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COGNITIVE LEARNING IN A SELECTED UNDERGRADUATE
PHYSICAL EDUCATION ACTIVITY COURSE.

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A TEACHING INSTRUMENT, PROGRAMMED TO FACILITATE
COGNITIVE LEARNING IN A SELECTED UNDERGRADUATE
PHYSICAL EDUCATION ACTIVITY COURSE

Edward Charles Dear

A dissertation presented to the
Graduate Faculty of Middle Tennessee State University
in partial fulfillment of the requirements
for the degree Doctor of Arts

August, 1974

A TEACHING INSTRUMENT, PROGRAMMED TO FACILITATE
COGNITIVE LEARNING IN A SELECTED UNDERGRADUATE
PHYSICAL EDUCATION ACTIVITY COURSE

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Recreation

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ABSTRACT

A TEACHING INSTRUMENT, PROGRAMMED TO FACILITATE COGNITIVE LEARNING IN A SELECTED UNDERGRADUATE PHYSICAL EDUCATION ACTIVITY COURSE

by Edward Charles Dear

Instructors of non-major physical education courses are continually faced with the dilemma of how much time should be taken away from participation to provide lecture time for cognitive information. The basic idea of the author was to utilize an eclectic style of programmed text enabling students to learn cognitive information outside the classroom thus maximizing class time for participation in skills. The programmed text administered at the beginning of the course serves as a primer in that students are able to recall related facts before participation in the activity. Volleyball was the selected activity because of its uniqueness. Volleyball originated in the United States but is played with greater competitive skill in some foreign countries.

The author created an eclectic style programmed text which contained one hundred and ten frames. Each frame was composed of a statement in paragraph form, a

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question which required a written response, and the answer which was located on the opposite side of the page. Some answers were followed by further explanation. After each answer, a code was used to indicate the reference, page number, and, when applicable, the specific rule number. With this system, the text can be utilized as a resource. The programmed text underwent many editing processes including a pilot study. The final product was tested with ninety-three non-major, male and female students enrolled in volleyball courses at Glassboro State College, Glassboro, New Jersey. A second study was done with twenty-two male physical education majors. The programmed text was tested with four evaluative procedures. The first was a comparison to the 90/90 criteria: ninety percent of the subjects taking the program will have ninety percent of the responses correct, and no individual frame will be responded to incorrectly by over ten percent of the subjects. The second testing procedure was a pre- and posttest which contained one hundred and ten questions corresponding to the one hundred and ten frames in the programmed text. The test required approximately ninety percent fill in style responses to reduce guessing. The third testing procedure was time analysis which resulted in a determination of the range and mean in minutes for subjects to complete the programmed text. The fourth

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procedure was a questionnaire requiring a yes-no response and included a section for remarks.

The results of the four testing procedures are positive. Because this text was the first attempt at programming, the 80/80 criteria was used. The results revealed that the program exceeded the 80/80 criteria. The actual level reached was 89/87. The results of the pre- and posttests were significant at the .001 level of confidence. The direct difference method for repeated measures was used. The average percent of improvement between pre- and posttests was 237.5%. Three measures of central tendency were noted:

Note: 110 questions, non-major results

	Pretest	Posttest
Mean	23.62	80.59
Mode	16	90
Median	22	85
Range	4-65	28-108

The time analysis, in minutes, revealed a mean of 75.1 and a range of thirty-five to three hundred to complete the programmed text. The questionnaire substantiated the positive results of the programmed text.

The author believes that a teaching instrument has been created and tested which will facilitate learning in a non-major volleyball course.

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Vice Chairman	Dr. Stanley Hall
H. E. Representative	Dr. Wallace Maples
Sociology Minor	Dr. Hershel Aseltine
Ex Officio	Dr. Robert Aden

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Chapter I

INTRODUCTION

To maximize the amount of class time available for participation in activity in a selected undergraduate physical education course a programmed instrument was developed to facilitate cognitive learning. John Dewey's principle of "learn by doing" has been influential in physical education activity courses resulting in such concepts as practice, repetition, and maximum participation. Instructors of physical education activity courses are reluctant to set aside a great deal of class time for lectures on cognitive or basic knowledge of the course. Activity instructors are interested in the students participating in the various skills as much as possible during the class time to improve skill level.

Physical education, like education in general, is concerned with the physical, social, and mental development. It is believed by the author that the mental or cognitive knowledge is the foundation of the physical or psychomotor and that the social is a by-product of the level of accomplishment of psychomotor. Therefore, according to the author, more emphasis must be placed on basic knowledge without taking class time from the

psychomotor phase. More emphasis on knowledge could create a solid foundation for more accomplishment in the physical and social aspects of an activity course.

If the concept that knowledge and understanding are on a continuum is accepted, then one needs knowledge to have understanding. Therefore, students need some factual information as soon as possible in the learning process. In an activity course there is the decision of how much time to allot to teaching cognitive or factual information in the beginning of the course. This time lessens the actual class participation in the activity. In most activity courses in college the first session can best be described as administrative: locker assignments, orientation to the course, operational procedures, and grading. The second session generally finds the class dressed for activity and ready to begin. The author's idea was to create an instrument which would teach the basic facts of the course before the second class, therefore, maximizing participation.

SELECTION OF INSTRUMENT

The teaching instrument had to be completed in a short duration of time because the student may be

scheduled to have the second class the next day. The teaching instrument had to be completed outside the classroom.

Textbooks of traditional style have been used to supplement learning. Jacobs¹ states that textbooks and programs can be used at the student's own pace. Some textbooks have introduced study questions, concept questions or other forms of questions in an attempt to have students actively respond to the material. Another consideration is the application of the traditional text. Reading assignments usually involve assigning the total text, assigning specific chapters during the course, or expecting the student to follow along in the text in relation to class activities.

According to Markle², B. F. Skinner has three principles of learning. The first is that the reader actively respond to each statement, fact or concept of knowledge. Second, it is important that the reader make

¹Paul I. Jacobs, Milton H. Maier, and Lawrence M. Stolurow, A Guide to Evaluating Self-Instructional Programs (New York: Holt, Rinehart and Winston, Inc., 1966), p. 12.

²Susan Meyer Markle, Good Frames and Bad: A Grammar of Frame Writing (New York: John Wiley and Sons, Inc., 1964), p. 21.

the correct response the first time. This is an attempt to avoid negative learning. Third, the reader should receive the results of his response as soon as possible. The author contends that the above does not occur in traditional texts while programmed texts are based on these learning principles.

Thus the author selected an eclectic form of programmed learning which covered one hundred and ten frames which could be completed, on the average, within one hour and thirty minutes.

BASIC ASSUMPTIONS

1. If one accepts the definition of learning as a change in behavior and that programmed instruction does change behavior, then a programmed text will produce learning to some degree.

2. An eclectic form of programming based on Skinner's linear and Crowder's branching principles is an acceptable method of programming.

DEFINITION OF TERMS

Cognitive: This term refers to recall or recognition of knowledge.³ Examples are: to recall rules, to recognize strategy, or to recall how to officiate.

Psychomotor: The performance of motor skills, such as serving or spiking, is termed psychomotor.⁴

Understanding Student: A student who utilizes the cognitive domain when participating in the psychomotor domain demonstrates understanding.⁵

Physical Education Activity Course: This type of course requires physical participation to attain a physical skill, similar to the concept of a laboratory course. Generally it is a sport-related activity in a required or optional, non-major, undergraduate, physical education program.

³Benjamin S. Bloom (ed.), Taxonomy of Educational Objectives (New York: David McKay Co., Inc., 1956), p. 7.

⁴Ibid.

⁵M. Gladys Scott, Research Methods (Washington, D. C.: American Association for Health, Physical Education and Recreation, 1959), p. 215.

Basic Knowledge: Basic knowledge describes the composition of the activity. It is the level of cognitive knowledge which will facilitate psychomotor learning. An example is rules.

Programmed Book or Teaching Instrument: These terms are used synonymously to describe the end product of this research.

Activity Book: This is a brief and concise text dealing with one or more physical education activities and usually is in paperback form consisting of approximately one hundred pages of the six by nine inch size. Examples are the Brown Series and the Prentice-Hall Sport Series.

Traditional Text: A book which is written in paragraph form which does not require the reader to respond to each fact or concept presented can be described as traditional.

Programmer: This term will be used synonymously with the author of the dissertation.

Frame: . . . a segment of material which the student handles at one time. An item may vary in size from a single incomplete sentence, question, or instruction to perform some response, up to a sizable paragraph. In almost all programming methods, it will require at least one response and will provide knowledge of results before the student proceeds to the next item.⁶

Knowledgeable Person: An individual who has previous exposure to the subject matter is a knowledgeable person.

⁶Markle, op. cit., p. 247.

Chapter II

REVIEW OF LITERATURE

Three areas of literature were reviewed; programming techniques, sport series books, and volleyball.

Basically there are two types of programming, linear and branching. Linear style of programming presents one fact after another in the form of frames. Each fact is presented similarly in a progressive fashion. The main problem with a true linear program is that the longer the program, the greater the chance for boredom to occur. The reader of the program must read each frame to progress through the program. Some authors feel this does not allow the reader to progress at his own rate. This author believes that there is allowance for the individual in that the better reader or more knowledgeable person will progress through the program at a faster rate. However, because the reader must read every frame, it is possible that the knowledgeable reader may become bored.

The branching style of programming utilizes the multiple-choice form of response. If a reader selects the correct answer each time, he may read about one-third of the program. Each answer to a frame refers the reader to a different page of the program. If the answer is incorrect

the reader may be directed to reread an area. The advantage of the branching style is that a knowledgeable reader will finish the program quickly and a reader who needs extra help will be tutored by the various referrals. The major problem in this style of programming involves the programmer who must anticipate every possible wrong conclusion for each frame and then branch these answers so the reader will be placed back on the central progression of facts or concepts.

As a result of the review of literature on programming, the author would describe the form used to construct this programmed text as eclectic. Primarily it is based on Skinner's concepts of linear programming. One hundred frames is the scope of the text which can be completed in about one hour and thirty minutes so the degree of boredom would be limited. Since the reader would read every fact, it serves as a review to the knowledgeable person. Some of Crowder's principles of branching were utilized in the form of terminal frames and review frames in which the student is referred back in the program. It is generally accepted that the more senses employed in the learning process, the greater the chance for learning. Therefore, the author used a written or fill-in response for the questioning in each frame.

The second area of literature reviewed was sport series books. Traditionally these are found in two forms, the combined style and the single subject book in a series. The first style combines several sports in one book. This type of book is designed to serve as a reference for an entire physical education activity curriculum. The weakness of this style is that it does not have space for rules or facts on equipment or detailed dimensions of the facilities. This type of book is economical for students taking several activity courses; however, it must be supplemented by the instructor in each specific area.

The second type of sport book which was reviewed can be referred to as a series book. Unlike the combined book of several hundred pages, the series book is small in size and generally under one hundred pages. The book usually has one sport as its content. This type of book, like the combined book, is written in the traditional prose form. The questions concerning the use of this type of book are several: Did the student learn the specific facts the instructor desired? Was there space in the book for the rules? How much was added between the facts to inflate the size of the book? Has the book proved that it can produce learning as demonstrated by a change in

behavior? The sport series book is a step in the right direction of offering specific material on a particular topic in an economical manner; however, it is questionable if the book is motivating enough to produce specific learning of central facts.

The third area of literature reviewed by the author included all aspects of volleyball. During the process of surveying this literature, the author found that the United States Volleyball Association Rule Book and Guide was the best source of factual material.

The purpose of reviewing this third area of literature was to determine the content for the text. Certain central areas appeared in each text on which the content of this programmed text was developed.

The literature reviewed determined the type of teaching instrument and the content for the teaching instrument. A bibliography is included.

Chapter III

METHODOLOGY

PREPARATION OF PROGRAMMED TEXT

Objectives

The first step in preparing the programmed text was to establish objectives. The following objectives guided the progress of the text:⁷

1. To construct an eclectic style programmed text in volleyball with which eighty percent of the coed undergraduate students in the selected group will correctly respond to eighty percent of the frames.

2. To construct an eclectic style programmed text in volleyball in which eighty percent of all frames will be responded to correctly by eighty percent of the subjects.

3. To construct an eclectic style programmed text in volleyball which will be completed by the subjects in a mean time, in minutes, of less than ninety.

⁷Robert F. Mager, Preparing Objectives for Programmed Instruction (San Francisco: Fearon Publishers), 1962.

Content

Through a thorough review of the literature on volleyball, the author established the scope of the content:

History

Concept of "power volleyball"

Rules

Scoring

Officiating

Equipment

Safety

Identifying the role of skills

Passing Blocking

Set-up Serving

Spiking New Recovery

Offensive Strategy

Defensive Strategy

The author originally gathered one hundred and fifty-five facts covering the areas above. After an editing process, one hundred and twenty frames were used for the pilot study.

Construction of Frames

The majority of frames in the text were constructed in the following manner:

1. A paragraph was read which emphasized a central fact.

2. A question was read which calls for the fact as a response. The reader responded in a written form such as a word, date, or number.

3. After responding, the reader turned the page to see the correct answer. The answer was sometimes followed by an explanation. This idea was part of the branching system of programming. It represents a tutorial approach in that it may explain the answer further to a reader who answered incorrectly or it may reinforce a correct answer.

