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A Comparison of Three Basketball Skill Tests

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A COMPARISON OF THREE

BASKETBALL SKILL TESTS

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A Thesis

Presented to

The Graduate Faculty

Central Washington State College

_____

In Partial Fulfillment

of the Requirements for the Degree

Master of Education

_____

By

Michael Lee Osborn

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APPROVED FOR THE GRADUATE FACULTY

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ACKNOWLEDGEMENT

CHAPTER I

THE PROBLEM AND DEFINITIONS OF TERMS USED

Many tests, in physical education and athletics, have been devised to assist the physical education instructor and the coach. Very often there is more than one test which measures the same skill or ability. The problem of the coach or instructor is to choose the test which best measures the desired skills or abilities.

I.   THE PROBLEM

Statement of the problem. The purpose of this study was to determine which, if any, of three existing basketball skill tests: (1) The Lehsten test; (2) The Stroup test; and (3) The Knox test, has the highest correlation with the basketball ability of senior high school boys as rated by expert opinion.

Importance of the study. In the area of basketball, many tests have been devised for selecting the boys with the most basketball ability. The physical education instructor can pick any one of the existing skill tests and use it. The instructor has time to experiment with several tests. I If, in his opinion, one test does not appear accurate, he can either administer another test or rely on his own judgment for

grading purposes. However, the average basketball coach is reluctant to place the selection of his team either partially or wholly, on the basis of test scores. This is due largely to two reasons. First, the coach is slow to believe that a test can show better judgment than he can. Second, if he does decide to use a basketball skill test he must pick among several tests, all claiming to be valid. Since most high school coaches have only a short time in which to pick their team and prepare for the season, there is little time for experimenting with various skill tests. This fact alone would seem to discourage basketball coaches from using skill tests for picking their teams.

A study comparing the leading basketball skill tests would be of value to both the coach and the physical education instructor. It was with this in mind that this study was undertaken.

Limitations of the study. This study was limited to the use of twelve (12) varsity basketball players, twelve (12) junior varsity basketball players and twelve (12) non-basketball players ranging from sophomores to seniors in Grandview High School.

Delimitations of the study. This study was concerned with only one high school in the State of Washington.

II. DEFINITIONS OF TERMS USED

<u>Knox</u> <u>Basketball</u> <u>Test</u>. This test was developed by Robert Knox in 1937. It is a test of basketball ability.

<u>Stroup</u> <u>Basketball</u> <u>Test</u>. This test was developed by Francis Stroup and is a basketball achievement test.

<u>Lehsten</u> <u>Basketball</u> <u>Test</u>. This is a basketball skill test developed by Nelson Lehsten in 1948 at Indiana University.

<u>Expert</u> <u>opinion</u>. This is the opinion of three experienced basketball coaches at Grandview High School as to the ability of the subjects tested.

<u>Basketball</u> <u>ability</u>. This was determined by test scores and by expert opinion.

CHAPTER II

REVIEW OF LITERATURE

The physical educator or basketball coach looking for a test of basketball skill can find a wide variety of such tests. These tests vary as to criterion, items and scoring methods used.

Development of basketball skill tests. Edgren paved the way for further studies when he developed an experiment in testing basketball ability in 1932. In this study, Edgren makes the following suggestions: (1) Individual instruction is enhanced when the instructor knows the skills of each pupil. This is only possible when each student has been tested in the particular activity in which he is engaged; (2) Pupil interest is developed when the pupil can see the progress he is making as shown by periodic testing; and (3) Final grades can be more accurately given when actual scores are present. (1:165)

The Knox Test. In 1937, Robert Knox developed his test. These tests were originally given to all boys in a league of eight 'B' high schools in the State of Oregon. The criterion for validating the tests was the scoring of the varsity players.

