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An Overhand Passing Test for Girls Volleyball

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AN OVERHAND PASSING TEST

FOR GIRLS VOLLEYBALL

(TITLE)

BY

Jarielle L. Harner

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF

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IN THE GRADUATE SCHOOL, EASTERN ILLINOIS UNIVERSITY
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AN OVERHAND PASSING TEST FOR GIRLS VOLLEYBALL

by

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BACHELOR OF SCIENCE

GREENVILLE COLLEGE

ABSTRACT OF A THESIS

Submitted in partial fulfillment

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ABSTRACT

The purpose of this study was to construct and validate an overhand passing test for experienced volleyball players. The test designed in this study required each player to pass to two different targets, 90 degrees from each other.

The two targets were three feet from the junction of two unobstructed walls. On each wall a horizontal line was taped three feet long and ten feet above the floor. At the end of each horizontal line, a vertical line was taped, extending three feet above the ten foot line and perpendicular to it.

Sixty-three high school girls at Stewardson-Strasburg High School, Stewardson, Illinois, were tested. All had experience in overhand passing.

The test consisted of the number of overhand passes alternated between the two wall targets in 30 seconds. The player could begin in front of either target and begin by tossing the ball to herself and then overhand passing to the target. To score the second pass had to be made into the opposite wall target. If the ball was dropped, the player put it back into play with a self-toss. Scoring resumed with the second wall pass.

If the ball did not contact the target or any of its boundary lines during a succession of passes, the player could continue to volley but that contact was not counted in the score.

Each student took three test trials. The highest reliability coefficient, .87, determined by the Pearson product-moment method of correlation, resulted between the scores of trial two and trial three. This indicated that three test trials should be administered.

To determine the validity of the test, three high school coaches were asked to judge the players' overhand passing skill. The judges rated each player's setting skill from a scale of one to ten points.

The final rating for each player was the total of the three judges' ratings. These ratings were correlated with several different methods of scoring the test, using the Pearson product-moment method of correlation.

The validity coefficient of the best score from all three trials was .8274. Besides having a high validity, taking the best of three trials was the easiest method of scoring the test.

The research established the two wall test as valid and reliable. The study concluded that using the highest score of three trials was a valid and simple method of scoring the test.

TABLE OF CONTENTS

APPENDIXES

TABLES

Chapter 1

INTRODUCTION

The strategy of a volleyball offense has been to receive the ball from the opponents and return it with an attack play. The attack play developed from three main skills, the underhand pass to receive the ball and pass it to the setter; the set pass to project the ball to a spiker; and the spike to hit the ball forcibly into the opponent's court.

The overhand pass evolved from a need to "set" the ball close to and above the net so a spiker could spike it effectively. The skill is called the "set," usually the second pass in the attack play.

Keller (7) gave the following description of the setter:

> While all players in a team must understand and attain competency in setting, generally one player is designated as "the setter" in an offensive rotation and all other players at one time or another may be designated.

Most passes the setter has to receive come from the back of the court. In a basic offense the set is usually made to the left front spiker or to the right front spiker. The setter has been required many times during a match to turn to the left front court area or to turn to the right front court area before passing the ball. Each time the ball was received from the back of the court, a quarter or 90 degree body turn was needed before the pass could be made.

Since the setter has not always been in position to make the second pass, all players have to be trained in overhand passing.

Skilled overhand passing has become necessary for a team to maintain the attack.

Bertucci (2) listed the overhand pass, executed after a 90 degree body turn, as one of the fundamental skills in overhand pass training. Because all players must be trained in overhand passing and because some players need to specialize as "setters," the optimum development and assessment of this skill has become very important to the teacher and the coach.

Statement of the Problem

The purpose of this study was to construct and validate a test of a volleyball player's ability to alternate overhand passes between two targets 90 degrees from each other.

Delimitations of the Study

This study was delimited to high school girls. It was further delimited to experienced volleyball players.

