



*National Association
of
Basketball Coaches Convention
Indianapolis, Indiana
April 1997*

1996-97
Research Committee Report
Indianapolis, Indiana
April 1997

I. 1996-97 OBJECTIVES

A. Encourage basketball research.

1. Administer the NABC research grant program.

STATUS: The committee annually solicits, screens, recommends to the Board of Directors and monitors completion of basketball research grants (ten possible awards/up to \$1,000 per grant)

The present summary:

- a) Awarded/completed/funded _____ 23
- b) Awarded/in-progress _____ 7
- c) applications pending _____ 2

2. Publish basketball research in the NABC Courtside.

STATUS: Research articles/reports/grant abstracts are edited and submitted for publications.

3. Conduct cooperative rules experimentation with the NCAA Basketball Rules Committees.

STATUS: Focus continues on the evaluation of basketball equipment with priorities to protect players, improve performance, and maintain the quality and integrity of the game.

Efforts are still being placed on the problem of rebound/shooting differences attributed to inconsistencies in rim/backboard/support systems from court to court and between both baskets on the same court.

The rim testing process and parameters that were developed are still recommended, though not required, for college basketball. The NCAA Rules Committees have adopted acceptable energy absorption ranges from 35% to 50% for each basket and a maximum difference of 5% between baskets on the same court to keep the game the same on every court.

Recent findings confirm a relationship between energy absorption values and field goal shooting percentages as well as rebound differences. Increased incidents of variability of rim/backboard/support systems also are evident

due to adjustability of rims and existing differences between approved equipment from many manufacturers.

It is still concluded that this problem threatens the fair play concept in basketball; i.e., rim & backboard equipment differences are influencing game outcome.

Rim testing would solve this problem and insure that all baskets are at the same height and have similar ball-rim rebound to *make the game the same everywhere*. The technology is there based on solid research done over a ten year period. Equipment adjustments/changes can be made to bring present equipment/systems into compliance.

4. Continue basketball equipment improvement/testing.

STATUS: During 1995-97 experiments were conducted to determine possible elasticity changes on breakaway rims that affect rebound and shooting percentages.

In 1993-95, the U.S. Military Academy Engineering Departments centered on ball-rim and ball-floor interaction plus the development of an engineering model to evaluate the effect of additions/changes in equipment for basketball.

B. Compile and maintain a bibliographic reference source of all basketball printed materials in the United States.

STATUS: Updating was carried out in 1993-94. Revision of the *Basketball Resource Guide (Second Edition)* published by Human Kinetics Publishers, Champaign, Illinois was completed in 1995-96 for publication of the third edition in 1996 (five year publishing intervals). This edition is in computer disc format and is available from Human Kinetics (800-747-4457)

C. Communicate basketball rules and equipment information to NABC members.

1. Via the NABC Courtside

STATUS: It is recommended that the following schedule be adopted:

a) Summer

Current year questionnaire results/new rules changes/comments on rules/NABC research grant guidelines.

b) Fall

Rules changes/points of emphasis/NABC research grant guidelines

c) Winter

Rules editor comments/grant guidelines

d) Spring

Last year's questionnaire results/rules issues article

e) Periodic articles on rules and research

2. Via the NCAA Men's Basketball Rules Committee

STATUS: The NABC Research Committee Chair has attended rules committee meetings as an official representative of the NABC to the rules committee (since 1982). The research chairman was an ex-officio attendee to the meetings and was excluded from voting sessions of the committee. The NABC Board has chosen not to send the chair to the rules meetings for 1997.

D. Conduct the annual 30 year statistical trend analysis and questionnaire summary for presentation at the annual convention.

STATUS: For the fifth year in a row, the NCAA Statistics Service is furnishing mid-season statistics. The NCAA Rules - Editor will report on the questionnaire results.

II. STATISTICAL ANALYSIS

Based upon 1996-97 NCAA Division 1 statistics (mid-season statistics compared to previous 20 years).

A. Field Goals

1. Total FG

Decrease

a) Attempts - 115.6

This is far under the all-time high of 140.6 (1951-52) and other near-highs in the early seventies. It is the lowest since the 3 FG rule began in 1987.

