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MOR'S SOCCER SKILL TEST BATTERY FOR
MALE UNIVERSITY STUDENTS

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ABSTRACT

The purpose of the study was to construct a practical skill test battery that would measure soccer ability of male students at the university level. The subjects consisted of forty-five males enrolled at Appalachian State University during spring semester of 1977. Group I was composed of fifteen males selected from the Appalachian State varsity soccer team. Group II was composed of fifteen males selected from two championship intramural soccer teams, and group III was composed of fifteen males selected from two physical education soccer classes taught during spring semester, 1977. Previous soccer experience was prerequisite for all subjects. Soccer skills tested were: dribbling for speed and accuracy, heading for accuracy, passing for accuracy, shooting for accuracy, and trapping. The subjects were evaluated subjectively during game play by three judges, and the combined evaluation was used as the criterion measure. The findings of the study were as follows:

1. The validity coefficients between each test item and the criterion measure were: dribbling, .731; heading, .941; passing, .776; shooting, .912; and trapping, .670.

2. The reliability coefficients for the five test items utilizing fifteen subjects were: dribbling, .795;

heading, .941; passing, .961; shooting, .984; trapping, .712.

3. The objectivity coefficients for the five test items were: dribbling, .998; heading, .918; passing, 1.0; shooting, .984, and trapping, 1.0.

4. The multiple R coefficients between the judges' criterion measure and the combination of test items were: passing, .779; passing + dribbling, .790; passing + dribbling + shooting, .913; passing + dribbling + shooting + trapping, .913; passing + dribbling + shooting + trapping + heading, .942.

The following conclusions were drawn from the study:

1. The correlation of .942 between the criterion measure and the combined test battery was certainly high enough to warrant that this test can adequately differentiate the more skillful player from the less skillful player of soccer at the university level.

2. It would appear that general soccer ability can be adequately measured while utilizing the tests of dribbling, passing and shooting.

3. Selected soccer skills can be measured objectively and reliably with this battery of five tests.

DEDICATION

The years of study which led to the completion of this thesis were made possible by the understanding, encouragement, and assistance of my wife, Hagit, to whom this study is dedicated.

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Chapter I

INTRODUCTION

HISTORY

Soccer has been truly an international sport which has been played before crowds of more than 100,000 in stadia across Latin America, Europe, and Asia. Its great world popularity has no doubt influenced the tremendous growth of its popularity in the United States as a participative sport. The game is so simple and its skills are so natural that one would not be surprised to find early traces of soccer in several ancient cultures. Soccer is a game with a presumed shady past, for no real evidence has been found to disclose when and where soccer first developed. According to ancient prints, games that used inflated balls which were propelled primarily by kicking were used by the ancient Greeks, Romans, and Chinese long before the emergence of Christianity. Soccer appears to be one of these games (8:2). According to Gardiner, soccer appeared in China before the birth of Christ. As long ago as the fifth century A.D. an inflated ball made of leather strips was utilized (7:16). Most authorities believed that the game was brought to England by the Romans in the first century wherein it became very popular.

At first, the game was played violently with no specific rules regarding the playing field, duration of the game, and the number of participants. A special English event that evolved into a great soccer day was the Shrove Tuesday Football, a victory celebration over a troop of Roman warriors, in which an entire town or village that contained as many as five hundred people participated in the event. The object of the event was to propel the ball by any means from one end of the town to the other; the game lasted all day and into the night (20:280, 281).

To suggest that the development of soccer in England was met with absolute enthusiasm was to belie the facts. With so many players on a side and no rules enforced, the game was rough and caused heavy property damage which led to many fights and injuries. This, together with the fact that soccer started interfering with archery practice, led several British rulers to ban the game for over three centuries. Only after the Puritan era was the game adapted and modified by the English schools. From within the schools the game spread to the colleges of Oxford and Cambridge and then throughout the British Isles (24:3, 4).

There are, of course, several references to the game in the works of Shakespeare. For example, Kent, in King Lear, was quoted as saying: "Nor-tripped neither, you base football player" (16:990).

In 1862 the first set of rules was drawn up by J. C. Thring. The concern and efforts of early authorities

to establish an organized game led to the foundation of the Football Association in 1863. The year was one of the historic landmarks of the game, as it marked the beginning of organized soccer. From England the game spread to its colonies, to other European countries, and eventually to all parts of the world (19:3, 5). In May 1904, the Federation International de Football Association, commonly referred to as FIFA, was formed in Paris. FIFA has remained the world's largest sport association and has controlled and organized all international soccer competition throughout the world. In 1903, soccer was first included in the Olympic Games and has been continued on a permanent basis. Since only amateur competitors were allowed in the Olympic Games, there was a need for a worldwide professional soccer tournament in which all the participant countries could be represented by their best players. In 1932 the first world-cup tournament was held in Uruguay. The world-cup tournament, a quadrennial event, is the world's most popular sport event other than the Olympic Games. The world-cup tournament was the first, and still remains the largest non-olympic, worldwide team sport series that assembles together the best soccer players in the world (3:331).

Although some form of soccer was being played in the United States as early as 1870, it has not enjoyed the same level of popularity as it has throughout the remainder of the world. In 1923 the Intercollegiate Soccer Football Association was formed for the purpose of promoting the

game among colleges. Six years later, in 1913, the United States Soccer Football Association, commonly referred to as USSFA, was formed. In 1963 the North American professional soccer league was established.

VALUES

Soccer may be considered to be the world's most popular game. In contrast with many other popular games, soccer has many requisites that appeal to large numbers of players and spectators. One of the greatest advantages of the game lies in the age range of those able to participate. It can be played by young and old and by boys and girls, regardless of size. The inherent physical, mental, and social factors that have made the game so popular throughout the world have inspired physical educators to include soccer in physical education curricula and athletic programs from grade school level through college. Soccer is a very economical sport and with a minimum of equipment it can be easily adapted to most school programs. A ball and an open field are all that are required.

The game of soccer provides constant action with very few interruptions, making the game tremendously appealing to both players and spectators. Soccer involves creativity since each time the ball is passed, and each time a player receives the ball, the situation is variable. Soccer is a team sport and yet it provides many opportunities for each individual to demonstrate individual skills and

talents. The total fitness of the soccer player must be similar to that of an athlete who participates in other contact sports that require such factors as speed, agility, neuromuscular coordination, strength, and endurance. In addition, soccer is the only major sport that requires constant eye-foot coordination. Soccer is also unique since any part of the body may be used to propel the ball with the exception of the hands and arms. It has been difficult if not impossible to determine how many millions of people play the game each year, but it has been estimated that it is played each year in 132 countries by 250 million players in the presence of 650 million spectators (19:1-2).

NEED FOR THE STUDY

Research has been conducted in many areas of physical education and sports activities, one of which has been sports skill testing. Excellent skill tests have been devised and established in many of these sport activities. In the field of soccer, however, skill tests have not been extensive. The acquisition of sport skills and the development of organic fitness are generally recognized as two of the major objectives of physical education. In an effort to develop a meaningful method of measuring and evaluating the extent to which these objectives have been accomplished, the use of a skill test must be prerequisite.

"Skill test reflects the ability of the student to perform in a specified sport such as badminton, basketball,

and handball" (14:161). Skill tests have been constructed in many sports activities which have been found to be useful to both the student and the instructor. The following are specific examples in which skill tests have been utilized by the physical educator, the coach, and the student:

1. To classify students or team players according to their performance ability.
2. To measure students' achievement and progress in the various sports activities.
3. To measure the effectiveness of a teaching method or a program.
4. To provide an objective method of marking.
5. To serve as a practical teaching and practice aid.
6. To serve as a motivational device (12:340).

Clarke summarized the importance of skill tests by stating:

Tests in health and physical education may be used for many purposes. All purposes, however, focus in one all-encompassing aim: to realize educational objectives; to serve boys and girls better than would otherwise be possible (4:30).

With the dearth of information relating to skill tests in soccer, the writer felt the development of a test battery of soccer skills was warranted. The value and need for reliable, valid, and objective neuromuscular test construction in research cannot be questioned.

STATEMENT OF THE PROBLEM

Since there appears to be a lack of tests to measure soccer skills, it was deemed worthwhile to investigate the development of a soccer skill test that would measure general soccer ability of male students at the university level.

PURPOSE OF THE STUDY

The purpose of this study was to construct a practical skill test battery to measure soccer skills utilizing the following soccer skill components: dribbling, heading, passing, shooting, and trapping.

SUB-PROBLEMS

The sub-problems in this study were as follows:

1. Identification of basic soccer skills and the selection of an appropriate test item for each.
2. Selection of subjects.
3. Development and application of criterion measures.
4. Administration of test items.
5. Organization and analysis of data.

DEFINITION OF TERMS

Dribbling

A technique of advancing the ball on the ground utilizing any part of the foot.

Heading

A technique of advancing or trapping the ball by allowing the ball to contact the forehead.

Passing

A technique of transferring or interchanging the ball from one teammate to another while utilizing one foot.

Shooting

A technique of propelling the ball toward the goal in an attempt to score utilizing the forehead or foot.

Trapping

A technique of stopping a moving ball while bringing it under control by utilizing any part of the body except the hands and arms.

BASIC ASSUMPTION

It was assumed that each subject gave a maximal effort during the testing.

