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THE CONSTRUCTION OF AN OBJECTIVE BASKETBALL
KNOWLEDGE EXAMINATION FOR COLLEGE WOMEN

by

Sallie McCutcheon
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7080

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Approved by

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The purpose of the study was to construct an objective basketball knowledge examination for college women in required physical education classes. It was hoped that the examination would be a reliable and valid measure of the student's general knowledge of the sport.

Fifty four-choice multiple-choice questions were constructed covering the following topics: rules, etiquette and procedure, techniques and skills, strategy and tactics, terminology, history and equipment, and safety. All rules questions were based on the Division for Girls and Women's Sports Basketball Guide September 1964-September 1965.

Sixteen colleges and universities were asked to participate in the study. Several schools were unable to administer the test one of the required dates. A total of 303 answer sheets were returned from five schools.

An item analysis was computed by the Flanagan Method using the Upper 29 per cent and the Lower 29 per cent with double weighting for the extreme 9 per cents. The mean Difficulty Rating was 67 per cent. A scale was devised by the author to evaluate each question on the basis of the item analysis. Each question was also put into one of five categories according to the type of revision needed: no revision, response revision, stem and response revision, deletion or extreme revision, and deletion.

The test scores ranged from forty-five to twenty. A fre-

quency distribution was set up and the mean was found to be 33.89; the standard deviation was 8.13. The reliability of the test was found by a Kuder-Richardson formula; it was .852.

The author concluded that the basketball examination was reliable based on standards given by authorities. A large portion (thirty-five) of the total number of questions were found to be of relatively high quality. The purpose of the study was accomplished in that it was possible to construct examination questions which could be an accurate evaluation of the basketball knowledge of students in various areas of the country.

The primary reason for suggesting that some questions be deleted was that they were too easy. The entire test was considered rather easy as revealed by the mean score of 33.89 and the mean Difficulty Rating of 67 per cent.

The eleven test questions which the writer suggested should be deleted or should have extreme revision were studied. Five of these undesirable questions pertained to techniques and skills. This gave some indication that the differences in individual teaching techniques by test administrators could have an effect on the statistical analysis of the questions. Two undesirable questions pertained to rules and one question each pertained to procedure, strategy, and terminology.

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CHAPTER I

INTRODUCTION

The game of basketball is watched and played by more people than any other sports activity in the United States. It has been estimated that 12,000,000 fans watch high school and college basketball games each year. (2:1) A large percentage of these fans and participants are girls and women. Since the invention of the game, in 1891, women have taken an active part in the development of the sport; the first girls' Basketball Guide was written in 1899 by Senda Berenson. (2:1)

The rules and skill techniques have changed throughout the years to define a game which is rewarding to both the participant and the spectator. Today's game of basketball has greatly advanced from the first games which included as many as fifty players on a team. After a score was made the players stood around watching as a volunteer climbed the ladder to retrieve the football from the peach basket. Yes, a great development to a rewarding sport for people of many different ages.

The basketball activities included in the physical education programs of many colleges and universities have helped to develop an understanding of and an appreciation for the game. Enjoyment of the activity can be gained not only through participation but also through a knowledge of the history, background, and underlying purposes of the sport. In a college class situation these knowledges can be measured through a conscientious testing program.

Knowledge tests in any sports activity should be geared to the objectives of the class. Students in the required physical education program are not expected to develop into highly skilled athletes but rather to direct their interests toward the carry over values of the sport to the student's recreational activities. Tests should be constructed with these particular objectives in mind. Complicated officiating decisions and technical aspects of the game were considered unnecessary topics for test questions. For the general college students a broad overall understanding of the game and certain basic related aspects were the primary consideration in the test construction.

Objective examinations are considered to be the most efficient method which can be used to obtain an overall picture of the student's understanding of an activity. The uses of the objective examination are governed by factors such as time available for test administration and grading, and the amount of information to be covered. In the construction of this examination it was taken into consideration that each individual instructor would place emphasis in various areas. It was believed, however, that a group of test items could be constructed which would be basic to every instructional program at the college level.

A standardized examination could be helpful to many instructors. A general upgrading of the testing aspects of a program can be brought about by the use of such tests. A stable basis of grading can be built on this type of examination. These are a few of the values which can come from the construction of a sound group of test items. The remaining factor is the intelligent use of such examinations by instructors of physical education activities.

CHAPTER II

STATEMENT OF THE PROBLEM

The purpose of the study was to construct an objective basketball examination for college and university women in required physical education classes. It was hoped that the examination would be a reliable and valid measure of the student's general knowledge of the sport.

A test of this type would be of value to instructors since the use of tested examination questions would provide a basis for knowledge evaluation.

CHAPTER III

REVIEW OF LITERATURE

A review of the literature concerning knowledge tests for girls basketball revealed that only two studies on the topic could be considered as recent studies. A test battery was constructed by Hennis (10), in 1956, and Ley (22) constructed the most recent test battery, in 1960. These tests were of value to instructors of required college classes; however, due to the extensive rule changes since their construction, some questions were outdated.

Snell (18:78) constructed a battery of tests for college women which was used to classify students in college admission at the University of Minnesota. The tests were also used as a basis for grading at the end of the semester. The battery included tests in field hockey, soccer, basketball, baseball, volleyball, tennis, archery, golf, horseback riding, fundamentals, and hygiene. Each test consisted of seventy multiple-choice questions (except the hygiene test) and the battery had a reliability range of .6264 to .9066. The basketball test had a reliability of .8827. The original seventy questions for each test were revised and the revised edition included forty-five questions for each activity. The reliability range for the revised tests was from .5107 to .9275. The basketball revision had a reliability of .6693. The Spearman-Brown prophecy formula was used to compute the reliability of the entire examination.

Schwartz (16:143) constructed a combination of skills tests and a knowledge test in basketball for high school girls. The one hundred test

questions were based on three-court basketball. Four types of questions were used: true-false, completion, best answer, and pictorial. The test scores ranged from thirty-three to one hundred with a mean of 69.9. The scores indicated "...that the test contained too many questions which were either too difficult or too simple. Not enough questions were of average difficulty." (16:149) The study included five skill tests which were administered to the same one thousand subjects taking the knowledge test. All of the subjects tested represented four sections of the country. A T-scale was constructed for both the skill and knowledge sections of the battery. The reliability of the tests was not reported.

French (9:406) constructed a test battery for women physical education majors which included the following activities: badminton, basketball, body mechanics, canoeing, field hockey, folk dance, golf, recreational sports (aerial darts, bowling, deck tennis, handball, shuffleboard, table tennis, tetherball), rhythms, soccer, softball, stunts and tumbling, swimming, tennis, track and field, and volleyball. Each test consisted of approximately sixty multiple-choice questions administered to students ranging in number from forty-eight to ninety-three. The Degree of Difficulty and the Index of Discrimination was established for each question. Questions which tested out poorly by these standards were eliminated. The reliability coefficients, mean scores, standard deviations and norms were computed for each test. The reliabilities were computed by the odd-even method. The Spearman-Brown prophecy formula revealed that the reliability for most of the tests was lower on the short form than on the long form. The reliabilities of the original tests ranged from .702 to .884. The reliability of the basketball test was .854. The reliability of the revised tests ranged from .619 to .878. The reliability of the revised basketball test was .700. This

revised test consisted of twenty-four questions (the original test consisted of fifty-four). The test data were compared to the test constructed by Snell and Scott.

Fisher (21) constructed several knowledge examinations and selected skill tests to evaluate participants in the following activities: beginning swimming, intermediate swimming, and advanced swimming, recreational sports, stunts and tumbling, soccer, basketball, volleyball, tennis, and softball. The study was limited to women students enrolled in physical education required classes at Ball State Teachers College. The examinations were composed of from thirty-three to sixty-one true-false and multiple-choice questions. As a basis for revision, Fisher completed an item analysis, calculating Indices of Discrimination and Degrees of Difficulty for the examination. She did not, however, calculate the reliability of the examination.