Some frames are diagrams in which the reader was requested to fill-in certain information such as numbers or labels. Other frames requested a listing of answers. The response solicited for each frame was dependent upon the material to be learned.

In consultation with a professional programmer it was learned that a weakness of a programmed book is that it cannot be used as a resource. To overcome this the major sources for the content of the text were listed at the end of the text. Each source was numbered. After each

answer in the text, a parenthesis was placed which included the number of the source, the page number in the source, and the specific rule number if the source was a rule from the rule book. Example: (2 - 78 [1.07]) If there was a question about the answer, the reader could check the source for detailed information on each frame.

In the organization of this text, the first fifty-five frames, which represents one half of the text, run from the front of the text to the back on the top half of the page. The second fifty-five frames run on the bottom half of the page. This was done for several reasons. The first was that the reader would feel accomplishment progressing quickly through the text. It also emphasized a half-way point. The text does not appear as thick. Each page was fully utilized. The reader had to turn the page for the correct response which hopefully discouraged cheating.

The actual construction of frames can best be described as a trial and error procedure. The programmer constructed a number of frames to cover certain information under a subheading of content. A minimum of one female and one male undergraduate student responded to the frames. Afterwards the programmer attempted to ascertain through

discussion the rationale for the responses. The programmer edited the frames again to make each more effective in producing the correct response.

After a subheading section of frames was completed, the programmer administered the complete subheading to an undergraduate group of five males and five females. A discussion followed and another editing process occurred. Specific frames within the tested subheading were administered to small groups for further editing.

A written response was required for each frame. The responses included circling a word, writing a number, or writing words. By this procedure the programmer was able to determine if the responses were correct according to the programmer. In this way the programmer counted the number of correct responses and applied a percentage to the sum of the correct responses and a percentage of correct responses to each frame.

The programmer edited the frames until the trial subjects were able to respond correctly to eighty percent of the frames with no individual frame receiving over twenty percent incorrect responses.

The author found that the formulation of frames was very time consuming. The author was able to construct

approximately four to five frames per hour. After formulating the frames, the editing process was even more time consuming.

Once the program was believed to be ready, a pilot test was administered to twenty-four women and twenty-two men who were enrolled in a physical education activity course in volleyball. After the pilot study, a frame analysis was performed to determine which frames needed further editing. The length of time needed to complete the program was determined. This resulted in the number of frames being reduced to one hundred and ten. At this point the program was ready for actual testing.

TESTING PROCEDURES

The actual testing of the programmed text took place at Glassboro State College, Glassboro, New Jersey, in the spring semester, 1974, in the following manner.

On the first class session the instructors of the selected volleyball classes administered the pretest to the students enrolled in the courses. At the end of the same class period the instructors handed each student the volleyball programmed text. The instructions for using the program were reviewed and the students were requested

to complete the program, filling in the responses, by the next class session.

At the second class session the programmed texts were collected and the posttest was administered by the instructors. The students did not know ahead of time that they were going to be retested.

Approximately three-quarters of the way through the course the questionnaire was administered to the students.

Delimitations of the Study

1. The subjects were coed undergraduate students enrolled in volleyball classes in the spring semester, 1974, at Glassboro State College, Glassboro, New Jersey.

2. Subjects in the pilot study were coed undergraduate students from physical education activity courses in the fall semester, 1973, who would not be in the spring volleyball classes.

3. There was no way to control previous knowledge of volleyball of any of the subjects. However, this may be more realistic because this is the type of situation for which the teaching instrument was designed.

4. The number of subjects was twenty-four men and sixty-nine women.

5. The sampling of population was limited to one college. However, this sampling was from a middle class college which could be characterized as typical of the mid-Atlantic part of the United States.

PROCEDURES FOR TREATING DATA

According to Jacobs⁸ and Espich⁹ there are four ways to evaluate programmed instruction: 90/90 criterion, pre- and posttests, time range, and attitudes or opinions.

90/90 Criterion

This criterion is referred to by the American Association for Health, Physical Education and Recreation¹⁰ as an objective to aim for in producing an effective program. The 90/90 criterion prescribes that ninety percent of the subjects taking the program will have ninety percent of the responses correct, and that no individual

⁸Jacobs, op. cit., p. 62.

⁹James E. Espich and Bill Williams, Developing Programmed Instructional Materials (Belmont, California: Fearon Publishers, 1967), pp. 119-125.

¹⁰American Association for Health, Physical Education and Recreation, Programmed Instruction in Health and Physical Education (Washington, D. C.: NEA Publications, 1970).

frame will be responded to incorrectly by over ten percent of the subjects. This criterion was attempted by the author: however, because this was the first attempt at programming by the author, an 80/80 criterion was considered acceptable.

While participating in the program the subjects were required to give a written response to each frame. Thus, the programmer was able to determine a raw score for number of correct responses for each subject. This raw score was converted into a percentage of correct responses by dividing the number of correct responses by the number of possible correct responses. Thus, a percentage of correctness was obtained for each subject. An arithmetic mean was computed of all the percentages. To compute the eighty percent criterion, the number of subjects having eighty percent or better of correct responses to frames on the program was determined. This figure was then subtracted from the total number of subjects. The result was divided by the number of subjects to determine a percentage of subjects having eighty percent or better correct responses to frames on the program. This percentage was compared to the eighty percent criterion.

A similar process was followed for each individual frame. The programmer determined a raw score for the number of correct responses for each frame. This raw score was converted into a percentage of correct responses by dividing the number of correct responses by the total number of possible correct responses. This produced a percentage of correctness for each frame. An arithmetic mean was computed for the percentages correct. The eighty percent criterion for frames was computed by determining the number of frames which have been responded to correctly by eighty percent of the subjects. By dividing this number by the total number of frames, a percentage was obtained. The percentage was compared to the eighty percent criterion.

Pre- and Posttests

The pretest was administered on the first class meeting. The program was disseminated to the class after taking the pretest. The classes were told to complete the program before the next class meeting. This gave the students a minimum of forty-eight hours before the second class meeting. At the second class meeting the programs were collected and the posttest was administered.

Because there were one hundred and ten frames in the program, the test contained one hundred and ten questions. A question related to each frame. The questions were difficult because specific knowledge was needed to answer each question. Guessing was difficult because of the fill-in style of response. Other types of questioning were used when appropriate for the material. Another unique aspect of the test was a response block in which the subjects could admit that they did not know the answer. This was an attempt to avoid guessing. This block was used in the pilot test but was not used in the actual test.

Included in the instructions for the test was the statement that the student would not receive a grade for the test and that it was important that the subject respond to each question.

Sample question:

The overall length and width of a volleyball court is _____ feet by _____ feet.

The same test was administered for the pre- and posttesting. The test, like the program, went through a rigorous editing process. Questions were administered to small groups and then edited until a test was prepared for

a pilot test. Because the program was edited from one hundred and twenty frames to one hundred and ten frames, the test was edited likewise. In the pilot test the subjects were asked to circle words, phrases, or sentences which were ambiguous. An item analysis was performed after the pilot test and further editing was performed before the test was used as an actual pre- and posttest.

Significance of scores. Because the groups in both tests were the same subjects, the direct difference method for repeated measures was used to determine if the difference in raw score means between the pre- and posttests was significant at the .05 level of confidence. The above was computed for the total group.

Raw scores. The next data was a listing of raw scores on pre- and posttests for the total group. The mean, mode, and median were also noted to observe measures of central tendency.

Average percentage of change. A percentage was determined between the mean pretest score and the mean posttest score. This represents a percentage of change for the average subject.

Time Analysis

During the pre- and posttest pilot study, the administrator noted the starting time of the group and the finishing time for the last subject. This was necessary in order to determine the practicality of the test for a class period.

To determine the time it took each subject to complete the program, the cover page had a note requesting that the subject write the number of minutes it took to complete the program.

The time analysis involved the amount of time subjects required to complete the program. The time scores, in minutes, were computed to determine the arithmetic mean and the range of scores.

Questionnaire

In reviewing the literature, the author was unable to locate a questionnaire specifically designed for programmed material. Therefore, the author developed ten questions which called for a yes or no response. The questions in the questionnaire could be categorized in three areas: previous experience with programming, structure of this program, and effect on the class performance. The subjects were encouraged to make comments

in the "Remarks" section. The questionnaire was not used
in the pilot study.

Chapter IV

RESULTS

80/80 CRITERIA

A raw score was determined for each program. (See Table 1) A percent of correctness for each program was determined. Sixty-nine was the lowest percent correct for a program, and three programs were responded to correctly one hundred percent. The interesting figure was the mean, 94.37. Students on the average missed 6.74 frames of the one hundred and ten frames in the program.

The first part of the 80/80 criteria represents the percentage of students who had eighty percent of the responses correct. The percentage of the students who responded with eighty percent of the responses correct was 95.67. To take this one step further and compare it to the ninety percent criterion, the figure becomes eighty-eight percent. Thus, the program falls short of the ninety percent criterion by two percent. (See Table 1) The actual percent reached was eighty-nine.

The second half of the 80/80 criteria was concerned with whether eighty percent of the frames were responded to correctly by eighty percent of the subjects. The result is

Table 1
 Number and Percentage of Correct
 Frames for Each Subject

Subject	Number Correct	Percent Correct	Subject	Number Correct	Percent Correct
1	100	91	19	106	96
2	105	95	20	107	97
3	86	78	21	108	98
4	95	86	22	109	99
5	106	96	23	108	98
6	102	93	24	105	95
7	101	92	25	103	94
8	105	95	26	95	86
9	84	76	27	104	95
10	104	95	28	105	95
11	104	95	29	108	98
12	106	96	30	106	96
13	107	97	31	91	83
14	107	97	32	97	88
15	106	96	33	91	83
16	106	96	34	87	79
17	104	95	35	104	95
18	107	97	36	107	97

Table 1 (continued)

Subject	Number Correct	Percent Correct	Subject	Number Correct	Percent Correct
37	107	97	57	100	91
38	109	99	58	102	93
39	107	97	59	108	98
40	109	99	60	108	98
41	108	98	61	106	96
42	107	97	62	109	99
43	110	100	63	101	92
44	103	94	64	99	90
45	103	94	65	102	93
46	106	96	66	105	95
47	108	98	67	108	98
48	105	95	68	108	98
49	99	90	69	106	96
50	89	81	70	108	98
51	109	99	71	105	95
52	108	98	72	103	94
53	105	95	73	108	98
54	102	93	74	107	97
55	109	99	75	101	92
56	110	100	76	105	95

Table 1 (continued)

Subject	Number Correct	Percent Correct
77	106	96
78	102	93
79	76	69
80	98	89
81	105	95
82	106	96
83	105	95
84	107	97
85	108	98
86	109	99
87	110	100
88	109	99
89	103	94
90	110	100
91	108	98
92	108	98
93	109	99

M=103.95 M=94.39

ninety-four percent of the frames were responded to correctly by eighty percent of the subjects; therefore, the eighty percent criterion was reached. To take this result one step further and compare it to the ninety percent criterion, the result is eighty-five percent. Thus, the frames are five percent short of reaching the ninety percent criterion. (See Table 2) The actual percent reached is eighty-seven percent.

PRE- AND POSTTESTS

The results of the pre- and posttests were significant at the .001 level of confidence. The direct difference method for repeated measures was used. Thus, it can be assured that the results of the pre- and posttesting were not by chance.