Importance of the Study

Several volleyball authorities have described the requirements of the setter during match competition (2, 7, 16). Included in their descriptions was the readiness of the setter to make the second play of the attack.

The setter needed to face the teammate who received the ball from the opponent. Often the setter received the first pass from the back

of the court. The setter faced the teammate, then turned the side to the net and watched the ball over the shoulder as it arrived. The turn had to be made so the body was facing the location of the target, either the right front court area or the left front court area.

Any published test of overhand passing skill tested a player's ability to pass consecutively without turning the body (1, 3, 4, 5, 6, 8, 11, 13). In all of the published tests, the testees received the ball from the same direction to which they needed to set it. They did not have to turn the body to face another target because none of the tests required them to change the direction of the ball.

During a match a setter makes very few overhand passes which were not preceded by a body turn. Teachers and coaches needed a better way to assess and improve the overhand pass. A test was needed to simulate the requirements for receiving a pass and setting it during a match; to measure a more advanced level of setting skill; and to motivate experienced players to continue improvement in setting.

Other qualifications of the test included the following:

1. Ease in administration.
2. Requirement of a 90 degree body turn toward the target.
3. Alternation between a right and left target to score.
4. Application as a drill for skill practice.

Limitations of the Study

The study explored an uninvestigated method of testing overhand passing ability in volleyball.

Sixty-three students from Stewardson-Strasburg High School, Stewardson, Illinois, represented experienced volleyball players and were subjects for the study.

Definitions of Terms

Definitions for the technical terms describing skill specialization in volleyball were needed. The terms employed in this study required clarification.

Attack

An attack is hitting the ball into the opponents' court. A well-placed set allows for strategy in an attack, like hitting to a weak opponent (10).

Overhand pass

An overhand pass is a ball played with the fingertips of both hands. Contact is made in front of the face, and the ball is usually passed in the direction in which the spiker is facing (10).

Setter

The setter is the player who usually makes the set pass. A player who has specialized is usually used because this position requires a high level of skill (12).

Setting

Setting is passing to place the ball into position close to the net for a player to spike (14).

Spike

A spike occurs when the ball is hit downward with force into the opponents' court (14).

Chapter 2

REVIEW OF RELATED LITERATURE

The purpose of this study was to construct a test for assessing an experienced volleyball player's skill in overhand passing. The test needed to require the player to turn the body while alternating consecutive passes between two target areas separated by a 90 degree angle.

Wall Volley Test

A search of the literature revealed the published tests of passing skill. Most of the volleyball passing tests reported high validity and reliability coefficients using the repeated wall volley test (1, 3, 4, 5, 6, 8, 11, 13).

All the wall volley tests for girls in early literature marked a wall line seven feet, six inches above the floor (1, 4, 6, 7, 11, 13). The wall test differed in the requirements of a floor restraining line and in the length and number of test trials used to determine a subject's final score.

In 1937 French and Cooper (6) administered the test with the target area seven feet, six inches above the floor and with a restraining line on the floor, three feet from the wall. They gave high school girls 10 trials, each trial lasting 30 seconds. The score was the sum of the five best trials.

Also in 1937 Bassett, Glassow, and Locke (1) used the wall volley to test college girls. They used a restraining line six feet from the wall. This was used only to begin the trial and to resume the passing if the subject lost control of the ball during the trial. The sum of three 30 second trials was the most reliable score.

Mohr and Haverstick (11) researched the test in 1955 with three different restraining lines, three feet, five feet, and seven feet from the wall. The most valid score was the trial taken from the seven foot line in the time of 30 seconds.

The only early study that differed in height of the wall line was Brady's (3) study in 1945. He tested college men with a wall line 11 feet, six inches above the floor. Two 60 second trials were given and a restraining line was not used.

All the early research in testing girls' skill, except Clifton (4), was published before the rule change in 1957 which disallowed a player volleying to herself before passing the ball to a teammate or over the net. The Clifton test in 1962 was given to college women at two distances from the wall, five feet and seven feet. The same wall line, seven feet, six inches from the floor, was used. Clifton determined the most valid score was the sum of two 30 second trials behind the seven foot line.