Hennis (10:301) constructed a test battery for college women in the following activities: badminton, basketball, bowling, field hockey, softball, tennis, and volleyball. Each original test consisted of fifty four-choice multiple-choice questions. The tests were revised on the basis of the results of an item analysis. The number of students taking the examination ranged from 280 in one test to 1,432 in another, and they represented sixteen different colleges and universities throughout the United States. The basketball test was administered to 538 students. The scores for this examination ranged from twelve to forty-four, with a mean of 29.60. The revised form of the test consisted of thirty-five items. The scores ranged from eight to thirty-two, with a mean of 21.92. The reliability of the revised form was .76. Hennis concluded that the badminton, basketball, bowling, field hockey, softball, tennis, and volleyball tests were "...satisfactory

measures of knowledge in their respective areas." (10:309)

Ley (22) constructed a test battery for both physical education majors and required classes. The activities included were: archery, badminton, bowling, golf, basketball, soccer, softball, and volleyball. The tests were administered to women in fifteen different colleges and universities. The questions were of the four-choice multiple-choice type. Several of the questions were based on charts and diagrams. "Particular emphasis is placed on items for measuring understanding of skill techniques and game strategies and the application of skill techniques to the game situation." (22:8)

In an analysis of previously constructed tests, Ley stated that the authors had included too many rules questions and other factual items at the expense of "...the relevance categories of generalization, understanding and application..." (22:63) In some tests the rules questions comprised as much as half of the test. The relevance analysis computed on Ley's questions revealed that for the most part her intent was accomplished. Her intent was "...to demonstrate that discriminating items could be written in the higher relevance categories, with particular attention to the topical areas of practical use of skills and problems of game play in..." the eight sports. (22:64)

The original tests were administered several times over a period of a year. After revision the tests were administered once again, followed by a second revision. The number of questions for each activity in the final revision ranged from thirty-six to fifty-five. The basketball test included forty-seven questions.

The basketball examination was administered to 187 majors and 228 required subjects. The Index of Discrimination used was the U-L Index. In the upper group (27%) of the basketball test, the mean for the physical

education majors was 32.02 and the required group had a mean of 28.50. In the lower group (27%) the means were 20.02 and 16.44 respectively. The Degree of Difficulty was also calculated for each question. The range of difficulty for the basketball test for majors was nine to ninety while the range for the required subjects was nine to eighty-four. The mean difficulty was 65.4 and 55.8 respectively.

Ley concluded that generally majors were not required to take archery, badminton, bowling, and golf. There was also evidence that fewer team sports were being offered in the colleges. Ley also concluded that the tests were too difficult for both the major and the required group. A significant difference was not found between the scores of the two groups in archery, badminton, bowling, basketball, and volleyball. Based on these results Ley questioned "... whether or not major students are being taught to understand, apply and interpret the skills and games which are the tools of their profession." (22:97)

Studies concerning certain aspects of multiple-choice questions have been conducted mainly through the fields of psychology and education. McNamara and Wheitzman (12:103) conducted a study, in 1945, which indicated that the positioning of the correct response to a multiple-choice question had an effect on the calculated difficulty of a question. They determined it was statistically significant that if the next to last position in a four- or five-choice item was the correct response, then the calculated difficulty of the question was greater.

Marcus (11:48), in 1963, and Cronbach (7:475), in 1946, found that multiple-choice questions were free from the influences of correct choice placement. Wevrick (20:533), in 1962, concluded the same results from the findings in his study.

Through research conducted on existing standardized tests, Metfissel and Sax (13:787) concluded that test authors had a tendency, in constructing multiple-choice questions, to locate the correct answer in the center of the response distribution. Other influences of the response location were studied by Rapaport and Berg (14:58). These researchers concluded that the response choice was influenced by the personality of the individual to which the test was administered rather than a general tendency on the part of a majority of subjects. Based on the present research, this researcher concluded that the question of response placement and its effect on the test results was inconclusive.

CHAPTER IV

PROCEDURE

The purpose of the test and the group for which it was designed were considered in the preparation of this objective basketball examination. Since the test was to be used by a variety of instructors, who would emphasize various aspects of the game, only questions concerning the major points of the game were included. Due to the fact that the test was designed for the regular college student, and not the professional student, questions on highly technical rules and techniques were omitted.

TEST CONSTRUCTION

Information given by Scott and French (5), and Barrow and McGee (1) was consulted as a guide for the test content development. These authors suggested percentage distributions for question topics which were relatively similar. Using the Barrow and McGee general topic suggestions as a basis, fifty four-choice multiple-choice questions were constructed. The number of questions covering each topic were as follow:

- 11 Rules
- 5 Etiquette and Procedure
- 12 Techniques and Skills
- 12 Strategy and Tactics
- 5 Terminology
- 3 History and Equipment
- 2 Safety

Each question was constructed on the basis of information found in the official Division for Girls and Women's Sports Basketball Guide September 1964-September 1965, and other references by recognized basketball

authorities. Some questions were based on the personal experience of the writer.

A few questions seemed to be associated with certain geographical areas. For example, some terminology used in the Southwest was unfamiliar to persons from the Southeast. This type of question was presented to a group of physical education majors at the University of North Carolina at Greensboro. The group commented on terms and phrases and these comments were used to revise those particular questions.

TEST ADMINISTRATION

Letters were sent to staff members in the physical education departments of sixteen different colleges and universities, to ask if they would administer the test to their required classes. Return post cards were included on which they indicated their desire to participate, the date of administration they preferred, and the approximate number of students who would take the test. The date choices were February 22-February 27, and March 1-March 6. Seven schools replied that they would participate on one of the two dates suggested. Three schools stated that they could only administer the examination during the first week in January. This date was too early since the examination was not completed before that time. Two schools could not administer the examination until the fourth week in March. This date was too late since it would not allow time to complete the data analysis. Two additional schools replied that basketball was not offered to required classes in their program, but that they would administer the examination to major students. Since the examination was constructed for required classes this offer was refused. Two schools did not return the enclosed post card.

An acknowledgement was sent to the cooperating schools stating the number of tests they requested, the date they suggested, and the approximate date the tests would be sent to them. This was done to confirm their replies. The tests were mailed ten days before the week specified for their administration.

Repeated use of the test questions was possible since answer sheets were used and nothing was to be written on the examination paper itself. Letters were sent to five of the largest participating schools asking for the greatest number of students who would be administered the test at any one time. Return post cards were included and all five schools replied. This information was needed in order to minimize the size of test packages and the cost of mailing.

Table I indicates the number of tests and answer sheets sent to each school, the number requested by the schools, the number returned, and the date the tests were mailed. The mimeographed tests, answer sheets, and instructions were on regular size typing paper ($8\frac{1}{2}$ X 11). Boxes of this exact size were obtained for mailing. Included in the box for each school were the following materials: tests, answer sheets, instruction sheet, a "keyed" answer sheet, a punched "key" for the actual grading, and a large self-addressed stamped envelope for returning the answer sheets. The correct postage on the return envelope was determined by weighing the answer sheets which were sent to each school. The punched "key" was made of stiff paper which was placed over the answer sheet during grading. Holes were punched in the spaces for the correct answer to each question, therefore, when placed over the answer sheet the correctly marked answer showed through the space. Although grading the examination was optional, "keys" were sent to all schools since some instructors had requested them. These instructors

TABLE I

MAILING INFORMATION

SCHOOL	DATE SENT	DATE REQUESTED	NO. TESTS REQUESTED	NO. ANSWER SHEETS SENT	NO. TESTS SENT	NO. ANSWER SHEETS RETURNED
Appalachian State Teachers College	Feb. 11	Feb. 22-27	25	30	30	22
Eastern Illinois University	Feb. 11	Feb. 22-27	63	65	25	61
Florida State University	Feb. 11	Feb. 22-27	120	125	50	110
Woman's College of Georgia	Feb. 11	Feb. 22-27	25	30	30	24
Stanford University	Feb. 22	Mar. 1-6	50	55	25	29
Memphis State University	Feb. 22	Mar. 1-6	75	80	40	79
Western Illinois University	Feb. 22	Mar. 1-6	57	60	30	50

Total 375

indicated that the scores would be used in grading the students in the required classes.

As the answer sheets were returned, each was graded even though some had been graded by the instructors. A list of the individual students, the grade for each, and the school mean were immediately returned to each school. Accompanying this list was a letter of appreciation and an approximate date the instructor could expect to receive a compilation of the complete data.

TEST ANALYSIS

A total of 375 answer sheets were returned. The twenty-two answer sheets from Appalachian State Teachers College were not included, however, since the examination was inadvertently administered to physical education majors. The fifty answer sheets from Western Illinois University arrived too late to be included in the statistical calculations. Statistical computation was completed on 303 answer sheets. All calculations were based on a possible test score of fifty. A frequency distribution was set up on the scores; the highest score was forty-five and the lowest was twenty (a range of twenty-five points). The mean was calculated by the formula: (1:76)

$$M = AM + \left(\frac{\sum fd}{N} \right) i$$

AM = Assumed mean
 $\sum fd$ = Sum of the "fd" column
 N = Number of tests
 i = Size of the intervals

The formula for the standard deviation was: (1:76)

$$S. D. = i \sqrt{\frac{\sum fd^2}{N} - \left(\frac{\sum fd}{N} \right)^2}$$

A Kuder-Richardson formula (1:521) was chosen to compute the reliability of the examination. Errors associated with the Spearman-Brown

split-half or rescaling method are eliminated. This formula is used for an examination that is administered only once. The formula is one of several formulas developed by Kuder and Richardson. In all of the formulas it is assumed that the items of the test are equal in difficulty and intercorrelation. Some formulas require much computation which is unnecessary unless a very high degree of accuracy is required. This formula required only the computation of the mean and the standard deviation. Although the formula chosen is not the closest approximation to the true reliability, it has the advantage of producing a result which can be interpreted as the minimum reliability value. Other variations of the formula have been developed by Hoyt and Dressel (3:455). The formula used was: (3:455)

$$r_{tt} = \frac{n\sigma_t^2 - M(n-M)}{(n-1)\sigma_t^2}$$

n = Number of test items
 M = Test mean
 σ_t^2 = Standard Deviation squared

An item analysis was completed by the Flanagan Method. The Upper 29% and the Lower 29% of the test scores were used. The Index of Discrimination and the Difficulty Rating were computed for each question. The number of functioning responses was also indicated by this analysis. Information provided by the item analysis, and the Kuder-Richardson reliability formula was used to indicate areas where revision was necessary.

