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**A COMPARISON OF MEDIA APPROACH VERSUS TRADITIONAL METHOD IN  
TEACHING COLLEGE BEGINNING RACQUETBALL**

*Middle Tennessee State University*

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TRADITIONAL METHOD IN TEACHING  
COLLEGE BEGINNING RACQUETBALL

by

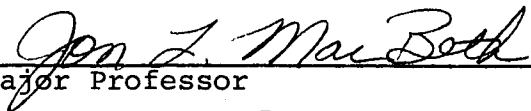
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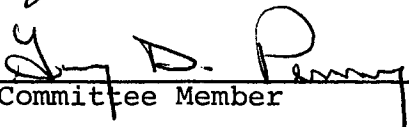
A dissertation  
submitted in partial fulfillment  
of the requirements for the degree of  
Doctor of Arts in the Department of Health,  
Physical Education, Recreation, and Safety  
Middle Tennessee State University  
August, 1983

A COMPARISON OF MEDIA APPROACH VERSUS  
TRADITIONAL METHOD IN TEACHING  
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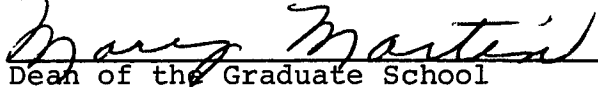
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## ABSTRACT

### A COMPARISON OF MEDIA APPROACH VERSUS TRADITIONAL METHOD IN TEACHING COLLEGE BEGINNING RACQUETBALL

by Mohammad Ghorbani

The purpose of this study was to determine if an experimental method using the overhead projector is more effective than the traditional method of instruction in teaching beginning racquetball at the college level.

The sample for this study consisted of two beginning racquetball classes selected from ten beginning racquetball sections of physical education service classes at Middle Tennessee State University in the spring 1983 semester. One class, which consisted of fifteen students, aged eighteen to thirty-one years, served as an experimental group. Another class, which consisted of sixteen students, aged eighteen to thirty-one, served as a control group. The experimental group was taught by the investigator who utilized the overhead projector. The control group was taught by a regularly assigned instructor who followed a traditional teaching approach focused on mass demonstration, explanation, and drill. The experiment lasted eight weeks. Improvement in the performance of the knowledge and the ability of the game was determined by pretest and posttest scores on JLRB, form A knowledge and JLRB, form B ability.

The .05 level was utilized to determine significance for the statistical analysis conducted in this study. A general unweighted means analysis of variance (ANOVAGUM) was used to determine if there were any significant differences between groups.

Findings of the study were:

1. Both the experimental and the traditional procedure proved to be effective in that significant gains at .05 level were made in JLRB, form B ability test.
2. There was no significant difference between the groups in JLRB, form A knowledge test.
3. No significant difference existed between the groups on any of the two variables measured as a result of the experimental treatment.



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## CHAPTER 1

### INTRODUCTION

The popularity of racquetball has soared during the past decade. This has resulted in tremendous growth of the number of individuals actively participating in racquetball. The sport of racquetball can be enjoyed by all ages and both sexes in an area of a booming leisure sport. The sport involves simple rules and requires little innate strength, size or speed. Some people find racquetball appealing because of the potential fitness values it offers.<sup>1</sup>

College physical education programs traditionally have been faced with instructing large numbers of students seeking to learn a new activity, particularly racquetball. The importance of leisure-time activity, physical fitness, and the concomitant social satisfaction derived from participation in this activity, cause a high value to be placed on possession of this skill. Racquetball sections are often the first to be filled during registration. Long waiting lists attest to the popularity and interest in this skill.<sup>2</sup>

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<sup>1</sup>Craig A. Buschner, "The validation of a racquetball skill test for college men" (DA dissertation, Oklahoma State University, 1976), p. 30.

<sup>2</sup>Steve Epperson, "Validation of the Reznik racquetball test" (Master's thesis, Washington State University, 1977), p. 3.

The game of racquetball can be fast-moving with many strategies employed. Many different types of shots are executed during the course of a match and practice. When developing or improving skill level in any sport, it is necessary to break down the skill into different components so that the specific attention can be paid to each of the components and adjustments made to overcome any faults. Improving the skill level in each specific area should then enable the participants to put all the components together and show a marked improvement in overall playing ability.<sup>3</sup>

J. Dowell defines a technique of teaching as a "device employed by teacher to better carry out the subject matter." He tells the story about a man who took a sieve to transport some water. Naturally, the man did not succeed in reaching his objective. Before his objective could be reached, the method of carrying the water had to be changed by lining the sieve with clay. To reach the objective of transporting the water faster, a handle was attached to the sieve lined with clay. J. Dowell makes the following analogies:

The water is the subject matter, the carrier is the teacher, the way it is carried (container) is the method, and the handle and clay used to make the method of carrying water effective is the technique.<sup>4</sup>

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<sup>3</sup>Epperson, p. 2.

<sup>4</sup>Linus J. Dowell, Strategies for Teaching Physical Education (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1975), p. 17.

Many text books contain methods and techniques of teaching. Some of the methods and techniques have been validated through research, while others have not. Even with the abundance of literature concerned with methods and techniques, effective teaching is lacking on different levels and in various fields. Dowell states, "as fantastic as it may seem, a great many teachers carry water in a sieve."<sup>5</sup>

The key person in the process of learning should be the teacher who has traditionally used the technique of lecture and demonstration to enhance the learning environment. However, with advances in the technical and applied sciences, the modern teacher is not content to employ only the traditional technique, but searches for more effective approaches to learning.<sup>6</sup>

In racquetball activity classes instructors using traditional methods of instruction have been faced with the following problems: communication, presenting cue correction, and placement of the target. Lack of communication due to poor acoustics may be overcome by using the overhead projector. Communication, target placement and cue correction are presented visually and readily to the students.

Through research, devices have been developed to assist the instructors in the instructional process. Teaching racquetball with traditional methods can eventually be successful. However, the instructor's knowledge of fundamentals

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<sup>5</sup>Dowell, p. 7.

<sup>6</sup>Dowell, p. 7.



and mechanics plus utilization of the overhead projector might increase efficiency and economy of teaching racquetball.

#### Statement of the Problem

This study was designed to examine the effects of utilizing the overhead projector in teaching beginning racquetball at the college level.

#### Purpose of the Study

The purpose of this study was to determine if an experimental method using the overhead projector is more effective than the traditional method of instruction in teaching beginning racquetball at the college level.

