differences to their counterparts on teams that did not advance.

The changing playing style of goalies from stand-up to butterfly and then to a hybrid of the two favored taller and heavier goalies as their upper bodies covered more net area than smaller goalies. The butterfly style caused shorter goalies who played in a stand-up position to become obsolete. Our observed growth in goalie size aligns well with the transition of playing style from stand-up to butterfly.

References

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