An examination of Table 3 will give a comparison of pre- and posttest scores. Three measures of central tendency were calculated:

	<u>Pretest</u>	<u>Posttest</u>
Mean	23.62	80.59
Mode	16	90
Median	22	85
Range	4-65	28-108

Table 2
 Number and Percentage of Correct
 Responses for Each Frame

Frame	Number Correct	Percent Correct	Frame	Number Correct	Percent Correct
1	85	91	19	92	99
2	91	98	20	92	99
3	92	99	21	70	75
4	93	100	22	85	91
5	91	98	23	91	98
6	93	100	24	91	98
7	89	96	25	93	100
8	92	99	26	91	98
9	88	95	27	72	77
10	93	100	28	92	99
11	91	98	29	92	99
12	75	81	30	88	95
13	92	99	31	92	99
14	91	98	32	91	98
15	93	100	33	90	97
16	44	47	34	64	69
17	91	98	35	71	76
18	89	96	36	93	100

Table 2 (continued)

Frame	Number Correct	Percent Correct	Frame	Number Correct	Percent Correct
37	85	91	57	92	99
38	92	99	58	92	99
39	91	98	59	84	90
40	92	99	60	92	99
41	90	97	61	93	100
42	89	96	62	93	100
43	92	99	63	86	92
44	92	99	64	79	85
45	92	99	65	87	94
46	91	98	66	87	94
47	91	98	67	92	99
48	92	99	68	92	99
49	92	99	69	93	100
50	93	100	70	92	99
51	89	96	71	93	100
52	91	98	72	81	87
53	87	94	73	91	98
54	92	99	74	81	87
55	89	96	75	91	98
56	83	89	76	86	92

Table 2 (continued)

Frame	Number Correct	Percent Correct	Frame	Number Correct	Percent Correct
77	74	80	94	90	97
78	84	90	95	82	88
79	90	97	96	90	97
80	76	82	97	88	95
81	88	95	98	89	96
82	90	97	99	88	95
83	92	99	100	93	100
84	92	99	101	70	75
85	89	96	102	90	97
86	78	84	103	92	99
87	93	100	104	93	100
88	73	78	105	91	98
89	92	99	106	90	97
90	82	88	107	86	92
91	91	98	108	87	94
92	89	96	109	92	99
93	93	100	110	89	96

Table 3
Pre- and Posttest Scores and Number
of Minutes to Complete Programmed Text Per Subject

Subject	Pretest	Posttest	Minutes
1	19	89	60
2	25	107	90
3	33	53	70
4	8	100	60
5	44	108	54
6	19	103	120
7	35	90	50
8	43	103	56.5
9	36	55	77
10	22	90	60
11	30	80	80
12	32	102	72
13	34	59	50
14	33	85	70
15	39	63	50
16	18	94	90
17	30	94	75
18	23	107	110

Table 3 (continued)

Subject	Pretest	Posttest	Minutes
19	39	105	110
20	22	105	80
21	37	90	80
22	41	93	60
23	21	100	65
24	38	107	65
25	7	52	100
26	29	89	75
27	34	87	70
28	17	58	55
29	19	101	90
30	24	94	62
31	17	37	90
32	25	56	90
33	20	58	120
34	10	51	110
35	30	78	71
36	18	52	60
37	14	87	50
38	16	78	85

Table 3 (continued)

Subject	Pretest	Posttest	Minutes
39	12	92	60
40	27	90	60
41	18	87	120
42	5	64	84
43	6	84	75
44	16	68	80
45	16	91	80
46	27	80	95
47	8	96	125
48	15	72	90
49	6	28	61
50	16	48	60
51	41	95	76
52	39	79	90
53	44	84	40
54	18	70	60
55	40	77	75
56	16	97	90
57	16	74	65
58	37	95	60

Table 3 (continued)

Subject	Pretest	Posttest	Minutes
59	12	81	68
60	8	85	61
61	65	90	90
62	19	74	45
63	13	82	47
64	29	71	63
65	15	90	120
66	5	32	51
67	30	78	75
68	21	76	70
69	58	83	70
70	4	101	90
71	19	84	74
72	30	86	60
73	29	68	65
74	30	80	78
75	16	66	65
76	6	36	75
77	24	90	71
78	28	99	70

Table 3 (continued)

Subject	Pretest	Posttest	Minutes
79	10	48	60
80	15	95	300
81	39	97	55
82	31	86	75
83	26	74	45
84	19	86	77
85	9	104	50
86	22	92	80
87	29	96	55
88	37	67	75
89	26	87	58
90	14	76	60
91	16	77	69
92	4	70	60
93	20	57	35
Mean	23.62	80.59	75.16
Mode	16	90	
Median	22	85	
Range	4-65	28-108	35-300

The average percent of change, or in this case the average percent of improvement between the pretest and the posttest, was 237.5%. The average subject improved 237.5% from the pretest to the posttest.

TIME ANALYSIS

In Table 3 the number of minutes needed by each subject to complete the program is listed. The mean is 75.16 minutes. The average subject completed the program in one hour and fifteen minutes.

It is interesting to note the range of time required to complete the program was thirty-five to three hundred minutes.

QUESTIONNAIRE

The questionnaire contained ten questions. This particular questionnaire was subjective in nature. Table 4 reports the number of yes-no responses to each question. The number of positive and negative statements made in the remarks section of the questionnaire are also noted in Table 4.

Table 4
Results of Programmed Learning
Volleyball Questionnaire

1. Have you used any form of programmed learning before participating in this research?	YES 28	NO 65
2. Did you complete all frames in the programmed text?	YES 76	NO 17
3. Did you find the programmed text difficult to follow or understand?	YES 3	NO 90
4. Were the instructions for the programmed text clear?	YES 87	NO 5
5. Did you complete the entire program at one time?	YES 52	NO 41
6. Was the program too long?	YES 64	NO 29
7. Was the content of the program sufficient for the course?	YES 88	NO 5
8. Did you utilize any of the information while participating in the volleyball course?	YES 89	NO 4
9. Do you prefer this type of programmed text to the traditional text usually used for physical activity courses?*	YES 83	NO 9
10. By using this programmed text at the beginning was your motivation increased toward the course?	YES 61	NO 32

REMARKS: (Please express your thoughts on any aspect of this research)

Positive Negative

37 7

* One subject did not respond to this question.

Chapter V

SUMMARY OF RESULTS

The 90/90 criteria are the accepted standards for a successful program. This program reached the 89/87 percent level. However, the author considers the program a success: first, because it was the author's initial attempt in programming; second, some of the frames were terminal or general review frames necessitating several responses. For example, one frame required four word answers and seven measurements to have the frame correct. If one response was incorrect, the entire frame was counted as incorrect. The author realized that the particular frame would be missed with some consistency, but it would serve as a review. The author set the 80/80 percent criteria as the objective for this research. The research surpassed this objective.

The pre- and posttests offered a second method of evaluation. On a one hundred and ten question pretest, the average subject had twenty-four correct answers. On the same posttest, the average subject had eighty correct answers. This represents a 237.5% improvement. One could

generalize and state that this program can more than double the knowledge of volleyball of the average coed freshman.

The time analysis mean proved to be seventy-five minutes. Thus improvement can be attained on the average in one hour and fifteen minutes.

The written questionnaires reveal certain tendencies. Seventy percent of the subjects had not used any form of programming prior to this research. This gives some indication of how much programmed learning is utilized in the kindergarten through twelfth grades in this geographical area. Three percent stated that they found the program difficult to follow. Ninety-five percent agreed that the instructions were clear. Although the average subject completed the program in one hour and fifteen minutes, fifty-seven percent completed the program in more than one time period. Sixty-nine percent of the subjects believed the program to be too long. The material was believed to be sufficient for the course. Ninety-six percent of the subjects stated that they utilized the material from the program while participating in the volleyball course. Ninety percent preferred the programmed text as opposed to the traditional text for the activity course. Sixty-six percent of the subjects believed that

the programmed text used at the beginning of the course increased motivation. The questionnaire included a remarks section. Of the ninety-three subjects, forty-four subjects wrote their opinions. Of the forty-four responses, thirty-seven were interpreted as favorable. The overriding opinion of the favorable responses was that the subjects liked the idea of programmed learning at the beginning of the course which increased their motivation and knowledge. (See Table 4)

Three behavioral objectives were determined for this research. The first objective was to construct an eclectic style programmed text in volleyball with which eighty percent of the coed undergraduate students in the selected group would correctly respond to eighty percent of the frames. This objective was attained and surpassed. The second objective was to construct an eclectic style programmed text in volleyball with which eighty percent of all frames will be responded to correctly by eighty percent of the subjects. This objective was attained and surpassed. The third objective was to construct an eclectic style programmed text in volleyball which will be completed by the subjects with a mean time, in minutes, of less than ninety. This objective also was attained.

FURTHER RESEARCH

The author has two proposals for further study. The first proposal is that the program be revised, adjusted, and retested to make it applicable to the secondary education level. The concept of priming through programming for an activity may be successful at various levels of education including graduate.

The second proposal is directed to all teachers to encourage analysis of subject matter to determine if this primer idea is applicable to the subject. Perhaps mini programs could serve as introductions to sections of a course. The primer idea could be utilized with any subject which has cognitive knowledge as part of the content.

The author views programmed learning as a teaching instrument to supplement or assist the teacher, not to replace the teacher.

APPENDIX A

APPENDIX A

PHYSICAL EDUCATION MAJORS SUMMARY

The same testing procedures for the programmed text were administered to a class of twenty-two physical education majors. The group was composed of men enrolled in a course which included a section on volleyball at Glassboro State College, Glassboro, New Jersey.

Because the group was all male and less in number than the non-major, test group, no comparisons were attempted.

The results are as follows:

1. The criterion reached was 90/91.
2. The percent of improvement from pretest to posttest was one hundred and forty-eight.
3. The direct difference method revealed the pre and post scores were significant at the .001 level of confidence.
4. The mean pretest score was forty-two and the mean posttest score was eighty-nine.
5. The average time in minutes was 69.18.
6. The questionnaire revealed very favorable responses.

With the percent of improvement and the favorable reactions to the questionnaire, the author believes the text would be valid and beneficial for physical education majors.

APPENDIX B

APPENDIX B

VOLLEYBALL
KNOWLEDGE
INVENTORY

by

Edward C. Dear

Name _____

Date _____

Period _____

INSTRUCTIONS

1. Read each question carefully.
2. Write your answer in the blank provided within the sentence. If a true-false response is required, circle the appropriate response.
3. If you do not know the answer, leave it blank.

DO NOT GUESS

1. Volleyball was created by William G. Morgan in the year _____.
2. The U.S. participates in volleyball more as a _____ activity than as a competitive activity.
3. Mr. Morgan was a director in a _____ in Massachusetts.
4. Since 1928 the U S _____ has been looked upon as the ruling body for tournaments, rule making, and promotion.
5. The NCAA and NAIA hold _____ tournaments at the collegiate level each year.
6. Name one other organization which promotes volleyball tournaments at the national level. _____
7. The U.S. _____ since WWI has been a main source of promotion of volleyball internationally.
8. A ball is in play when which player makes contact with the ball? _____
9. An attempt at the net to rebound the ball into the opponent's court is called _____ing.
10. A violation of the rules is called a _____.
11. A ball must be _____, it cannot come to rest.
12. If a ball hits a line it is considered _____.
13. A player can catch the ball if it is obviously out-of-bounds to avoid chasing it. TRUE OR FALSE

14. A "play over" is serving again without giving any points or declaring side out. TRUE OR FALSE
15. When two players hit the ball at the same time, it is called s _____ contact.
16. The size of a volleyball court is _____ feet wide by _____ feet long, including the outer edge of the lines.
17. Obstructions above the court must be at least _____ feet above the floor.
18. How many different colors can the lines on the volleyball court be? 1 ___ 2 ___ 3 ___ 4 ___ More ___
19. The spiking line is located _____ feet from the middle of the center line and parallel to it.
20. The service area is located o _____ the end line on the right side of the court. This area is _____ feet in width.
21. Name two of the lines found on a volleyball court.
Example: Vertical Line _____
22. The net is _____ feet wide and _____ feet long.
23. The size of the squares in a volleyball net is _____ inches.
24. At the top of the net is a white or orange line which is _____ inches in width.

25. Write the appropriate height of the top of the net from the floor: Men _____ feet
Women _____ feet
26. On the net there should be a two inch v _____ line perpendicular to the side line.
27. What is the height of the net for coed play? _____ feet
28. The cover of a volleyball should be made of _____ and be composed of _____ or more pieces.
29. The cover of a volleyball should be laceless and be composed of how many colors? 1 ___ 2 ___ 3 ___ 4 ___
30. When properly inflated the ball should rebound 60-65 inches off the floor when dropped from _____ inches above the floor.
31. The head official is called the _____.
32. The _____ can overrule any official.
33. What is the location of the umpire in relation to the referee? _____ of the net.
34. Time out when the ball is dead can only be requested by the _____ or the _____.
35. Which two people can request a substitute for a team? _____ and _____.
36. The umpire _____ the referee in his duties.
37. The scorer is located on the opposite side of the net from the _____.

38. The scorekeeper verifies the serving order for the referee. TRUE OR FALSE
39. The scorer records points, verifies serving order, and records time outs. Name one other duty: _____
40. What is the mid-point of the third game?
_____ or _____
41. The timekeeper is located next to the _____.
42. The basic duty of the timekeeper is to record the _____ the ball is in play.
43. The timekeeper should also call out when four, _____, and _____ minutes remain.
44. The primary job of the linesmen is to signal _____ of _____.
45. Name one of the three lines which is the responsibility of the linesmen to call: _____
46. The proper number of players allowed to play on a team at one time is _____. The number allowed on a team is _____.
47. If a team has less than six players they forfeit the first game. If after _____ minutes the team cannot produce six players, the second game is forfeited.
48. In competition players wear _____ inch numbers on their back and _____ inch numbers on their front for identification.

49. Refusing to play by a team results in a forfeit of that game. After _____ minutes the next game is forfeited.
50. A toss of the coin determines the _____ for the first game. The loser has choice of _____.
51. After the first game, teams will _____ courts. After four minutes or _____ points of the third game, teams _____ courts.
52. The server may not touch the back line or beyond before _____ the ball.
53. Offensive players must be in their proper rotation positions until the _____ contacts the _____.
54. A back court player may not _____ past the ten foot line.
55. Only _____ court players can block.
56. A substitute must take the position of the player he _____.
57. A player continues to serve until a _____ is committed or the game is completed.
58. If the serving team commits a foul or the ball touches the floor on their side of the net, _____ is declared.

59. When a team first receives the serve from the opponent, each player on the new serving team must _____ one position in a _____ manner.
60. The server may start play by contacting the ball with his hand, fist, or _____.
61. When serving, the ball must _____ the net and go into the opponent's court.
62. A player may not _____ the net at anytime, although there is one exception to this rule.
63. A follow-through which goes over the net is _____.
64. _____ over the net is permitted if the opponent has played the ball.
65. A player may not touch the floor area past the center _____ of the opponent's court.
66. A ball can be played from the net provided there is a legal number of hits remaining. TRUE OR FALSE
67. A player may not make successive _____ with the ball.
68. If two players block the ball simultaneously, one of these players may hit the ball a second time, however, this counts as a _____ hit for the team.
69. The ball can hit any part of the body _____ the _____.
70. Simultaneous contact of two or more parts of the body is considered _____ play or hit.