DELIMITATIONS

The study was delimited to forty-five male students enrolled in Appalachian State University during the spring semester of 1977, with previous soccer experience. The subjects were classified according to soccer experience from one of the following three groups: (1) enrollment in a physical education soccer class, (2) participation on a championship intramural soccer team, (3) membership on the Appalachian State University varsity soccer team. Each subject was tested on the following soccer skills: dribbling, heading, passing, shooting, and trapping. A combined rating by three judges of the subject's playing ability during actual soccer games constituted the criterion measure.

Chapter II

REVIEW OF LITERATURE

A search of the literature revealed that the development of skill tests in soccer began more than forty years ago. Most of the tests were specifically designed for elementary and high school students, or for varsity soccer players. There were few skill tests in existence which purported to measure the soccer ability of male students at the university level. Many of the early tests in the area lacked statistical evidence of validity and reliability.

The literature for soccer skill tests was reviewed in two sections. The first section reviewed studies that were critical to the problem under investigation, and included soccer skill tests designed for male students at the university level. The second section reviewed those studies that were allied to the problem, and included soccer skill tests for other levels including female students and professional players.

CRITICAL STUDIES

One of the earliest efforts in developing a motor ability test for soccer was conducted by Brace (2: 81-84) in 1927. The test was designed for both males and females at the university level. It included: dribbling,

heading, goal-kicking, and the throw-in. The author established T-scales for both college men and women for the four test items.

As cited in Johnson and Nelson (13:262), Johnson studied the use of a wall-volley test in order to measure general soccer ability of college men. The following equipment was used: a target area, 24 feet wide and 8 feet high, with a restraining line drawn 15 feet from the wall, soccer balls, and a stopwatch. The test consisted of kicking the soccer ball against the target area as many times as possible in 30 seconds. All balls had to be kicked from behind the restraining line. The subjects were permitted to use their hands to retrieve a rebounding ball, and when the ball went out of control, the subjects were allowed to use one of the spare balls located in a container adjacent to the subject. Three 30-second trial periods were given and the total number of rebounds on the three trials constituted the test score. The validity coefficient was obtained by correlating between the test scores and judges' ratings of the subjects' soccer ability. A correlation coefficient of .98 was found for the physical education service class students; a correlation of .94 for the physical education majors, and a correlation of .58, .84, and .81 were found for the first, second, and third varsity teams, respectively. A reliability coefficient of .92 was found for consecutive trials.

McDonald (15) also studied the use of a wall volley test as a measure of general soccer ability of college men. The investigator constructed a test utilizing college varsity soccer players, junior varsity players, freshman team players, and combined groups. The following equipment was used: a wall 30 feet wide and 11½ feet high with a restraining line drawn nine feet from the wall, a stopwatch, and three soccer balls. The test consisted of kicking a soccer ball against the wall as many times as possible in 30 seconds. Any type of kicking and control methods was permitted; however, the kicking of the ball had to be executed from behind the one-foot restraining line. The subjects were allowed to retrieve a lost ball with their hands and when the ball went out of control, the subjects had the option of using one of the spare balls that was located nine feet behind the restraining line. Use of the hands in returning the spare ball into the desired kicking position was also permitted. Four trials were allowed. The score recorded was the highest number of kicks in any of the four trials. The scores on the test were correlated with the coaches' ratings to compute the validity of the test. The following coefficients of correlation were obtained: .94 for the varsity players, .63 for the junior varsity players, .76 for the freshman varsity players, and .85 for the combined groups.

In 1968 Crew (5) developed a skill test battery for use in service soccer classes at the university level in

order to predict soccer ability. Fifty-one male students with limited soccer experience served as subjects for this study. The following test items were included: a wall volley accuracy test, dribble, aerial pass for accuracy, and ball control. The validity of each test item was determined by correlating the item with the combined judges' rating of soccer ability. The highest validity coefficient was .97, obtained from the multiple correlation between all four experimental soccer skill tests and the judges' ratings. The highest validity coefficient for a single test was .95 for the ball control test. The validity coefficient for the other single items were as follows: aerial pass test, .94; dribble test, .92; and wall volley test, .88. The objectivity coefficients of the experimental test items were: wall volley, .97; dribble, .99; aerial pass, .99; and ball control, .99.

In 1962 Roger (17:54-55) utilized four soccer skills in developing a test to measure the soccer proficiency and skill that are usually required for the different positions on a soccer team. The test distinguished between the skillful and the less skillful soccer players. The items included in this test were: dribbling, heading, wall volley, and place kick for distance. No statistical data were available to support the test.

ALLIED STUDIES

In 1927 Anderson (1:112-113) set up three soccer tests for use with elementary school boys and girls. These tests, which were used for motivation and for evaluation of status, consisted of dribbling around objects for speed, and kicking the ball for distance and accuracy.

Hillas (10:22-24) and Knighton in 1929 developed tests for both soccer and speedball for high school and college women. Soccer skills tested were: dribbling, kicking for accuracy, and dribbling and kicking for speed and accuracy. In the same year, F. T. Holloway (11) developed a battery of soccer skills for the purpose of classifying students into groups of high, medium, and poor abilities. The tests used in this study were kicking, heading, dribbling, and the throw-in. No statistical evidences were presented.

In 1932 a ten-item soccer skill test was developed by Vanderroof (22:23:42, 54-56). The test was designed for motivation and for more objective skill evaluation in physical education classes for girls. The ten items selected were: dribbling, trapping, throw-in, place kick, volleying, throw-down, tackling, corner kick, drop-ball and goalkeeping. It was concluded that those students who achieved a high score on all tests should be able to meet the requirements for making the first class team. It was also concluded that more practice and time should be given

to those students who scored low on most of the tests. The data were not analyzed further.

In the same year, Heath and Rodgers (9:33-35) constructed both skill and knowledge soccer tests for fifth and sixth grade boys. The skills tested were: dribble for speed, a throw-in target test, place-kick for accuracy, and kicking a moving ball for accuracy. The authors reported correlations of .602 and .624 between the composite T-scores and the judges' ratings of soccer playing ability of the fifth and sixth grade students, respectively. The coefficients of correlation for reliability of the composite scores on the four skill tests, using the test-retest method, were .71 for the fifth graders (N = 241), and .74 for the sixth graders (N = 193). No statistical evidence was included to support the individual items.

Warnner (23:295-298) developed a soccer skill test battery to measure the fundamental skills of soccer, to arouse interest in learning basic skills, to measure improvement, and to help select a varsity team. The test was designed for junior and senior high school boys and for high school varsity players. The following test items were tested: kicking for distance--right foot, kicking for distance--left foot, corner kicking for accuracy, heading for accuracy, throw-in for distance, penalty kicking for accuracy, and dribbling for time. In the kicking for distance tests using the right and left feet, the subject kicked a stationary ball as great a distance as possible.

The ball had to stay within a lane of twenty-five yards wide. The distance the ball traveled in the air until the first bounce was measured. Three trials were given for each foot. The score was the best kick out of the three trials. In the dribbling test for time, the purpose was to measure one's ability to control the ball with the feet while dribbling among five obstacles five yards apart in the least time possible. Three trials were given and the best out of the three constituted the final score. The test did not discuss any statistical procedures.

Schaufele (18), in 1940, developed a group of soccer tests for high school girls. The author correlated each test with a subjective criterion, judges' ratings, and with a total test criterion, which was the sum of the T-scores for each test. Skills tested were: dribbling (validity of .63 with the subjective criterion and .59 with the total test criterion; reliability was .56); goal-shooting (validity of .34 with the rating and .61 with the total test criterion and a reliability of .93); judgment in passing (validity of .34 with the subjective criterion and .65 with the total test criterion, reliability of .69); kicking (validity of .61 or .69 when compared with the total test criterion; reliability was .73); passing and receiving (validity of .50 with the subjective criterion, .68 with the total test criterion reliability); and volleying (validity of .57 with the rating, .77 with the total test criterion and a reliability of .67). Schaufele considered

passing, kicking, volleying, and judgment in passing as the best four-item battery. The best three-item battery was concluded to be passing, volleying, and judgment in passing.

Whitney and Chapin (25:18) developed a six-item soccer skill test which included dribbling for speed and accuracy, place kick for a goal, trapping, volleying, receiving and kicking for a goal, and punting for distance. No reference was made to any statistical analysis.

In 1958, Crawford (6) developed a five-item soccer skill test designed for women physical education majors at the university level. The items selected were: dribbling, passing and receiving, trapping, volleying, and place kicking. A multiple correlation of .79 was obtained when the battery of dribbling, passing and receiving and trapping was correlated with the judges' ratings. The objectivity coefficients of the above items in the battery were .99, .97, and .92, respectively.

Winterbottom (26) included three skills in his study: place-kicking using a moving ball, accuracy in kicking using a moving ball, and controlled heading ability. Sixty of the top professional soccer players in England were tested. The average scores reported by this investigator for five kicks with the left foot in each category were two scoring kicks out of five, which would probably indicate that either the test itself was too difficult, or that the players were not motivated to perform to the best of their ability. This was also true of the two heading tests in

which only one score was made in every five attempts on the average. No further statistical data were presented.

Tomlinson (21:73-77) developed a soccer skill test to measure present soccer skills and to provide for classifying and determining playing ability status. The test was designed for high school boys and girls, college men and women, and varsity players. The following test items were used: accuracy kick, trapping, and dribbling. The source did not refer to any statistical analysis.