The results of the study are as follows: (1) Varsity players, with but two exceptions, made total scores of forty-six seconds or better. (2) Of the 138 boys who made scores of forty-six seconds or better, 66 were players and 72 were non-players. (3) Twenty-four players and only one non-player made scores of thirty-eight seconds or better. (4) Of twenty-four players who made thirty-eight seconds or better, twenty were first-team members and four were substitutes. (5) The ten best total scores in each school were made by the ten boys who were players, and the five best total scores were made by members of the first team. (6) Knox, by using the total scores of the four test items, predicted sixty-one out of sixty-eight squad members, and twenty-nine out of thirty-six first-team members. (5:171)

Knox used the tests with his own high school squads for four years and at the University of Idaho in 1941-42. The results were similar.

The tests consist of:

Speed-Dribble Test. Four chairs are placed in a straight line so that the first one is 20 feet from the starting line and the others, 15 feet apart. The starting line is 65 feet from the endline of the court.

The subject stands behind the starting line with a basketball in his hands. At the signal, "Ready, go" he dribbles in and around the obstacles, then weaves back in the same manner.

Wall-Bounce Test. The subject stands with his toes behind a line five feet from a wall. The object of the test is to ascertain how long it will take him to chest-pass the ball against the wall and catch it, 15 times.

The subject starts passing the ball at the signal, "Ready, go" and counts silently. The watch is stopped as the ball hits the wall the 15th time.

Each subject is allowed to pass the ball four times for practice. The ball must be definitely caught, not batted, after each pass.

Dribble-Shoot Test. Using the same starting line as in the Speed-Dribble, arrange three chairs directly in line with the basket, so spaced as to divide the distance into four equal segments. (Entire course is 65 feet.)

The subject stands behind the starting line with a ball in his hands. At the signal, "Ready, go," he dribbles in and out of the obstacles towards the basket. Upon reaching the goal, he tries to lay in the ball. (If he misses the first shot, he keeps shooting until he makes a basket.)

He then recovers the ball and dribbles back around the obstacles to the starting line. The total elapsed time represents his score.

Penny-Cup Test. A 20 foot course is set up with a "signal line" eight feet from the start. Three ordinary tin cups, painted blue, white and red, respectively, are placed

in a vertical line five feet apart at the finish (20-foot mark).

The subject stands behind the starting line with his back to the cups. He has a penny or some other small object in his hand. At the signal, "Ready, go", he pivots and races towards the cups.

As he crosses the "signal line" the tester calls out one of the cup colors. The boy is then supposed to drop his coin into that cup.

The watch starts on the signal "go" and is stopped at the sound of the coin clinking into the cup. The test is repeated four times, the total elapsed time representing the score. The subject is allowed to run through the test once for practice. (3:45-46)

The reliability of each test and the total score was determined by the Pearson Product-Moment correlation technique. A group of 50 high school students, selected at random, were tested and re-tested to obtain data for these computations. The results follow, with the figures representing reliability coefficient:

Speed-Dribble, .71; Wall-Bounce, .784; Dribble-Shoot, .579; Penny-Cup, .904; Total Score, .88. (3:47)

The reliability coefficient of the dribble-shoot is so low as to be practically useless for predictive purposes. Yet, Knox observed, this particular test, in actual practice,

proved to have greater predictive value than any of the others.

Knox attributes this paradox to the fact that the test is a great deal more reliable when used with varsity groups. Most boys in these groups will consistantly hit on their first try while the non-players may not.

It is believed then, that this test is quite reliable when administered to members of player groups, but its accuracy cannot be depended upon with members of the non-playing groups.

The Lehsten Test. In 1948, while at Indiana University Nelson Lehsten attempted to establish a practical test for high school boys which would measure their abilities in various items involving basketball skills. Lehsten stated:

> Coaches frequently ignore tests in sports because
> of the many intangibles involved in game situations
> and the ever present sports sense in both players
> and coaches. However, it seems that any sound ob-
> jective evidence which one can have before him to
> support his judgement will be advantageous over
> his opinion alone. (4:103)

In the specific school studied, an effort was made to work out a scheme of skills testing in basketball which would be workable in both the core required program and in extra-curricular activity.