71. A team is allowed _____ hits or plays after receiving the ball from the opponent.
72. A player may play the ball outside the boundary lines.
TRUE OR FALSE
73. A ball is dead when it _____.
74. Back line players cannot contact the ball above net level when forward of the _____ foot line.
75. The ball may be played off obstructions if the ball does not fall into the _____ court.
76. A game is won by a team having 15 points and leading by _____ points.
77. The rest period between games is _____ minutes.
78. Time out lasts _____ seconds, and a team is allowed 2 per game.
79. Substitution requests are only made when the ball is considered _____.
80. A team can substitute players twelve times a game, and one player can enter as many as _____ times.
81. Unsportsmanlike conduct can result in: 1) warning, 2) sideout or point declared, or 3) _____ of the player for the game or match.
82. The term _____ is used when the referee wishes to restart play and award no points or sideout.
83. To earn a point, your team must have served when the _____ committed a foul.

84. When the serving team fouls, _____ is declared and the serve goes to the other team.
85. To win a match a team must win _____ out of _____ games.
86. The score of a forfeited game is _____.
87. For elementary grades the height of the net cannot be lower than _____ feet.
88. In coed play the ball must be hit between men and women alternately. TRUE OR FALSE
89. The net height for coed play must be _____ feet high.
90. In doubles play the court dimensions are 30 feet by _____ feet.
91. In doubles play the number of substitutions allowed is _____.
92. The object of "power volleyball" is to _____ the ball into the opponent's court using planned techniques.
93. For safety reasons the standards which hold the net should be placed _____ to _____ feet off the court.
94. The forearm pass is used to set-up a _____ shot.
95. In the forearm pass the hands are _____.
96. The overhead pass is generally used to set-up balls which are 1 _____ across the net.
97. The ball is played with the _____ extended above the head in the overhead pass.

98. In one type of serve, the ball is placed in the hand opposite the striking hand. With a _____ swing the ball is hit off the hand holding the ball.
99. The power serve in volleyball is the _____ serve.
100. When a spike is anticipated, one or two players may jump in front of the net extending their arms upward. This is called _____.
101. _____ can best be described as a defensive weapon.
102. Jumping into the air and contacting the ball with the hand over the head so the ball can be powered into the opponent's court is called a _____.
103. Volleyball is a team effort with players participating in close proximity; therefore, it is important for teammates to c_____ with each other during play.
104. As experience and skill increase, players begin to _____ their movements as well as their opponent's movements.
105. A good strategy for beginning players is to use all _____ hits in returning the ball.
106. A beginning server should be mainly concerned with getting the ball _____ l y into the opponent's court.

107. Name one advanced skill in serving: _____
108. Name one defensive strategy against the serve:

109. When setting, the first hit should place the ball in
the _____ of the court.
110. The best location for the ball to be spiked is about
_____ feet from the net and just off center.

APPENDIX C

APPENDIX C
GLASSBORO STATE COLLEGE
Glassboro, New Jersey

Programmed Primer
For
Volleyball

Cognitive Teaching Instrument

by
Edward C. Dear

Student Name _____

Please note below the number of minutes required for you
to complete all frames in this text.

_____ Minutes

INSTRUCTIONS

You are about to use a programmed text. The first half of the text, frames 1 through 55, is written on the top half of each page. The second half, frames 56 through 110, is on the bottom of each page. The frames are composed of a paragraph and question on the front of the page and the corresponding answer on the back of the page. In all frames you are asked to make a written response-- to fill in, circle, or check off an answer.

Procedures for using text:

1. Cover the question with a blank piece of paper.
A dotted line is provided between the paragraph and the question.
2. Read the paragraph.
3. Cover the paragraph.
4. Read the question and respond.
5. Turn the page and check your answer.
6. Continue on to the next page completing all one hundred and ten frames in numerical order.

HISTORY AND BACKGROUND

Just before the turn of the century, in 1895, volleyball was originated by William G. Morgan. The game was started five years after basketball was created. Mr. Morgan wanted a lunch time activity which was not as strenuous as basketball for businessmen.

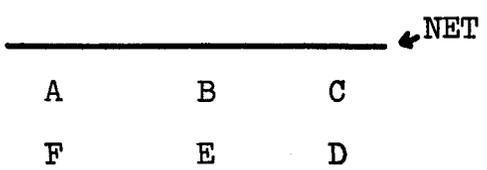
GUIDE LINE

Q. When was basketball invented?

With all this moving around one must remember that all players must return to their rotation or starting position before the next serve begins. A substitute must take the same position as the player whom he replaces.

.....

Q. If a team wanted to put a good spiker into the game which players could they take out? (Circle the players)



1

- A. 1890 If volleyball was created in 1895 and basketball came five years earlier, then 1890 is correct.

(3 - 56)

56

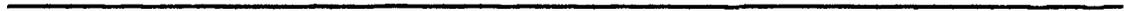
- A. A, B, and C are the correct answers. Any player in the front row may spike, but back row players may not spike.

(2 - 189 [6.08])

Like basketball, volleyball is an American creation. In the United States volleyball is played as a recreational activity as compared to the highly competitive emphasis of organized volleyball in other countries.

.....

Q. The United States created the game of volleyball. However, in this country, volleyball is not generally considered a competitive sport. It is played as a _____ activity.



When your team has the serve you can score points. A player continues to serve until a foul is committed by his team or the game is completed.

.....

Q. The basic objective of the game is to get the _____ and keep it until you win the game.

2

- A. RECREATIONAL or any word with a similar meaning is correct.

(1 - 55)

57

- A. SERVE

Serving is the name of the game. You cannot score if your team did not serve.

(2 - 190 [7.03])

Mr. Morgan, the creator of volleyball, was a YMCA director in Massachusetts. Because the YMCA started volleyball, it was the organization which promoted and ruled the game for the first twenty years.

.....

Q. Mr. Morgan was a director in a _____

If your team was serving and committed a foul or the opponent hit the ball to the floor in-bounds on your side of the court, sideout would be declared and the opponent would serve next.

.....

Q. What is the word used to indicate that a team just lost the serve?

3

A. YMCA

Remember this is the organization which first ruled
the game.

(3 - 56)

58

A. SIDEOUT!

(2 - 190 [7.04])

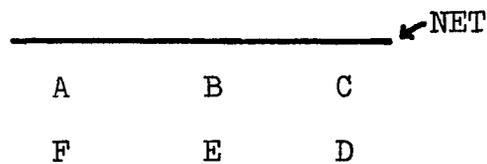
In athletics a ruling body is an organization which determines the rules and generally governs the whole country. The YMCA was the first ruling body for volleyball however, this organization had many other interests and a new organization emerged as the official ruling body. About 1928 the United States Volleyball Association (USVBA) began making the rule changes, running tournaments, and promoting the sport.

.....

Q. What are the initials of the organization which became the ruling body for volleyball after the YMCA?

When sideout is declared by the official, the team receiving the ball for the serve rotates one position clockwise before they can serve the ball.

.....



Q. If sideout has just been declared and the above team just received possession of the ball and has not rotated, which player will serve the ball?

4

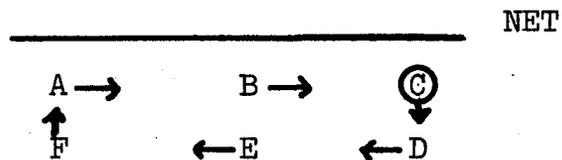
A. USVBA

The United States Volleyball Association is still recognized as the ruling body.

(3 - 57)

59

A. C



(2 - 190 [7.05])

The National Collegiate Athletic Association (NCAA) and the National Athletic Intercollegiate Association (NAIA) hold national tournaments each year to determine national champions in volleyball at the college level.

.....

Q. The NCAA and NAIA hold _____ tournaments each year in volleyball.



We have mentioned many times that the starting point of play is when the server contacts the ball. Now we need to know how the server may contact the ball. There are three basic ways: 1) open hand; 2) fist; and 3) forearm, which is used in the oriental countries frequently.

.....

Q. What are the three parts of the body which may contact the ball when serving?

- 1. _____ 2. _____ 3. _____

5

A. NATIONAL

Because these organizations hold national tournaments, national champions are determined for the college level.

(3 - 59)

60

A. 1. OPEN HAND 2. FIST 3. FOREARM

(2 - 191 [7.10])

Other national volleyball tournaments are administered without the restriction of being a college student. The USVBA promotes an open tournament and the YMCA holds a national tournament. The Jewish Welfare Board holds a national tournament. The Amature Athletic Union (AAU) and the United States military have various tournaments nationally.

.....

Q. Are there opportunities to participate in national volleyball tournaments if you are not a college student?

YES _____ NO _____

When playing volleyball many people confuse some of the rules with tennis. There is no such thing as a "let" in volleyball. The rule states that when serving, the ball must clear the net and, if not hit by the opponent, land within bounds on the opponent's court.

.....

Q. In order for the serve to be good it must _____ the net!

6

A. YES!

Even if your college does not have a competitive team, participation can be as close as your local "Y" or AAU facility.

(3 - 59)

61

A. CLEAR

Remember touching the net is not clearing the net!

(2 - 191 [7.11])

Since World War I the United States military has been a major force in the promotion of volleyball world-wide. It is interesting to recall that foreign countries play the game with more emphasis on competition.

.....

Q. Which organization spread the game of volleyball internationally?

- YMCA _____ AAU _____ NCAA _____
- USVBA _____ U.S. Military _____

PLAY AT THE NET

The net in volleyball is like a "no man's land". It is not to be touched. It is a foul to touch the net. The only exception is when the ball hits the net first causing the net to hit the player. This occurs generally when the opponent hits the ball into the net and the net contacts a front line player of the opposing team.

.....

Q. A player may not t _____ the net by his own impetus.

7

A. UNITED STATES MILITARY is correct.

(3 - 59)

62

A. TOUCH

You cannot hit the net but the net can hit you.

(2 - 191 [8.01])

DEFINITIONS

Ball in play: When the football center releases the ball or the tennis player hits the ball when serving, at that moment the ball is put in play. In volleyball this moment occurs when the server makes contact with the ball in the act of serving.

.....

Q. The ball is put in play by the player recognized as the _____.

One problem encountered by front line players is follow-through of the hand over the net. The rule allows a follow-through over the net only when the player contacts the ball on his side of the net.

.....

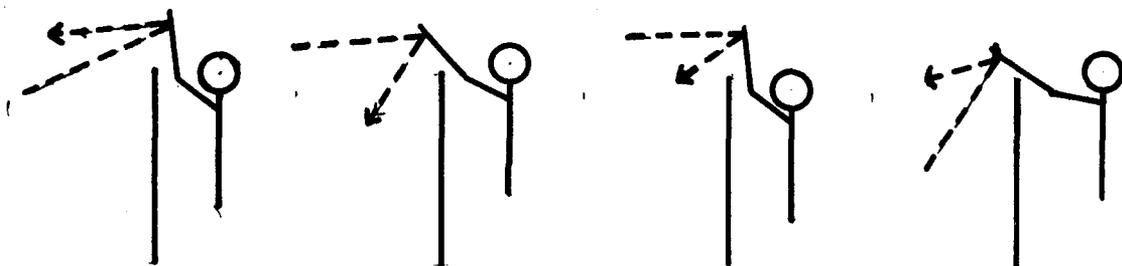
Q. Which of the following are legal contacts?

A

B

C

D



A. SERVER

This is the player who starts the action the moment he contacts the ball.

(2 - 177 [1.01])

A. A and C are legal.

C is close, but contact was still on his side of the net. Remember after contact the player's arm may move forward over the net, however, it may not touch the net.

(1 - 192 [8.02])

Blocking: This is a defensive maneuver which is performed at the net. The idea is to extend the barrier of the net by players reaching high with their arms just above the net. If a team can anticipate where the opponent will hit the ball over the net, by placing their arms in this area, hopefully, the ball will rebound off the player's arms and return to the opponent's court.

.....

Q. The objective of blocking is to _____
the ball back into the opponent's court.

If we can follow-through over the net after hitting a ball, how about reaching over the net to block a ball? You are allowed to reach over the net. The key is whether your opponent had an opportunity to hit the ball in the act of returning it before you blocked it.

.....

Q. If you are attempting to block a ball on your opponent's side of the net and both you and your opponent hit the ball at the same time, is a foul called?

YES _____ NO _____

A. REBOUND

You may have said "hit". Hit is also correct, if you are visualizing the ball rebounding off the arm.

(2 - 177 [1.02])

A. YES

Your opponent must be allowed to hit the ball before you can block it.

(2 - 192 [8.02])

Foul: When a player violates one of the rules, the fans may yell an assortment of words; however, the referee or umpire will say, "foul".

.....

Q. When a rule is violated the official word used by the referee or umpire is _____.



We mentioned that the center line is four inches as compared to all other lines which are two inches wide. In theory this allows two inches to extend beyond the net on each side. Like the boundary lines, the center line is fair territory and the outside edge is the line of demarcation. A player may step on the center line, but no part of his foot may touch past this line into the opponent's court.