CHAPTER V

ANALYSIS AND INTERPRETATION OF DATA

Statistical computations were calculated on the scores of 303 students. The mean by the formula $M = AM + \left(\frac{\sum fd}{N}\right) i$ was found to be 33.89.

The Standard Deviation was 8.1306. The minimum reliability value was found by a Kuder-Richardson formula. The reliability for this examination was .852. The mean Difficulty Rating was 67%.

The Flanagan Method was used for the item analysis which involved the Upper 29 per cent and the Lower 29 per cent of the test scores. For the 303 test scores the Upper-Upper group contained 27 scores, the Upper group 61, the Lower group 61, and the Lower-Lower group 27. A total of 176 answer sheets were used in the item analysis.

Through the item analysis specific aspects of each question were seen. The comments offered by three individual test administrators also gave an indication of the desirability of each question. The Index of Discrimination was accepted if over .20. The Difficulty Rating was accepted between 10% and 90%. However, there were no Difficulty Ratings below 19%. For this examination, a Difficulty Rating of 40% and below was considered very difficult. Table II indicates the question rating for this examination. In order for a response to function, it had to be chosen by 3 per cent of the students. Three per cent in this group was five. All limits were based on the recommendations given by Barrow and McGee (1).

TABLE II
QUESTION RATING SCALE *

INDEX OF DISCRIMINATION

Per Cent	No. of Questions	Rating
.60-up	4	Excellent
.50-.59	5	Good
.30-.49	22	Average
.20-.29	13	Fair-- acceptable but low
Below .20	6	Delete-- not acceptable

DIFFICULTY RATING

Per Cent	No. of Questions	Rating
90%-up	5	Delete-- too easy
80%-89%	13	Easy
60%-79%	14	Average
40%-59%	12	Difficult
Below 40%	6	Very Difficult

*This scale was devised by the writer to evaluate only the questions on this particular examination.

The following is a compilation of the information computed on each question from the item analysis and subjective information given by the test administrators:

TEST QUESTIONS, COMMENTS, AND RESPONSE FUNCTIONS	I.D.	D.R.
<p>#1- Where was basketball first played ?</p> <p>*a. Springfield College in Springfield, Massachusetts.</p> <p>b. State College in Bridgewater, Massachusetts.</p> <p>c. New York University in New York, New York.</p> <p>d. Ohio State University in Toledo, Ohio.</p>	.63	84%
<p>The question discriminated well but was rather easy. Response "d" did not function sufficiently. Response revision was indicated.</p>		
<p>#2- What would the stationary defenders do in a two-on-two fast break ?</p> <p>a. Take zone positions under the basket.</p> <p>*b. Employ player-to-player defense.</p> <p>c. Assume stationary positions on either side of the foul line.</p> <p>d. Meet the offensive players at the foul line.</p>	.37	48%
<p>The discrimination value was acceptable but rather low. The question was difficult and all responses functioned.</p>		
<p>#3- Which statement concerning the lay-up shot is incorrect ?</p> <p>a. The ball may be delivered at the height of the jump.</p> <p>b. A right hand shooter would most likely jump off his left foot.</p> <p>*c. A slight pause is taken before the shot.</p> <p>d. The shooter should be approximately at a 45 degree angle to the backboard.</p>	.07	49%

* The correct answer

I.D. D.R.

This was a poor question and did not discriminate well. It was rather difficult. Comments by one test administrator suggested that the question was vaguely worded. All responses functioned. Revision or deletion was indicated.

- #4- Who was the inventor of basketball ? .61 85%
- *a. James Naismith of Springfield College.
 - b. Senda Berenson of Smith College.
 - c. Luther Gulick of State College.
 - d. A committee composed of all three.

The question discrimination value was excellent, however it was rather easy. Response "b" did not function sufficiently. Response revision was indicated.

- #5- Which is not a violation during the jump ball ? .45 44%
- *a. Tapping the ball twice.
 - b. Tapping the ball before it reaches its highest point.
 - c. Catching the ball.
 - d. Stepping into the opponents' half of the restraining circle.

The discrimination value was average. The question was relatively difficult and all responses functioned.

- #6- Which is the incorrect aspect of the defensive stance ? .44 69%
- a. Knees flexed slightly, feet apart.
 - b. Body kept low.
 - c. Weight evenly distributed on both feet.
 - *d. Feet apart, and weight on the forward foot.

The question discrimination was average and the difficulty rating was average. Response "a" did not function sufficiently. One test administrator questioned the meaning of "low" in response "b". Response revision was indicated.

I.D. D.R.

- #7- Which is the correct statement concerning a break ? .38 59%
- *a. A break is taken into a space.
 - b. A break is taken around a player.
 - c. A break is taken toward the sidelines.
 - d. A break is taken away from the basket.

The discrimination value was average. The question was difficult. All responses functioned.

- #8- Which is a shot most likely taken on the run ? .20 84%
- a. Hook shot.
 - *b. Lay-up shot.
 - c. Jump shot.
 - d. Two-hand overhead shot.

The question discrimination value was acceptable although extremely low. The question was rather easy. Response "d" did not function at all. Revision was indicated.

- #9- In shooting for a goal, which would not be done ? .11 92%
- a. Relax.
 - b. Concentrate on the basket.
 - c. Follow up your shots.
 - *d. Practice new shots so you foul the guards.

The question did not discriminate acceptably. It was too easy to be desirable. Response "b" and "c" did not function sufficiently. A typing error was not detected prior to the test administration. Even though the error occurred in the correct response, it did not seem to confuse the students. The response read "Practice new shots so you can foul the guards" and it should have read "Practice new shots so you can fool the guards." Deletion was indicated.

I.D. D.R.

#10- A player who has four fouls is involved in a double foul situation. What is the procedure ?

.59 54%

- *a. The player is out of the game and her substitute takes the free shot.
- b. The player takes a free shot, and leaves the game following the center jump.
- c. The player leaves the game during the first dead ball after the missed free throw.
- d. The player takes the foul shot and then must leave the game.

The question discrimination value was good and it was a difficult question. Response "c" did not function sufficiently. Response revision was indicated.

#11- From which position (s) on the court would a rim shot most likely be taken ?

.46 69%

- a. From a position under the basket.
- b. From anywhere on the court.
- *c. From the extreme side or directly in front of the basket.
- d. From a position diagonally away from the basket.

The discrimination value was average. The question was of average difficulty. All responses functioned. One test administrator suggested that all shots should emphasize the rim as the point of aim.

#12- Under which condition would the officials not call the center line violation by a fifth player ?

.25 42%

- a. When a player steps on but not over the center line.
- *b. When the penalty would be to the advantage of the offending team.
- c. When a player steps over the line but does not gain an advantage.
- d. The officials would call the penalty on each occasion of the infringement.

I.D. D.R.

The discrimination value was acceptable but very low. The question was rather difficult. All responses functioned. Two test administrators suggested that the questions's subject matter was rather technical. They also considered response "b" and "c" as correct. The writer attributed this to the misinterpretation of the word "offending." The test administrators interpreted the meaning as the "offensive" team when the intended meaning was "offending" or "team that committed the offense." Revision was indicated.

- #13- In order to stop abruptly without danger of injury, which is the best position for the forward foot ? .28 80%
- a. Knee bent, toes turned to the side.
 - *b. Knee bent, toes pointed forward.
 - c. Knee extended, toes pointed forward.
 - d. Knee extended, toes pointed to the side.

The discrimination value was acceptable but low. The question was rather easy. Response "d" did not function sufficiently. Response revision was indicated.

- #14- How should one guard a player who looks as if she might shoot a long shot ? .43 77%
- a. Jump into the air with both hands up.
 - b. Hold both hands out to the side.
 - c. Move as close as possible and wave both hands.
 - *d. Hold one hand up and one hand out to the side.

The discrimination value was average and the question was of average difficulty. Response "b" did not function at all. Two test administrators suggested that the question was ambiguous. Revision was indicated.

- | | I.D. | D.R. |
|--|------|------|
| #15- What is an "air dribble" ? | .26 | 77% |
| a. Impetus given the ball as it rebounds | | |
| *b. The same thing as a juggle. | | |
| c. Another name for a high bounce. | | |
| d. An uncontrolled catch by a player. | | |

The discrimination value was acceptable but low. The question was of average difficulty. All responses functioned.