The rule change prompted Cunningham and Garrison (5) in 1968 to raise the wall line of the test. They raised the wall line to 10 feet above the floor and included a target area three feet wide. Thus their test reduced the height advantage of a tall player and

assessed the accuracy of the pass by requiring the player to volley the ball within the target to score.

The test by Cunningham and Garrison also made the wall testing more similar to game requirements by eliminating the floor restraining line. In a game the overhand passer is not restricted by a line in receiving a pass to set.

Use of Ropes for Testing

Two tests were found which did not use a wall area to assess skill in the overhand pass. The skill test manual published by the American Association of Health, Physical Education, and Recreation required the player to pass the ball above a rope extended nine feet above the floor. The player was passed 10 balls to set consecutively to the right side of the court and 10 balls to the left side of the court. The score was the number of sets above the rope.

The other published test that did not use a wall area was a design by Liba and Stauff (9) in 1963. They strung two ropes, one 11 feet and the other 13 feet, above the court. The pass had to be made from a restraining floor line marked 10.5 feet from the ropes. Each subject passed the ball from a self-toss and aimed above the highest rope. Point values for the height of the pass were awarded as follows:

1. Three points for a pass over the 13 foot rope.
2. Two points for a pass between the two ropes.
3. One point for a pass below the 11 foot rope.
4. No score for a pass that failed to reach the distance on the floor directly below the ropes.

Liba and Stauff emphasized distance, as well as height in their test by also awarding points for where the ball landed on the court. The floor was lined with adjacent squares beginning beyond the restraining line. Each square was marked with ascending point values of one, two, three, four, five, six, and seven, and then marked in descending point values of six, five, four, three, two, and one. The square marked with point seven was 23.5 feet from the restraining line and was assigned the highest point value because the researchers valued it as the optimum distance of a set.

The subject attempted to pass the ball between the two ropes in aim of the highest point values on the floor. The score for each pass was the sum of the two values. The final score of the test was the total points accumulated from the location values of ten passes.

The most recent study of an overhand passing test was the aforementioned research by Cunningham and Garrison (5) in 1968. They tested university women with two trials, each lasting 30 seconds. The highest validity coefficient, .72, was found by taking the better of the two trials. The reliability coefficient for the test was .85.

Summary

The review of the related literature revealed the wall volley as the most popular method of measuring overhand passing skill. The latest test, Cunningham and Garrison (5) in 1968, changed the boundaries of the earlier wall volley tests. The researchers removed the restraining floor line that was used in the earlier tests; they elevated the wall line from seven feet to ten feet in height; and they included

a target area to assess the accuracy of the pass. The final score was the number of passes made within the target in the better of two 30 second trials.

An example of an overhand passing test which did not use the wall was the Liba and Stauff (9) test that measured a player's skill at passing to an optimum height. Each pass was made by a self-toss and was scored according to the ball's flight above, between, or below two ropes extended 11 feet and 13 feet over the court and parallel to the floor. Optimum distance of the pass was evaluated by marking squares with point values on the floor. Each pass was scored by the sum of the value of the height and the value of the distance of the pass, and the final score was the total of 10 passes.

The wall volley was a convenient test to administer, while the test by Liba and Stauff demonstrated the need for extensive space, time, preparation, and equipment.

Chapter 3

METHODOLOGY

This study was designed to develop a test of overhand passing skill by requiring a player to pass alternately to two different targets. The components of the design are covered in this chapter.

Facilities and Equipment

Permission was granted to use the Stewardson-Strasburg High School Gym, Stewardson, Illinois, for this study.

Each student to be tested was issued a volleyball for pre-test warm-up and for the spiking drill used in this study. One volleyball was selected for the two wall test and was separated from the other volleyballs.