Decrease

b) Percentage - 43.2

Again this statistic shows a steady decrease since the 1984 high of 48.1 and is probably a reflection of the 3 point FG attempts general increase since the 1987 rules adoption.

2. Two Point FG

Decrease

a) Attempts - 81.1

From the high of 95.8 in 1987, this statistic has shown a steady decrease to an all-time low.

Decrease

b) Percentage - 47.3

A fairly steady decrease of the past five years, this figure is lower than the all time high of **49.4** in 1989.

3. Three Point FG

Constant

a) Attempts - 34.5

This figure is slightly down after an all-time high for the previous eight consecutive years.

Decrease

b) Percentage - 33.7

Again, 3 FG % *continues to go down* and 3 FG attempts proceeds generally upward, since the rules inception 10 years ago.

c) Trend Comparison - 3 point FG

YEAR	MADE	ATTEMPTS	3 POINT %	% TOTAL FG ATTEMPTS
1987	7.0	18.3	38.4	15.4
1988	8.0	20.8	38.2	18.0
1989	8.9	23.6	37.6	20.0
1990	9.4	25.7	36.7	21.5
1991	10.0	27.6	36.1	22.7
1992	9.9	28.0	35.5	24.8
1993	10.5	29.8	35.4	24.8
1994	11.4	33.0	34.5	26.9
1995	11.8	34.3	34.5	28.4
1996	11.7	34.2	34.2	29.6
MID 1997	11.6	34.5	33.7	29.8

Increase

Percentage of total shots (29.8). This is a continuing trend; the 1987 ratio of 3 points FG/2 point FG being 2:10 compared to the 1997 figure of almost 4:10. Another way of stating this finding is that the 3 point FG attempts per game average is 34.5 compared to 2 point FG attempts of 81.1. 3 point FG attempts make up about **30%** of total shots compared to about **70%** of total shots for 2 point FG attempts. In today's game almost **1 in every 3** FG shots is a "trey" as opposed to 1 in 6 when the shot was first introduced in 1987.

Decrease

4. Overall FG% is the Lowest in 32 years (43.1% in 1965). It seems clear that *shot quality* continues to drop since 1989.

B. Free Throws

Constant

1. Attempts - 43.3

This statistic shows a slight rise since 1973 but remains below the 1953 high of 65.8 as it plateaus the past two years.

Decrease

2. Percentage - 66.5

This figure, lower than last year's 67.4, is a slight departure from the 36 year constant trend in the 67-70 percent range.

Constant

3. Trend comparison - FT

YE/ R	% TOTAL POINTS SCORED BY FT	% TOTAL SHOTS TAKEN BY FT
1990	20.5	27.6
1991	20.7	27.4
1992	21.4	27.2
1993	20.6	27.8
1994	20.9	27.8
1995	20.6	27.5
1995	20.7	27.6
MID : 1997	20.4	27.2

Free throw importance seems to be decreasing (about 20% of total scoring and 27% of total shots as compared to all-time highs of 22.5% and 28.0%, respectively.) This is also a reflection of the growing importance of the 3 FG.

Constant

C. Personal Fouls

No mid-season report. For 1994, it was 39.7. This statistic has stayed between 38-41 for the past 30 years.

Decrease

D. Total Points Scored - 140.4

Scoring is down as a trend. It is above the "pre-three" figure but much less than the 1971 all-time high of 155.4.

E. Value of Ball Possession

The scoring probabilities in different situations are:

Constant

1. Field Goal
 - a) Two point FG situation (.96)
 - b) Three point FG situation (1.02)

Decrease

2. Free Throw
 - a) One shot (.66)
 - b) Bonus (1.06)
 - c) Two shots (1.32)
 - d) Three shots (1.98)

SUMMARY ORDER OF IMPORTANCE	
1 Shot FT	= .66
2 Point FG	= .95
3 Point FG	= 1.01
Bonus FT	= 1.06
2 Shot FT	= 1.32
3 Shot FT	= 1.98

There is a clear trend toward lowered shot quality, i.e., shooting percentages are down in all areas.