In the original selection of test items which involved various motor skills it seemed desirable to include activities

which were fundamental to the game of basketball. Speed,
shooting, passing, reaction time, sensory-motor coordination,
footwork, motor ability and motor agility, and ball handling
were among the fundamental factors considered in the selec-
tion of the original eight test items. These items and the
factors to which they are known or assumed to be related
are: Height--shooting, ball control and recovery; Baskets
Per Minute--ball handling, speed, sensory motor coordination;
Forty-Foot Dash--velocity, reaction time, motor agility;
Vertical Jump--velocity, agility, power; Burpee Motor Ability
Test (10 seconds)--motor ability; Dodging Run--speed motor
agility, velocity; Free Throws (out of ten)--shooting, sensory-
motor coordination, motor ability; Wall-Bounce (10 seconds)--
motor agility, sensory-motor coordination, velocity. (4:103)

After testing the subjects and correlating the relation-
ship between the various test items, Lehsten decided to take
the five events which had the highest correlations and as they
all had a validity of .70 or better set up a five item battery
test made up of Dodging Run, Baskets Per Minute, Forty-Foot
Dash, Wall-Bounce and Vertical Jump. The scale scores were
totaled in these five items for all cases and correlated with
the original eight item Battery Scores. A correlation of
.968 was obtained. (4:105)

The directions for conducting each item are as follows:

Baskets Per Minute. The subject will take a position just behind the foul line and facing the basket. On the "go" from the scorer-timer the subject will proceed to shoot as many baskets as he possibly can from the floor in one minute. He may shoot from any point on the floor or beneath the basket, but if he wishes to move closer after retrieving a ball he must dribble. Score will be the number of baskets made in one minute.

Forty-Foot Dash. The subject takes a position behind the out of bounds line at the end of the floor. He starts from an upright position on the "go" from the scorer-timer and runs the forty-foot course across the finish line as fast as he can. Score will be the elapsed time to the nearest tenth of a second from his start to the finish.

Vertical Jump. Student stands facing the jump and reach board which has been attached to the basketball back-board. With a short piece of chalk in his hand he reaches up and makes a horizontal mark as high as he can on the board while still keeping both feet on the floor. He may then turn 90 degrees to the left or right so that his reaching hand is closest to the board; he jumps as high as he can and may use a preliminary arm swing, and at the point of greatest height he again reaches and makes a second horizontal mark on the board. The vertical distance to the

nearest half inch is measured between the reach mark and the
jump mark. Each student is given three trials and the best
distance recorded.

Dodging Run. The following diagram will best illustrate
the procedure.

The runner starts at 'A' and follows the course indicated by
the dotted lines until he returns to point 'A'. He must go
over the outlined course two times, without stopping, to
record a trial. Score is recorded for the elapsed time to
the nearest tenth of a second. Only one attempt is allowed
for each individual.

Wall Bounce. A target is painted on a smooth surfaced
wall. The dimensions are two feet wide by four feet high with
the lower limit of the rectangle three feet above the floor.

From a point six feet from the wall target, the individual on the "go", bounces the basketball against the wall target and catches the rebound (without it touching the floor) as many times as possible in ten seconds. The ball must hit the wall inside the boarders of the rectangular target. Score is the number of times the ball is caught in rebound from the wall within the ten seconds allotted.