Subjects

Sixty-three female students in the Stewardson-Strasburg physical education classes volunteered to be tested. The mean age of the girls in the study was 15.65 years. The different ages represented in the study are shown in these figures:

Age	Number
14	15
15	15
16	10
17	23

Female students in five different physical education classes participated in the study. All had experience in overhand passing and had at least two weeks of daily practice during class prior to the testing day.

The students in each class were tested in alphabetical order during one class period. Another class period was scheduled for the players to be judged, and a copy of the alphabetical list of each class was prepared for each judge.

Two Wall Test

A testing area was constructed at the junction of two walls in the gym. The two unobstructed wall areas formed a 90 degree angle.

A target area was constructed on each wall, each target three feet from the junction of the walls. A horizontal line was taped three feet long and ten feet above the floor, the dimensions used in the Cunningham and Garrison (3) study.

At the end of the horizontal line, a vertical line was taped, extending three feet above the ten foot line and perpendicular to it.

Scoring

The test consisted of the number of overhand passes alternated between two wall targets in 30 seconds. The testee was instructed that she could stand in front of either target. With the signal, "ready, go" the player was to toss the ball to herself and overhand pass to the wall. To score the second pass had to be made into the opposite wall target. The pass was counted if it hit within the target or touched any of the boundary lines of the target.

Each player was informed that any time she lost control of the volleyball, she was to toss the ball to herself and overhand pass it to either wall target. When the ball was put back into play after the loss of control, the first pass was not scored. Scoring resumed on the second pass.

If the ball did not contact the target area or any of its boundary lines during a succession of passes, the player could continue to volley but that contact was not counted in the score.

The students in the study took three test trials. The tester recorded three scores for each subject.

Administration

All participants were administered the same pre-test activity. Twice they were given 30 seconds of overhand volleys at one wall. Each one was also allowed 10 overhand passes between the two corner wall targets.

The players were tested in alphabetical order. They followed the same order on the second and third trials. This afforded five minutes of rest for each testee between trials.

The reliability of the test was to be determined by correlating the players' scores on the first trial with their scores of the second trial; their scores on the first trial with the third trial; and their scores of the second trial with the third trial.

Judges' Ratings

To determine the validity of the test, three high school volleyball coaches were asked to judge the players' overhand passing skill. Each judge was provided a list of the players' names in alphabetical order. A sample rating sheet was placed in Appendix A.

The players were assembled again the week following the wall testing. They were organized into a drill for spiking which allowed the three judges to rate their ability to set the volleyball in a game situation.

Several players were aligned behind the left front court area on the same side of the net on one volleyball court. Each held a volleyball and were instructed to take turns spiking the ball over the net.

An equal number of players were stationed behind the right front court area on the same side of the net for the same procedure.

Each player was to spike the ball, retrieve it, and go to the end of the opposite spiking line. Each one was told to alternate lines with every spike.

One player began the drill on the opposite side of the net to retrieve the first spiked ball. After retrieving the ball, she was to join one of the spiking lines.

The player to be judged stood in the setter's area in the center front of the volleyball court about an arm's length from the net. She was to be ready to receive a pass from the first spiker, who was 10 feet from the net on the same side of the volleyball court. After passing to the setter, the spiker was to approach the net in anticipation of a set. The spiker was to retrieve the ball she hit and go to the end of the opposite spiking line.

The setter was to receive the pass from the spiker and set it to the net for the spiker to spike. She was to alternate this procedure consecutively between the right side spiker and the left side spiker.

The setter was given 10 opportunities to pass overhand, alternating between the left and right side spikers. The judges were instructed to rate each setter after the 10 passes.

After completing 10 passes the student joined one of the spiking lines and the next student on the alphabetical list was called to be judged.

The judges' scores were compared to determine how they related in objectivity. Judge one was correlated with judge two; judge one with judge three; and judge two with judge three.

The final rating for each player was the total of the three judges' ratings. These ratings were correlated with the wall test results to test the validity of the two wall test.