The researcher hopes the data that was collected in this study will be helpful to the racquetball instructors when teaching racquetball.

#### Delimitation of the Study

The subjects in this study were limited to students enrolled in the two racquetball classes during the spring semester of the 1983 academic year at Middle Tennessee State University and who met the requirements of a beginning racquetball player.

Each class met four days per week for the period of fifty minutes. One class was taught by the investigator as an experimental group utilizing the overhead projector, and

the other class was taught by the regularly assigned instructor and was observed by the investigator as a control group.

#### Definition of the Terms

Beginning racquetball player - A student who has received no racquetball instruction, who received racquetball instruction on the high school level for a period of less than eight weeks.

Overhead projector - A device which throws an image on a screen or wall. It is placed in front of an audience and may be used in a completely lighted or semi-darkened room, such as a racquetball court.

Traditional method of instruction - That instructional method utilizing lecture, demonstration, drill, and practice related to the various aspects of the course.

Media approach - A teaching method which utilizes an overhead projector in addition to the traditional method of instruction called (MO-MAC).<sup>7</sup>

#### Hypotheses

This study investigated the following hypotheses:

1. There will be no significant difference between the experimental and control group in the mean test scores of the racquetball knowledge test.
2. There will be no significant difference in the

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<sup>7</sup>Mohammad Ghorbani and Jon L. MacBeth.

mean ability performances of the experimental  
and control group.

## CHAPTER 2

### REVIEW OF RELATED LITERATURE

A review of the literature on teaching racquetball produced a very limited spectrum of information. Methods of teaching racquetball do not appear to be documented very thoroughly. This is a new sport and many of the techniques and methods of teaching have not yet been finalized. However, a review of the literature reveals that most studies of racquetball concern themselves with validation and development of racquetball ability, skill, and achievement or classification tests. Therefore, the investigator has divided the review of literature into two sections: research on racquetball skill test and research on related racquet sports.

#### Research on Racquetball Skill Test

In 1972 Wickstrom and Larson developed a two-item skill test which included a rally test and a volley test. The rally test is a thirty-second rally against the front wall in which the subject may use either the forehand or backhand stroke. The subject must stay behind the service line when rallying. A line marked across the front wall and four feet above the floor provides a target area for the subject. Only those hits which are below the four-foot line are scored. The rally test consists of three thirty-second

trials, and the subject's score is the total number of hits for three trials. For the volleying test, the subject stays behind the restraining line, which is ten feet from and parallel to the front wall. The subject attempts to volley the ball off the front wall. The total number of hits against the front wall during the three thirty-second trials is the subject's score.<sup>8</sup>

In 1976 Buschner constructed a battery of tests to measure racquetball ability and classifying college males into levels of racquetball ability. The Buschner test consists of five items: forehand/backhand rally, a backhand rally, a ceiling shot test, a front wall kill placement test, and a volley test. The player's success during a round robin tournament was the criterion for validation. A player's success was determined by total points scored minus total points scored by the opponents during the tournament.

The multiple correlations of coefficients of .76 were obtained when the forehand/backhand rally test and the ceiling shot test were combined to obtain the most valid measure of beginning racquetball skill. The range of reliability for the forehand/backhand rally test, backhand rally test, ceiling shot test, and volley test was from .63 to .76. The kill shot placement test obtained the lowest reliability score with a .41. The validity score for each item was .68 for the

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<sup>8</sup>Ralph Wickstrom and Charles Larson, Racquetball and Paddleball Fundamentals (Columbus: Charles E. Merrill Company, 1972), p. 75.

forehand/backhand rally test, .49 for the backhand rally test, .64 for the volley shot, and .67 for the ceiling shot.<sup>9</sup>

In 1976 Reznik reported a five-item battery of tests for the evaluation of selected racquetball skills. The components used in the test were: a sixty-second rally test, a sixty-second backhand rally test, a power drive test, a shot placement test, and a service placement test. Reznik did not report reliability or validity coefficients for any of the tests.<sup>10</sup>

Klass's battery of reaction time tests and a wall-volley skill test was constructed in 1977 to evaluate racquetball ability of college men. The test was created to test students on vertical jump reaction time, multiple choice reaction time, and a wall-volley. The criterion for comparison was the subject's success in a round robin single tournament. Player success was determined by the difference between points scored versus points allowed. Also, winning percentage was part of the player's success.

The data revealed a multiple correlation of .55 for evaluating racquetball skills from wall-volley test and the movement time reaction test. For the multiple reaction test, vertical jump reaction test, and wall-volley reliability scores ranged from .07 to .56. A coefficient of .53 was

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<sup>9</sup>Craig A. Buschner, "The validation of a racquetball skill test for college men (Doctoral dissertation, Oklahoma State University, 1976), p. 31.

<sup>10</sup>John W. Reznik (ed.) Championship Racquetball (Cornwall: Leisure Press, 1976), p. 57-58.

reported for the wall-volley and round robin tournament, while the winning percentage and wall-volley produced a coefficient of .56. A low coefficient reported for the intra-correlation of racquetball skill scores and electronic tennis, winning percentage and the racquetball round robin scores with the highest, .21.<sup>11</sup>

In 1977 Epperson made a study of the validity of the Reznik racquetball test. The percentage of won and loss during a single round robin tournament and points scored by a participant divided by the points scored by the opponent were used as criterion for validation of the test. Epperson reported reliability of .80 for all items except the short placement test. The time for administration of the test was forty-five minutes per subject. Because of the length of the time, the test was reported impractical. However, the items were used for evaluation of the racquetball skills considered practical.<sup>12</sup>

Hensly and Stillwell's achievement test was constructed in 1978 to evaluate selected racquetball skills. The test was designed for college beginning men and women. The test was created to test students on short wall volley and a long wall volley. The short wall volley consisted of two thirty-second

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<sup>11</sup>Robert Alan Klass, "The validation of a battery of reaction time tests to predict racquetball ability for college men," Dissertation Abstracts International, XXXVIII (1978), A. 6563.