.....

Q. Can a player from each team step on the line at the same time?

YES _____ NO _____

10

A. FOUL

Hopefully, this was your answer!

(2 - 177 [1.05])

65

A. YES

The line is in-bounds for both teams. The far edge is the true boundary.

(2 - 192 [8.03])

Hit Ball: This concept is probably the most difficult to understand in the game of volleyball. A hit must be instantaneous. This means it must rebound upon contact like bouncing a ball off a wall. There must be a similar reaction when the ball is hit by any part of the upper body. The rule states that the ball must be hit. It cannot come to rest.

.....

Q. The word _____ best describes the hitting action when playing the ball.



What happens when a player from your team hits the ball into the net? Can you play it? Yes, you can! This is why it is important that the net be tight so that the ball will spring off of it.

.....

Q. A teammate hits the ball into the net on the second hit. The referee should call the ball dead.

TRUE _____ FALSE _____

11

A. INSTANTANEOUS is the word.

Remember, it cannot come to rest.

(2 - 177 [1.06])

66

A. FALSE

A ball hit into the net is not dead unless it was the third hit which went into the net. You should get ready for the ball to rebound to your court. A player has to get low quickly because the ball is dropping fast. You are allowed to play it from the net.

(2 - 192 [8.04])

In-Bounds: In volleyball if the ball hits the line, it is good and is called in-bounds. So, the outer edge of the line is the key spot to observe to determine if the ball is in-bounds. If the ball hits the line, it is in-bounds. If it does not touch the outer edge, it is out-of-bounds.

.....

Q. If the ball hits the outer edge of the line, the ball is ruled _____.

A player may not hit a ball two times successively. Should player "A" hit the ball, then player "B", player "A" may then hit the ball again.

.....

Q. Suppose you do not hit the ball the way you wanted to and the ball is coming down over your head, what should you do?

- A ___ Move out of the way so a teammate can hit it.
- B ___ Hit it again. You are in good position.
- C ___ Catch the ball to avoid a collision.

12

A. IN-BOUNDS

Yes, if it hits the line it is good.

(2 - 177 [1.08])

67

A. A is correct.

MOVE OUT OF THE WAY! Sometimes players are frustrated and try to hit the ball again. It is a foul for a player to hit the ball two times in a row.

(2 - 192 [8.07])

Out-of-Bounds: If a player catches or touches a ball which is, in his opinion, going out-of-bounds, it cannot be determined where the ball would have landed. To cover this situation, the rules declare a ball which is touched or caught as in-bounds.

.....

Q. To have a ball ruled out-of-bounds the ball must _____ the floor outside of the lines.

When attempting a block, two players from the same team may hit the ball at the same time. This counts as one hit and either player may hit the ball a second time.

.....

Q. If player "A" and player "B" block the ball at the same time and the ball falls into their court, can "A" hit the ball again?

YES _____ NO _____

13

A. HIT the floor!

So a rule of thumb for a player when he thinks the ball is going out-of-bounds is to "let it hit the floor".

(2 - 177 [108])

68

A. YES

Go back and reread if you had a different answer.

(2 - 192 [8.08])

Play-over: If for some reason play is hindered and the referee desires to stop play and start again, he declares a play-over. If this is done, no points are awarded and sideout cannot be declared.

.....

Q. If something interferes with play, the referee can stop play and declare a _____.

This next rule has varied over the years. Presently the rule states that a player may contact the ball with any part of the body above the waist.

.....

Q. Contact with the ball may be made with any part of the body above the _____.

14

A. PLAY-OVER

(2 - 177 [1.09])

69

A. WAIST, good.

(2 - 193 [9.01])

Simultaneous Contact: Sometimes during the course of the action, two players from the same team may contact the ball at the same time, and simultaneous contact is declared. The importance of this is that it only counts as one hit for a team.

.....

Q. Simultaneous contact is when t or more players from the s team contact the ball at the same time.



If a player misjudges a ball and it hits his arm, chest, or any combination of body parts at the same time, it is considered one hit.

.....

Q. If two or more parts of the body hit the ball at the s t, this is considered one hit.

15

A. TWO from the SAME team are the correct answers.

(2 - 179 [1.11])

70

A. SAME TIME

Simultaneous hit is the key.

(2 - 194 [9.05])

16

- A. If a full court is 30 feet by 60 feet then half of a court would be 30 feet by 30 feet. The total court is rectangular, but the playing area for one team is square.

(2 - 179 [2.010])

71

- A. THREE (3)

(2 - 194 [9.06])

In some gymnasiums there are overhead obstructions such as a pull-away basketball backstop or ropes. These obstructions must be at least 26 feet off the floor. It is recommended that they be 30 feet off the floor.

.....

Q. An official volleyball game can be played under ceiling obstructions if the obstructions are at least _____ feet off the floor.



The outside boundary lines do not limit the movement of the players. A player may go outside the lines to play a ball. The only exception is that a player may not step beyond the center line to play a ball.

.....

Q. Can a back line player cross the ten foot spiking line to hit a ball to a teammate?

YES _____ NO _____

17

A. 26 feet is correct.

Try to have 30 feet clearance for obstructions when possible.

(2 - 179 [2.010])

72

A. YES

The only exception is the center line. A back line player cannot spike the ball, but he may play or set the ball.

(2 - 194 [9.07])

All visible lines on a volleyball court must be the same color. All lines, except the center line under the net, are two inches wide. The center line under the net is four inches wide.

.....

Q. All lines are the _____ color. With one exception, all lines are _____ inches in width.



The term "dead ball" is used in many sports usually to denote that play has stopped. In volleyball the ball is dead when: 1) it hits the floor, 2) it crosses the net outside the vertical line, 3) it touches obstructions when hit to the opponent, and 4) it lands out-of-bounds.

.....

Q. Name two situations in which the ball would be considered dead:

1. _____

2. _____

18

A. SAME color and TWO inches in width

Remember the center line under the net is four inches
in width.

(2 - 179 [2.02-3])

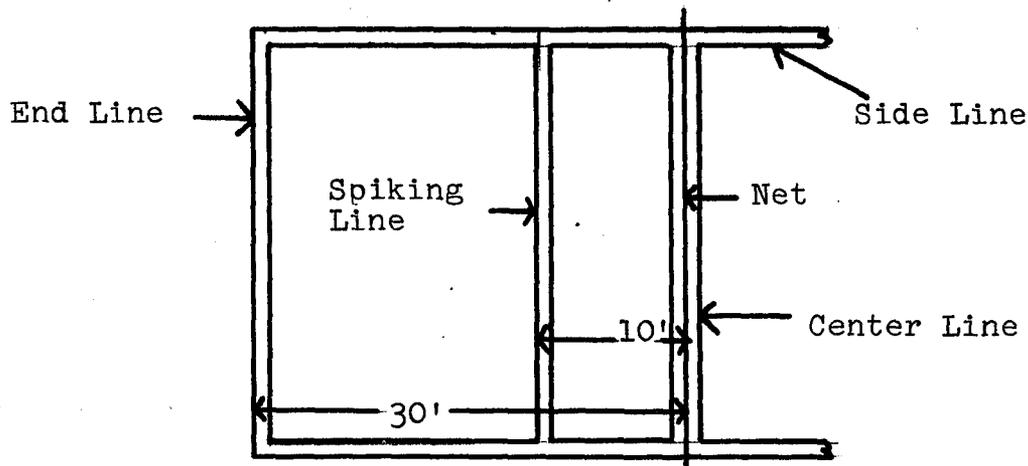
73

A. Go back to the list of four situations in which the
ball is considered dead to see if your two answers
are similar.

Are they? YES _____ NO _____

(2 - 194 [9.09])

A line located 10 feet back from the middle of the center line is called the spiking line. No back court player may spike the ball in front of this line.



.....
 Q. The _____ line is the line 10 feet back from the center line.

Back line players have limitations on their movements when they are forward of the ten foot line or spiking line. The one limitation we already discussed is that they cannot spike. The other limitation when forward of the ten foot spiking line is that they cannot contact the ball above the level of the top of the net if they are returning the ball across the net to the opponent.

.....
 Q. Can a back line player run forward of the ten foot line and hit the ball above the net level if he is passing it to a teammate?

YES _____ NO _____

19

A. SPIKING line is the correct answer.

(2 - 179 [2.06])

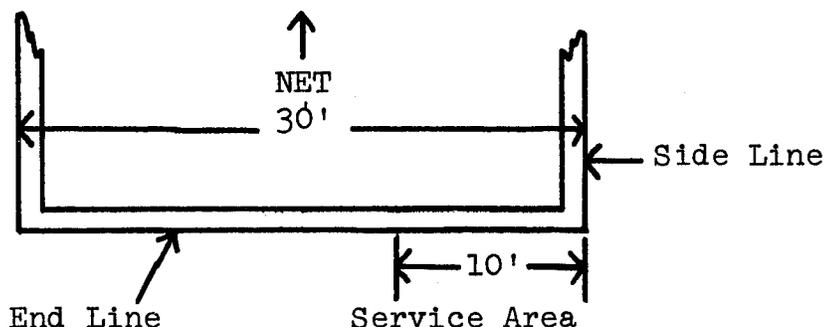
74

A. YES

A back line player can hit the ball above the net level, when he is past the ten foot line, if he is hitting the ball to a teammate and not returning it across the net.

(2 - 193 [9.01])

The service area is located outside the end line on the right side facing the net. This area is ten feet in length.



.....

Q. What is the length of the service area outside the end line?

_____ feet

In some gymnasiums overhead obstructions are a problem. If they are higher than 26 feet, the court is legal for official games. An interesting rule provides that if team "A" hits the ball and it hits an overhead obstruction within their own court, team "A" can play the ball off the obstruction. However, team "A" may not hit the ball over the net and hit an obstruction in team "B's" court.

.....

Q. A team is making its second play, and in so doing, the ball hits a rope in the ceiling on their side of the court. The ball comes down and a different player dives outside the sideline and hits the ball back across the net in a legal manner. Is this permissible?

YES _____ NO _____

A. 10 feet is correct.

Remember, the server may not touch or pass over the end line until the ball is contacted and in flight.

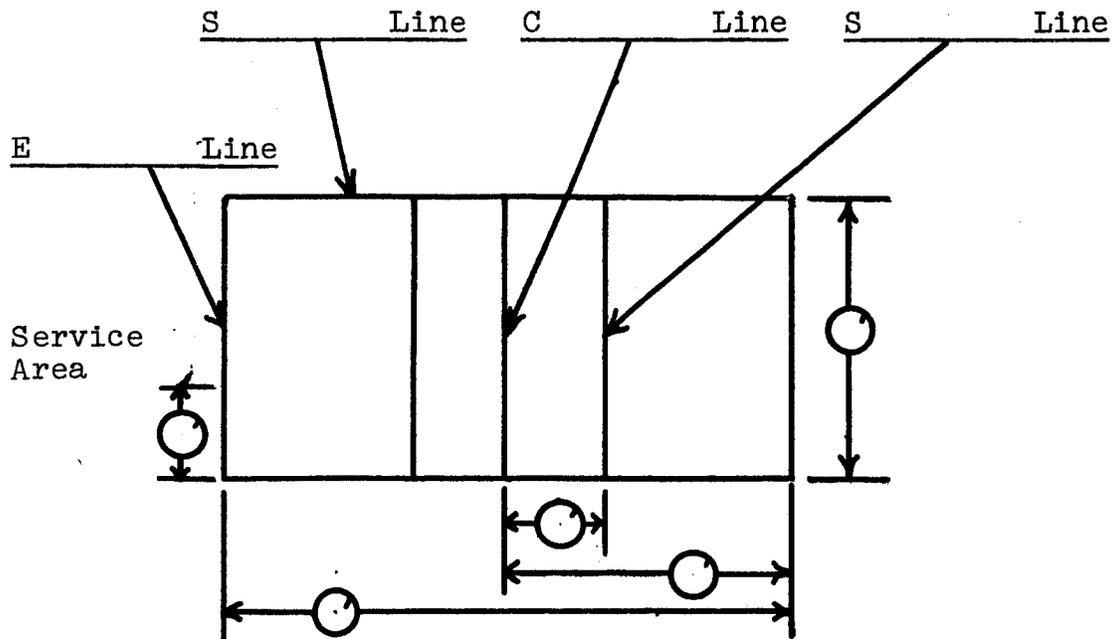
(2 - 179 [2.05])

A. YES is correct.

A team can play a ball off an obstruction on their side of the court. A player may go outside the boundaries to play the ball.

(2 - 194 [9.10])

Name the four lines and place the proper number, in feet, in the five circles.