- | | | |
|---|-----|-----|
| #16- Which shot would most likely be used from a great distance to the basket ? | .24 | 61% |
| a. One hand push shot. | | |
| *b. Two hand push shot. | | |
| c. Jump shot. | | |
| d. Hook shot. | | |

The discrimination value was acceptable but low. The question was of average difficulty. All responses functioned. One test administrator questioned the term "two hand push shot" in favor of "chest shot." Revision was indicated.

- | | | |
|---|-----|-----|
| #17- On what should the players of a zone defense concentrate ? | .44 | 36% |
| *a. The ball. | | |
| b. Their designated forward. | | |
| c. Staying between the forward and the goal. | | |
| d. Preventing forwards from entering the lane. | | |

The question discrimination was average. It was one of the most difficult. Response "b" did not function sufficiently. Two test administrators suggested that the word "concentrate" could apply to both physical and mental concentration. Revision was indicated.

- | | | |
|--|-----|-----|
| #18- How many seconds may a closely guarded player hold the ball ? | .32 | 85% |
| a. Three seconds. | | |
| *b. Five seconds. | | |
| c. Ten seconds. | | |
| d. Indefinitely. | | |

I.D. D.R.

The question discrimination was average. The question was rather easy. Response "c" did not function sufficiently. Response revision was indicated.

- #19- A player fouls out and the team has no substitutes. How does this affect the roving player rule ? .29 72%

- a. It has no effect since the game is discontinued.
- *b. The team plays with five players and any two may rove.
- c. If a rover fouled out, the team no longer has but one roving player.
- d. The maximum number of players on one end of the court will be seven.

The discrimination value was acceptable but low. The question was of average difficulty. All responses functioned.

- #20- Which is not a true statement concerning a pivot ? .19 89%

- a. It is a method of evading an opponent.
- b. It is an offensive maneuver.
- c. It is a defensive maneuver.
- *d. It is executed by lifting both feet from the floor.

The question was a poor one and the discrimination value was not acceptable. It was rather easy. All responses functioned. Deletion was indicated.

- #21- What is the ruling if the referee tosses the ball crooked during a jump ball ? -.04 88%

- a. Play continues.
- *b. The ball is tossed again between the two players.
- c. Play is stopped only if a player requests another toss.
- d. Play continues to see if an advantage is gained by one of the players.

The discrimination value was negative and not acceptable. The question was rather easy. All responses functioned. One test administrator

I.D. D.R.

considered the question rather technical and suggested it applied to officials rather than players. Deletion was indicated.

- #22- When should a bounce pass be used ? .26 33%
- *a. When a short pass in the scoring area is needed.
 - b. When the opponent is close to the receiver.
 - c. When the opponent is close to the passer.
 - d. When a fast pass is necessary.

The discrimination value was acceptable but low. The question was one of the more difficult. All responses functioned. Two test administrators favored response "c" as the correct answer and suggested that a bounce pass would be a poor choice in the scoring area. They also indicated that strategy and other variables were involved. Revision was indicated.

- #23- How long is a player allowed to hold the ball before throwing it in from out of bounds ? .27 78%
- a. Three seconds.
 - b. Four seconds.
 - *c. Five seconds.
 - d. Ten seconds.

The discrimination value was acceptable but low. The question was of average difficulty. Response "b" did not function at all. Response revision was indicated.

- #24- In general, what is the most likely formation desired by the offensive players when there is a rebound ? .27 59%
- a. All under the basket.
 - b. Three in front of the basket and one out.
 - *c. Three in a triangle formation around the basket and one out.
 - d. Two near the basket and two out.

The discrimination value was acceptable but rather low. The question was difficult. Response "a" did not function sufficiently.

I.D. D.R.

Two test administrators suggested the correct answer was debatable. Response revision was indicated.

- #25- When does a game officially begin ? .26 82%
- a. Follow the toss of the coin.
 - b. When the teams assemble on the court.
 - *c. When the ball is touched on the center jump.
 - d. When the official blows his whistle to start the clock.

The discrimination value was acceptable but low. The question was rather easy. Response "a" and "b" did not function at all. Response revision was indicated.

- #26- From which position would a right handed player execute a hook shot ? .32 89%
- a. With the back to the basket.
 - *b. With the left shoulder to the basket.
 - c. With the right shoulder to the basket.
 - d. With the chest turned toward the basket.

The discrimination value was average. The question was rather easy. Response "a" and "b" did not function sufficiently. Revision was indicated.

- #27- When would a hook pass most likely be used ? .34 56%
- a. When the passer is not closely guarded.
 - *b. When the passer is closely guarded.
 - c. When the ball is held in one hand.
 - d. When the passer jumps into the air.

The question discrimination value was average and the question was difficult. All responses functioned.

I. D. D. R.

- #28- What is the disadvantage of player-to-player defense ? .49 63%
- a. Defensive players do not have clear guarding assignments.
 - b. It does not have a check system.
 - *c. It is tiring for the defense if the offense moves around a great deal.
 - d. It does not allow for good rebound position by the defenders.

The question discrimination was average. It was of average difficulty. Response "a" did not function sufficiently. Response revision was indicated.

- #29- Where should a bounce pass land in relation to the passer and the receiver ? .33 70%
- a. Half way between the two.
 - b. Closer to the passer than the receiver.
 - *c. Closer to the receiver than the passer.
 - d. About a foot from the receiver.

The discrimination value was average. The question was of average difficulty. Response "b" did not function sufficiently. Response revision was indicated.

- #30- Which is the best area of the backboard at which to aim while making a lay-up from the side ? .36 67%
- a. Directly above the basket.
 - b. Just over the edge of the rim.
 - c. Above the basket; slightly to the opposite side from which the shot is made.
 - *d. Above the basket; slightly to the same side from which the shot is made.

The discrimination value was average. The question was of average difficulty. All responses functioned.

	I.D.	D.R.
#31- After the ball leaves the shooter's hand the final horn sounds to end the game. The goal is made. What is the officials' decision ?	.43	90%
a. The goal does not count.		
*b. The goal counts two points.		
c. The goal counts one point.		
d. A free shot is awarded the shooter.		

The question discrimination was average, however it was much too easy. Response "c" did not function sufficiently and response "d" did not function at all. Deletion was indicated.

#32- Which of these is correct for indicating two consecutive free throws awarded and made ?	.50	81%
a. 0 0		
b. 0 0		
c. 0 0		
*d. 0 0		

The question discrimination was good. It was relatively easy. Response "a" did not function at all. Response revision was indicated.

#33- Which is the most likely method of stealing the ball from a dribbler without committing a foul ?	.33	27%
a. Reaching with both hands as the dribbler passes by.		
b. "Punching" at the ball with one hand.		
c. Tapping the ball with a downward motion of one hand.		
*d. Moving one hand in an upward motion to deflect the ball.		

The discrimination value was average. The question was one of the most difficult. All responses functioned. Two test administrators suggested that "c" was a possible answer.

	I.D.	D.R.
#34- How many free throws are awarded to a forward in the act of shooting who was fouled by two guards and missed her shot ?	.81	39%
a. One.		
b. Two.		
*c. Three.		
d. Four.		

This was the most discriminating question. It was also one of the most difficult. All responses functioned.

#35- Which is the most effective position when setting a screen ?	.17	19%
a. Directly behind the opponent.		
b. Directly to the side of the opponent.		
*c. Diagonally to the side and back of the opponent.		
d. To the basket side of the opponent.		

The question was a poor one and the discrimination value was not acceptable. It was the most difficult question. All responses functioned. Three test administrators suggested the question was unclear and that there were several types of screens and a clarification should be made. Deletion was indicated.

#36- Which is a deliberate attempt to deceive the opponent ?	.56	88%
*a. A feint.		
b. A pivot.		
c. A step.		
d. A jump.		

The question discrimination was good but it was rather easy. Response "c" and "d" did not function sufficiently. Response revision was indicated.

I.D. D.R.

- #37- Because of excessive individual fouls, a team without substitutes has only four eligible players. How does this effect the game ?
- All four players rove.
 - The opponents usually win because the players get tired.
 - *c. The opponents win by default.
 - d. Play continues as long as both teams agree to continue.

.47 87%

The question discrimination was average. It was rather easy. Response "a" did not function at all. Response revision was indicated.

- #38- Which is the safest way to catch a hard throw ?
- Absorb the shock with both hands held stiff.
 - Bat the ball to the floor to avoid injury.
 - Relax the hands and absorb the shock with the fingers.
 - *d. "Give" with the ball and catch it with relaxed hands.

.37 94%

The discrimination value was average. The question was much too easy. Response "a" and "b" did not function at all. Revision or deletion was indicated.