<sup>12</sup>Steve Epperson, "Validation of the Reznik Racquetball Test" (Master's thesis, Washington State University, 1977), p. 13-17.

trials in which the subject attempts to volley the ball against the front wall while standing behind the short line. The long-wall volley was the same as the short-wall volley, but the subject had to attempt to volley the ball against the front wall while standing behind the restraining line typed twelve feet behind and parallel to the short line. One point is recorded for each time the ball legally hits the front wall during the thirty-second trial. The total score is the sum of the legal hits during two thirty-second trials. The reliability of the test was reported .82 for women and .76 for men, while validity coefficients were reported for men and women .79 for the short-wall volley test and .86 for the long-wall volley test. Reliability was determined by the intraclass correlation method calculated separately for men and women.<sup>13</sup>

In 1979 Scott and Harlan developed four skill tests to help teachers in self-evaluation, self-testing and grading. The items used were: rally test, kill shot, lob service, low drive or power serve. No validation study has been conducted in this skill test.<sup>14</sup>

Durstine and Drowatsky's skill test was conducted in 1979 for the purpose of classifying and to rate playing skills. The subjects were tested on forehand and backhand skills. The components of the test were as follows: front

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<sup>13</sup>Larry D. Hensley, Whitfield B. East, and Jim L. Stillwell, "A Racquetball Skill Test," Research Quarterly, January, 1979, p. 114-118.

<sup>14</sup>Alen C. Moore, Thomas M. Scott, and William E.



wall placement, back wall placement, power, wall volley, and agility.

Correlation of .80 was reported for the men and .175 for the women. Correlation of .80 was reported for both men and women. Also a three-item test battery was developed for men and women to equate students for competition and skill instruction. The items used in this test consisted of shuttle run, wall volley and front wall placement with backhand. Correlation coefficient of .63 was reported for this test.<sup>15</sup>

In 1980 Bartee and Fothergill designed a six-item battery of test to measure specific skills important to racquetball. Students were tested on Z-serve, lob serve, drive serve, control bounce, wall pass, and drop kill test. Approximately eight students were tested during fifty-minutes class period. A ladder tournament was established with initial placement based upon the results of a round robin tournament. Correlation coefficient of .93 was found when comparison was made between student's rank and the result of the test battery by using the Pearson product-moment criterion.<sup>16</sup>

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Harlan, Racquetball for All (Dubuque: Kendall/Hunt Publishing Company, 1979), pp. 77-81.

<sup>15</sup>J. Larry Durstine and John N. Drowatsky, "Racquetball Success-skill and More," Learning and Physical Education Newsletter, 12, No. 1, Fall, 1979.

<sup>16</sup>Horace Bartee and Richard W. Fothergill, "Tests of Racquetball Skills," Texas Association for Health, Physical Education and Recreation Journal, XLVIII (May, 1980), 8, 32.

In 1980 Shemwell made a study of validity of the James-Lowell racquetball skill test. The James-Lowell racquetball skill test was designed to classify coeducational racquetball players into beginning, intermediate, or advanced ability levels. The students were tested on form A knowledge test which consisted of fifteen multiple choice items and on form B ability test which consisted of a thirty-second front wall rally in which the subject may use any grip, stroke, and stance to stroke the ball in such a way that it rebounds off the front wall. The subject's score is the total number of hits that strike the front wall on or below the line five feet above the floor while the subject is in a ten foot by twelve foot rectangle marked on the floor behind the short line.

Validation of form A was accomplished by an item analysis and scored from .31 to .82. Validity of form B was determined by correlating the instructor's subjective rating of each subject's overall ability and initial test score of the subject on the JLRB, and coefficient of .59 was reported for form B. The test retest was used to establish reliability for form B. The initial test score of all subjects correlated with retest and coefficient of .81 was produced.<sup>17</sup>

The sixty-second rally test and Peterson partner rally test was constructed in 1981 by Peterson to help instructors in classifying and grading racquetball players. The partner

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<sup>17</sup>James A. Shemwell, Jr., "Validation of the James-Lowell Racquetball Test" (Doctoral dissertation, Middle Tennessee State University, 1980).

rally test requires two players of similar ability to rally the ball for three-minute periods. A player's score is the total front wall hits by both players minus the number of individual mistakes. The sixty-second rally test requires one player to rally the ball for a sixty-second period from behind a restraining line 32 feet from the front wall. The score for front wall rally is the average of number of hits during the two trials.

Reliability was determined by correlation between a round robin tournament and double elimination tournament. The reliability coefficients of .92 and .94 were reported for the two tests. Validity coefficient of the sixty-second rally test was .88, while coefficient of .80 was reported for the Peterson partner rally test.<sup>18</sup>

In 1981 Gunnelo investigated the value of Rotator Wrist Developer on wrist strength, racquet velocity and racquetball skills. College students from the beginning racquetball classes were used for both experimental and control groups. The experimental group played four times a week for six weeks using the rotator wrist developer. Both groups continued normal racquetball instruction through the program. Analysis of data showed significant difference between two groups on the forehand power drive in favor of the control group. The investigator concluded that for beginning

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<sup>18</sup> Alen Prescott Peterson, "The Development and Analysis of Two Racquetball Skill Tests," Dissertation Abstracts International, 43, No. 1 (July, 1982), 109-A.

racquetball students, a program on the rotator does not improve these measures more than six weeks of racquetball instruction alone.<sup>19</sup>

Henrich used two groups of beginning racquetball students in a study to compare the value of one grip system and two grip system in execution of a backhand stroke in racquetball. One group was taught the one-grip system and the other group was taught the two-grip system for the period of seven weeks. Two batteries of skill tests were administered prior to instruction. The results showed significant improvement in both groups. However, there was no significant difference between treatments.<sup>20</sup>

#### Research on Related Racquet Sport

Gray and Brumbach studied the effect of loop films as an instructional aid in teaching selected badminton skills. Subjects used in this study were sixty college male undergraduates enrolled in four beginning badminton classes. Two of these classes were selected as the experimental group and the other two classes as the control group. Both groups received traditional instruction consisting of demonstration,

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<sup>19</sup>Jay D. Gunnelo, "The effects of a rotation wrist developer on wrist strength, racquet velocity and racquetball skills" (Doctoral dissertation, University of Arkansas, Fayetteville, Arkansas, 1981).