The judges' ratings were also used to establish the most valid method of scoring the test. The ratings were correlated with the following test scores:

1. The first trial
2. The second trial
3. The third trial
4. The sum of the first and second trials
5. The sum of all three trials
6. The better of the first and second trials
7. The best of all three trials

Chapter 4

ANALYSIS OF DATA

The results of the two wall test and the judges' ratings were analyzed. The judges' ratings were correlated with the scores on the two wall test and were included in this analysis.

The reliability of the two wall test was computed by the Pearson product-moment method of correlation. A .82 coefficient of correlation was found between trial one and trial two; a .81 correlation between trial one and trial three; and a .87 correlation between trial two and trial three. The consistency in test results indicated the two wall test was a reliable test for measuring overhand passing skill.

Since the highest reliability, .87, occurred between trial two and trial three, the test results also indicated that three test trials should be given.

The judges' ratings were also correlated by the Pearson product-moment method. The scores of judge one and judge two had a .78 coefficient of correlation; and .87 correlation was computed between the scores of judge one and judge three; and an .86 coefficient resulted from the scores of judge two and three. These correlations demonstrated a high relationship of objectivity between the three judges.

The data collected from the three trials of the test was recorded in Table 1, located in Appendix B. Several methods of scoring were

used to determine the most valid final score for each player. Table 1 depicts the validity coefficients, computed by the Pearson product-moment method, for each method of scoring the two wall test.

The sum of trials one and two resulted in an .8417 coefficient of correlation, the highest validity coefficient of all the methods of scoring. The best of trials one, two, and three produced a coefficient of .8274, nearly equal to the coefficient from the sum of the first and second trials. For ease in scoring, the best of three trials would be the simplest method.

Table 2

Validity of Methods of Scoring
the Overhand Passing Test

Two Wall Test	Validity
Trial 1	.8080
Trial 2	.8086
Trial 3	.7593
Sum of Trials 1 and 2	.8417
Sum of Trials 1, 2, and 3	.7825
Better of Trials 1 and 2	.8029
Best of Trials 1, 2, and 3	.8274

Chapter 5

SUMMARY, CONCLUSIONS, RECOMMENDATIONS

On October 27, 1981, a two wall overhand passing test was administered to 63 high school girls experienced in playing an organized basic offense in volleyball. The test was conducted in the Stewardson-Strasburg High School Gymnasium. Students who missed October 27 were tested on October 29.

The two wall test was constructed to ascertain the subjects' overhand passing skill by requiring them to alternate overhand passes between two wall targets separated by 90 degrees. The player's score was the number of passes completed in 30 seconds.

On November 5, 1981, three judges rated each player's overhand passing skill in an organized game-like drill. The judges' ratings were compiled for each participant and correlated with the results of the two wall test to determine the validity of the test in measuring overhand passing skill. The judges' scores were also used to find the most valid method of scoring the test.

Conclusions

The objective of this study was to construct an overhand passing test which would assess a player's skill in alternating passes between two targets separated by 90 degrees.

Since the one wall test had been proven a valid and reliable test (3, 4, 5, 6, 9, 11, 13), it was used as a model for the research.

A sufficiently high reliability coefficient of .87 was found by correlating two trials of the two wall test. A high validity coefficiency of .83 was found, using the best of three trials. These results indicated the test was a valid and reliable method of measuring an experienced player's overhand passing skill.

Besides being valid and reliable, the test met the other requirements the researcher established for it. The test was easy to administer and did not take much preparation; it required the player to alternate passes between a left and right target to score; and it made the player turn the body 90 degrees to receive the ball.

The test measured an advanced passing skill because it required the body turn to change direction of the ball. Also, the test boundary lines were left on the wall to be used as a drill and incentive for skill practice.

Recommendations

The following recommendations are made as a result of this study:

1. The two wall test could be given to a greater number of subjects to test its validity and reliability more extensively. It could be given on two different days.

2. The researcher suggests that the subjects be administered another validated test of overhand passing skill. The results of the test could be correlated with the results of the two wall test. Two test dates would be needed.

3. The test with a higher wall line should be given to boys and its validity and reliability determined for measuring their skill.