Table II shows the conversion of raw scores to scale scores in each event. The scale scores for each individual are added to obtain the Five Item Battery Score. It was concluded that the Five Item Battery was a valid means of measuring basketball ability. (8:207-209)

The Stroup Test. Stroup undertook his study with two purposes in mind. One, to demonstrate the use of a validation technique for a team sport test in which game results were used as the criterion, and second, to establish the validity of an administratively economical test for equating teams. Stroup stated:

> The demonstration of a technique in which game results are used as a criterion for validation would be an important step in attaining greater confidence in sport skill tests. Regardless of the magnitude of the derived coefficient of correlation between scores on a test and a selected validity criterion, the test will not inspire confidence if there is doubt regarding the appropriateness of the criterion. And confidence is necessary if a test is to receive wide use. (6:353)

Stroup used freshmen and sophomores at Southern State College for subjects. The three item test he used and the directions for each are as follows:

Goal Shooting. The subject is allowed to stand as near as he wishes to the basket and shoot as many baskets as possible in one minute, retrieving the ball each time himself. No penalties are invoked for rules violations since the time limit penalizes and discourages such infractions.

Wall-Passing. The subject stands behind a line six feet from a will and passes against the wall as many times as possible in one minute. It is considered a miss to bat the ball instead of catching it or to move beyond the restraining line while handling the ball. The score is the number of legal passes made in one minute.

The Dribbling Test. The subject is required to dribble alternately to the left and right of bottles placed in line and 15 feet apart on a 90 foot court, circle the end bottle, and continue in this manner for one minute. It is considered a miss to knock over a bottle or to not pass a bottle on the proper side. The score is the number of bottles properly passed in one minute. (6:354)

Scoring Procedures. Previous experimentation with the test items used in this study led to the development of scale scores with letter equivalents for performances on each item. A subjects raw scores for the three items are

converted to scale scores which are averaged to obtain his basketball skill score.

Table III in the Appendix is used for this conversion and Figure 3 shows the equivalent letter scores.

As part of this study, ten-minute basketball games were played in four team sport section of physical education classes for men. These games were spaced over the last six weeks of the semester and team members for each game were selected at random.

At the close of the semester, the three item basketball test was administered to class members. Skill scores for the subjects were computed as previously described and each subjects' skill score was inserted before his name on the score sheet of each game in which he participated.

Skill scores for the members of each team was averaged and comparisons of competing teams were based on average skill scores and game scores.

Of the 31 games in which differences both between average skill scores and between game scores for the competing teams were observed, 26 (83.87%) of the games were won by the team having the higher average skill score. (6:356)

The following conclusions were drawn from this study: (1) Ten-minute games used as the criterion are valid; (2) Average skill scores derived from scores on the three-item test are a valid measure of team strength in basketball

because relative skill scores of competing teams was related to the ability to win ten-minute games; and (3) The test appears to be a practical method of equating teams. (6:356)

The studies mentioned above indicate there are several tests available for measuring basketball skill. It is very difficult for the physical educator or coach to decide which one best fits his particular needs. For this reason, the author has conducted this comparison.

CHAPTER III

PROCEDURES AND COLLECTION OF DATA

Subjects. In an attempt to determine which of three
existing basketball skill tests has the highest correlation
with the basketball ability of senior high school boys as
rated by expert opinion, the author used thirty-six boys
at Grandview High School, Grandview, Washington. The boys
were members of the sophomore, junior or senior classes.
Twelve boys had junior-varsity basketball experience and the
remaining twelve had no interscholastic basketball experience
at all. Each experience level contained boys from all three
classes.

Expert opinion. Each individual in the three experience
catagories was rated by three experienced basketball coaches.
The subjects were rated on speed, rebounding, dribbling,
passing and shooting. Each skill was worth from one to seven
points, with seven points indicating the highest proficiency.
The subjects were rated separately by each coach and then
an average of the three totals was taken to determine the
individual subjects' rank order. The result was a rank order
in each of the three experience catagories, varsity, junior-
varsity and non-players as determined by expert opinion.

Grouping. Four boys from each of the three experience catagories were placed in a group. For example, Group 'A' included four boys with varsity experience, four boys with junior-varsity experience and four non-players. There were three groups in all.

Skill testing. The three groups were given the three skill tests in different order. Group 'A' took the Knox Test first, Group 'B' took the Lehsten Test first and Group 'C' took the Stroup Test first. The testing continued until all subjects had taken each of the three tests. This procedure was used to eliminate as much as possible, subjects' learning from the previous test. This would insure one test not having an advantage over the other two.