- #39- What should one not do when passing to a teammate ?
- Use teammate's waistline as a target when passing.
 - *b. Pass across the court underneath your opponents' basket.
 - Use short passes.
 - d. Always lead a running teammate.

.43 72%

The question discrimination was average. It was of average difficulty. Response "c" did not function sufficiently. Two test administrators commented that the "waist" was too low a target. An administrator indicated that the necessity to "pass across the court ..." could arise. Response revision was indicated.

	I.D.	D.R.
#40- Who are the officials of the game ?	.57	54%
a. Two scorers, two timers and two referees.		
b. One scorer, one timer and one referee.		
c. One scorer, one timer and one referee, and one umpire.		
*d. Two scorers, two timers, one referee, and one umpire.		
<p>The question discrimination was good. It was rather difficult. All responses functioned.</p>		
#41- A player with the ball pivots and in doing so hits her guard with her shoulder. What is the officials' decision ?	.26	79%
a. Foul against the guard.		
*b. Foul against the forward.		
c. Legal, the guard was not moving.		
d. Legal, a forward has the privilege when pivoting.		
<p>The discrimination value was acceptable but low. The question was of average difficulty. All responses functioned.</p>		
#42- Which is the most recently developed scoring technique ?	.46	52%
a. The hook shot.		
b. The lay-up shot.		
c. The two hand overhead shot.		
*d. The jump shot.		
<p>The question discrimination was average. It was rather difficult. All responses functioned.</p>		
#43- One minute left to play in the game. A forward is fouled as she slowly dribbles down the court toward the basket. What is the ruling ?	.66	62%
a. One free throw is awarded.		
*b. Two free throws are awarded.		
c. Violation is called because it is illegal to "freeze" the ball.		
d. Regular foul rulings apply provided no "freeze" was attempted.		

I.D. D.R.

The question discrimination was excellent. It was of average difficulty. Response "c" did not function sufficiently. Response revision was indicated.

- #44- What does body contact in fouling involve ? .31 97%
- a. The arms only.
 - b. The knees only.
 - c. The upper body only.
 - *d. Any part of the body.

The discrimination value was average. The question was much too easy. Response "a" did not function sufficiently and response "b" did not function at all. Revision or deletion was indicated.

- #45- Which is an incorrect statement concerning the post or pivot player (s) ? .07 36%
- a. A post may be set up to the extreme side of the court.
 - *b. A post player rarely shoots but is usually used to pass the ball to another player.
 - c. A post player can be used against a zone defense.
 - d. Double posts need not be on the same side of the basket.

The question did not discriminate to any extent. It was very difficult. All responses functioned. Two test administrators suggested possible confusion in relation to the duties of a post player. Deletion was indicated.

- #46- Of what was the first basketball goal made ? .57 82%
- a. A sewing basket.
 - *b. A peach basket.
 - c. A fish basket.
 - d. A trash basket.

The question discrimination was good. It was rather easy. Response "a" did not function sufficiently. Response revision was indicated.

I.D. D.R.

- #47- Who is the trailing official ? .24 69%
- a. The referee during the first half of the game.
 - b. The umpire during the second half of the game.
 - *c. Both during the entire game.
 - d. The official who comes to the game last.

The discrimination value was acceptable but low. The question was of average difficulty. All responses functioned. One test administrator indicated the question was in the realm of the officials rather than players.

- #48- Which is a true statement concerning the three second lane violation ? .29 53%
- a. A player may be in the lane for no more than three seconds at any one time.
 - b. A player may be in the lane over three seconds provided she receives the ball after the fourth second.
 - c. A player with the ball may enter the lane, pass to another player, and remain in the lane for a return pass.
 - *d. A player without the ball may enter the lane, receive the ball, and stay another three seconds.

The discrimination value was acceptable but low. The question was rather difficult. All responses functioned. Most test administrators seemed to agree in that the question was rather confusing as to which team had the ball and on what end of the court. Deletion was indicated.

- #49- Who should be the roving players ? .33 92%
- a. The tallest girls who move the fastest.
 - b. The fastest girls who are the shortest.
 - *c. The best all around girls.
 - d. The best all around girl and the least skilled girl.

The discrimination value was average. The question was much too easy. Responses

"b" and "d" did not function sufficiently.
Revision or deletion was indicated.

- | | | | |
|------|--|-----|-----|
| #50- | What should a guard do when the dribbler drives to the guard's right ? | .36 | 46% |
| | a. She should step sideways with her right foot. | | |
| | b. She should slide sideways with her left foot. | | |
| | *c. She should step backward with her right foot. | | |
| | d. She should step forward with her left foot. | | |

The discrimination value was average. The question was difficult. All responses functioned.

A compilation of the general comments by the test administrators indicated that they questioned the fact that a general test could be constructed for a nationwide purpose. They pointed out that this was due to the difference in teaching strategy and techniques. The differences between individual teaching methods were stressed.

A classification of the questions was made. They were divided into five categories according to the information attained from the item analysis. The categories pertained to the worth of the question. Table III is an accumulation of the questions in each category.

TABLE III
QUESTION CATEGORIES

CATEGORY	QUESTION NUMBER
Questions which need not be revised: (15 - total)	2,5,7,11,15,19,27,30,33,34,40,41,42,47,50.
Questions which need response revision: (17 - total)	1,4,6,10,13,18,23,24,25,28,29,32,36,37,39,43,46.
Questions which need stem and response revision: (7 - total)	8,12,14,16,17,22,26.
Questions which could be deleted or need extreme revision: (4 - total)	3,38,44,49.
Questions which should be deleted: (7 - total)	9,20,21,31,35,45,48.

CHAPTER VI

SUMMARY AND CONCLUSIONS

The purpose of the study was to construct an objective basketball examination for college and university women in required physical education classes. It was hoped that the examination would be a reliable and valid measure of the student's general knowledge of the sport.

Fifty four-choice multiple-choice questions were constructed. The questions covered the following topics: rules, etiquette and procedure, techniques and skills, strategy and tactics, terminology, history and equipment, and safety.

Sixteen colleges and universities were asked to participate in the study. Several schools wanted to participate, however they were unable to administer the test on one of the requested dates. The scores from five schools were used in the final statistical computations. A total of 303 answer sheets were returned.

The test scores ranged from forty-five to twenty. A frequency distribution was set up and the mean was found to be 33.89; the standard deviation was 8.13. The reliability of the test was found by the use of a Kuder-Richardson formula. The reliability was .852. The mean difficulty rating was 67%.

An item analysis was computed by the Flanagan Method using the Upper 29 per cent and the Lower 29 per cent with double weighting for the extreme 9 per cents. Questions were placed in categories based on the analysis information. These categories divided the questions into the ones

which needed general revision, revision or deletion, response revision, deletion, and the questions which did not need any revision.

The eleven test questions which the writer suggested should be deleted or should have extreme revision were studied. Five of these undesirable questions pertained to techniques and skills. This gave some indication that the differences in individual teaching techniques by test administrators could have an effect on the statistical analysis of the questions. Two undesirable questions pertained to rules and one question each pertained to procedure, strategy, and terminology. Four of the eleven undesirable questions were stated negatively. No specific indication (e.g. underlining) was printed on the examination to insure that the subject noted the negative stem of these particular questions. This could have been a factor in the statistical outcome of the questions.

CONCLUSIONS

The basketball examination was reliable (.852) as based on the standards given by authorities. A large portion (thirty-five) of the total number of questions were found to be of relatively high quality.

Some test administrators questioned the possibility of constructing a nationwide examination. They suggested that this would be difficult because of the emphasis placed in different areas by individual instructors. Since a large portion of the questions were of good quality, the writer maintained that it was possible to construct examination questions which could be an accurate evaluation of the basketball knowledge of students in various areas of the country.

The primary reason for suggesting that some questions be deleted

was that they were too easy. The entire test was considered rather easy as revealed by the mean score of 33.89 and the mean difficulty rating of 67%.

Limitations of this study

1. The schools participating in the study were limited to certain geographical areas of the United States. A very small number of subjects represented the Western states.
2. The test was limited to the Division for Girls and Women's basketball rules. Various cities, counties, and states use these rules as a basis but often substitute local variations. These local rules or interpretations could have some bearing on the test results from a particular section.
3. The amount of basketball instruction given in an individual institution varied since some schools were on a tri-semester system, some on the quarter system, and others on the bi-semester system.
4. The amount of test preparation given to the students by the test administrator prior to the examination could not be regulated. There was no evidence of such influences taking place during this study, but the limitation could possibly exist.
5. The study was limited in that time did not permit the actual revision of the test questions and the readministration of the examination. However, specific revision indications were suggested.