SUMMARY

In reviewing the related literature, the investigator summarized those studies which have attempted to provide soccer skill tests. The related studies were reviewed in this chapter under two sections. The first section included those studies that were critical to the problem under investigation. The second section included those studies that were allied to the problem and contained soccer skill tests for boys, girls and professional players. Although considerable testing in the area of soccer skills has been reported in the last forty years, a review of the literature disclosed few tests have been constructed specifically for male students at the university level.

Some of the early studies have revealed that tests have been constructed for the elementary school level students. Other studies have measured various skill levels at the high school and university level. Of the studies

reviewed, fourteen (1, 2, 5, 6, 9, 10, 11, 17, 18, 21, 22, 23, 25, 26) used a battery of tests to measure soccer ability and two (13, 15) used a wall volley test. The highest number of soccer skills included in any test was ten skills by Vanderhoof (22).

The highest validity coefficient for the test batteries was a multiple correlation of .97 reported by Crew (5). The highest reliability coefficient for the test batteries was .74 reported by Heath and Rodgers (9). The highest validity and reliability for the wall volley tests were obtained by Johnson (13), of .98 and .92, respectively. The highest objectivity coefficient reported was .99 by both Crawford and Crew, respectively (5, 6). The skills which have been tested most frequently, although utilizing different procedures, were dribbling, place-kicking, volleying and passing. Other tests included heading, throw-in, trapping, and tackling. Various combinations of these skills were also used.

Chapter III

PROCEDURES

OVERVIEW

The purpose of the study was to construct a practical skill test battery that would measure soccer ability of male students at the university level. This chapter was divided into five sub-problems dealing with the development of the skill test battery. These sub-problems were:

1. Identification of the basic soccer skills and the selection of appropriate test items for each.
2. Selection of subjects.
3. Development and application of criterion measures.
4. Administration of test items.
5. Organization and analysis of data.

SUB-PROBLEM ONE

The identification of the basic soccer skills and the selection of appropriate test items for each were based on the following justification: there are usually several basic skills in almost every sport game that must be learned and practiced before a satisfactory level of

playing ability can be achieved. Soccer has its basic skills that can be identified.

The skills identified for inclusion in this study were:

1. Dribbling for speed and accuracy. Since the use of the hands and arms is not permitted in soccer, except for the goalkeeper, dribbling is the only skill by which an individual player can advance the ball under control.

2. Heading for accuracy. Soccer is the only sport that utilizes the use of the head as a basic skill. When the ball is too high in the air to play with the feet or body, the skill of heading must be used. In using the heading skill, one can pass, score, clear, or even trap the ball.

3. Passing for accuracy. As in many team sports, passing contributes to good team play in soccer. Passing is the basis of the game and is the technique for moving the ball accurately from one teammate to another.

4. Shooting a stationary ball for accuracy. Kicking is the beginning and the end of soccer. It is the most important skill to be mastered in soccer.

5. Trapping ability. Trapping is the technique of bringing the ball under control whether it be on the ground or in the air. In most situations in soccer, the ball must be trapped before it can be passed, shot, or dribbled.

SUB-PROBLEM TWO

The second sub-problem dealt with the selection of subjects. A total of sixty male students with previous soccer experience enrolled at Appalachian State University during the spring semester of 1977 volunteered for the study. A total of forty-five subjects, fifteen from each of the following groups were randomly selected to participate in the investigation:

1. The Appalachian State University varsity soccer team.

2. The two intramural divisional championship teams of Appalachian State University.

3. The two physical education soccer classes taught at Appalachian State University.

SUB-PROBLEM THREE

The criterion measure was developed by three judges, the varsity head soccer coach, the varsity assistant soccer coach, and a soccer instructor in the physical education department at Appalachian State University. (Criterion measures as determined by individual judges are shown in Appendixes I, J, and K, pages 68, 69, and 70.) Each judge received a rating sheet with the subject's name and was requested to evaluate each subject according to the subject's general playing ability during actual games being played at Appalachian State University. The judges'

evaluation was guided by a rating scale ranging from one through ten as follows:

9 - 10	Excellent
7 - 8	Above Average
5 - 6	Average
3 - 4	Below Average
1 - 2	Poor

During the rating process, the players wore specific numbers for the purpose of identification by the judges. Each judge worked independently. The three rating scores given for each individual by the judges were summed to establish the criterion measure. Raw data of the judges' rating is shown in Appendix E, page 62.

SUB-PROBLEM FOUR

The fourth sub-problem dealt with the administration and the equipment used for each test within the battery. This was done in the following manner:

Test One--Dribbling

The administration of the dribbling test was subdivided in the following manner:

Equipment. One or more regulation soccer balls, fully inflated, one stopwatch, and twelve plastic cones eighteen inches in height were utilized.

Field marking. A circular course twenty yards in diameter was utilized, and a three foot line illustrating

the start and the finish line was drawn (see Figure 1, page 25, and for further description, see Appendix A, page 57).

Test. The ball was placed on the starting line. On the signal, "Ready--Go," the subject had to dribble the ball "in-and-out" by weaving among the plastic cones that were placed five yards apart around a circular course of twenty yards in diameter. This was to be done in the least amount of elapsed time possible. Three trials were given. The first trial was performed in a clockwise direction, the second trial was performed in a counterclockwise direction, and the third trial involved the subject's preference. The best two of the three trials were combined to determine the performance score on the test. A practice trial was given before actual testing began. There was no penalty other than the time consumed for balls kicked against the cones.

Test Two--Heading

The administration of the heading test was subdivided in the following manner:

Equipment. One regulation soccer goal, two ropes ten feet in length, four circular targets four feet in diameter, three regulation soccer balls, and a ball-throwing device capable of projecting a soccer ball at various distances and velocities were required for the test (see

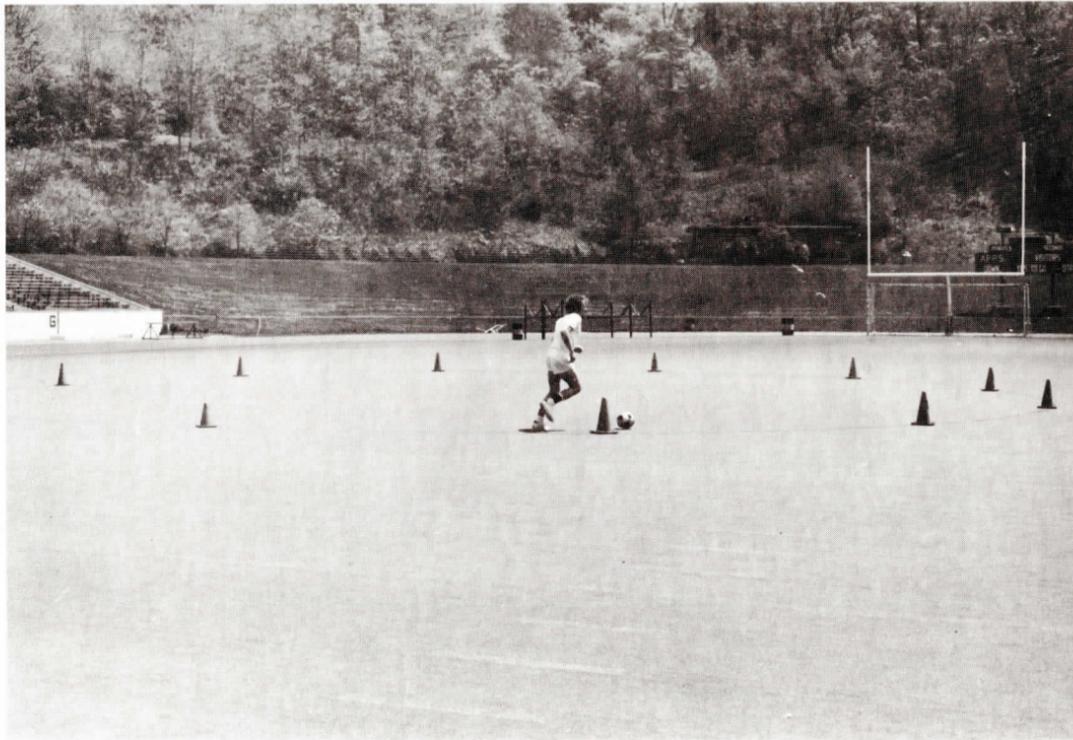


Figure 1
Course Marking for the
Test of Dribbling

Figure 2, page 27, and for further description of the ball throwing device, see Appendix B, page 58).

Field marking. The soccer goal was divided by two ropes suspended from the crossbar four feet from each goal post, into two scoring areas. In addition, each scoring area was divided into two circular targets by two circular hoops four feet in diameter (see Figure 3, page 28, and for further description of the goal division, see Appendix C, page 60).

Test. The subject was asked to head a thrown ball into a designated target. Sixteen trials were given with four consecutive trials for each of the four targets. The ball was thrown toward the subject's head by a ball-throwing device (constructed by Chip Huggins, Industrial Arts Department, Appalachian State University) that was located ten yards behind the goal line. This device was capable of throwing the ball consistently over a specified distance. It was felt that this device would eliminate any human errors involved with tossing a ball manually.