<sup>20</sup>L. J. Henrich, "Comparison of the one grip system and two grip system in execution of the backhand stroke in racquetball" (Master's thesis, Washington State University, Pullman, Washington, 1981).

explanation, and practice. In addition, the experimental group viewed loop films pertaining to specific skills being taught during the second through the fifth weeks of instruction. Students with skill deficiency were required to watch the films during the seventh and eighth weeks. During the first, sixth and tenth weeks, a battery of three separate skill tests was administered. The results of testing during the sixth week indicated that the experimental group had made a significant improvement, but the control group had not. There was no significant difference between the two groups when the final test was administered during the tenth week. However, both groups had made significant improvements. The investigator concluded that viewing loop films of specific skills appeared to hasten the learning of badminton for male college students classified as beginning players.<sup>21</sup>

In 1970 Zimmeran investigated the value of selected visual aids on the learning of badminton skills. Subjects were the women physical education majors enrolled in two badminton classes. The task method of instruction was used for both the control group and the experimental group. In addition, members of the experimental group viewed their own performance on video tape and the performance of experts on loop film. Analysis of the data showed no significant

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<sup>21</sup>Charles A. Gray and Wayne Brumbach, "Effect of Daylight Projection of Film Loops on Learning Badminton," Research Quarterly, 38: 562-569, December, 1967.

differences between the two groups. The researcher concluded that the task method of teaching augmented by video taped performance and loop films of expert performance was not superior to the task method without these visual aids.<sup>22</sup>

Brown conducted a study on the effect of using a suspended shuttle (with a release mechanism) to practice the clear and smash strokes in badminton. Subjects were 101 college freshmen women divided into four groups. One group did not use the teaching aid, while three groups used the aid for either ten weeks, the first five weeks, or the second five weeks. The three individual criterion measures included the newly constructed over head distance hit test, the Brown smash test, and a modified French clear test. No significant difference was found in the level of the groups in the specific skills that were tested.<sup>23</sup>

In an investigation by Harless comparing the traditional method of instruction for teaching badminton to the traditional method of instruction augmented by video tape replay, skills included the over head forehand in badminton, the full swing using middle distance iron in golf, and the forehand ground stroke in tennis. The analysis of variance

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<sup>22</sup>Patricia A. Zimmeran, "The effect of selected visual aids on the learning of badminton skills" (Doctoral dissertation, University of Iowa, Iowa City, 1970).

<sup>23</sup>Dulcie Patricia Brown, "The effects of augmenting instruction with an improvised teaching aid for college women in learning selected badminton skills" (Doctoral dissertation, Indiana University, Bloomington, 1969).

revealed no significant difference between the groups for any selected motor skill.<sup>24</sup>

In 1972 Stephens conducted a study using college women enrolled in two badminton classes as subjects. The purpose of this study was to compare a traditional instruction method and the traditional method plus video-tape replay of performance. The findings revealed that video-tape replay did not help in the learning of skill at the beginning level, but was of value if the skill levels were high.<sup>25</sup>

In 1973 Reidinger used three classes of students who were beginning badminton players to compare three methods of instruction. Three classes of students were randomly assigned to either individualized instruction, traditional, or non-instruction classes in badminton. After three weeks, a badminton volley test was used as the pre-post test. Analysis of data indicated a significant difference between the traditionally taught group and the non-instruction group favoring the traditionally taught group.<sup>26</sup>

Lalance conducted a study in 1974 to compare improvement in selected motor skills using traditional method of

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<sup>24</sup>Ivan Luther Harless, "A comparison of improvement of selected motor skills utilizing two instructional methods" (Doctoral dissertation, The Louisiana State University and Agricultural and Mechanical College, 1969).

<sup>25</sup>Mary Walter Stephens, "An evaluation of video-tape replay in the acquisition of perceptual motor skills in beginning badminton classes" (Master's thesis, The University of Texas at Austin, 1972).

<sup>26</sup>Madeline R. Reidinger, "An individualized program

instruction to mental practice, or physical-mental practice. The modified version of the Pemmington Handball Test and the Iowa-Brace Test were the skills selected for this study. Pearson Product-Movement method of correlation was used to determine the extent of correlation between these measures. The results indicated no significant effects of the instruction method on the service, but traditional instruction was significantly superior to mental practice for teaching lob service. There was no evidence to support the ability of the Iowa-Brace Test to predict improvement in either the power or lob service in handball.<sup>27</sup>

In 1958 Irwin used three groups of college women in examining the value of selected audio-visual aids on teaching tennis. Three methods of instruction were used to teach the forehand, backhand, and serve. One group was taught by the verbal-demonstration method, another group by the verbal-demonstration plus a silent loop film and the other group by the verbal-demonstration plus a sound film and filmstrip.

The researcher concluded that each of the three methods produced significant improvement in tennis playing ability and tennis knowledge of college women. The results of the study did not offer any evidence that the use of special

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in badminton for elementary school" (Master's thesis, Western Illinois University, Macomb, Illinois, 1973).

<sup>27</sup>Robert C. Lalance, "A comparison of traditional instruction, mental practice, and combined physical-mental practice upon the learning of selected motor skills" (Doctoral dissertation, Middle Tennessee State University, 1974).



audio-visual aids was more effective in improving learning than traditional method without these aids.<sup>28</sup>

A study was conducted by Moor in 1970 to measure the effects of cartoon illustrations as an instructional aid in the teaching of basic tennis skills. The investigator concluded that the cartoon illustration did not result in the acquisition of a greater degree of knowledge, as measured by a written test, but it was considered to be a valuable aid to teachers in their classroom preparation and in supplementing instruction.<sup>29</sup>

Hart came up with significant improvement at the .05 level when using four beginning tennis classes to determine the effectiveness of an instructional device, "The Stroke Builder," on the improvement of performance of a backhand drive in tennis. For the purpose of this study, two classes used the traditional practice method, while the other two were assigned to a "Stroke Builder."<sup>30</sup>

Roland studied the effectiveness of instructional devices in teaching beginning tennis players. He used high

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<sup>28</sup>June Irwin, "The effects of selected audio-visual aids on teaching beginning tennis skill and knowledge to college women" (Doctoral dissertation, Indiana University, Bloomington, 1958).

<sup>29</sup>Ballard J. Moor, "Evaluation of a pictorial form of instructional aid in the teaching of a motor skill" (Doctoral dissertation, Louisiana State University, Baton Rouge, 1970).

<sup>30</sup>Douglas W. Hart, "Effectiveness of the 'Stroke Builder' as a tennis backhand learning aid" (Master's thesis, Ithaca College, Ithaca, New York, 1971).

school students as subjects and placed them into equated groups based on the Broer-Miller Forehand and Backhand Tennis Test when administered after a period of basic instruction. The control group practiced the traditional method (without instructional devices), while the experimental group practiced with stroke developers. The investigator came up with significant findings at the .01 level, but there was no significant difference between the groups at the .05 level.<sup>31</sup>

Solley and Boders conducted a study to compare student progress in the forehand drive when taught by traditional method supplemented by the use of the Ball-Boy, a machine which projects tennis balls toward the learner at regular intervals with controlled speed and direction of the trajectory. The findings indicated that gains made in the forehand drive for all students under the Ball-Boy were greater than the gains made by all students using the traditional method. The investigator concluded that teaching machines such as the Ball-Boy are highly valuable in teaching specific skills in beginning tennis classes.<sup>32</sup>

Branvold utilized one-hundred and nine college men and women of low and moderate tennis ability in determining the effects of badminton instruction on the tennis skill.