As each subject proceeded through each test, his scores were recorded on score sheets. Examples of the score sheets used for recording skill test scores are shown in Figures 1, 2 and 3.

The raw scores in the Lehsten and Stroup test were converted to scale scores by the use of the tables mentioned in Chapter II. The subjects in each experience catagory were then placed in rank order for each of the three tests according to their scores. The result was a rank order for the varsity players according to Knox, a rank order according to Lehstan and another for Stroup. The other two catagories were ranked in the same way.

The order of the subjects according to each of the skill tests was compared to the rank order of ability as determined by expert opinion.

Name_____

Group_____

SCORE SHEET FOR KNOX BASKETBALL TEST

SPEED DRIBBLE   SCORE

WALL BOUNCE

DRIBBLE-SHOOT

PENNY CUP

TOTAL SCORE

Test Score_____

Test Score-The scores of the four items added together

FIGURE I

Name_____

Group_____

SCORE SHEET FOR LEHSTEN BASKET BALL TEST

	RAW SCORE	SCALE SCORE
Baskets per minute		
Forty-Foot dash		
Vertical jump		
Dodging run		
Wall bounce		
Test Score		

Test Score-Scale scores of the five items added together

FIGURE 2

Name_____

Group_____

SCORE SHEET FOR STROUP BASKETBALL TEST

RAW SCORE   SCALE SCORE

Shooting		
Passing		
Dribbling		

Basketball Skill Score_____

Letter Score_____

Basketball skill Score - Shooting scale score + Passing s.s. + Dribbling ss divided by three.

SCALE SCORE	LETTER SCORE
91-100	A
81-90	B
71-80	C
61-70	D
0-60	F

FIGURE 3

CHAPTER IV

ANALYSIS OF DATA

The purpose of this study was to determine which of three existing basketball skill tests has the highest correlation with the basketball ability of thirty-six boys at Grandview High School, as rated by expert opinion.

The subjects were ranked first by expert opinion, then placed in rank order on each of three basketball skill tests. The results of the subjects' test scores were then compared with the rank order according to expert opinion.

The following formula was used to compare the above information:

$$r = \frac{N \sum X Y - \sum X \cdot \sum Y}{\sqrt{[N \sum X^2 - (\sum X)^2][N \sum Y^2 - (\sum Y)^2]}}$$

This formula can be found in Garrett's <u>Statistics</u> <u>in</u> <u>Psychology</u> and <u>Education</u>, 5th edition, page 143.

An example of the worksheet used in comparing each subject's test scores with expert opinion is shown in Figure 4.

The scores of the three skill tests were each compared with the rank order by expert opinion. Table I shows the correlation between each test and rank order of subjects as determined by three basketball coaches' opinions.

W O R K S H E E T for M A C H I N E C O R R E L A T I O N

Variable X is:_____ Variable Y is:_____

X	x^2	$\overset{2XY}{XY}$	Y	Y^2
___	___	___	___	___

...from: Garrett, Statistics
in Psychology and Education,
5th ed., p. 143.

$$r = \frac{N \sum X\,Y - \sum X \cdot \sum Y}{\sqrt{\left[N \sum x^2 - (\sum X)^2\right]\left[N \sum Y^2 - (\sum Y)^2\right]}}$$

$$= \frac{}{\sqrt{\left[\quad{}^2\right]\left[\quad{}^2\right]}}$$

$$= \frac{}{\sqrt{[\qquad][\qquad]}}$$

$$= \frac{}{\sqrt{\qquad}} =$$

$$= \frac{}{\qquad} = \frac{}{\qquad}$$

FIGURE 4

The correlations shown in Table I are significant to this study, for they indicate that there is a high correlation between the experts' opinion and the Knox Test (.853) in determining basketball ability. The correlation between expert opinion and the Lehsten Test is (.746). For the Stroup Test the correlation is (.684).