A t-test was computed between two trials utilizing the ball-throwing device involving fifteen repetitions for each trial. A t of .036 was found which was not significant at the .01 level, indicating that no significant difference existed in the distances that the ball was projected (see Appendix H, page 67 for raw data for establishing reliability for the ball-throwing device).

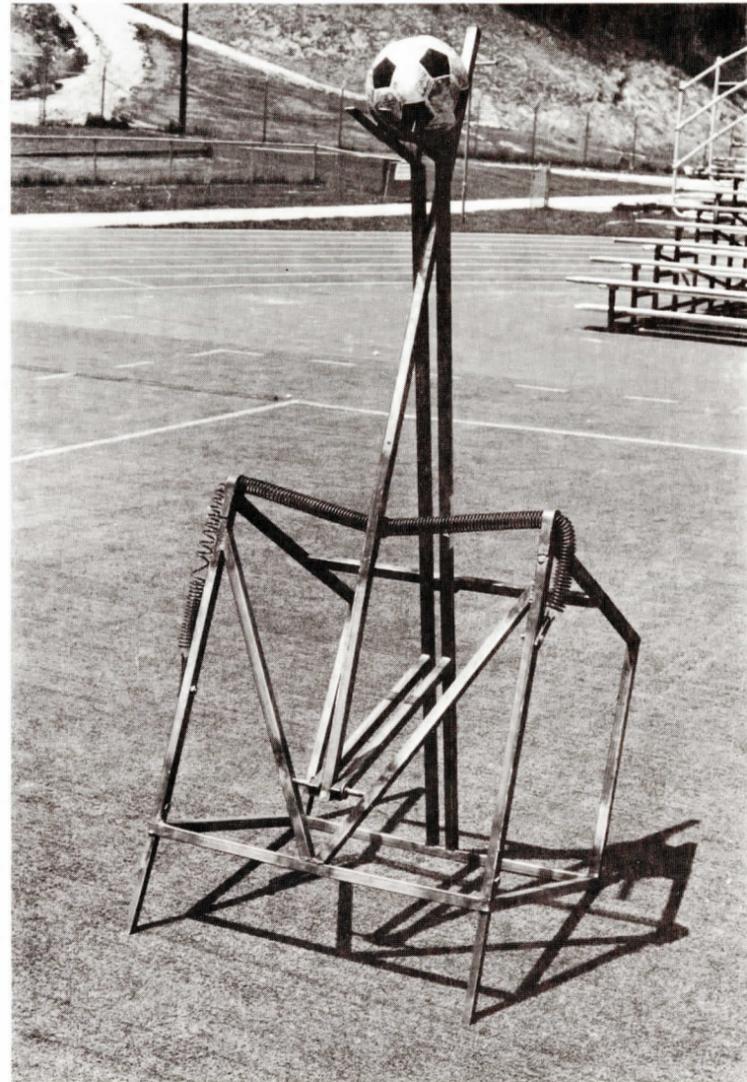


Figure 2
Ball-Throwing Device

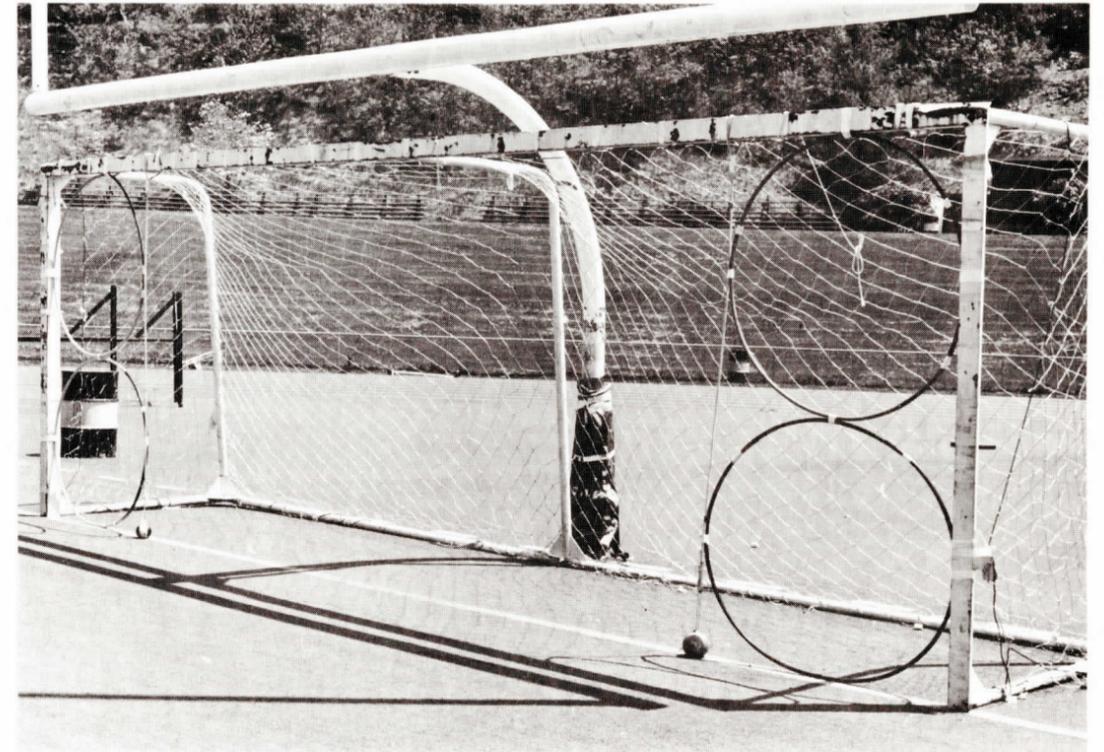


Figure 3
Goal Division for Administering the Heading
and Shooting Tests

The subjects were allowed to make contact with the ball from behind a line drawn five yards from the goal line. Four practice trials were given before the actual testing began. The first and the third sets of four trials were aimed toward the upper left and upper right targets, respectively. The second and fourth sets of four trials were aimed toward the lower right and lower left targets, respectively.

When aiming toward the upper target, the subject received a score of ten points each time the ball was headed through the upper target, and a score of four points was given when the ball was headed through the lower target while aiming for the upper target.

When aiming toward the lower target, a score of ten points was given each time the ball passed through the lower target, and a score of four points was given each time the ball passed through the upper target while aiming toward the lower target. The goal posts, the crossbar and the ropes that composed the scoring areas were considered as part of the designated area. Balls that rebounded from the circular targets were considered as successful trials. The performance score for the test was the total number of points achieved on the sixteen trials. A ball that went through the designated scoring area after bouncing off the ground was considered as a good mark. No points were recorded for a ball that did not pass through the appropriate target area.

Test Three--Passing

The administration of the passing test was subdivided in the following manner:

Equipment. Five plastic cones eighteen inches in height, three regulation soccer balls, and a rope four feet in length were used.

Field marking. A small goal marked one yard in width and eighteen inches in height utilizing two plastic cones as goalposts, and a four foot rope as the crossbar were utilized. Three plastic cones located fifteen yards from the goal line were placed at angles of 90 degrees and 45 degrees with the small goal (see Figure 4, page 31, and for further description, see Appendix D, page 61).

Test. Subjects were asked to pass a stationary ball into the small goal of one yard in width from three different angles as marked by the cones fifteen yards from the goal line utilizing the preferred foot. Twelve trials were given, four from each angle. A score of one point was given for each successful pass. Balls that rebounded from the goal post (plastic cones) were considered as successful trials. No points were given for balls that did not go through the goal area. Prior to the actual testing, two practice trials from each angle were permitted. The performance score on the test was the total points achieved on the twelve trials.

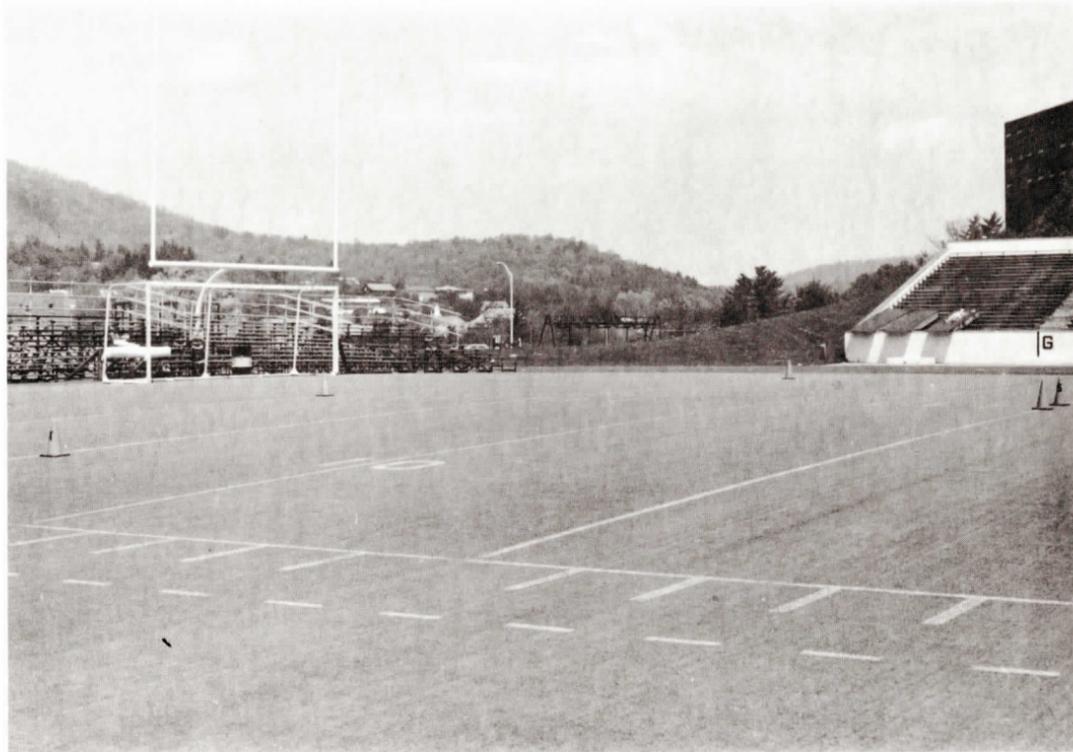


Figure 4

Field Marking for Administering
the Passing Test

Test Four--Shooting

The administration of the shooting test was subdivided in the following manner:

Equipment. One regulation soccer goal, two ropes ten feet in length, four circular targets of four feet in diameter, and four regulation soccer balls, fully inflated were used.