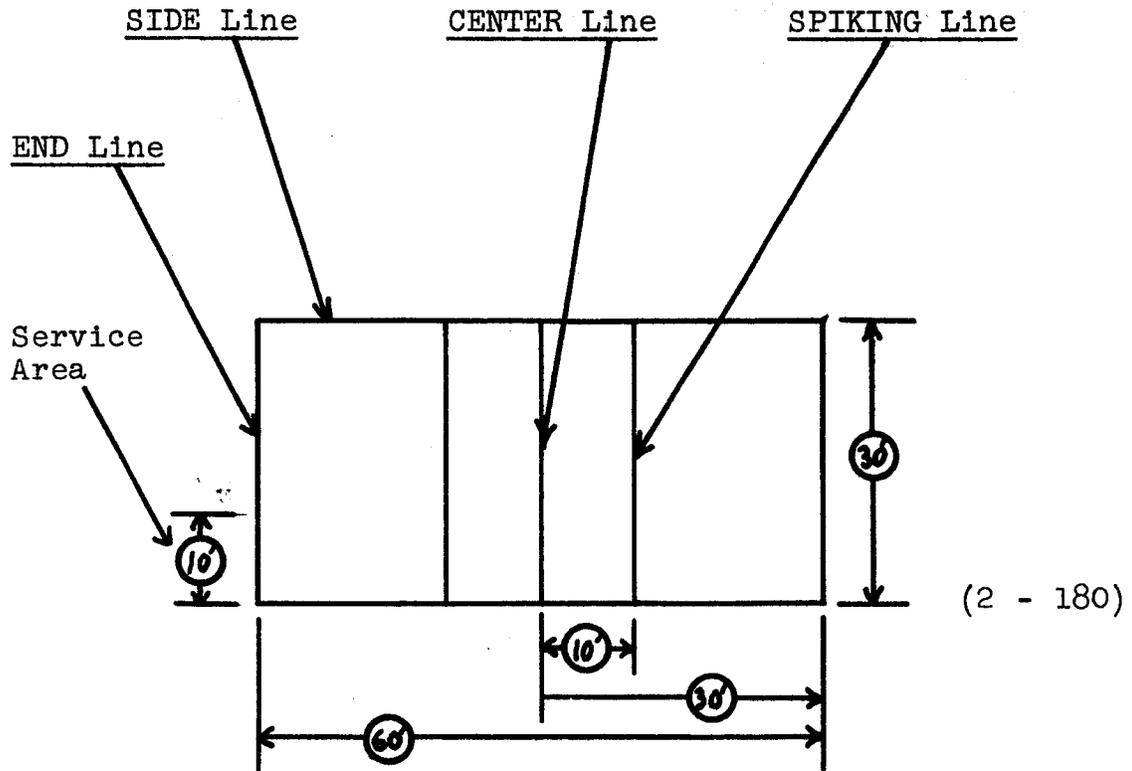
A game is won by scoring 15 points and leading the other team by 2 points.

.....

Q. Which of the following games has been completed?

- A. 21-19
- B. 14-12
- C. 20-19
- D. 15-14

21

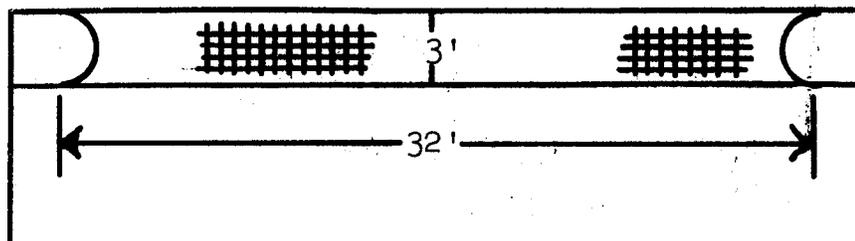


76

A. A is correct.

Review the rule if you are incorrect.

A volleyball net is three feet wide by thirty-two feet long.



Q. How much, in feet, will the net extend past the sideline on one side?

_____ feet

77

Between each game there is a three minute rest period.

Q. How many minutes of rest would there be if three games were completed?

_____ minutes

- A. If the net is 32 feet long and the width of the court is 30 feet, then one foot of net would extend past the sideline on each side.

(2 - 181 [2.20])

- A. 6 minutes
3 minutes after the first game and 3 minutes after the second game.

(2 - 195 [10.03])

A net is made up of squares. A volleyball net is located at eye level; therefore, the squares must be as large as possible and still be small enough so that a volleyball cannot pass through. The size of the squares in a volleyball net is four inches.

.....

Q. If two nets are in an equipment closet, how would you know which is the volleyball net and which is the tennis or badminton net?

The one with the _____ inch squares is the volleyball net!

In each game a team is allowed two time outs. Each time out is thirty seconds in length.

.....

Q. What is the total number of minutes a team could take in time outs during three games?

_____ minutes

23

- A. You could say the net with the larger squares is the volleyball net. You could have remembered that the squares are four inches. The important thing is that you pick up the correct net.

(2 - 181 [2.20])

78

- A. 3 minutes

Two time outs per game for 30 seconds each equals one minute per game.

(2 - 195 [10.04])

So that the top edge of a volleyball net is easy to see, a two-inch white or orange line is located across the top edge of the net.

.....
Q. Why is there a two-inch line across the top edge of the volleyball net?

- A. "Let" is called if this line is hit when serving
- _____ B. Opponent may touch this line but not the net
- C. So top edge of net can be easily seen
- D. All of the above

Remember the four situations in which a ball is considered dead? If not, review frame number 73. When the ball is dead, a request for a substitute can be made.

.....
Q. While the game is in progress, a player is hurt. Can a substitute enter the game and take the injured player's position while the ball is still in play?

YES _____ NO _____

A. C is correct.

Can you imagine judging your hit over the net with no top line? Hang the net upside down and play. This will show you the reason for the top line on the net.

(2 - 181 [2.20])

A. NO

A substitute may enter the game only when the ball is dead. If the injury is serious the referee or umpire should stop play.

(2 - 196 [11.01])

Sex plays a role in determining the height of the net. When we say the height of the net, we are referring to the distance from the floor to the top edge of the net. For an all male match, the distance is eight feet. For a coed match, the height is also eight feet. For an all female match, the net height is seven feet, four and one quarter inches.

.....

Q. Of the three kinds of matches--male, coed, or female-- which one requires a lower net height?

In one game, a team is allowed twelve substitutions. Any one player may enter the game three times. Once in a game, a player may only substitute in that position.

.....

Q. Can a coach use substitution as a way to keep the best player in a key location for certain plays?

YES _____ NO _____

25

A. When all participants are female, a lower net height is used.

(2 - 181 [2.22])

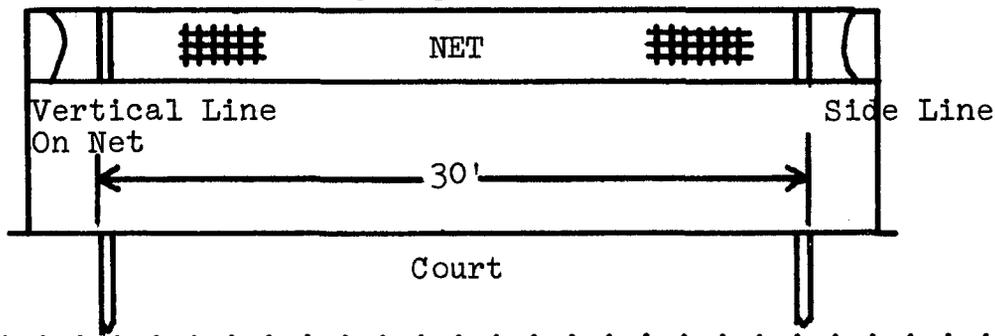
80

A. NO

A player must return to the position he was playing.
Possibly this may be a key location.

(2 - 197 [11.10])

To coincide with the side line on the floor, a vertical line is placed on the net directly over the side line. The width of this vertical line is two inches and the color is the same as the top edge line on the net.



Q. The vertical line on the net is directly over which line on the court?

If a player gets excited and acts in an unsportsmanlike manner, the referee may warn the individual, declare a point for the other team or sideout whichever applies, or disqualify the individual for the game or match. This is not only for players but for coaches and managers as well.

Q. The referee has the power to disqualify a player for unsportsmanlike conduct from the _____ or the entire _____.

26

A. SIDE LINE is correct.

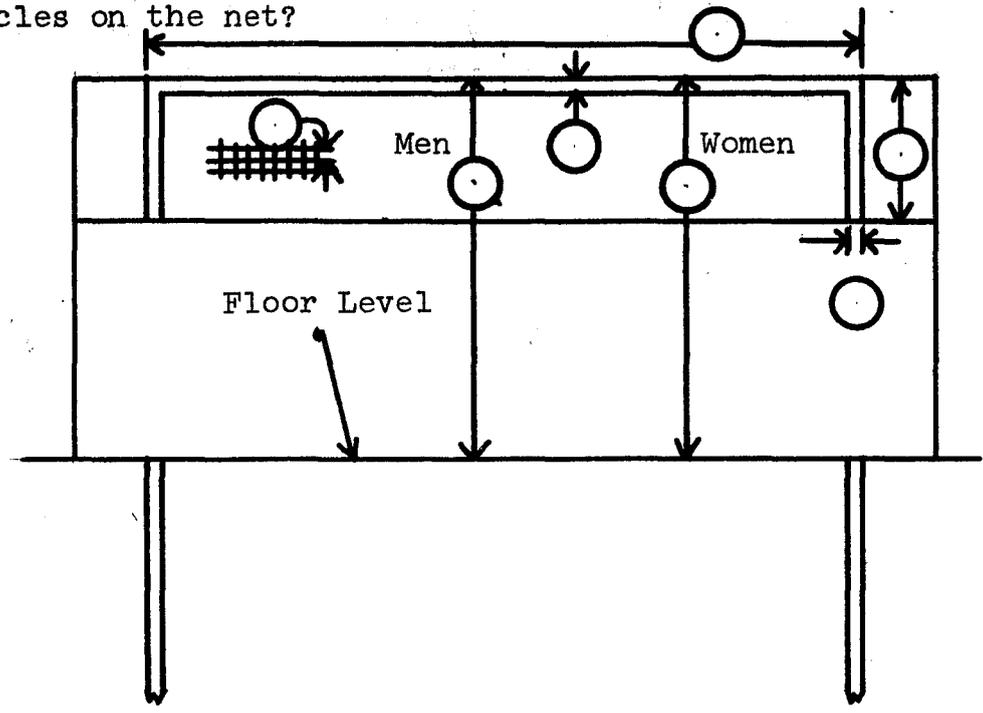
(2 - 181 [2.21])

81

A. GAME or the entire MATCH

(2 - 198 [12.02])

Can you place the proper measurements in each of the seven circles on the net?

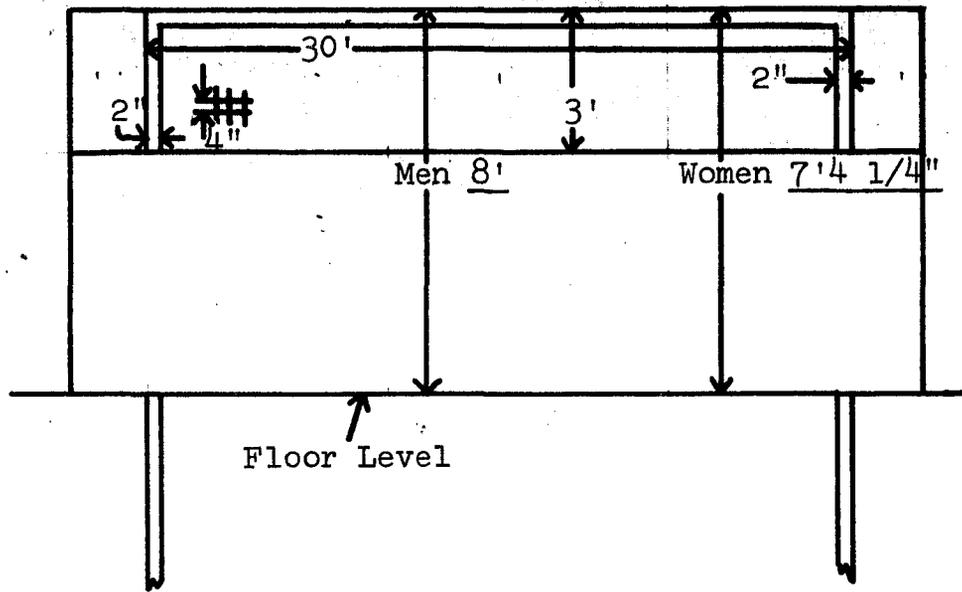


The term "play over" is used in many sports. When we play over we want to go back and do it again without anything changing. So when "play over" is called, no points are awarded and sideout is not declared. In the following situations a "play over" may be declared: official's mistake, foreign object on the court, ball held simultaneously above the net, injured player, or a double foul.

.....
 Q. When "play over" is declared, sideout or a point can be awarded.

TRUE _____ FALSE _____

27



(2 - 179 [2.00])

82

A. FALSE

No points are awarded and the serve does not change sides.

(2 - 199 [13.09])

Ball: The novice at one time had difficulty differentiating a volleyball from a soccer ball. Perhaps this is the reason a soccer ball now has black spots. You should know the composition of an official volleyball. A volleyball is laceless and made of leather. There should be twelve or more pieces or sections which make up the outside cover.

.....

Q. Now we said the volleyball is laceless and made of _____ . There are at least how many pieces in the cover? _____

To earn one point your team must be serving when the opponent commits a foul or the ball contacts the floor in the opponent's court.

.....

Q. Your team must have _____ when the opponent fouled in order for your team to earn a point.

A. LEATHER

There are many commercial volleyballs which are made of rubber or vinyl, but they are not official balls. 12 pieces or more make up the outside cover of the official volleyball.