BIBLIOGRAPHY

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PHYSICAL EDUCATION DEPARTMENT

November 15, 1954

Miss M. H. Stallings
Physical Education Department
Northern Illinois University
DeKalb, Illinois

Dear Miss Stallings:

In regard to the physical education requirement in the Department of Physical Education at the University of North Carolina at Greensboro, I plan to construct an objective knowledge exam similar to college exams. The purpose of the study is to determine a test which will be beneficial to instruction of students enrolled in Health, Physical Education, and Recreation degree classes. Your report will be most recommended to us as the which would possibly be interpreted in administering the test.

APPENDIX

The test will include 75 questions pertaining to rules, objectives and procedures, terminology, strategy and tactics, terminology, history and equipment, and safety. The Division for Girls and Women's Sports (DWGS) will be the reference for all rules questions.

Upon completion of the test results, I will send you a copy of the total scores and the placement of your answers. Accompanying this information will be a copy of the revised examination.

I would appreciate your completion of the enclosed post card and its return to us at your earliest convenience.

Thank you for your cooperation in this project.

Sincerely,

Dr. J. H. ...

INITIAL LETTER SENT TO SIXTEEN SCHOOLS

November 28, 1964

Miss Martha Stallings
Women's Physical Education Department
Northern Illinois University
DeKalb, Illinois

Dear Miss Stallings:

In partial fulfillment of the Masters of Science degree requirement in the Department of Physical Education at the University of North Carolina at Greensboro, I plan to construct an objective basketball knowledge examination for college women. The purpose of the study is to standardize a test which will be beneficial to instructors of students enrolled in Health, Physical Education, and Recreation service classes. Your department has been recommended to me as one which would possibly be interested in administering the test.

The test will include fifty (50) questions pertaining to rules, etiquette and procedures, techniques and skills, strategy and tactics, terminology, history and equipment, and safety. The Division for Girls and Women's Sports Basketball Guide will be the reference for all rules questions.

Upon completion of the test results, I will send you a copy of the total scores and the placement of your students. Accompanying this information will be a copy of the revised examination.

I would appreciate your completion of the enclosed post card and its return to me at your earliest convenience.

Thank you for your cooperation in this matter.

Sincerely,

Sallie McCutcheon

Marjorie Leonard, Advisor

POST CARD ACCOMPANYING INITIAL LETTER

Miss Martha Stallings
Northern Illinois University

I am interested in administering the test. Yes
 No

If so:

How many students would take the test? _____

Please indicate your preference as to the date
of the administration:

Feb. 22 - Feb. 27 _____

March 1 - March 6 _____

Signature

MAILING LIST FOR INITIAL LETTER

Miss Kay Burrus
Women's Physical Education Department
Indiana University
Bloomington, Illinois

Miss Barbara Dowd
Women's Physical Education Department
Memphis State University
Memphis, Tennessee

Dr. Jean Jacobs
Department of Physical Education
Woman's College of Georgia
Milledgeville, Georgia

Mrs. Jeanetta Land
Women's Physical Education Department
Auburn University
Auburn, Alabama

Miss Aimee Loftin
Women's Physical Education Department
Western Illinois University
Macomb, Illinois

Mrs. Frances Loyde
Women's Physical Education Department
Campbell College
Bales Creek, North Carolina

Miss Kaye McDonald
Women's Physical Education Department
Illinois State University
Normal, Illinois

Miss Martha Moore
Montgomery Gymnasium
Florida State University
Tallahassee, Florida

Miss Phyllis Morris
Department of Health and Physical Education
State College at Bridgewater
Bridgewater, Massachusetts

MAILING LIST (continued)

Miss Mary Slaughter
117 Women's Gymnasium
University of Illinois
Urbana, Illinois

Dr. Barbara M. Snow, Chairman
Women's Physical Education Department
Eastern Illinois University
Charlston, Illinois

Miss Martha Stallings
Women's Physical Education Department
Northern Illinois University
DeKalb, Illinois

Dr. Pamela Strathairn
Women's Physical Education Department
Stanford University
Stanford, California

Miss Betty Swift, Chairman
Women's Physical Education Department
Arkansas State Teachers College
Conway, Arkansas

Miss Jo Anne Thorpe
Women's Physical Education Department
Southern Illinois University
Carbondale, Illinois

Miss Rebecca Tomlinson
Department of Physical Education
Appalachian State Teachers College
Boone, North Carolina

LETTER TO AFFIRMATIVE REPLIES

December 12, 1964

Miss Martha Moore
Montgomery Gymnasium
Florida State University
Tallahassee, Florida

Dear Miss Moore:

Thank you very much for your prompt reply concerning the administration of a basketball test to your service classes. You stated that you would need approximately twenty (20) tests. Accompanying the tests and answer sheets will be the necessary instructions concerning their return. These will be mailed to you the week prior to Feb. 12-27.

In the event that you have a drastic change in the number of tests requested, please notify me to that effect. This information is important since it is necessary that a specific number of students be administered the examination.

Your prompt and courteous participation is appreciated.

Sincerely,

Sallie McCutcheon

LETTER REQUESTING MAXIMUM NUMBER OF TESTS

February 1, 1965

Miss Martha Moore
Montgomery Gymnasium
Florida State University
Tallahassee, Florida

Dear Miss Moore:

I would like some information in regards to the basketball test which will be administered to your basketball classes. On the card enclosed, would you please indicate the maximum number of students that will be taking the test at one time. This will prevent me from sending a number of unnecessary tests. A total of one hundred and ten (110) answer sheets will be included.

Thank you for your cooperation.

Sincerely,

Sallie McCutcheon

POST CARD ACCOMPANYING
LETTER REQUESTING MAXIMUM NUMBER OF TESTS

Miss Martha Moore
Florida State University

Dear Miss Moore:

The maximum number of students that will be taking
the basketball examination at one time is

_____ Name

MAILING LIST FOR
LETTER REQUESTING MAXIMUM NUMBER OF TESTS

Dr. Barbara M. Snow, Chairman
Women's Physical Education Department
Eastern Illinois University
Charlston, Illinois

Miss Martha Moore
Montgomery Gymnasium
Florida State University
Tallahassee, Florida

Dr. Pamela Strathairn
Women's Physical Education Department
Stanford University
Stanford, California

Miss Barbara Dowd
Women's Physical Education Department
Memphis State University
Memphis, Tennessee

Miss Aimee Loftin
Women's Physical Education Department
Western Illinois University
Macomb, Illinois

POST CARD REMINDER

Dear Miss _____,

I trust that the basketball examinations you were kind enough to administer arrived on time. Before I can complete my statistical data, I must have all of the answer sheets returned. I would appreciate you returning the answer sheets as soon as possible.

Please disregard this card if you have already done so.

Sincerely,

Sallie McCutcheon

TABLE IV

TALLY SUMMARY

The four numbers under each response are the tally summations for each group. From top to bottom they are: Upper-Upper Group, Upper Group, Lower Group, Lower-Lower Group.

No.	Responses					No.	Responses				
	a	b	c	d	Omit		a	b	c	d	Omit
1	27*	0	0	0		8	0	25*	2	0	
	61	0	0	0			3	54	4	0	
	47	8	3	1	2		7	50	4	0	
	13	7	4	2	1		5	19	3	0	
2	9	18*	0	0		9	1	1	0	25*	
	16	41	2	2			2	0	1	58	
	33	18	4	4	2		6	1	0	54	
	16	7	2	1	1		2	0	0	25	
3	3	2	13*	9		10	26	1	0	0	
	3	7	30	21			47	0	0	14	
	3	9	38	11			16	3	2	40	
	3	13	5	6			6	2	2	16	1
4	27*	0	0	0		11	0	0	25*	2	
	61	0	0	0			4	3	52	1	1
	46	1	4	9	1		7	7	35	12	
	15	1	8	2	1		9	5	9	4	
5	25*	2	0	0		12	0	15*	12	0	
	60	0	1	0			0	34	23	4	
	46	7	3	4	1		8	16	24	13	
	16	2	2	6	1		1	9	11	6	
6	0	0	0	27*		13	0	26*	1	0	
	0	3	9	49			7	51	2	0	
	1	13	14	33			11	45	5	0	
	2	6	6	13			6	18	2	1	
7	21*	0	5	1		14	0	0	1	26*	
	46	8	4	2			2	0	3	56	
	29	17	8	6	1		16	0	12	33	
	7	10	2	6	2		6	0	1	20	

* The correct answer

TALLY SUMMARY (continued)