Field marking. The marking and scoring were the same as those utilized with the heading test (see Figure 3, page 28, and Appendix C, page 60).

Test. The subjects were asked to shoot a stationary ball with the preferred foot from the eighteen yard line into a designated scoring area. The subjects were allowed to place the ball at any point behind the sixteen-yard-line and then were asked to shoot four consecutive balls at each of the four targets. Sixteen trials were given.

The performance score on the test was the total points achieved on the sixteen trials. As previously indicated, the scoring was identical to that of the heading test, with the exception of a bouncing ball that passed through the target area. No points were given for balls that rolled or bounced through the target area. Four practice trials were given before the actual testing began.

Test Five--Trapping

The administration of the trapping test was subdivided in the following manner:

Equipment. Three regulation soccer balls, one rope sixteen feet in length, and a ball-throwing device (see Figure 2, page 27) were utilized.

Field marking. A circle of five yards in diameter was formed on the ground using a rope 47.1 feet in length. A ball-throwing device was placed twenty yards from the center of the circle (see Figure 5, page 34).

Test. The subjects were asked to stand within the circle in an effort to trap a thrown ball with the preferred body part excluding the hands and arms.

The ball was thrown toward the subject by a ball-throwing device that was located twenty yards from the center of the circle. The subject had to bring the ball under control by means of controlling it within the five-yard boundaries. Four trials were given and for each successful trap the subject received a score of one point. Prior to the actual testing, each subject received two practice trials. The performance score on the test was the total points achieved on the four trials.

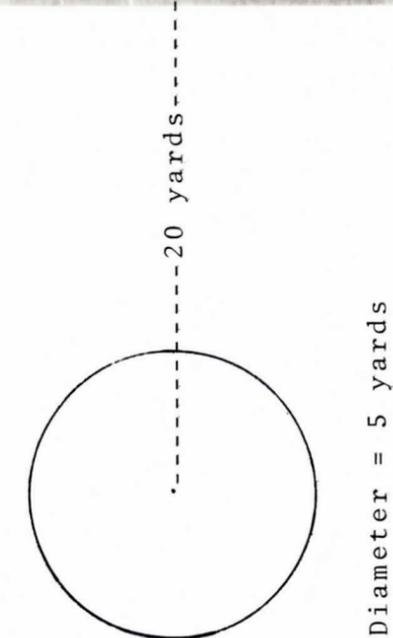
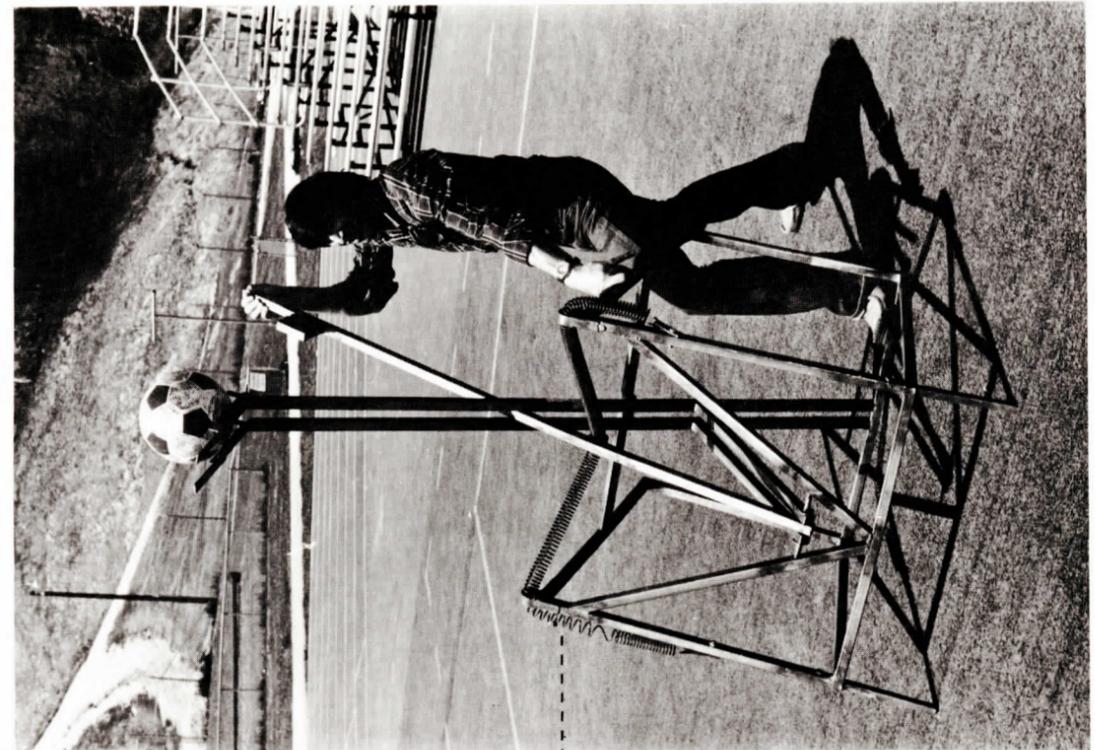


Figure 5
Field Marking for Administering
the Trapping Test

SUB-PROBLEM FIVE

The last sub-problem involved the organization and analysis of the data. The analysis of the data involved the following parameters: validity, reliability, objectivity, and a regression analysis of the data. All data were analyzed by a Fortran Minitab II Statistical Computing System. A Sperry/Univac 90/60 computer at Appalachian State University was utilized to complete the computations.

Validity

The validity of each test item was determined by correlating the individual test item score, which had been converted to a T-score, with the combined judges' rating of soccer ability.

The following procedures were used:

1. A Product-Moment correlation was used between the judges' criterion ability rating score and the total dribbling score obtained by each subject on the best two trials.
2. A Product-Moment correlation was used between the judges' criterion ability rating score and the total heading score obtained by each subject on the sixteen trials.
3. A Product-Moment correlation was used between the judges' criterion ability rating score and the total passing score obtained by each subject on the twelve trials.

4. A Product-Moment correlation was used between the judges' criterion ability score and the total shooting score obtained by each subject on the sixteen trials.

5. A Product-Moment correlation was used between the judges' criterion ability rating score and the total trapping score obtained by each subject on the four trials.

6. A Product-Moment correlation was used between the judges' criterion ability rating score and the composite score of each subject on the five test items (see Appendix E, page 62).

Reliability

The reliability correlation coefficient for each test item was obtained by utilizing the test-retest method. Five subjects from each of the initial testing groups were randomly selected for the retest. The scores obtained on each test item for each subject in the first test were correlated with the scores that were obtained on each test item in the second test (see Appendix G, page 66 for raw data for determining reliability).

Objectivity

The objectivity of the five experimental skill tests was determined by utilizing the scores that the investigator obtained and those obtained by a second tester on each of the five test items for each subject. While the second tester's scores were recorded simultaneously with those of the investigator, independency was maintained.

A Product-Moment correlation coefficient was obtained between the two scores for each test item (see Appendix F, page 64 for raw data for determining objectivity).

Multiple Correlational
Analysis

A regression analysis was utilized to determine if one item or any combination of test items when correlated with the criterion measure might be adequately capable of measuring general soccer ability.

Chapter IV

PRESENTATION AND ANALYSIS OF DATA

The analysis of the data consisted of utilizing validity coefficient, reliability coefficient, objectivity coefficient, and a multiple R correlational analysis. Forty-five male students enrolled at Appalachian State University participated in the study. The test items that were analyzed were as follows: dribbling, heading, passing, shooting, and trapping.

ANALYSIS OF VALIDITY COEFFICIENTS UTILIZING
THE FIVE TEST ITEMS WITH THE
CRITERION MEASURE

The validity coefficient of each test item was determined by correlating the test item with the combined judges' rating of soccer ability. The following correlation coefficients were obtained: dribbling, .731; heading, .941; passing, .776; shooting, .912; and trapping .670 (see Table 1, page 39).

Table 1
Validity Coefficients between Each Test Item
and the Criterion Measure

Test Items	N = 45	r
Dribbling		.731
Heading		.941
Passing		.776
Shooting		.912
Trapping		.670

ANALYSIS OF THE RELIABILITY COEFFICIENTS
FOR EACH TEST ITEM

The reliability coefficient for each test item was determined by correlating the scores obtained on the first test with the scores obtained on the retest by means of the Product-Moment method of correlation. Five subjects were randomly selected from each of the initial testing groups: the varsity soccer team, the two intramural divisional championship soccer teams, and two physical education soccer classes. The following reliability coefficients were obtained: dribbling, .795; heading, .941; passing, .961; shooting, .984; and trapping, .712 (see Table 2, page 40).