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<sup>31</sup>Dale Arthur Roland, "Instructional aids in tennis" (Master's thesis, University of California, Los Angeles, 1960).

<sup>32</sup>William H. Solley and Susan Borders, "Relative Effects of Two Methods of Teaching the Forehand Drive in Tennis," Research Quarterly, 36: 120-122, March 1965.

Each subject was given a tennis skill test prior to six weeks of badminton instruction. Following the instruction, the students were again given the same tennis skills test. The results indicated that significant improvement in low tennis skill students, while moderate tennis skill students did not improve significantly.<sup>33</sup>

Young conducted a study to compare the effectiveness of teaching beginning tennis skills by the traditional method to the individualized learning method. For the purpose of this study, two groups of students were taught by the traditional method and one group was taught by the individualized method for the period of ten weeks. After ten weeks of instruction, the students were tested on knowledge, forehand, backhand, serve, and the Dyer test. Analysis of data revealed no significant difference between the two groups using the Dyer test. The individualized group was significantly superior on the serve and the knowledge test.<sup>34</sup>

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<sup>33</sup>Scott E. Branvold, "The effects of badminton instruction on the tennis skill of college students" (Master's thesis, Mankato State University, Mankato, 1973).

<sup>34</sup>Jimmie L. Young, "A comparative study to determine the difference between the effectiveness of teaching beginning tennis skills by the traditional method and the individualized learning method" (Master's thesis, North Carolina Central University, Durham, North Carolina, 1974).

## CHAPTER 3

### METHODS AND PROCEDURES

The methods and procedures described in this chapter will be used to ascertain information pertinent to the statement of the problem of this study. The following paragraphs include descriptive information regarding the subjects, treatment classification, and data collection.

#### Pilot Study

To familiarize the investigator with the methods and procedures involved in the study, a pilot study was conducted during the 1982 summer session at Middle Tennessee State University. The subjects consisted of 10 male and 6 female students who were beginning racquetball players. The class met four days a week for the period of 60 minutes.

During the first class meeting, the JLRB, form B,<sup>35</sup> was administered and during the second regularly scheduled class meeting the JLRB, form A was administered. The basic instruction started during the third class meeting.

The students received the traditional method of instruction except that the instruction was supplemented with the overhead projector. At the beginning of each class

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<sup>35</sup>Shemwell, p. 79.

meeting transparencies appropriate to the skills being taught were prepared and were presented to the students. After instructing the students with the aid of transparencies, the investigator demonstrated the given skill or skills. The students were then instructed to proceed to the court to practice. Specific instruction was given to the students to concentrate on control of the ball and to refrain from striking the ball too hard. Emphasis was primarily on form, position, stands, and accuracy. The investigator maintained his position outside the court while presenting cue corrections. Correction cues were given via overhead projector with a minimum of verbal cues.

After each class meeting necessary changes and adjustments were made to improve the method of instruction. A practice drill was developed for each skill and transparencies were prepared for the next class meeting.

Administration of the pilot study resulted in improvement of instruction, development of practice drills, preparation of material and transparencies, increased economy of time, accuracy of scoring, and training of research assistants.

### Subjects

The subjects for this study were selected from the students enrolled in ten beginning racquetball classes. Two classes consisted of thirty-one students ranging in age from eighteen to thirty-one enrolled in beginning racquetball sections of physical education service classes at Middle

Tennessee State University in the spring 1983 semester were used. At the beginning of the semester the investigator gave the students a detailed explanation of the study and the procedure that was followed. The students were informed of their part in the study and were assured that no reflection on their grade would result from participation in any phase of this study. Volunteers were asked to sign a consent form (see Appendix A) before taking part in the study.

### Testing Instrument

The literature revealed that several instruments have been designed to measure various facets of racquetball. This study was concerned with knowledge and ability. Therefore, the investigator chose the James Lowell form A (knowledge) and form B (ability) test.<sup>36</sup>

The test has been subjected to statistical analysis in terms of reliability and validity. The item analysis resulted in thirteen items (86.6) being acceptable items for racquetball knowledge.

The reliability for the form B (ability) was ranged from a low of  $r=.31$  to a high of  $r=.82$  and the reliability for form B was .81 when the test retest was used to establish reliability.<sup>37</sup>

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<sup>36</sup>Shemwell, p. 79.

<sup>37</sup>Shemwell, p. 65.

### Testing Procedure

Four research assistants were trained by the investigator to aid in administering and collecting data. Two teaching assistants were randomly assigned to each class schedule. They were responsible for scoring and timing of the JLRB, form B ability.<sup>38</sup>

The subjects for this study were given two tests during the initial data collective period: 1. the JLRB, form A knowledge (see Appendix B) and 2. the JLRB, form B ability (see Appendix C). During the first regularly scheduled class meeting the JLRB, form A knowledge test was administered to each activity class during the first ten minutes of the class period. The test was administered, scored, and recorded by the investigator.

After the Form A knowledge test, the form B ability test was administered. Prior to the test, the investigator read the students a list of directions and rules for form B ability test and then demonstrated the procedure to be followed. Any questions by the students were answered by the investigator. For the purpose of this test, a ten by twelve foot rectangle (see Appendix D) located behind the short line was measured and marked with masking tape on the floor. Also, on the front wall a line was measured and taped five feet above the floor. After entering the court area, each subject was given three balls and a racquet; extra balls were available.

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<sup>38</sup>Shemwell, p. 79.

Standing within the restraining rectangle, the subject started the test by dropping a ball, letting it hit the floor once, and then rallying it against the front wall as rapidly as possible for thirty seconds. Four thirty-second trials were given to each subject. The first trial was a warm-up trial.

Each ball striking the wall on or below the line on the front wall during the second, third, and fourth trials was counted provided the subject had at least one foot in or on the rectangle and the ball immediately contacted the front wall after contact with the racquet. The final score was the sum of all legal hits of the second, third, and fourth trials. The test was administered, scored, and recorded by the investigator.