No.	Responses					No.	a	b	c	d	Omit
	a	b	c	d	Omit						
15	0	23*	4	0		24	0	1	21*	5	
	3	54	3	1			2	7	42	10	
	7	42	7	41	1		2	8	30	21	
	4	17	5	1			0	6	11	10	
16	2	23*	1	1		25	0	0	23*	4	
	11	41	8	1			0	0	57	4	
	17	28	12	4			0	0	47	14	
	4	16	6	1			0	0	18	9	
17	15*	0	6	6		26	0	27*	0	0	
	35	1	17	8			1	56	4	0	
	12	0	34	15			0	53	5	3	
	2	0	15	10			0	20	6	1	
18	1	26*	0	0		27	1	21*	3	2	
	5	56	0	0			6	44	7	4	
	9	50	0	2			11	22	17	11	
	4	18	2	3			5	12	6	4	
19	0	24*	2	1		28	0	1	26*	0	
	1	49	5	6			0	10	41	10	
	13	41	2	5			1	17	19	24	
	6	13	3	4	1		1	8	7	10	1
20	1	0	0	26*		29	1	1	24*	1	
	2	1	2	56			0	0	51	10	
	2	4	3	52			5	1	31	24	
	1	0	3	23			2	0	17	8	
21	0	23*	2	2		30	2	1	1	23*	
	3	54	2	2			4	3	3	51	
	5	54	1	1			18	12	1	30	
	1	24	2	0			9	2	2	14	
22	18*	1	8	0		31	0	27*	0	0	
	20	2	39	0			1	59	1	0	
	15	2	38	6			7	52	2	0	
	6	1	16	4			6	20	1	0	
23	2	0	25*	0		32	0	0	0	27*	
	5	0	52	4			0	1	2	58	
	12	0	43	6			0	17	4	40	
	5	0	18	4			0	6	3	18	

TALLY SUMMARY (continued)

No.	Responses				Omit	No.	Responses				Omit
	a	b	c	d			a	b	c	d	
33	1	2	12	12*		42	3	0	2	22*	
	2	3	33	23			9	3	6	43	
	2	5	45	9			21	6	11	21	2
	2	2	20	3			10	8	4	5	
34	0	3	24*	0		43	0	27*	0	0	
	1	19	38	3			6	54	0	1	
	6	47	6	2			25	23	1	12	
	2	24	0	1			12	5	0	10	
35	3	0	8*	16		44	0	0	0	27*	
	9	3	13	34	2		0	0	0	61	
	4	8	11	35	3		1	0	3	57	
	2	4	2	18	1		0	0	2	25	
36	27*	0	0	0		45	12	12*	2	1	
	60	1	0	0			27	21	8	4	1
	52	7	1	1			10	23	14	13	1
	16	8	0	3			6	7	8	4	2
37	0	0	27*	0		46	0	27*	0	0	
	0	0	59	2			0	59	1	1	
	1	0	48	12			1	43	6	9	2
	2	0	19	6			2	15	4	4	2
38	0	0	0	27*		47	1	0	25*	1	
	0	0	1	60			6	8	44	2	1
	1	1	4	55			12	9	36	2	2
	0	0	3	24			7	1	17	2	
39	0	26*	0	1		48	3	0	1	23*	
	4	51	1	5			19	1	7	34	
	15	40	1	5			24	2	6	29	
	8	10	1	8			13	4	2	8	
40	1	0	1	25*		49	0	0	27*	0	
	6	0	8	47			2	0	59	0	
	18	3	22	18			7	1	52	1	
	12	3	7	5			2	1	24	0	
41	3	23*	0	1		50	5	0	22*	0	
	3	56	1	1			16	9	33	3	
	14	40	3	4			25	15	19	2	
	4	20	1	2			14	5	7	1	

TABLE V

INDEX OF DISCRIMINATION
AND DIFFICULTY RATING

QUESTION NO.	I.D. (r)	D.R. Per Cent	TOPIC NO.	QUESTION NO.	I.D. (r)	D.R. Per Cent	TOPIC NO.
1	.63	84	6	26	.32	89	3
2	.37	48	4	27	.32	56	4
3	.07	49	3	28	.49	63	4
4	.61	85	6	29	.33	70	3
5	.45	44	1	30	.36	67	3
6	.44	69	3	31	.43	90	1
7	.38	59	4	32	.50	81	2
8	.20	84	5	33	.33	27	4
9	.11	92	3	34	.81	39	1
10	.59	54	1	35	.17	19	3
11	.46	69	3	36	.56	88	5
12	.25	42	1	37	.47	87	2
13	.28	80	7	38	.37	94	7
14	.43	77	4	39	.43	72	4
15	.26	77	5	40	.57	54	2
16	.24	61	4	41	.26	79	1
17	.44	36	4	42	.46	52	3
18	.32	85	1	43	.66	62	1
19	.29	72	1	44	.31	97	5
20	.19	89	3	45	.07	36	3
21	-.04	88	1	46	.57	82	6
22	.26	33	4	47	.24	69	5
23	.27	78	1	48	.29	53	2
24	.27	59	4	49	.33	92	4
25	.26	82	2	50	.36	46	3

QUESTION TOPICS

TOPIC CODE NO.	TOPICS
1	Rules
2	Etiquette and Procedure
3	Techniques and Skills
4	Strategy and Tactics
5	Terminology
6	History and Equipment
7	Safety

BASKETBALL EXAMINATION*

Sallie McCutcheon
UNC-G
Greensboro, North Carolina

Masters Thesis
February 1965
DGWS Rules

DIRECTIONS: Read each statement carefully and select the one item which best answers the question. Mark an "X" through the letter on your answer sheet which corresponds to the best answer to each question.

1. Where was basketball first played ?
 - a. Springfield College in Springfield, Massachusetts.
 - b. State College in Bridgewater, Massachusetts.
 - c. New York University in New York, New York.
 - d. Ohio State University in Toledo, Ohio.
2. What would the stationary defenders do in a two-on-two fast break ?
 - a. Take zone positions under the basket.
 - b. Employ player-to-player defense.
 - c. Assume stationary positions on either side of the foul line.
 - d. Meet the offensive players at the foul line.
3. Which statement concerning the lay-up shot is incorrect ?
 - a. The ball may be delivered at the height of the jump.
 - b. A right hand shooter would most likely jump off his left foot.
 - c. A slight pause is taken before the shot.
 - d. The shooter should be approximately at a 45 degree angle to the backboard.
4. Who was the inventor of basketball ?
 - a. James Naismith of Springfield College.
 - b. Senda Bernson of Smith College.
 - c. Luther Gulick of State College.
 - d. A committee composed of all three.
5. Which is not a violation during the jump ball ?
 - a. Tapping the ball twice.
 - b. Tapping the ball before it reaches its highest point.
 - c. Catching the ball.
 - d. Stepping into the opponents' half of the restraining circle.
6. Which is the incorrect aspect of the defensive stance ?
 - a. Knees flexed slightly, feet apart.
 - b. Body kept low.
 - c. Weight evenly distributed on both feet.
 - d. Feet apart, and weight on the forward foot.

* The spacing here is not the same as for the original examination.

7. Which is the correct statement concerning a break ?
 - a. A break is taken into a space.
 - b. A break is taken around a player.
 - c. A break is taken toward the sidelines.
 - d. A break is taken away from the basket.

8. Which is a shot most likely taken on the run ?
 - a. Hook shot.
 - b. Lay-up shot.
 - c. Jump shot.
 - d. Two-hand overhead shot.

9. In shooting for a goal, which would not be done ?
 - a. Relax
 - b. Concentrate on the basket.
 - c. Follow up your shots.
 - d. Practice new shots so you can foul the guards.

10. A player who has four fouls is involved in a double foul situation. What is the procedure ?
 - a. The player is out of the game and her substitute takes the free shot.
 - b. The player takes a free shot, and leaves the game following the center jump.
 - c. The player leaves the game during the first dead ball after the missed free throw.
 - d. The player takes the foul shot and then must leave the game.

11. From which position(s) on the court would a rim shot most likely be taken.
 - a. From a position under the basket.
 - b. From anywhere on the court.
 - c. From the extreme side or directly in front of the basket.
 - d. From a position diagonally away from the basket.

12. Under which condition would the officials not call the center line violation by a fifth player ?
 - a. When a player steps on but not over the center line.
 - b. When the penalty would be to the advantage of the offending team.
 - c. When a player steps over the line but does not gain an advantage.
 - d. The officials would call the penalty on each occasion of the infringement.

13. In order to stop abruptly without danger of injury, which is the best position for the forward foot ?
 - a. Knee bent, toes turned to the side.
 - b. Knee bent, toes pointed forward.
 - c. Knee extended, toes pointed forward.
 - d. Knee extended, toes pointed to the side.

14. How should one guard a player who looks as if she might shoot a long shot ?
 - a. Jump into the air with both hands up.
 - b. Hold both hands out to the side.
 - c. Move as close as possible and wave both hands.
 - d. Hold one hand up and one hand out to the side.

15. What is an "air dribble" ?
 - a. Impetus given the ball as it rebounds from the backboard.
 - b. The same thing as a juggle.
 - c. Another name for a high bounce.
 - d. An uncontrolled catch by a player.

16. Which shot would most likely be used from a great distance to the basket ?
 - a. One hand push shot.
 - b. Two hand push shot.
 - c. Jump shot.
 - d. Hook shot.

17. On what should the players of a zone defense concentrate ?
 - a. The ball.
 - b. Their designated forward.
 - c. Staying between the forward and the goal.
 - d. Preventing forwards from entering the lane.