Table 2
Reliability Coefficients for the
Five Soccer Test Items

Test Items	N = 15	r
Dribbling		.795
Heading		.941
Passing		.961
Shooting		.974
Trapping		.712

ANALYSIS OF THE OBJECTIVITY COEFFICIENTS
FOR EACH TEST ITEM

The objectivity coefficient of each test item was determined by correlating the scores recorded by the investigator with those of a second tester, utilizing the Product-Moment method of correlation. The following objectivity coefficients were obtained: dribbling, .998; heading, .918; passing, 1.0; shooting, .999; and trapping, 1.0 (see Table 3, page 41).

Table 3
Objectivity Coefficients for the
Five Soccer Test Items

Test Items	N = 45	r
Dribbling		.998
Heading		.918
Passing		1.0
Shooting		.999
Trapping		1.0

MULTIPLE CORRELATION ANALYSIS BETWEEN THE
JUDGES' RATING OF OVERALL SOCCER
ABILITY AND THE VARIOUS TEST
BATTERY COMBINATIONS

A multiple R analysis was used to predict the best combination of test items for measuring soccer ability. The following correlation coefficients were obtained for the various test battery combinations: passing, .779; passing + dribbling, .790; passing + dribbling + shooting, .913; passing + dribbling + shooting + trapping, .913; and passing + dribbling + shooting + trapping + heading, .942 (see Table 4, page 42).

Table 4
Analysis of Multiple R Coefficients between
the Judges' Rating of the Subject's
Overall Soccer Ability and the
Soccer Test Results

Soccer Tests	R
Passing	.779
Passing + Dribbling	.790
Passing + Dribbling + Shooting	.913
Passing + Dribbling + Shooting + Trapping	.913
Passing + Dribbling + Shooting + Trapping + Heading	.942

Chapter V

SUMMARY, DISCUSSION OF RESULTS, CONCLUSIONS,
AND RECOMMENDATIONS

SUMMARY

The purpose of this study was to construct a practical skill test battery that would measure soccer ability of male students at the university level. Several sub-problems were identified as necessary to the completion of this task. The sub-problems were:

1. Identification of basic soccer skills and the selection of appropriate test items.
2. Selection of subjects.
3. Development and application of the criterion measure.
4. Administration of test items.
5. Organization and analysis of data.

The study was delimited to forty-five male students with previous soccer experience who were enrolled at Appalachian State University during spring semester, 1977. Fifteen subjects were randomly selected from each of the following groups: (1) Appalachian State University varsity soccer team, (2) two championship intramural soccer teams, and (3) two physical education soccer classes taught during spring semester, 1977. The subjects were observed by three

judges and subjectively evaluated, by use of a rating form, during actual game conditions. Each subject received a soccer ability rating score from each of the three judges. These three scores were then combined to form one composite score that was used as the validity criterion measure. The skills tested were: dribbling, heading, passing, shooting, and trapping.

The procedures in administering the five test items were as follows: during the dribbling test the subjects had to dribble the ball "in-and-out" by weaving among twelve plastic cones that were placed five yards apart around a circular course of twenty yards in diameter, in the least amount of elapsed time possible. Three trials were given, and the best two out of the three trials were combined to establish the performance score on the test. There was no penalty other than the time consumed for balls kicked against the cones.

The heading test utilized a soccer goal that was divided by two ropes suspended from the crossbar four feet from each goal post. In addition, each scoring area was divided into two circular targets by two circular hoops four feet in diameter. Sixteen trials were given and the subject was asked to head four consecutive balls into a designated target. The ball was thrown toward the subject's head by a ball-throwing device that was located ten yards behind the goal line (see Figure 2, page 27). The subjects were allowed to make contact with the ball from behind a

line drawn five yards from the goal line. The first and the third sets of four trials were aimed toward the upper left and upper right targets, respectively. The second and the fourth sets of four trials were aimed toward the lower right and the lower left targets. The performance score was based upon the total points accumulated for the sixteen trials.

The passing test necessitated that the subjects pass a stationary ball into a small goal of one yard in width and eighteen inches in height from three different angles (see Figure 4, page 31). Twelve trials were given, four from each angle. The performance score on the test was the total points achieved on the twelve trials.

In the shooting test the marking and scoring was the same as those utilized with the heading test (see Figure 3, page 28). The subjects were asked to shoot a stationary ball with the preferred foot from anywhere behind the eighteen-yard-line into a designated scoring area. Sixteen trials were given, and the subjects were asked to shoot four consecutive balls at each of the four targets. The performance score on the test was the total points achieved on the sixteen trials.

For the trapping test, the subject was asked to stand within a circle of five yards in diameter in an effort to trap a thrown ball with the preferred body part excluding the hands and arms. The ball was thrown to the subject by a ball-throwing device that was located twenty yards from the circle. The subject was required to bring

the ball under control within the five yard boundary of the circle. Four trials were given and the performance score on the test was the total points achieved on the four trials (see Figure 5, page 34).

The statistical methods used were correlational with the exception of a t -test used to establish reliability for the ball-throwing device. The correlational analysis was performed at Appalachian State University utilizing a Fortran IV program developed by Pennsylvania State University. Validity coefficients were computed between the criterion measure and the score of each of the five test items. The reliability correlation coefficient for each test item was obtained by utilizing the test-retest technique. A total of fifteen subjects, five from each of the original testing groups, were randomly selected to take part in the retest.

The objectivity correlation coefficient for the five test items was determined by utilizing the scores of the investigator and the scores recorded by a second tester on each test item for each subject.

A multiple correlation analysis was used to select the best combination of test items that would predict general soccer ability.

The results of the study were as follows:

1. The validity coefficients between each test item and the criterion measure were: dribbling, .731;

heading, .941; passing, .776; shooting, .912; and trapping, .670 (see Table 1, page 39).

2. The reliability coefficients for the five test items utilizing fifteen subjects were as follows: dribbling, .795; heading, .941; passing, .961; shooting, .984; and trapping, .712 (see Table 2, page 40).

3. The objectivity coefficients for the five test items were: dribbling, .998; heading, .918; passing, 1.0; shooting, .999; and trapping, 1.0 (see Table 3, page 41).

4. The multiple R coefficients between the criterion measure and the combination of test items were: passing, .779; passing + dribbling, .790; passing + dribbling + shooting, .913; passing + dribbling + shooting + trapping, .913; passing + shooting + trapping + heading, .942 (see Table 4, page 42).

DISCUSSION OF FINDINGS

The highest validity correlation between a single test item and the criterion measure was .941 which involved the heading for accuracy test. This perhaps can be explained by the fact that the subject received accurate and consistent ball flight patterns from behind the goal, which allowed the subject to see both the thrown ball and the target before making contact with the ball. This validity coefficient was found to be the highest when compared to other skill tests reported in the literature.

The second highest validity correlation coefficient of .912 was exhibited by the shooting for accuracy test. This high correlation might be attributed to the fact that the subject had to kick a stationary ball from a relatively short distance, sixteen yards, without external pressure. A validity of .34 with the judges' rating and .61 with the total test criterion was the highest validity coefficient found in the review of literature for goal shooting, which was reported by Shaufele (18).

The passing for accuracy test revealed the third highest coefficient of .776 when correlated with the criterion measure. This might be attributed to the small size of the goal, one yard in width, and to the three different angles from which the passing test was executed, whereas the shooting test could be taken from the same angle each time. The highest validity coefficient in the review of literature for passing was .68 reported by Shaufele (18).

A relatively low correlation of .713 was found for the dribbling test. This can perhaps be explained by the fact that two elements were involved in the dribbling test: speed and ball control. It was the opinion of the writer that the three judges who evaluated the subjects' soccer ability did not regard speed as an integral component of dribbling ability. The highest validity coefficient reported in the literature was .92 found by Crew (5). The second highest correlation of .727 was reported by Crawford (6).

The trapping test produced the lowest correlation of .670 which seemed to indicate that either the circle boundary of five yards in diameter was too small, or that the subjects experienced some difficulties in determining what body part to use in order to trap the ball. When compared to the heading test, the subjects did not have to make a judgment as to which body part was to be utilized. The test of trapping allowed the subjects to make the decision on the body part to be used.

The validity coefficient between the composite test items and the criterion measure of .942 was an indication of the common dependence of the five test items in measuring soccer ability. The highest multiple correlation of .979 between four items was reported by Crew (5).

The three highest reliability coefficients in the investigation were: .984, .961, and .941 for the shooting, passing, and heading tests, respectively. These were relatively high when compared to other skill tests reported in the literature. The remaining reliability coefficients were: .795 for dribbling and .712 for heading.

The objectivity coefficients for all five test items were extremely high when compared to other skill tests reported in the literature. This can perhaps be attributed to the simplicity and clarity with which these tests were administered and recorded. Both the passing and the trapping tests showed coefficients of 1.0. The other objectivity coefficients were: shooting, .999; dribbling,

.998; and heading, .988. The highest objectivity coefficient reported in the literature was .99 which was reported by Crew (5), and Crawford (6) for tests of dribbling.