The posttest was conducted at the end of the eight-week treatment period. Testing procedure was the same for pretest and posttest.

#### Treatment Classification

The treatment program was conducted in the racquetball courts of Murphy Athletic Center. One class of beginning racquetball students served as the control group and one class served as the experimental group. The treatment program lasted eight weeks.



### Experimental Group

The experimental group was taught by the investigator and instructed by means of the teaching method which utilized the overhead projector in addition to the traditional method of instruction.

The treatment program consisted of basic racquetball instruction and practice drills for the improvement of the racquetball skills. The course material was presented to the students via transparency projected onto the walls of the courts. The transparency presentations consisted of an introduction to racquetball, definitions of racquetball, court dimensions, safety tips, warm-ups, grips, stance, backswing, forward swing, follow-through, forehand stroke, backhand stroke, forward swing and impact, serve, service tips, basic shots. Each skill was accompanied by sequential presentations, diagrams, photographs, and practice drills which illustrated critical movements of the various strokes.

At the beginning of each class meeting the transparencies appropriate to the skills being taught were presented to the students. After instructing the students with the aid of the overhead projector, the investigator demonstrated the given skill or skills; the student then proceeded to the court and attempted to practice the specific skill demonstrated. Specific instruction was given to the students to control the ball by striking the ball easy and to refrain from striking the ball too hard. Emphasis was primarily on form, position, stance, and accuracy throughout the course.

Due to acoustical problems encountered in the court, the students were presented cue corrections by transparency projection. Through the utilization of this method rather than verbal cues, the student was able to continue his practice session without interruption.

The traditional method of teaching racquetball has been that of marking or taping an area of the court walls to represent the target. This method has restricted the instructors, in that, he must interrupt instruction to change the target site in order to teach a different skill.

By use of the MO-MAC<sup>39</sup> technique, the target can be readily moved, which saves the instructor time, and enables him to teach more effectively. By utilizing the (M & M) technique, the target can be moved to any area of the court walls or ceiling by merely adjusting the transparency.

#### Control Group

The control group was taught by the regularly assigned racquetball instructor using a traditional teaching technique that incorporated a verbal explanation, demonstration, drill and practice. The teaching process of the control group was observed by the investigator.

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<sup>39</sup>Ghorbani, Macbeth.

## CHAPTER 4

### ANALYSIS OF DATA

Analysis of variance for unweighted means was used to interpret the data obtained in this study. An F-ratio was computed for pretest and posttest main effects for the experimental and control groups for racquetball ability and knowledge. Because the study was concerned with the acquisition of skill and knowledge of an experimental and traditional method of teaching racquetball, the Scheffe procedure was used to compare posttest means for ability and knowledge of the experimental and control groups.

The hypotheses tested in this investigation were as follows:

- Hypothesis 1. There will be no significant difference between the experimental and control group in the mean test scores of the racquetball knowledge test.
- Hypothesis 2. There will be no significant difference in the mean ability performances of the experimental and control group.

The hypotheses of this investigation were stated so as to examine the changes in pretest and posttest scores for the different treatment groups. Therefore, a general

unweighted means of analysis of variance (ANOVAGUM) was utilized to determine if there was a significant difference at the .05 level of confidence between the experimental and the control groups as a result of the experimental treatment.

At the beginning of the study each assigned group was given two pretests: (1) the JLRB, form A knowledge and (2) the JLRB, form B ability test. The investigator collected and analyzed the results of the study.

Group Means, Standard Deviations,  
and Mean Differences for the  
Form A Knowledge Test

Group means, standard deviations, and differences of the means for pretest and posttest for the JLRB, form A knowledge are presented in Table 1.

The pretest mean score on form A of the JLRB, knowledge test for the experimental group was 7.4664 and standard deviation was 1.552. The mean score on the posttest form A of the JLRB, knowledge test for the experimental group was 9.4, standard deviation was 1.183 and pretest and posttest difference 1.93. The control group had a mean score of 8.25, a standard deviation of 1.528, and a pretest and posttest difference of 1.475 on JLRB, form A knowledge test.

Analysis of the data presented in Table 1 revealed that the mean gain in the form A knowledge test was not significant as a result of the experimental treatment.

Table 1

Group Means, Standard Deviations, and Mean Differences  
for the Form A Knowledge Test

Group	Pretest		Posttest		X diff
	X	SD	X	SD	
Experimental	7.4667	1.552	9.40	1.183	1.93
Control	6.6125	1.797	8.25	1.528	1.475

Analysis of Variance for the  
Form A Knowledge Test

The results of the general unweighted means analysis of variance (ANOVAGUM) for the JLRB, form A knowledge test are presented in Table 2.

Table 2

Analysis of Variance for the Form A Knowledge Test

Source	SS	dF	MS	F	Prob
Espcon (A)	12.6001	1	12.6001	4.001	0.052
Between Error	91.3354	29	3.14950		
Pre-Post (B)	43.9839	1	43.9839	28.074	0.001
AB	0.951680	1	0.951680		
Within Error 1	45.4354	29	1.56674		

Harmonic Mean = 15.484

Analysis of variance for form A knowledge test showed that there was a significant difference between pretest and posttest for both the experimental and control group.

( $f = 28.07$   $p = .05$ )

Posttest Mean Differences and Scheffe Values for the Knowledge and Ability Test

The results of the Scheffe procedure for posttest mean differences of the JLRB, form A knowledge test and form B ability test for the experimental and control group are presented in Table 3.

The posttest mean difference score on the JLRB, form A knowledge test was 2.85, and the Scheffe value was 5.50. The posttest mean score on the JLRB, form B ability was 1.15, and the Scheffe value was 1.30.

Table 3

Posttest Mean Differences and Scheffe Values for the Knowledge and Ability Test

Variables	Posttest X Diff Exper-control	S value*
Knowledge	2.85	5.50
Ability Test	1.15	1.30

\*.05 level of significance

Analysis of data presented in Table 3 indicated that there was no significant difference shown by the results obtained on the posttest for the form A knowledge test.

On the basis of the results obtained from the analysis of data presented in Tables 1, 2, and 3, hypothesis 1 (that there would be no significant difference between the experimental and control group in the mean test scores of the racquetball knowledge test) was accepted.

Group Means, Standard Deviations  
and Mean Differences for the  
Form B Ability Test

Group means, standard deviations, and differences of the means for pretest and posttest for the JLRB, form B ability test are presented in Table 4.