TABLE I

CORRELATION BETWEEN EXPERT OPINION

AND KNOX, LEHSTEN, AND STROUP

KNOX BASKETBALL TEST	.853
LEHSTEN BASKETBALL TEST	.746
STROUP BASKETBALL TEST	.684

In summary, the Knox Test had a higher correlation with the three coaches' opinions as to basketball ability of the subjects than did either the Lehsten or Stroup Tests. The high correlation with the Knox Test (.853) would indicate that a basketball coach could, according to this study, use the Knox Test to double check his opinions when picking his squad, with a high degree of reliability.

SUMMARY AND CONCLUSIONS

The purpose of this study was to determine which of three existing basketball skill tests, (1) The Lehsten Test, (2) The Knox Test and (3) The Stroup Test, had the highest correlation with the basketball ability of senior high school students as rated by expert opinion.

I. SUMMARY

1. The subjects used for this study were sophomores, juniors and seniors at Grandview Senior High. Thirty-six boys took part in this study. Twelve of the boys had varsity basketball experience. Twelve of the boys had junior-varsity basketball experience and the remaining twelve boys had no interscholastic basketball experience. Each catagory contained boys from all three grades.

2. The boys in each experience catagory were placed in rank order within their own level by three experienced basketball coaches.

3. The subjects were then placed in one of three groups. Each group contained four varsity and junior-varsity members and four non-players.

4. The groups were given the three skill tests. Each group took the tests in a different order.

a. The raw scores from the Lehsten and Stroup
    tests were converted to scale scores by using
    the tables found Appendix.

b. The raw scores in the Knox Test are used for
    the test scores.

5. The test scores of each of the three tests were
correlated individually with the rank order of ability as
rated by the three coaches.

II   RESULTS

1. The results of this study were significant for
they showed a difference in the correlation between expert
opinion and the three skill tests.

2. The correlation between expert opinion and the
Knox Basketball Test is (.853).

3. The correlation between expert opinion and the
Lehsten Basketball Test is (.746).

4. The correlation between expert opinion and the
Stroup Test is (.684).

III   CONCLUSIONS

As a result of this study it appears that:

1. The Knox Basketball Test results more closely
correlate with coaches' opinions of basketball ability than
either the Lehsten Test or the Stroup Test.

2. Of the three tests studied the Knox Test could best be used in the grouping and grading of a basketball class in high school physical education.

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APPENDIX

TABLE II

SCALE SCORE EQUIVALENTS FOR

PERFORMANCE IN THE LEHSTEN TEST

	Scale Score	Baskets Per Min.	Vert Jump	40 Ft. Dash	Wall Bounce	Dodg- ing Run	Scale Score	
	100			2.0	18	16.0	100	
	99	41				16.1	99	
	98				17	16.2	98	
	97	40				16.3	97	
	96					16.4	96	
	95	39				16.5	95	
	94					16.6	94	
	93	38				16.7	93	
	92					16.8	92	
	91	37				16.9	91	
A	90			2.1		17.0	90	A
	89	36	25		16	17.1	89	
	88					17.2	88	
	87	35				17.3	87	
	86		24.5			17.4	86	
	85	34	24.0			17.5	85	
	84	33	24.0			17.6	84	
	83					17.7	83	
	82	32				17.8	82	
	81		23.5		15	17.9	81	
	80	31		2.2		18.0	80	
	79					18.1	79	
	78	30	23.0			18.2	78	
	77					18.3	77	
	76	29				18.4	76	
	75					18.5	75	
	74	28	22.5			18.6	74	
	73					18.7	73	
	72	27	22.0		14	18.8	72	
	71					18.9	71	
B	70	26		2.3		19.0	70	B

TABLE II (Cont)