The three-test battery consisting of passing, dribbling, and shooting appeared to be an adequate test combination for measuring soccer ability. When correlated with the criterion measure, this combination produced a coefficient of .913. When the trapping test was included, the correlation coefficient remained unchanged. By including the heading test, the coefficient increased to .942. As a result of this small increase, it is the opinion of the writer that the last two test items could be eliminated when economy of testing time must be considered.

CONCLUSIONS

The following conclusions were drawn from the study:

1. The correlation of .942 between the criterion measure and the combined test battery was certainly high enough to warrant that this test can adequately differentiate the more skillful player from the less skillful player of soccer at the university level.
2. It would appear that general soccer ability can be adequately measured while utilizing the tests of dribbling, passing, and shooting.
3. Selected soccer skills can be measured objectively and reliably.

RECOMMENDATIONS

The following recommendations have been proposed with reference to the procedures and results of this study:

1. A similar study should be conducted in which the ball for the heading test will be thrown toward the subject from the side instead of from behind the goal.

2. A further study should be conducted in which the shooting for accuracy test and the passing for accuracy test be performed in a realistic game situation.

3. A further study should be conducted in which the subject must perform the trapping test using specific body parts.

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BIBLIOGRAPHY

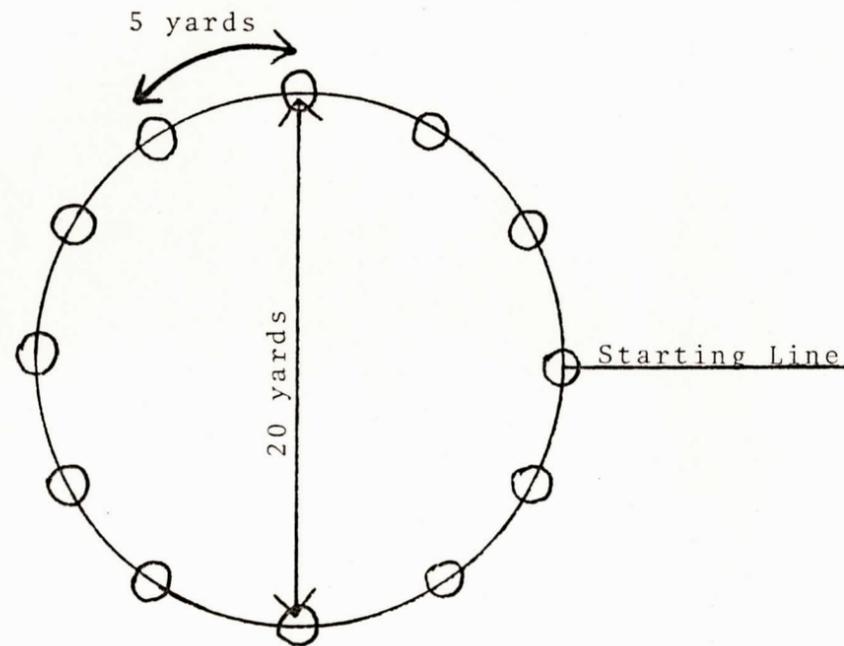
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APPENDIXES

APPENDIX A

COURSE MARKING FOR THE TEST OF DRIBBLING



APPENDIX B

BALL-THROWING DEVICE

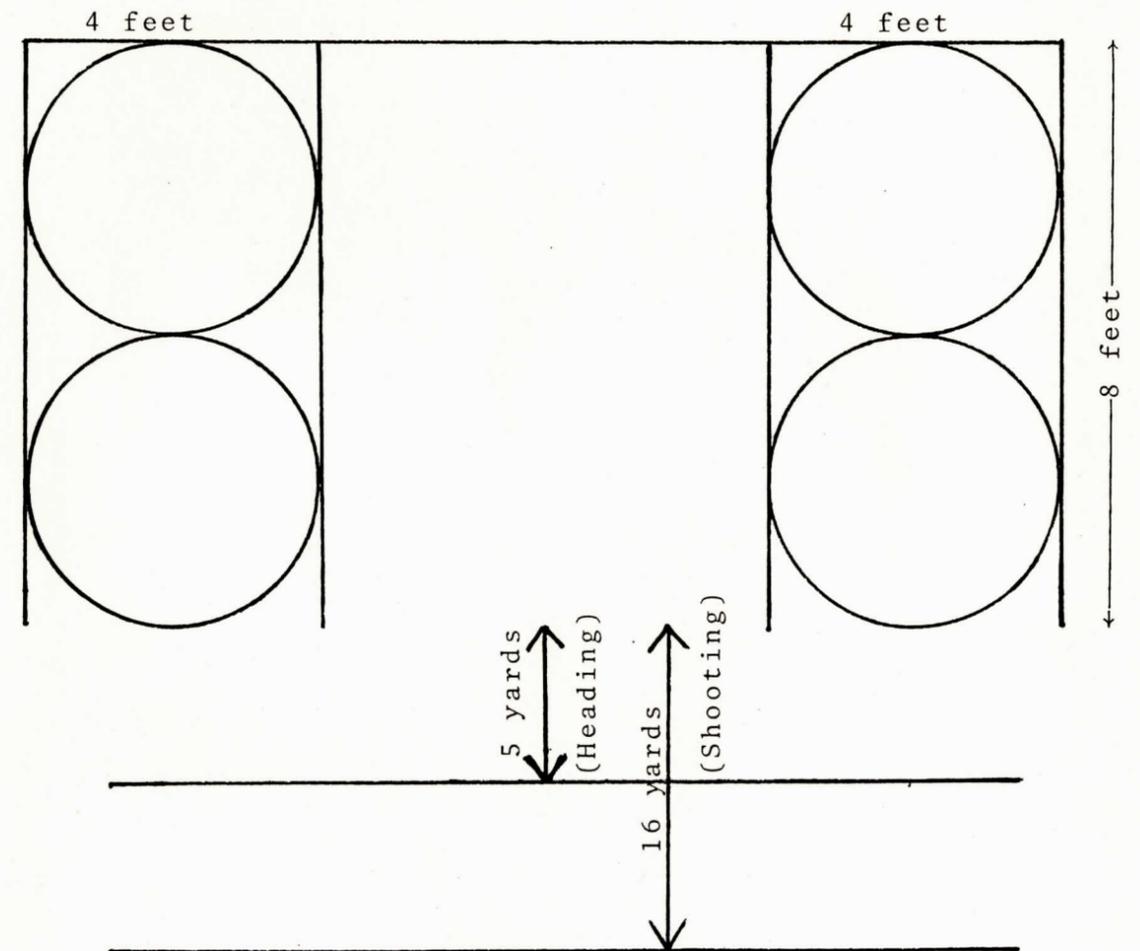
The ball-throwing device was constructed by Chip Huggins, an Industrial Arts major at Appalachian State University. The device was constructed in square steel tubes one inch in diameter, and was spring loaded. Dimensions of the parts (see page 59) were as follows:

- A. Two pieces, three feet, four inches
- B. Two pieces, two feet, eight inches
- C. Two pieces, two feet, four inches
- D. Two pieces, two feet
- E. Two pieces, two feet, five inches
- F. Two pieces, two feet, five inches
- G. Two pieces, one foot, ten inches
- H. One piece, five feet, six inches
- I. Two pieces, five feet, four inches
- J. Two pieces, one foot
- K. One garage-door spring, two feet, three inches