The pretest mean score on the JLRB, form B ability test for the experimental group was 21.333, and standard deviation was 10.926. The control group had a mean score of 22.5652 and a standard deviation of 8.025. The posttest mean score on the JLRB, form B ability test for the experimental group was 31.60, the standard deviation was 10.926 and a pretest-posttest difference of 10.2667. The control group had a mean score of 28.75, a standard deviation of 9.955 and a pretest-posttest difference of 6.1875.

Analysis of data presented in Table 4 revealed that the mean gain in the form B ability test varied slightly in favor of the experimental group.

Table 4  
Group Means, Standard Deviations, and Mean Differences  
for the Form B Ability Test

Group	Pretest		Posttest		X diff
	X	SD	X	SD	
Experimental	21.3333	10.926	31.60	9.95	10.2667
Control	22.5652	8.025	28.75	9.957	6.1875

Analysis of Variance for  
Form B Ability Test

The results of the general unweighted means analysis of variance (ANOVAGUM) for the JLRB, form B ability test are presented in Table 5.

Table 5  
Analysis of Variance for the Form B Ability Test

Source	SS	dF	MS	F	Prob
Espcon (A)	10.1694	1	10.1694		
Between Error	5815.19	29	200.524		
Pre-Post B	1048.02	1	1048.02	37.490	0.001
AB	64.4114	1	64.4114	2.304	0.136
Within Error	810.685	29	27.9547		

Harmonic Mean = 15.484



The analysis of variance for the form B ability test indicated that there was a significant difference between pretest and posttest for both experimental and control group.  
( $f = 37.490$   $P = .05$ )

The results of the Scheffe procedure for posttest mean differences of the JLRB, form B were presented in Table 3.

On the basis of the results obtained from the analysis of data presented in Tables 3, 4, and 5, hypothesis 2 (that there would be no significant difference in the mean ability performance of the experimental and control group) was accepted.

Pretest and Posttest Mean  
Differences and Scheffe  
Values for Knowledge  
and Ability Test

The pretest and posttest mean difference score on the JLRB, form A knowledge and JLRB, form B ability test for the experimental and control groups are presented in Table 6.

The pretest and posttest mean difference score on the JLRB, form A knowledge test for the experimental group was 1.93, and the Scheffe value was 6.19. The control group had a mean difference score of 1.475, and a Scheffe value of 5.50.

The pretest and posttest mean difference score on the JLRB, form B ability test for the experimental group was 10.2667, and the Scheffe value was 1.44. The control group had a mean difference of 6.1875, and a Scheffe value of 1.30.

Table 6

Pretest and Posttest Mean Differences and Scheffe  
Values for Knowledge and Ability Test

Group	Pre-Post $\bar{X}$ diff	S value*
Experimental		
Form A Knowledge Test	1.93	6.19
Form B Ability Test	10.2667	1.44
Control		
Form A Knowledge Test	1.475	5.50
Form B Ability Test	6.1875	1.30

\*.05 level of significance

Analysis of data presented in Table 6 revealed that there was no significant difference between experimental and control group. However, the effects of both the experimental and the control treatment did show an overall significant improvement of the racquetball ability.

## CHAPTER 5

### SUMMARY, CONCLUSIONS, OBSERVATIONS, AND RECOMMENDATIONS

#### Summary

The purpose of this study was to determine if an experimental method using the overhead projector is more effective than the traditional method of instruction in teaching beginning racquetball at the college level.

The sample for this study consisted of two beginning racquetball classes selected from ten beginning racquetball sections of physical education service classes at Middle Tennessee State University in the spring 1983 semester. One class, which consisted of fifteen students, aged eighteen to thirty-one years, served as an experimental group. Another class, which consisted of sixteen students, aged eighteen to thirty-one years, served as a control group. The experimental group was taught by the investigator who utilized the overhead projector. The control group was taught by the racquetball instructor who followed a traditional teaching approach focusing on mass demonstration, explanation, and drill. The experimental period lasted eight weeks. Improvement in the performance of the knowledge and ability of the game was determined by pretest and posttest scores on JLRB, form A knowledge and JLRB, form B ability.

The .05 level was utilized to determine significance for the statistical analysis conducted in this study.

A general unweighted means analysis of variance (ANOVAGUM) was used to determine if there were any significant differences between groups.

Statistical analysis of the data reveals that both the experimental and traditional methods of teaching beginning racquetball at the college level proved to be effective in that significant gains at .05 level were made in JLRB, form B ability test. There was no significant difference between the groups in JLRB, form A knowledge test between the groups. No significant difference existed between the groups on any of the two variables (knowledge and ability) as a result of the experimental treatment.

### Conclusions

Statistical treatment of the data indicates that both the experimental and the traditional methods proved to be effective in that significant gains at .05 level of probability were made in each of the two variables - ability and knowledge - of the game. No significant differences existed between the groups in any of the two variables measured as a result of the experimental treatment.

Results of this study reflect an inability to show that the utilization of the overhead projector in teaching beginning racquetball was more effective than a traditional method of lecture, drills, and practice. Why, then, has

media method come to widespread use? Perhaps the answer lies not in data collected in a formal investigation but in the very nature of the media itself: that it increases the efficiency and economy of teaching.

Support for this investigation can be seen in Appendix E. Students in the experimental group were asked whether they strongly agreed, agreed, were uncertain, disagreed, or strongly disagreed with ten statements concerning the desirability of the use of the overhead projector in teaching racquetball. Ten of the fifteen students "strongly agreed" and the additional five "agreed" that the utilization of the overhead projector in teaching beginning racquetball was more effective than the traditional method for learning racquetball.

On the basis of the findings revealed by the analysis of the collected data, the following conclusions were made:

1. The (MO-MAC) method of instruction was shown to be an effective method of teaching beginning racquetball to students at the college level.

2. The traditional method of instruction was an equally effective method of teaching beginning racquetball.

3. The (MO-MAC) method of instruction received a favorable reaction from the participating students.

#### Observations

The observations made by the investigator during the experimental period are as follows:

1. Students should be classified at the beginning of the term and placed with students of near equal abilities. This will enable students to progress in an equal basis and prevent discouragement of less skilled students.

2. The use of a convex mirror placed in each corner of the courts would enable the instructor to observe several courts in action.

3. The use of steps placed at the instructor's observation point is a great aid in attempting to observe the students while they are playing at the back of the court.

4. To expose the students to different experiences, the instructor should periodically have students change partners and courts.