(2 - 182 [2.30])

A. SERVED

Your team must be serving to score.

(2 - 200 [16.01])

Because the ball has to be located quickly by the human eye we need a ball which is light in color. This color cannot vary or, let us say, the color must be uniform.

.....

Q. Can a volleyball have a second color on it to aid its visibility as the soccer ball does?

YES _____ NO _____

If the serving team commits a foul, sideout is declared. The other team then has the serve and no points are awarded.

.....

Q. If the serving team commits a foul, one point is awarded and the other team gets the serve.

TRUE _____ FALSE _____

29

A. NO

Remember, the rules state that the color of the volleyball must be uniform.

(2 - 182 [2.30])

84

A. FALSE

(2 - 200 [16.02])

There are two other physical characteristics which you need to know about the ball. The circumference of a volleyball is 25-27 inches. This may help you when trying to inflate a ball. The fact that is most important is that a volleyball should be inflated to the extent that when it is dropped from a point 100 inches from the floor it will rebound 60-65 inches. This may seem petty, but two marks on the equipment room wall can make the job quick and easy.

.....

Q. A volleyball should rebound _____ to _____ inches when dropped from a height of _____ inches.

A game is won when one team has 15 points and leads by 2 points. A match is won when one team has won 2 games.

.....

Q. What is the maximum number of games played in a match?

_____ games

30

- A. 60 - 65 inches when dropped from 100 inches
Hope you can remember those numbers.

(2 - 182 [2.30])

85

- A. 3

If one team wins the first two games, the match is over. If one team wins the first game and the other team wins the second game, a third game is needed to determine the match winner.

(2 - 200 [16.05])

In officiating many sports, including volleyball, the person with the title of referee has the most authority and responsibility. In volleyball there is also an umpire who works with the referee in making the calls. Other supporting officials are: a scorer, a timekeeper, and two or more linesmen.

.....

Q. What is the title of the head official?

If a team forfeits a game, the score is recorded as 15-0.

.....

Q. How would the two scores be recorded if a team forfeited a match?

1st Game

2nd Game

31

A. REFEREE is the correct answer.

(2 - 182 [3.01])

86

A. $\frac{15 - 0}{1st\ Game}$ $\frac{15 - 0}{2nd\ Game}$

(2 - 201 [18.03])

In certain judgement decisions, the referee can overrule the other officials. This is not a common practice, but the referee has the authority and is responsible for the fairness of play.

.....

Q. Is a linesman's call of out-of-bounds final?

YES _____ NO _____

The game of volleyball is a good activity for elementary school. All the rules can be applied. The only thing that needs to be changed is the height of the net. Depending on the size of the children, the net can be lowered to various heights; however, it should never be lowered past the six foot level.

.....

Q. Volleyball is adaptable to elementary school by lowering the height of the net to a point not lower than _____ feet.

32

A. NO

The referee can overrule a decision made by any
official!

(2 - 183 [3.11])

87

A. 6 feet is the minimum height.

(2 - 201 [19.00])

The location of the referee and the umpire is at opposite ends of the net. They should be standing on platforms which enable their heads to be two to three feet above the net. This is the best location to observe play on both sides of the net.

.....

Q. What is the location of the umpire in relation to the referee?

_____ of net

Coed Play: In coed play if there are two or more hits by a team, a woman must have made one of these hits. This rule creates a situation for alternate play between the sexes.

.....

Q. In what situation in coed play could a male be the only player to hit the ball?

33

- A. The umpire is located at the opposite end of the net from the referee. Do not forget that they should stand on platforms.

(2 - 183 [3.10])

88

- A. If the ball was returned in one hit, is the correct answer.

Did your answer agree?

YES _____ NO _____

(2 - 201 [20.00])

How do you call time out in volleyball? In most sports any player can call time out. In volleyball only the playing captain and the coach can make the request to the referee or umpire. One other factor must be present, and that is the ball must be dead or not in play. The coach or playing captain cannot stop play by requesting time out.

.....

Q. Which two people can request a time out for a team?

Because the net is eight feet high in coed play, one back court player may block in the front court area if one male is in the front row.

.....

Q. What is the height of the net in coed play?

_____ feet

34

A. PLAYING CAPTAIN and COACH

Write-on!

(2 - 183 [3.15])

89

A. 8 feet, correct.

(2 - 201 [20.00])

Another tactic which can be employed while the ball is dead or not in play is to request substitution. Again this must be made to the referee or umpire by the playing captain or coach.

.....

Q. What two things can the captain of the team request of the officials while he is sitting on the bench?

A doubles form of volleyball can be played. The length of the court is shortened by ten feet in the over-all length.

.....

Q. What are the length and width measurements of a doubles volleyball court?

_____ feet by _____ feet

A. NOTHING

Remember the PLAYING captain is the only player who can make a request of the officials when the ball is dead.

(2 - 183 [3.16])

A. 30 feet by 50 feet

Several frames back we determined that a volleyball court is 30 feet by 60 feet. If we take off 10 feet in over-all length, we are left with 30 feet by 50 feet.

(2 - 201 [20.00])

The two officials calling all fouls are the referee and the umpire. The umpire's position is at the opposite end of the net from the referee. The umpire, like the referee, stands on a platform. The umpire assists the referee in all of his duties.

.....

Q. What two officials are located on platforms at each end of the net?

_____ and _____

In doubles no substitutes are allowed and the players cover the left and right side of the court. One difference is that if one team has eleven points and is ahead by two points, they win the game.

.....

Q. Being ahead by two points and having _____ points wins in regular play as opposed to having _____ points in doubles.

A. REFEREE and UMPIRE

The referee is the head official and the umpire assists.

(2 - 184 [3.40])

A. 15 points in regular play

11 points in doubles play wins the game providing
the team is ahead by two points.

(2 - 201 [200.00])

The scorer is seated on the opposite side of the court from the referee.

.....

Q. The scorer must be able to see face-to-face with which official?

In recent years the term "power volleyball" has been used. This is not a different game, but an attempt to make the game more intense and competitive by emphasizing the idea of spiking the ball to the opponent, thus the term "power volleyball".

.....

Q. When a ball is returned to an opponent and it goes up over the net and down in an arc-like fashion, is this "power volleyball"?

YES _____ NO _____

- A. If the referee has the final authority, the scorer must have face-to-face contact to verify when a point is scored and that no call is overruled by the referee.

(2 - 185 [3.60])

- A. NO
Remember when you spike you hit the ball directly downward into the opponent's court.

(4 - 4)

Besides recording the points, the scorer must be aware of the serving order of a team. Teams are allowed to move around after the server contacts the ball but they must return to their respective positions for proper rotation.

.....

Q. Which official is responsible for verifying serving order to the referee?

Safety: One point on safety which should be mentioned is that standards, poles which hold the net, should be placed one to two feet off the court. This, hopefully, will be adequate for avoiding collisions.

.....

Q. How far off the court should standards be placed?

_____ feet

A. This is the duty of the SCORER.

If the scorer sees a team serve out of order, he should inform the referee.

(2 - 185 [3.63-4])

A. ONE to TWO feet is correct.

(3 - 53)

Other duties of the scorer are to record time outs and substitutions.

Q. Name three recording duties of the scorer:

1. _____

2. _____

3. _____

SKILLS

Forearm Pass: In a truly competitive game of volleyball, the forearm pass is used extensively to stop spike shots from opponents. In performing the forearm pass, the player bends at the knees and extends his forearm in front of him with palms facing outward. This puts the player in a low position to hit the spike shot from the opponent. The forearm pass can be used anywhere on the court.

.....
Q. The forearm pass is a good shot to handle the _____ shot from the opponent.

- A. Did you forget RECORDING POINTS as a duty of the scorer? This plus indicating TIME OUTS and SUBSTITUTIONS are the three recording duties of the scorer. Checking the serving order is another duty.

(2 - 186 [3.66-7])

- A. SPIKE is the correct answer.

(3 - 16)

The last duty of the scorer involves the mid-point of the third game. After four minutes or eight points by one team in the third game, whichever comes first, the scorer notifies the referee that the mid-point has been reached.

.....

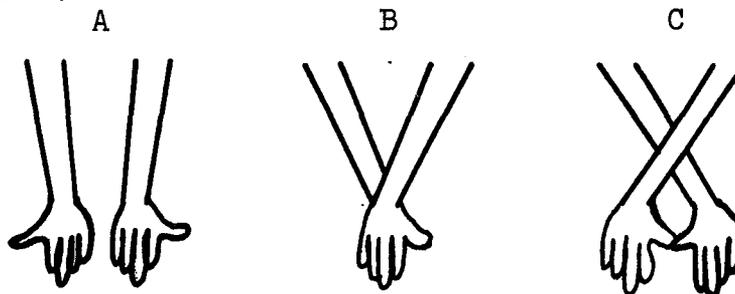
Q. What is the mid-point of the third game?

_____ or _____

When the player turns his palms outward in the forearm pass it creates about a three-inch surface area on the forearm. By placing the back of one hand in the palm of the other the forearms are drawn together. Now we have a surface area from which the ball can be rebounded.

.....

Q. Which of the following illustrates the forearm pass position?



- A. FOUR MINUTES or EIGHT POINTS, whichever comes first is the mid-point of the third game.

(2 - 186 [3.68])

- A. B is the correct answer.

Reread the frame if you were incorrect. The hand placement is the key.

(3 - 16)

A timekeeper is utilized in volleyball and he is located close to the scorer.

.....

Q. Where is the timekeeper located in relation to the referee?

_____ side of the court

Overhead Pass: This pass, like the forearm pass, is used all over the court. The overhead pass is generally used to set-up a lobbed ball. A lobbed ball has an arc-like pattern of flight. A lobbed ball has been hit upward and is coming down when the player makes contact above his head.

.....

Q. The overhead pass is used to set-up a _____ ball.

A. We said that the scorer was located on the opposite end of the net from the referee and that the timekeeper was close to the scorer. Therefore, the timekeeper is located at the opposite side of the court from the referee.

(2 - 186 [3.80])

A. LOBBED

(3 - 17)

The timekeeper must concentrate on the play of the game so he is alert to start the clock the instant the server contacts the ball and to stop the clock the instant the official's whistle is sounded.

.....

Q. The total time on the timekeeper's clock at any moment is the total time the ball has been i p .



In the overhead pass, the ball is contacted above the head. The fingers are extended, palms are up, and the elbows are bent. The ball should contact the soft pads of the fingers.

.....

Q. What part of the body contacts the ball in the overhead pass?

Palm ___ Forearm ___ Fist ___ Finger Pads ___

A. Time can only tick off when the ball is IN PLAY.

(2 - 186 [3.81])

A. FINGER PADS

This is the most sensitive part of the hand. Hitting the ball with the finger pads gives direction to the ball.

(3 - 18)

If no visible device is available so that every player can see how much time is remaining, the timekeeper must announce with a volume that every player will hear when there are four, two and one minutes remaining. This is done when the ball is dead.

.....

Q. What are the time periods which the timekeeper must announce if there is no visible clock?

_____, _____, and _____

Serving (underhand): The ball is placed in the hand opposite the striking hand and is extended forward about waist high. With a pendulum movement of the striking hand, the ball is hit off the palm of the holding hand.

.....

Q. What word best describes the striking movement in the underhand serve?

43

A. 4, 2, and 1.

(2 - 186 [3.82])

98

A. PENDULUM is correct.

(3 - 25)

A linesman's job is what the title implies. He is concerned with lines. When the ball is in play, he watches the boundaries; the end lines, side lines, and the vertical line on the net. When the server is about to serve, the linesman watches the foot of the server so that he can determine if the server enters the court before contacting the ball.

.....

Q. A linesman's job can best be described as an official who watches the _____.



Overhead Serve: The ball is tossed overhead and is struck with an open hand or fist above the head. The action is similar to a tennis serve.

.....

Q. Where is the point of contact in relation to the body in the overhead serve?



44

A. LINES

(2 - 186 [3.90])

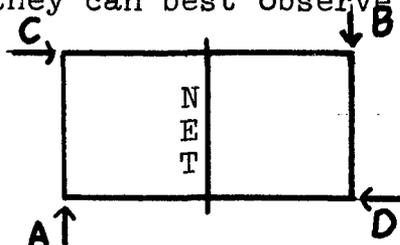
99

A. OVERHEAD

Maybe you said open hand or fist. The question said where not with what part of the body.

(3 - 26)

Two or four linesmen are used in officiating a game. They should position themselves outside of the court in a location in which they can best observe their area of responsibility.



Locations A and B are used when only two officials are used.

Q. What are the three lines which are the responsibility of the linesmen?

1. S ___ ___ ___ lines
2. V ___ ___ ___ ___ ___ ___ lines (net)
3. E ___ ___ lines

Blocking: When a spike is anticipated by the opponent, one or more players may jump in front of their net extending their arms upward. As contact is made with the ball, the arms are arched forward over the net to rebound the ball into the opponent's court.

.

Q. The objective of the block is to r ___ ___ ___ ___
 the ball into the opponent's court.

- A. 1. SIDE Lines
2. VERTICAL Lines on net
3. END Lines

(2 - 187 [3.91-2-3])

A. REBOUND

Did you say hit? Yes, you hit the ball but rebound describes the action a little better.

The number of players allowed on one team's court is six. Three are located in the front line near the net and three are in the back court. Twelve men are allowed on a team.