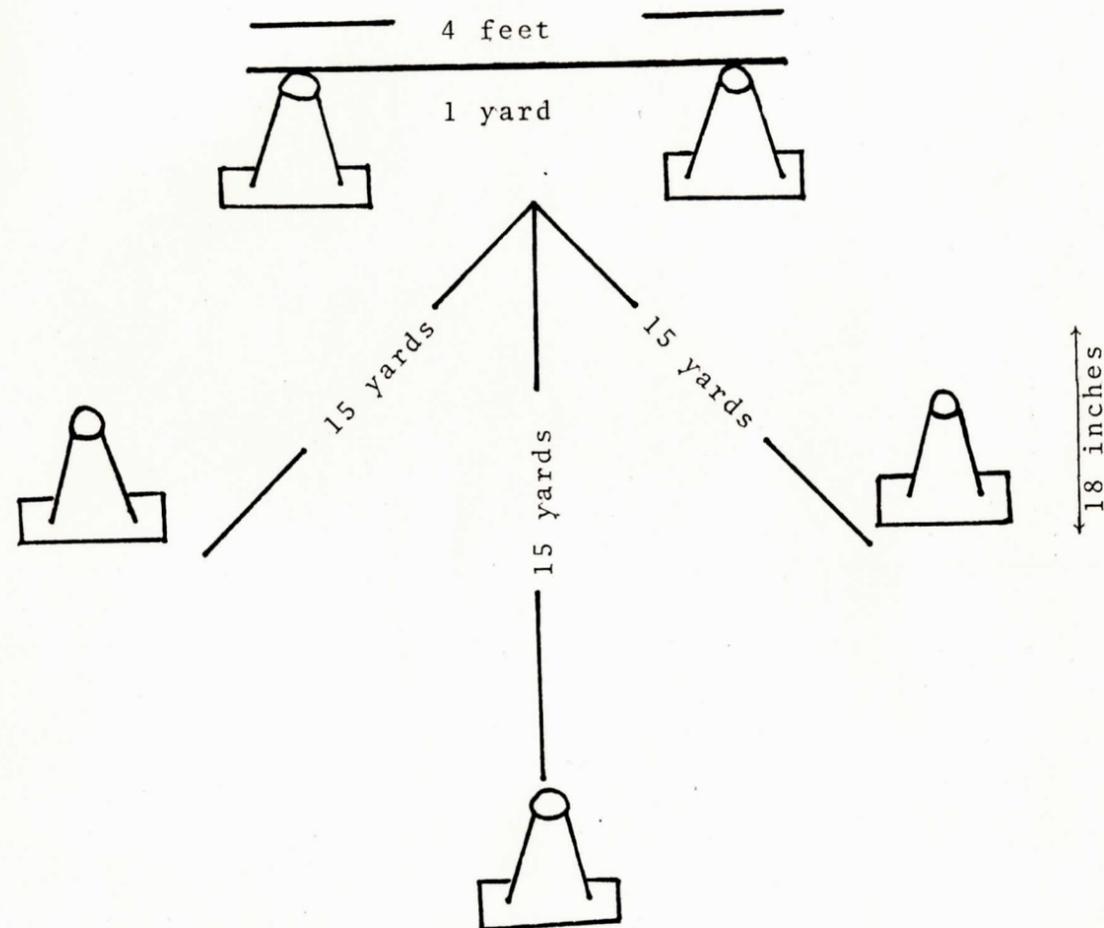
APPENDIX C

GOAL DIVISION FOR ADMINISTERING THE
HEADING AND SHOOTING TESTS



APPENDIX D

FIELD MARKING FOR ADMINISTERING THE PASSING TEST



APPENDIX E

RAW DATA FOR DETERMINING VALIDITY

SUBJECT	CRITERION	PASSING	DRIBBLING	SHOOTING	TRAPPING	HEADING
01	13	12	29.8	134	4	098
02	11	11	30.9	076	4	058
03	13	12	28.8	144	4	094
04	22	12	27.4	150	4	132
05	13	12	30.1	128	4	080
06	12	11	32.4	090	4	082
07	12	11	29.8	078	4	074
08	10	10	31.8	072	3	064
09	22	12	26.9	144	4	134
10	14	11	28.1	118	4	092
11	11	09	30.8	076	3	054
12	14	10	28.1	138	4	108
13	11	07	30.6	062	4	054
14	14	10	29.2	102	4	074
15	23	12	26.6	160	4	148
16	03	03	35	018	1	038
17	03	03	49	052	3	034
18	03	07	38.4	046	1	040
19	03	06	38.7	048	2	036
20	03	04	46.4	032	1	016
21	03	04	40.1	030	2	032
22	06	08	35.2	068	4	054
23	03	03	49.4	022	1	016
24	03	02	44.6	038	1	028
25	03	03	54	022	2	014
26	03	02	55.6	018	3	012

APPENDIX E (continued)

SUBJECT	CRITERION	PASSING	DRIBBLING	SHOOTING	TRAPPING	HEADING
27	03	02	52.3	022	1	020
28	06	10	33.4	070	4	068
29	03	02	40.2	022	2	020
30	03	03	37.2	032	2	024
31	09	10	32.2	078	4	074
32	09	10	32.5	072	4	058
33	06	06	35.4	062	3	044
34	05	08	035	064	3	056
35	06	10	34.1	072	2	058
36	06	09	31.4	054	3	050
37	07	08	31.6	080	3	064
38	06	10	33.1	064	4	054
39	07	11	32.2	062	4	056
40	10	12	31.8	070	4	074
41	06	07	35.3	068	4	058
42	08	11	32.6	098	4	070
43	06	07	37.1	066	4	054
44	06	06	34.4	056	3	042
45	03	04	39.7	046	2	034

APPENDIX F

RAW DATA FOR DETERMINING OBJECTIVITY

SUBJECT	CRITERION	PASSING	DRIBBLING	SHOOTING	TRAPPING	HEADING
01	13	12	29.8	134	4	098
02	11	11	30.8	076	4	058
03	13	12	28.7	144	4	094
04	22	12	27.3	150	4	132
05	13	12	29.4	128	4	080
06	12	11	33.1	090	4	082
07	12	11	29.8	078	4	072
08	10	10	31.8	072	3	064
09	22	12	27	144	4	134
10	14	11	30	118	4	092
11	11	09	30.8	076	3	054
12	14	10	28.2	138	4	108
13	11	07	30.6	062	4	054
14	14	10	29.1	102	4	074
15	23	12	26.6	160	4	148
16	03	03	35	018	1	038
17	03	03	48	052	3	034
18	03	07	38.3	046	1	040
19	03	06	38.9	048	2	036
20	03	04	46.4	040	1	016
21	03	04	41.1	034	2	032
22	06	08	35.2	064	4	054
23	03	03	49.2	024	1	016
24	03	02	43.8	038	1	028
25	03	03	54	022	2	014
26	03	02	55.5	018	3	012

APPENDIX F (continued)

SUBJECT	CRITERION	PASSING	DRIBBLING	SHOOTING	TRAPPING	HEADING
27	03	02	52.3	022	1	020
28	06	10	33.4	070	4	068
29	03	02	40.2	022	2	020
30	03	03	37.2	032	2	024
31	09	10	32.2	078	4	074
32	09	10	32.4	072	4	058
33	06	06	35.6	062	3	044
34	05	08	35.3	064	3	056
35	06	10	33.1	072	2	058
36	06	09	30.1	054	3	050
37	07	08	31.6	084	3	064
38	06	10	33.1	060	4	054
39	07	11	32.2	062	4	056
40	10	12	31.9	070	4	074
41	06	07	35.3	068	4	058
42	08	11	32.6	098	4	070
43	06	07	37.1	066	4	054
44	06	06	34.4	056	3	042
45	03	04	39.7	046	2	032

APPENDIX G

RAW DATA FOR DETERMINING RELIABILITY

SUBJECT	CRITERION	PASSING	DRIBBLING	SHOOTING	TRAPPING	HEADING
01	13	13	29.2	130	4	84
02	11	11	29.6	090	4	68
03	13	14	28.9	148	4	130
12	14	09	38.1	134	4	108
15	23	14	26.4	156	4	140
16	03	03	32.1	028	2	038
18	03	06	36.2	054	3	040
21	03	06	38.9	050	2	038
22	06	08	30.1	060	4	054
23	03	03	38.2	024	1	032
31	09	12	31.4	174	4	078
32	09	10	32.4	072	4	064
33	06	05	30.7	058	4	050
35	06	11	35.2	070	3	058
40	10	13	28.3	084	4	068

APPENDIX H

RAW DATA FOR ESTABLISHING RELIABILITY
FOR THE BALL-THROWING DEVICE

TRIALS	TEST I	TEST II
1	15	15
2	15	15.66
3	15	15
4	15	14.33
5	15	14.33
6	15	15
7	15	14.66
8	15.33	15.10
9	15	15.66
10	15	15
11	15	15
12	15	15
13	14.66	15
14	15	15
15	15	15

APPENDIX I

CRITERION MEASURE FOR VARSITY PLAYERS AS
DETERMINED BY INDIVIDUAL JUDGES

SUBJECTS	JUDGE I	JUDGE II	JUDGE III	SUM
1	4	5	4	13
2	3	5	3	11
3	4	5	4	13
4	7	8	7	22
5	4	5	4	13
6	3	5	4	12
7	3	5	4	12
8	3	4	3	10
9	7	8	7	22
10	4	6	4	14
11	3	5	3	11
12	4	6	4	14
13	3	5	3	11
14	4	6	4	14
15	7	9	7	23

APPENDIX J

CRITERION MEASURE FOR INTRAMURAL PLAYERS
AS DETERMINED BY INDIVIDUAL JUDGES

SUBJECTS	JUDGE I	JUDGE II	JUDGE III	SUM
1	3	3	3	9
2	3	3	3	9
3	2	2	2	6
4	2	2	1	5
5	2	2	2	6
6	2	2	2	6
7	2	3	2	7
8	2	2	2	6
9	2	3	2	7
10	3	4	3	10
11	2	2	2	6
12	3	3	2	8
13	2	2	2	6
14	2	2	2	6
15	1	1	1	3

APPENDIX K

CRITERION MEASURE FOR PHYSICAL EDUCATION SOCCER
CLASSES AS DETERMINED BY INDIVIDUAL JUDGES

SUBJECTS	JUDGE I	JUDGE II	JUDGE III	SUM
1	1	1	1	3
2	1	1	1	3
3	1	1	1	3
4	1	1	1	3
5	1	1	1	3
6	1	1	1	3
7	2	2	2	6
8	1	1	1	3
9	1	1	1	3
10	1	1	1	3
11	1	1	1	3
12	1	1	1	3
13	3	3	3	9
14	1	1	1	3
15	1	1	1	3

VITA

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Permanent address: Zahal St. 91 Zahala Tel-Aviv, Israel

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Date of birth: September 14, 1950

Place of birth: Hadera, Israel

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Physical Education Teachers College Beer-Sheva, Israel	1972-74	Teaching Cert.,	1974
Appalachian State University	1974-76	B.S.	1976

Major: Physical Education

Minor: Community Junior College

Positions held: Graduate Assistant, Department of Health, Physical
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