5. To present a demonstration to the students the instructor should not demonstrate in individual courts. The instructor may bring all students together for demonstration with an overhead projector.

6. The instructor should encourage students when learning new skills to concentrate on accuracy and control rather than expending wasted energy.

7. Due to poor acoustics the instructor could use the aid of a portable speaker in directing the statements to the students.

8. Prior to the beginning of the teaching session, the instructor can prepare transparencies to cover all aspects of teaching so that valuable time will not be lost.

### Recommendations

Based on the findings of this study, it is recommended that:

1. The study should be carried out on a larger population to determine if the results hold true for the larger population.

2. A similar investigation should be conducted using a full semester as an experimental period in order to ascertain if time would influence the results.

3. More research should be initiated determining the values, uses and outcomes of multi-media in teaching beginning racquetball.

4. A similar study could be conducted using more than one overhead projector to determine if the outcome of the study would be different.

5. Studies should be conducted in situations where class time exceeds fifty minutes to determine whether the effect of such a visual aid would differ significantly.

6. A new skill instrument should be developed and designed to better evaluate the use of the overhead projector in teaching beginning racquetball at the college level.

## APPENDIXES



APPENDIX A

THE JAMES-LOWELL RACQUETBALL TEST  
CONSENT FOR TEST PARTICIPATION

THE JAMES-LOWELL RACQUETBALL TEST  
CONSENT FOR TEST PARTICIPATION

The James-Lowell Racquetball Test, Form A: Knowledge, and  
Form B: Ability

Mohammad Ghorbani, Director of Testing          Date \_\_\_\_\_  
Class Instructor  
Test Location: Murphy Center

I. \_\_\_\_\_, hereby agree to  
  Subject's Name  
participate in an experimental test under the supervision of  
Mohammad Ghorbani. I understand that the results of the test  
will in no way affect my grade. I am \_\_\_\_\_ years of age. I  
am a male female (circle one). My classification is  
FRES. SOPH. JR. SR. (circle one).

\_\_\_\_\_  
Volunteer's Signature

Date \_\_\_\_\_

APPENDIX B

THE JAMES-LOWELL RACQUETBALL TEST  
FORM A: KNOWLEDGE

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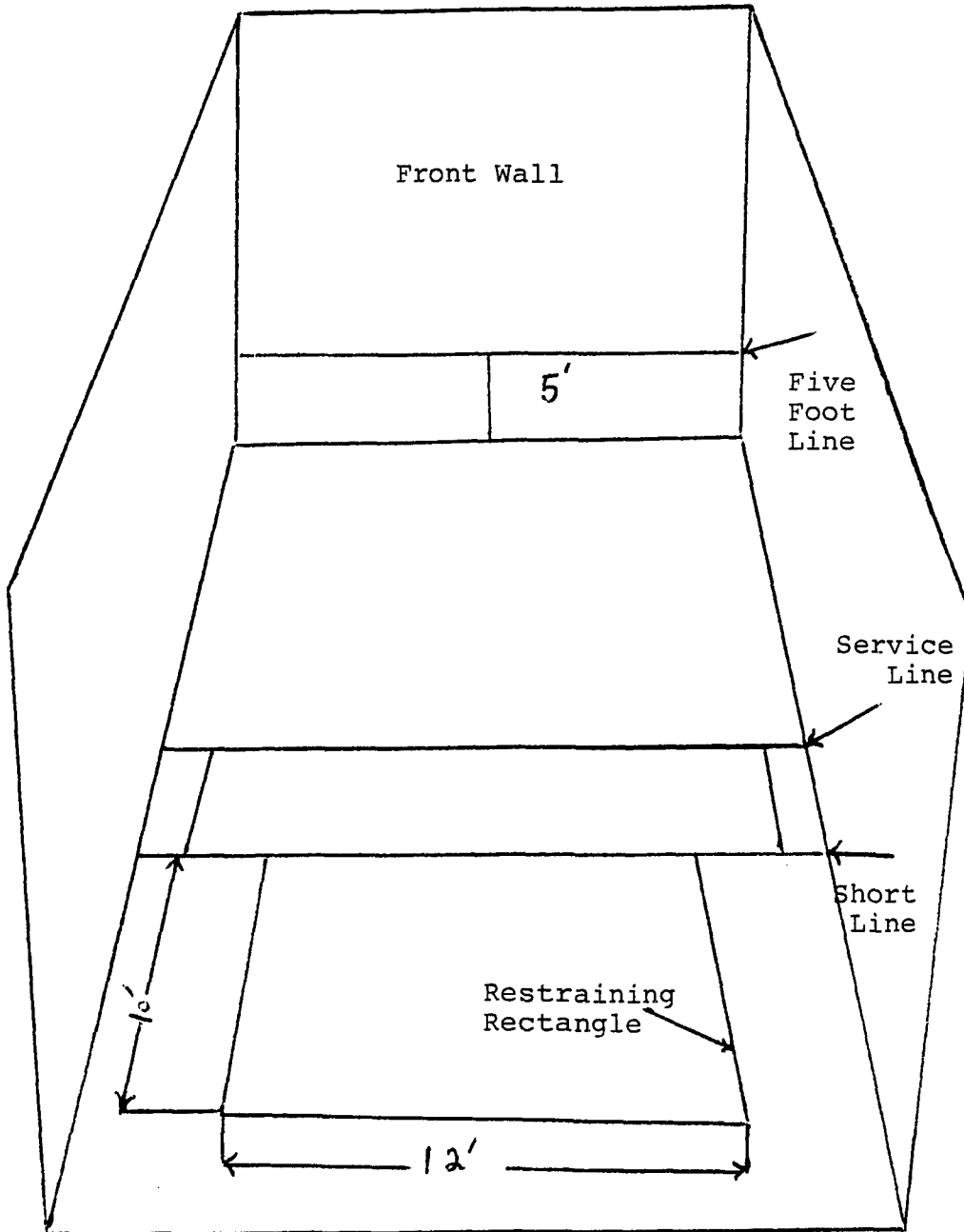
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APPENDIX C

THE JAMES-LOWELL RACQUETBALL TEST  
FORM B: ABILITY

APPENDIX D

COURT DIAGRAM



COURT DIAGRAM WITH MARKINGS FOR JAMES -LOWELL  
RACQUETBALL TEST, FORM B: ABILITY

APPENDIX E

RESULTS OF THE MEDIA APPROACH TO  
RACQUETBALL SUBJECTIVE  
EVALUATION



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