18. How many seconds may a closely guarded player hold the ball ?
 - a. Three seconds.
 - b. Five seconds.
 - c. Ten seconds.
 - d. Indefinitely.

19. A player fouls out and the team has no substitutes. How does this affect the roving player rule ?
 - a. It has no effect since the game is discontinued.
 - b. The team plays with five players and any two may rove.
 - c. If a rover fouled out, the team no longer has but one roving player.
 - d. The maximum number of players on one end of the court will be seven.

20. Which is not a true statement concerning a pivot ?
 - a. It is a method of evading an opponent.
 - b. It is an offensive maneuver.
 - c. It is a defensive maneuver.
 - d. It is executed by lifting both feet from the floor.

21. What is the ruling if the referee tosses the ball crooked during a jump ball ?
 - a. Play continues.
 - b. The ball is tossed again between the two players.
 - c. Play is stopped only if a player requests another toss.
 - d. Play continues to see if an advantage is gained by one of the players.

22. When should a bounce pass be used ?
 - a. When a short pass in the scoring area is needed.
 - b. When the opponent is close to the receiver.
 - c. When the opponent is close to the passer.
 - d. When a fast pass is necessary.

23. How long is a player allowed to hold the ball before throwing it in from out of bounds ?
 - a. Three seconds.
 - b. Four seconds.
 - c. Five seconds.
 - d. Ten seconds.

24. In general, what is the most likely formation desired by the offensive players when there is a rebound ?
 - a. All under the basket.
 - b. Three in front of the basket and one out.
 - c. Three in a triangle formation around the basket and one out.
 - d. Two near the basket and two out.

25. When does a game officially begin ?
 - a. Following the toss of the coin.
 - b. When the teams assemble on the court.
 - c. When the ball is touched on the center jump.
 - d. When the official blows his whistle to start the clock.

26. From which position would a right handed player execute a hook shot ?
 - a. With the back to the basket.
 - b. With the left shoulder to the basket.
 - c. With the right shoulder to the basket.
 - d. With the chest turned toward the basket.

27. When would a hook pass most likely be used ?
 - a. When the passer is not closely guarded.
 - b. When the passer is closely guarded.
 - c. When the ball is held in one hand.
 - d. When the passer jumps into the air.

28. What is the disadvantage of player-to-player defense ?
- Defensive players do not have clear guarding assignments.
 - It does not have a check system.
 - It is tiring for the defense if the offense moves around a great deal.
 - It does not allow for good rebound position by the defenders.
29. Where should a bounce pass land in relation to the passer and the receiver ?
- Half way between the two.
 - Closer to the passer than the receiver.
 - Closer to the receiver than the passer.
 - About a foot from the receiver.
30. Which is the best area of the backboard at which to aim while making a lay-up from the side ?
- Directly above the basket.
 - Just over the edge of the rim.
 - Above the basket; slightly to the opposite side from which the shot is made.
 - Above the basket; slightly to the same side from which the shot is made.
31. After the ball leaves the shooter's hand the final horn sounds to end the game. The goal is made. What is the officials' decision ?
- The goal does not count.
 - The goal counts two points.
 - The goal counts one point.
 - A free shot is awarded the shooter.
32. Which of these is correct for indicating two consecutive free throws awarded and made ?
- ② 0
 - ② ②
 - 0 0
 - ② ②
33. Which is the most likely method of stealing the ball from a dribbler without committing a foul ?
- Reaching with both hands as the dribbler passes by.
 - "Punching" at the ball with one hand.
 - Tapping the ball with a downward motion of one hand.
 - Moving one hand in an upward motion to deflect the ball.
34. How many free throws are awarded to a forward in the act of shooting who was fouled by two guards and missed her shot ?
- One.
 - Two.
 - Three.
 - Four.

35. Which is the most effective position when setting a screen ?
- Directly behind the opponent.
 - Directly to the side of the opponent.
 - Diagonally to the side and back of the opponent.
 - To the basket side of the opponent.
36. Which is a deliberate attempt to deceive the opponent ?
- A feint.
 - A pivot.
 - A step.
 - A jump.
37. Because of excessive individual fouls, a team without substitutes has only four eligible players. How does this effect the game ?
- All four players rove.
 - The opponents usually win because the players get tired.
 - The opponents win by default.
 - Play continues as long as both teams agree to continue.
38. Which is the safest way to catch a hard throw ?
- Absorb the shock with both hands held stiff.
 - Bat the ball to the floor to avoid injury.
 - Relax the hands and absorb the shock with the fingers.
 - "Give" with the ball and catch it with relaxed hands.
39. What should one not do when passing to a teammate ?
- Use teammate's waistline as a target when passing.
 - Pass across the court underneath your opponent's basket.
 - Use short passes.
 - Always lead a running teammate.
40. Who are the officials of the game ?
- Two scorers, two timers and two referees.
 - One scorer, one timer and one referee.
 - One scorer, one timer and one referee and one umpire.
 - Two scorers, two timers, one referee, and one umpire.
41. A player with the ball pivots and in doing so hits her guard with her shoulder. What is the officials' decision ?
- Foul against the guard.
 - Foul against the forward.
 - Legal, the guard was not moving.
 - Legal, a forward has that privilege when pivoting.
42. Which is the most recently developed scoring technique ?
- The hook shot.
 - The lay-up shot.
 - The two hand overhead shot.
 - The jump shot.

43. One minute left to play in the game. A forward is fouled as she slowly dribbles down the court toward the basket. What is the ruling ?
- One free throw is awarded.
 - Two free throws are awarded.
 - Violation is called because it is illegal to "freeze" the ball.
 - Regular foul rulings apply provided no "freeze" was attempted.
44. What does body contact in fouling involve ?
- The arms only.
 - The knees only.
 - The upper body only.
 - Any part of the body.
45. Which is an incorrect statement concerning the post or pivot player(s) ?
- A post may be set up to the extreme side of the court.
 - A post player rarely shoots but is usually used to pass the ball to another player.
 - A post player can be used against a zone defense.
 - Double posts need not be on the same side of the basket.
46. Of what was the first basketball goal made ?
- A sewing basket.
 - A peach basket.
 - A fish basket.
 - A trash basket.
47. Who is the trailing official ?
- The referee during the first half of the game.
 - The umpire during the second half of the game.
 - Both during the entire game.
 - The official who comes to the game last.
48. Which is a true statement concerning the three second lane violation ?
- A player may be in the lane for no more than three seconds at any one time.
 - A player may be in the lane over three seconds provided she receives the ball after the fourth second.
 - A player with the ball may enter the lane, pass to another player, and remain in the lane for a return pass.
 - A player without the ball may enter the lane, receive the ball, and stay another three seconds.
49. Who should be the roving players ?
- The tallest girls who move the fastest.
 - The fastest girls who are the shortest.
 - The best all around girls.
 - The best all around girl and the least skilled girl.

50. What should a guard do when the dribbler drives to the guard's right ?
- a. She should step sideways with her right foot.
 - b. She should slide sideways with her left foot.
 - c. She should step backward with her right foot.
 - d. She should step forward with her left foot.

INSTRUCTIONS

Sallie McCutcheon
UNC-G

Basketball Examination
February 1965

1. An envelope is enclosed for returning the answer sheets. Return postage is included.
2. Extra tests and answer sheets have been included.
3. Instruct the students to mark each question clearly on the answer sheet. DO NOT MARK ON THE TEST.
4. Point out to the students the following mimeographed imperfections on the test: Question number 32 may not be clear on some tests. It should be as follows:

a.	0	c.	oo
b.	00	d.	oo
5. A KEY is enclosed. I do not expect you to grade the examination unless you find it necessary to use the scores immediately. I plan to send you each individual's score and her relationship to the entire group tested at a later date.
6. If you do grade the examinations please place the number of correct answers (each answer counted as one) in the uppermost "Score" space. If possible mark the tests in red, green, or some other noticeable color.
7. If you feel a question is KEYED incorrectly as based on your teaching methods, feel free to alter it for your purpose. However, for my purpose the KEY will remain as marked. Please indicate your change if you do grade the tests.
8. If you have any comments about the test or any specific student reactions to one question or the entire test, please indicate them at the bottom of this sheet and return it with the answer sheets.
9. Please return the answer sheets and any comments you might have to the following address:

Miss Sallie McCutcheon
Box 514 UNC-G
North Spencer Annex
Greensboro, North Carolina 27412
10. Since this test has not been validated I would not suggest its further use. An evaluation of the questions will be sent to you upon completion of my data.
11. Comments:

TABLE VI

INDIVIDUAL SCHOOL STATISTICS

SCHOOL	NO. OF STUDENTS	RANGE	MEAN
1	110	45 - 28	37.65
2	29	40 - 24	33.86
3	79	42 - 20	33.24
4	24	38 - 24	31.04
5	61	38 - 21	28.84