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## WHY THE NBA BOUNCED THEIR NEW BASKETBALL

“When it gets wet with sweat,  
it’s hard to handle.”

– P.J. Brown,  
Chicago Bulls [1]

At the start of the 2006-07 National Basketball Association (NBA) season, the league adopted a new synthetic basketball. The players’ response was not favorable. And, beginning January 1, 2007 (about 28 games into the 2006-07 season), the NBA scrapped its new microfiber composite ball and brought back the old leather one. Statistically speaking, how did the first part of the 2006-07 season (with the new ball) compare to the first part of the previous season? Were there discernible differences in shooting, scoring, or ball-related turnovers to justify the switch back to the traditional leather ball?

Table 1 shows for each of the thirty teams in the NBA the number of turnovers per game in the early part of the 2005-06 season (that is, all games played through December 30, 2005) and the same per game statistic for all teams through the early part of the 2006-07 season (that is, all games played through December 30, 2006) with the NBA’s new basketball.<sup>1</sup> For all but five teams, turnovers per game rose after the change to the new ball.

Table 2 summarizes the results of ten paired *t*-tests before, during, and after use of the new NBA ball involving (i) points per game, (ii) field goal percentage, (iii) 3-point field goal percentage, (iv) free throw percentage, and (v) turnovers per game. Although the field goal percentage rose with the new ball (and, not surprisingly, so too did points per game),<sup>2</sup> NBA players obviously did not like the feel of dribbling the new ball. As pointed out earlier, turnovers per game *rose* at the beginning of the 2006-07 season relative to the same period of the 2005-06 season [ $p < .001$ ]. Some analysts might attribute the higher average number of turnovers per

game at the beginning of the 2006-07 season (relative to the same period a year earlier) not to the new ball, but to stronger enforcement in 2006-07 of rules related to carrying the ball and traveling. Yet, we found that turnovers per game *fell* for the remainder of the 2006-07 season (with the old leather ball) relative to the first part of the 2006-07 season (with the new synthetic ball) [ $p < .001$ ]. Moreover, for the remainder of the 2006-07 season, 3-point percentages rose, suggesting that long-range shooters felt more comfortable handling the traditional leather ball.

### **Concluding Remarks**

When at the beginning of the 2006-07 season the NBA decided to use a new synthetic composite basketball in place of the traditional leather one, players voiced their disapproval. They noted that the new ball did not absorb perspiration from the player's hands as well as the leather ball did. Moisture therefore accumulated on the surface of the new ball making it extremely slick and thus difficult to handle. Some players claimed that the synthetic material actually cut their hands. Others noted that the new ball bounced differently than the old one.

Statistical comparisons between the beginning of the 2005-06 season (prior to January 1, 2006) when the traditional leather ball was used and the beginning of the 2006-07 season (prior to January 1, 2007) when the new composite ball was used reveal discernible differences in the average number of turnovers per game. Turnovers increased by almost one per game, the clearest manifestation why players' response to the new composite ball was overwhelmingly negative.

**Table 1. Turnovers per game by team,  
early 2005-06 and 2006-07**

Team	Early 2005-06, old ball	Early 2006-07, new ball	Remainder 2006-07, old ball
Atlanta Hawks	15.79	<b>16.54</b>	14.50
Boston Celtics	16.62	15.82	15.59
Charlotte Bobcats	14.37	<b>15.27</b>	13.77
Chicago Bulls	15.93	14.97	<b>15.67</b>
Cleveland Cavaliers	13.68	<b>14.69</b>	13.28
Dallas Mavericks	13.03	<b>13.77</b>	12.73
Denver Nuggets	15.10	<b>16.52</b>	15.93
Detroit Pistons	11.04	<b>11.57</b>	<b>11.80</b>
Golden State Warriors	13.19	<b>15.56</b>	<b>15.76</b>
Houston Rockets	14.25	<b>16.03</b>	12.19
Indiana Pacers	15.33	<b>16.34</b>	15.56
Los Angeles Clippers	13.82	<b>14.06</b>	<b>14.60</b>
Los Angeles Lakers	13.83	<b>16.83</b>	14.00
Memphis Grizzlies	13.14	<b>15.16</b>	<b>16.10</b>
Miami Heat	14.03	<b>14.73</b>	13.46
Milwaukee Bucks	14.30	13.94	<b>14.94</b>
Minnesota Timberwolves	12.59	<b>16.00</b>	14.52
New Jersey Nets	13.62	<b>14.77</b>	13.71
New Orleans Hornets	13.34	<b>14.43</b>	13.17
New York Knicks	17.04	16.13	<b>16.34</b>
Orlando Magic	14.93	<b>16.59</b>	16.06
Philadelphia 76ers	12.57	<b>14.07</b>	<b>15.08</b>
Phoenix Suns	13.52	<b>15.11</b>	13.41
Portland Trailblazers	14.07	<b>14.45</b>	14.22
Sacramento Kings	14.34	<b>14.75</b>	13.70
San Antonio Spurs	13.39	<b>14.00</b>	12.85
Seattle Supersonics	13.66	<b>15.48</b>	13.90
Toronto Raptors	13.03	<b>13.06</b>	12.84
Utah Jazz	15.83	<b>15.90</b>	14.57
Washington Wizards	13.43	13.20	<b>13.25</b>
<i>Average</i>	14.09	<b>14.99</b>	14.25

\*Numbers in italicized boldface represent an increase from the previous column for that team.

**Table 2. Summary of Paired *t*-Tests,  
Early 2005-06 and 2006-07 NBA Seasons**

Variable	(1)	(2)	(3)	<i>p</i> -value on difference	
	Games through Dec. 30, 2005 (30-team avg.)	Games through Dec. 30, 2006 (30-team avg.)	Games beginning Jan. 1, 2007 (30-team avg.)	[Col. (2) - Col. (1)]	[Col. (3) - Col. (2)]
Points per game	96.123	98.438	98.910	.013	.497
Field goal percentage	44.841	45.630	45.944	.042	.291
3-point percentage	35.232	34.550	36.229	.266	.013
Free throw percentage	74.154	75.367	75.263	.070	.837
Turnovers per game	14.093	14.992	14.250	<.001	<.001

## Reference

1. “Intelligence Report: Player reaction to NBA’s new ball”, *ESPN Insider*, October 5, 2006, <http://insider.espn.go.com/nba/insider/news/story?page=intelligence-report/newball&univLogin02=stateChanged>

### Footnotes

1. The authors gratefully acknowledge the assistance of Douglas Steele whose Web site [www.dougstats.com](http://www.dougstats.com) provides detailed NBA team statistics after each game, enabling us to perform the before and after January 1<sup>st</sup> paired  $t$ -tests in two successive seasons.
2. Table 2 shows that for the remainder of the 2006-07 season (with the traditional leather ball) relative to the first part of the season (with the new ball), there was no discernible difference in either points per game or field goal percentage. That is, the initial increase in points per game or field goal percentage should not be ascribed to the new ball.