4. The use of this test is not recommended for beginning players. The researcher assumes the player has experience in overhand passing. The test assesses the ability of the player to turn the body 90 degrees to receive the pass over the shoulder as it rebounds from the wall, and then to overhand pass it to the opposite wall target. A player with little overhand passing skill would find it frustrating.

5. This test would be a motivation for player improvement, if it would be given as a pre-test and post-test in an intermediate or advanced volleyball unit of instruction. Also, the wall target is an excellent practice drill for any player desiring self-improvement for interscholastic competition.

6. This test would be beneficial for determining which team players have exceptional overhand passing ability and which players have potential to specialize as "setters".

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Appendix A

SAMPLE JUDGES
RATING

Rate each player's overhand passing ability on a scale of 1-10. The highest skill would indicate a "10" rating. The lowest level of skill would indicate a rating of "1". An average skill would be "5".

No.	Subject's Name	Rating
_____	S. Beals	_____
_____	C. Bowers	_____
_____	T. Doehring	_____
_____	P. Durbin	_____
_____	T. Durbin	_____
_____	T. Fortkamp	_____
_____	S. Fry	_____
_____	B. Lawrence	_____
_____	R. Renshaw	_____

Appendix B

Table 1. Subject Scores on Two Wall Test and Compiled Judges' Ratings

Subject	Trial 1	Trial 2	Trial 3	Judges	Subject	Trial 1	Trial 2	Trial 3	Judges	Subject	Trial 1	Trial 2	Trial 3	Judges
1	8	7	7	16	22	11	9	6	12	43	7	9	3	14
2	16	16	14	22	23	4	9	7	13	44	7	8	10	10
3	9	8	10	15	24	24	20	15	27	45	7	5	10	13
4	15	11	12	21	25	21	15	20	28	46	10	8	11	12
5	13	10	10	20	26	11	11	8	12	47	4	12	14	10
6	8	5	7	13	27	14	18	17	28	48	16	15	17	16
7	18	19	20	20	28	6	4	5	9	49	5	4	5	5
8	8	5	5	9	29	3	4	5	5	50	5	5	4	8
9	13	8	10	13	30	6	5	3	14	51	5	3	5	4
10	3	7	14	11	31	9	9	8	18	52	2	4	5	11
11	17	13	13	19	32	12	16	17	25	53	5	6	9	4
12	6	12	7	13	33	15	21	18	21	54	18	16	16	18
13	13	14	14	13	34	6	4	6	7	55	19	12	13	17
14	22	19	21	28	35	10	15	15	18	56	3	5	5	5
15	14	10	11	15	36	7	9	9	16	57	14	12	11	19
16	16	17	20	21	37	16	10	11	19	58	6	6	8	9
17	18	19	18	19	38	6	8	6	11	59	11	15	10	15
18	6	16	12	14	39	6	7	4	16	60	10	11	11	10
19	16	15	15	25	40	4	4	6	5	61	5	4	7	4
20	20	20	20	25	41	9	12	12	15	62	10	9	9	13
21	16	15	20	27	42	10	11	13	20	63	7	9	9	9

VITA

Jarielle Harner was born June 7, 1952 in Vandalia, Illinois. She graduated from Brownstown Community High School, Brownstown, Illinois in 1970.

She received her Bachelor of Science degree from Greenville College in 1974 and was a member of the varsity field hockey, volleyball, basketball, and softball teams.

She has completed eight years of teaching physical education, grades nine to twelve, and health, grade ten, at Stewardson-Strasburg High School, Stewardson, Illinois. She has coached volleyball and won the ten school conference all eight seasons. In 1978 and 1979 her volleyball team finished third place in the Illinois High School State Tournament.

She began summer graduate courses at Eastern Illinois University in 1979. She is presently teaching and coaching at Stewardson-Strasburg High School. In the summer she helps coach the Springfield women's fast-pitch softball team which won the Illinois State Amateur Softball Association title in 1981.