DIVISION I MEN'S STATISTICAL TRENDS

SEASON	GAMES	FG MADE	FG ATT.	%	FT MADE	FT ATT	%	PF	PTS
1967	4,602	57.7	131.9	43.8	34.4	49.8	69.0	38.3	149.8
1968	4,739	58.1	133.1	43.7	34.4	50.2	69.1	38.0	150.9
1969	4,883	58.2	132.8	43.8	34.7	50.8	68.4	37.9	151.2
1970	4,979	59.9	135.5	44.2	34.8	51.4	68.7	38.6	155.1
1971	5,232	60.2	135.6	44.4	35.3	51.3	68.1	38.5	*155.4
1972	5,404	60.2	134.3	44.8	35.0	51.1	68.6	38.4	155.3
1973	5,582	62.3	139.2	44.8	35.0	38.3	68.4	38.4	150.9
1974	6,060	62.0	136.5	45.4	26.2	37.4	68.4	38.4	149.5
1975	6,147	62.9	136.7	46.0	25.6	39.7	69.0	40.3	153.1
1976	6,240	61.9	132.5	46.7	27.4	39.8	69.2	40.4	151.3
1977	6,676	60.7	129.8	46.7	27.6	41.0	69.4	40.2	149.7
1978	6,901	60.2	127.2	47.3	28.4	41.4	69.2	40.4	148.9
1979	7,131	59.2	124.1	47.7	28.6	42.2	*69.7	41.1	147.9
1980	7,304	57.2	119.3	47.9	29.5	42.6	69.6	40.3	144.0
1981	7,407	55.6	115.9	48.0	29.7	42.0	68.9	40.2	140.1
1982	7,646	53.3	111.2	47.9	29.0	41.6	68.6	38.7	135.1
1983	7,957	54.3	114.0	47.7	28.5	42.3	68.5	39.7	138.6
1984	8,029	53.4	111.1	48.1	29.0	42.8	68.9	39.9	136.3
1985	8,269	54.5	113.9	47.9	29.5	42.5	68.9	39.3	138.3
1986	8,360	54.7	114.6	47.7	29.3	42.5	69.1	39.1	138.7

*All-time high

NOTE: Averages and percentages are for both teams, per game.

SEASON	GAMES	FG MADE	FG ATT	%	3 FT MADE	3FT ATT	%	FT MADE	FT ATT	%	PF	PTS
1987	8,580	54.4	117.3	46.4	7.0	18.3	*38.4	29.7	43.0	69.1	39.3	145.5
1988	8,587	54.8	116.6	47.0	8.0	20.8	38.2	30.2	43.8	68.9	39.4	147.8
1989	8,677	55.7	118.5	47.0	8.9	23.6	37.6	31.1	45.0	69.1	40.2	1551.4
1990	8,646	54.7	118.9	16.0	9.4	25.7	36.7	31.1	45.1	68.9	39.6	149.8
1990	8,720	55.6	121.3	15.8	10.0	27.6	36.1	31.7	46.3	68.5	39.2	152.9
1991	*8,803	53.0	116.6	45.5	9.9	28.0	35.5	31.6	46.4	68.1	40.0	147.6
1992	8,528	52.9	117.2	45.2	10.5	29.8	35.4	30.8	45.5	67.7	39.1	147.2
1993	8,630	53.7	121.1	44.3	*11.4	*33.0	34.5	31.2	46.4	67.1	39.7	150.0
1994	8,662	52.7	119.1	44.2	*11.8	*34.3	34.5	30.4	45.0	67.6		147.6
1995	3,960	51.8	118.2	43.8	11.6	34.0	34.1	30.0	45.1	66.6		145.3
1996	8,741	51.3	116.8	43.9	11.7	34.2	34.2	30.0	44.5	67.4		144.2
MID 1997	4,031	50.0	115.6	43.3	11.6	34.5	33.7	28.8	43.3	66.5		140.4

	2 FC MADE	2F ATT	%
995	40.9	84.8	48.2
MI) 1996	40.2	84.2	47.8
996	39.6	82.6	47.9
MI) 1997	38.4	81.1	47.3

*All-time high

NOTE: Averages and percentages are for both teams, per game.

1996-97

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