SCORE EQUIVALENTS FOR

PERFORMANCE IN THE LEHSTEN TEST

Scale Score	Baskets Per Min.	Vert Jump	40 Ft. Dash	Wall Bounce	Dodg- ing Run	Scale Score
69		21.5			19.2	69
68	25				19.3	68
67					19.4	67
66	24	21.0			19.5	66
65					19.6	65
64	23				19.7	64
63		20.5		13	19.8	63
62	22				19.9	62
61		20.0			20.0	61
60	21		2.4		20.1	60
59					20.2	59
58	20	19.5			20.3	58
57					20.4	57
56	19				20.5	56
55		19.0		12	20.6	55
54	18				20.7	54
53					20.8	53
52	17				21.9	52
51					21.0	51
C 50	16		2.5		21.1	50 C
49		18.0			21.2	49
48	15				21.3	48
47					21.4	47
46	14	17.5		11	21.5	46
45					21.6	45
44	13				21.7	44
43		17.0			21.8	43
42	12				21.9	42
41					22.0	41
40	11	16.5			22.1	40

TABLE II (Cont)

SCALE SCORE EQUIVALENTS FOR

PERFORMANCE IN THE LEHSTEN TEST

	Scale Score	Baskets Per Min.	Vert Jump	40 Ft. Dash	Wall Bounce	Dodg- ing Run	Scale Score	
	39					22.2	39	
	38	10				22.3	38	
	37		16.0		10	22.4	37	
	36	9				22.5	36	
	35					22.6	35	
	34	8	15.5			22.7	34	
	33	7				22.8	33	
	32					22.9	32	
	31	6	15.0			23.0	31	
D	30			2.7		23.1	30	D
	29	5	14.5		9	23.2	29	
	28					23.3	28	
	27	4				23.4	27	
	26		14.0			23.5	26	
	25	3				23.6	25	
	24					23.7	24	
	23	2	13.5			23.8	23	
	22					23.9	22	
	21	1				24.0	21	
	20		13.0	2.8	8	24.1	20	
	19					24.3	19	
	18					24.4	18	
	17		12.5			24.5	17	
	16					24.6	16	
	15					24.7	15	
	14		12.0			24.8	14	
	13					24.9	13	
	12					25.0	12	
	11		11.5		7	25.1	11	
F	10			2.9		25.2	10	F

TABLE II (Cont)

SCALE SCORE EQUIVALENTS FOR

PERFORMANCE IN THE LEHSTEN TEST

Scale Score	Baskets Per Min.	Vert Jump	40 Ft. Dash	Wall Bounce	Dodg- ing Run	Scale Score
9		11.0			25.3	9
8					25.4	8
7					25.5	7
6		10.5			25.6	6
5					25.7	5
4					25.8	4
3				6	25.9	3
2	10.0				26.0	2
1			3.0		26.1	1

TABLE III

SCALE SCORE EQUIVALENTS FOR

PERFORMANCE IN THE STROUP TEST

Shooting	Passing	Dribbling	Scale Score
6	53	27	51
7	55		52
8	56	28	53
9	57	29	54
	59	30	55
10	60	31	56
11	61		57
12	62	32	58
13	64	33	59
14	65	34	60
	66		61
15		35	62
16	67		63
	68	36	64
17	69		65
	70	37	66
18			67
19	71	38	68
	72		69
20	73	39	70
21			71
	74	40	72
22	75		73
23	76	41	74
	77		75
24	78	42	76
			77
25	79	43	78
26	80		79
27	81	44	80
	82		81
28		45	82
29	83		83

TABLE III (Cont)

SCALE SCORE EQUIVALENTS FOR

PERFORMANCE IN THE STROUP TEST

Shooting	Passing	Dribbling	Scale Score
	84	46	84
30	85		85
	86	47	86
31	87		87
32	88	48	88
	89	49	89
33	90	50	90
34	91		91
35	93	51	92
36	94		93
37	95	52	94
	97		95
38	98	53	96
39	99		97
40	100	54	98
41	102	55	99
42	103	56	100