.....

Q. Excluding the server, how many players are remaining in the back court?

_____ players

Blocking is a good defensive weapon. Now let us see if you can remember some rules which apply to blocking.

.....

Q. What is the maximum number of players who can participate at one time in a block?

1 ___ 2 ___ 3 ___ 4 ___ 5 ___ 6 ___

46

A. TWO

Three players are in the back court, minus one for the server, leaves two.

(2 - 187 [4.01])

101

A. 3 is correct.

There are 6 players on a team; however, only the front row players are allowed to block.

(3 - 29)

Six players are on the court at one time. If a team cannot produce six players, the first game will be declared a forfeit. At this point, the team has fifteen minutes to produce six players. If six players do not come forth, the second game is forfeited.

.....

Q. A team can play with four players.

TRUE _____ FALSE _____

Spike: The spike is performed by jumping into the air and contacting the ball with the open hand or fist over the head. This allows the player to "power" the ball straight DOWN into the opponent's court.

.....

Q. The purpose of the spike is to hit the ball straight _____ into the opponent's court.

47

A. FALSE

A team must have six players.

(2 - 187 [4.03])

102

A. DOWN

The purpose is to hit the ball straight down into
the opponent's court.

(3 - 32)

In official competition players wear numbers on the front and back of their shirts. This is an aid to the fans for identification, and it is an aid to the scorer who must keep track of their movements. Each player has six-inch numbers on the back and three-inch numbers on the front of the shirt.

.....

Q. What aid is used in volleyball to identify players?

ELEMENTARY STRATEGY

103

Volleyball requires team effort with players participating in close proximity; therefore, it is important to communicate during play.

.....

Q. Because there are no boundaries for each player, two players may be going for the ball at the same time. This is one situation which illustrates the need for _____ between teammates to avoid collision or a poor play.

48

A. NUMBERS on the front and back of each player's shirt

(2 - 187 [4.04])

103

A. COMMUNICATION

(1 - 39)

If a team refuses to play, the referee may declare a forfeit. Once the forfeit has been declared, the team has fifteen minutes to start the next game. If the next game is not started in the fifteen minute period, a second forfeit is declared.

.....

Q. What happens if a team refuses to play?

The _____ can declare that the game is _____.

As you experience the game, you will become aware of the skill of your teammates and opponents. As a result of this you will begin to anticipate your movements.

.....

Q. Knowing the skill of the opponents and teammates, you will be able to _____ some of your movements.

49

A. Referee can declare that the game is forfeited.

(2 - 188 [4.06])

104

A. ANTICIPATE

(1 - 39)

Like football, a toss of the coin determines which team will have possession of the ball or, in this case, which team will serve the ball first. The loser of the coin toss decides in which half of the court his team will start the first game.

.....

Q. How is it determined which team will serve first?

One problem a beginning player has is a strong desire to hit the ball over the net on the first hit. It is suggested that when the ball is hit to you that you think as a team player and try to set-up the ball utilizing the three hits allowed.

.....

Q. A team should not return the ball on the first hit regularly.

TRUE _____ FALSE _____

50

A. TOSS OF THE COIN

(2 - 188 [5.01])

105

A. TRUE

Set the ball for the spike using three hits.

(1 - 40)

Should there be a significant structural difference in one side of the court, it is to have equal effect on both teams. After the first game, teams change courts. After the second game, each team has played on both sides of the court. For the third game the teams return to their original side. After four minutes or eight points by one team, whichever comes first, the teams change sides.

.....

Q. Actually there is no reason to change courts.

TRUE _____ FALSE _____



When learning the game, players try to get fancy when serving. A good rule to follow as a beginning server is to hit the ball legally to the opponent's court.

.....

Q. A beginning server should be concerned with hitting the ball _____ into the opponent's court.

A. FALSE

Under ideal conditions this might be true, but conditions are not always ideal; therefore, the rule is an attempt to equalize opportunity.

(2 - 188 [5.03])

A. LEGALLY

(1 - 41)

The player who is serving is outside the end line.

Generally the server has some sort of forward movement.

However, he must contact or hit the ball before his foot touches on or over the end line. This is the same concept as observed in tennis.

.....

Q. Can the server touch the end line at the same time he is contacting the ball?

YES _____ NO _____



As the server becomes more skilled, he may try more advanced serving skills such as serving to the weakest receiver or away from the strongest spiker. Serving to specific areas of the court is an advanced skill. The strategic areas to aim for are deep corners, side lines, and just over the net.

.....

Q. Name two advanced skills in serving:

1. _____

2. _____

A. NO

The server must contact the ball before entering the court, and the end line is considered part of the court.

(2 - 188 [6.02])

A. Advanced skills in serving:

Serve to weakest receiver

Serve away from best spiker

Serve to specific areas of the court such as deep corners, side lines, or just over the net

Did your answer include two of the above?

YES _____ NO _____

We talked about six players on the court constituting one team with three players along the net and three players behind them. After the ball is contacted by the server players may move to any position on the court.

.....

Q. If a team has a player who can set the ball well, can this team continually play him in the middle of their court in good position to set the ball after the serve?

YES _____ NO _____

There are a few elementary strategies which can be used to defense the serve. If you have a weak player, try to cover for him. Some teams will try to switch positions after the ball is served so their best setter is in the middle. If a team is running a streak of points against your team, call a time out after a point is scored, when the ball is dead. Hopefully, this will stop their momentum and regroup your team.

.....

Q. Name two defensive strategies against the serve:

1. _____

2. _____

53

A. YES

After the ball is contacted by the server, any player may move to any position.

(2 - 189 [6.04])

108

A. Possible answers:

Cover the weak player

Switch best setter to middle position

Call time out

Did you get two of the three?

YES _____ NO _____

(1 - 41)

Even though players may move around the court after the server has contacted the ball, there are certain restrictions depending on their original position in the front row or back row. A back line player may not spike the ball in the front of the ten foot line.

.....

Q. The purpose of this rule is to stop a player from running up to the _____ to _____ the ball.

We have used the term setting throughout the text. Hopefully, you are aware that this means to control the ball by hitting it up in the air to another player so he can spike it over the net. A good rule of thumb for setting is to hit the ball into the center of the court so that on the next hit the player can set the ball to a front line player who can spike the ball over the net.

.....

Q. A good rule of thumb for a team in setting-up a spike is to hit the ball to the c _____ of the court on the first hit.

A. NET to SPIKE the ball

This rule prevents the running spike.

(2 - 189 [6.06])

A. CENTER or middle of the court

Hit 1 - "control it" and get the ball up in the
air in the middle of the court

Hit 2 - "set it" and pass the ball to a position
for a spiker on the front row

Hit 3 - "spike it" powering the ball down into
the opponent's court

(1 - 43)

One other restriction is that front line players are the only players who may block the opponent's hit.

.....

Q. What two skills can a front line player do that a back line player may not do?

1. _____

2. _____

The best location for the ball to be set so it can be spiked is about four feet back from the net just off center. This provides two options if your opponent is trying to block the ball. If the ball is four feet back, then the players' arms will not be close to the ball and you have enough clearance to hit the ball to either side of their court.

.....

Q. Where is the best place to set a ball to be spiked?

_____ feet back from the net and just off _____.

55

A. BLOCK and SPIKE are correct.

(2 - 190 [6.10])

110

A. 4 feet back from the net and just off CENTER.

(1 - 44)

RESOURCE REFERENCES

For further explanation of the content of each frame, a reference number is located in the lower right hand corner of each answer page. The first number refers to one of the four books listed below. The second number refers to a page number within the text. A third number may be present in brackets. This number refers to a specific rule from the rule book reference.

Example (2 - 79 [8.04])

Ref. Page Specific Rule

1. Hartman, Paul E. Volleyball Fundamentals. Columbus, Ohio: Charles E. Merrill Publishing Company, 1968.
2. Reid, Robert A. (ed.). The 1973 Annual Official Volleyball Rules and Reference Guide. Berne, Indiana: United States Volleyball Association, 1973.
3. Shondell, Donald, and Jerre McManama. Volleyball. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1971.
4. Thigpen, Janet. Power Volleyball for Girls and Women. Dubuque, Iowa: Wm. C. Brown Company Publishers, 1967.

SELECTED BIBLIOGRAPHY

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- American Association for Health, Physical Education and Recreation. Programmed Instruction in Health Education and Physical Education. Washington, D. C.: NEA Publications, 1970.
- Barnes, Mildred J. Program in Self-Instruction for Officiating DGWS Volleyball Rules. Burgess Publishing Co., 1965.
- Bloom, Benjamin S. (ed.). Taxonomy of Educational Objectives. New York: David McKay Co., Inc., 1956.
- Brethower, Dale M. Programmed Instruction. Chicago: Educational Methods, Inc., 1963.
- Casady, Donald R. Sports Activities for Men. New York: Macmillan Publishing Co., Inc., 1974.
- Cram, David. Explaining "Teaching Machines" and Programming. San Francisco, California: Fearon Publishers, Inc., 1961.
- DeCecco, John. Educational Technology: Readings in Programmed Instruction. New York: Holt, Rinehart, and Winston, 1964.
- Egstrom, Glen H. and Frances Scharfsma. Volleyball. Dubuque, Iowa: Wm. C. Brown Company Publishers, 1966.
- Esrich, James E. and Bill Williams. Developing Programmed Instructional Materials. Belmont, California: Fearon Publishers, 1967.
- Gunselman, Marshall B., Director, Learning Resources Center, Middle Tennessee State University. Personal Interview. June, 1973.
- Hartman, Paul E. Volleyball Fundamentals. Columbus, Ohio: Charles E. Merrill Publishing Company, 1968.
- Householder, Daniel. "Effects of Programed Instruction Upon Initial Learning, Retention, and Subsequent Learning from a Textbook." Unpublished Doctor's dissertation, University of Illinois, 1963.

- Hughes, J. L. Programmed Instruction for Schools and Industry. Chicago: Science Research Associates Inc. Publishers, 1962.
- _____. Programmed Learning: A Critical Evaluation. Chicago: Educational Methods, Inc., 1963.
- Jacobs, Paul I. and Milton H. Maier, and Lawrence M. Stolurow. A Guide to Evaluating Self-Instructional Programs. New York: Holt, Rinehart and Winston, Inc., 1966.
- Joint Committee on Programmed Instruction and Teaching Machines. Recommendations for Reporting the Effectiveness of Programmed Instruction Materials. Washington, D. C.: NEA Publications, 1966.
- Laveaga, Robert E. Volleyball. New York: A. S. Barnes and Company, 1942.
- Leeham, John, and Derick Anwin. Programmed Learning in the Schools. London: Longmans, Green and Company, Ltd., 1965.
- Lysaught, Jerome P., and Clarence M. Williams. A Guide to Programmed Instruction. New York: John Wiley and Sons, Inc., 1963.
- Mager, Robert F. Preparing Objectives for Programmed Instruction. San Francisco: Fearon Publishers, 1962.
- Markle, Susan Meyer. Good Frames and Bad: A Grammar of Frame Writing. New York: John Wiley and Sons, Inc., 1964.
- Ofiesh, Gabriel D., and Wesley C. Meierhenry. Trends in Programmed Instruction. Washington, D. C.: Department of Audiovisual Instruction, National Education Association and National Society for Programmed Instruction, 1964.
- Reid, Robert A. The 1973 Annual Official Volleyball Rules And Reference Guide of the United States Volleyball Association. Berne, Indiana: USVBA Publisher, 1973.

- Rokusek, Henry James. "An experimental Comparison of the Relative Effectiveness of the Automated Lecture-Graphic and Programmed Methods of Teaching." Unpublished Doctor's dissertation, University of Maryland, 1964.
- Sandefur, Randy. Volleyball. Pacific Palisades, California: Goodyear Publishing Company, Inc., 1970.
- Scates, Allen E. Winning Volleyball, Fundamentals, Tactics and Strategy. Boston: Allyn and Bacon, Inc., 1972.
- _____ and Jane Ward. Volleyball. Boston: Allyn and Bacon, Inc., 1970.
- Schaafsma, Frances, and Ann Heck. Volleyball. Dubuque, Iowa: Wm. C. Brown Company Publishers, 1972.
- Scott, M. Gladys. Research Methods. Washington, D. C.: American Association for Health, Physical Education, and Recreation, 1959.
- Shondell, Donald, and Jerre L. McManama. Volleyball. New Jersey: Prentice-Hall, Inc., 1971.
- Slaymaker, Thomas, and Virginia Brown. Power Volleyball. Philadelphia: W. B. Saunders Company, 1970.
- Thigpen, Janet. Power Volleyball for Girls and Women. Dubuque, Iowa: Wm. C. Brown Company Publishers, 1967.
- Thomas, C. A., and others. Programmed Learning in Perspective: A Guide to Program Writing. Chicago: Educational Methods, Inc., 1963.
- Thornton, James W., and James W. Brown. New Media and College Teaching. Washington, D. C.: Department of Audiovisual Instruction, NEA, 1968.
- Trotter, Betty Jane. Volleyball, For Girls and Women. New York: The Ronald Press Company, 1965.
- Veronee, Marvin D. The 1974 Annual Official Volleyball Rules and Reference Guide of the United States Volleyball Association. Berne, Indiana: USVBA Publishers, 1974.