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The Relationship Between Agility and Strength Tests and High School Football Ability

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THE RELATIONSHIP BETWEEN AGILITY AND STRENGTH
TESTS AND HIGH SCHOOL FOOTBALL ABILITY

A Thesis
Presented to
the Graduate Faculty
Central Washington State College

In Partial Fulfillment
for the Requirements for the Degree
Master of Education

by
Herbert Jerome Richey
June, 1966

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APPROVED FOR THE GRADUATE FACULTY

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CHAPTER I

INTRODUCTION

The purpose of this study was to determine on the basis of the data included within, the degree of relationship that exists between high scores made by high school football prospects on certain strength and agility tests and the best prospective players in high school football. The success of a football coach depends to a large extent on his ability to select those individuals having the greater abilities as football players from the large group of prospects reporting each fall. If the coach can accomplish this, his task of determining the most representative team will be made much easier.

According to the Washington State Interscholastic Activities Association, the football coach is limited in time by the following rules:

Football season is August 25th to November 30th, with no games prior to September 10, 1965.

Section II

1. The first football game or jamboree of the season may not be played earlier than the second Friday in September.
2. Football practice for all high schools engaged in interscholastic football may not be held earlier than 14 practice days prior to the second Friday in September (13:61-63).

Determining a high school's football potential is sometimes a difficult task. Time is often the controlling factor. With no spring practice allowed in the state of Washington and only two weeks of practice before the first game in the fall, it is difficult to establish a team containing the best football players.

I. STATEMENT OF THE PROBLEM

The purpose of this study is to determine if there is a positive correlation between scores on a series of agility and general strength tests and the best prospective players in high school football.

II. HYPOTHESIS

The following hypothesis has been formulated for purposes of this study:

The best prospective football players in a high school can be predicted by an agility and general strength test.

III. LIMITATIONS OF THE STUDY

The study will be limited in the following ways:

1. Junior and senior high school boys turning out for varsity football at Federal Way High School, Federal Way, Washington.
2. The school years 1960-61, 1961-62 and 1962-63.
3. The tests given were: Four count burpee; a coordination course, push-ups, fifty yard dash, standing broad jump, pull-ups and a speed course.

4. Factors such as desire, courage, motivation and attitude were not measured.
5. The psychological and sociological backgrounds were not taken into consideration.

IV. DEFINITIONS OF TERMS USED

Four Count Burpee

A four count burpee is an agility test given to the subjects. The subject is at attention. The following four part exercise is performed as rapidly as possible for thirty seconds: (1) Bend knees and hips and place hands on the ground. Fingers should point forward, and arms may be between, outside of, or in front of the bent knees; (2) Extend legs backward until body is straight from shoulders to heels; (3) Return to squat rest position; and (4) Stand straight. In the upright position, the subject may lean forward, but his chest must be in front of an imaginary line drawn from chin to toes. One point is given for the successful performance of each complete burpee, or if the thirty second time elapses while subject is in or beyond phase two of the burpee he will be credited with one point.

Pull-up

The pull-up is a strength test. The subject hangs from a horizontal bar, using the forward grasp, in which the thumbs and palms face away from the body, and the elbows

straightened out. The subject chins himself as many times as possible, as follows: (1) Pull body up until chin is brought above level of bar; (2) lower body until elbows are straight. Each time the subject pulls his chin above the bar in correct form he is given credit for one pull-up. He is not credited with a pull-up if the arms are not straight at the beginning of the pull-up, a kip or kick movement is used, or he stops to rest.

Push-up

A push-up is a strength test. The subject lies face downward, with his hands on the ground at the sides of the shoulders, fingers pointed forward, and toes resting on the ground. The subject performs the following movement as many times as possible: (1) Raise body from ground by straightening arms so the body is straight from shoulders to heels, with weight resting on hands and toes; (2) Lower body by bending elbows until chest touches the ground. One point is given every time the subject's arms are completely straightened and the exercise is correctly done.

Standing Broad Jump

The subject toes a line, and jumps forward from both feet. The measurement is taken from the toe line to the point where any part of the subject's body lands closest to the toe line. Measurement is recorded to the nearest inch. Each subject is allowed one trial.

Coordination Course

This is a coordination test. The subject assumes a football stance (3 point) behind the starting line. At a signal, subject begins running following the course marked out. Run straight ahead past the first dummy (football stand up dummy) onto the left and then turn right. Pass to the right of the next dummy, turn left and pass to the left of the next dummy and turn right. Circle the last dummy counter-clockwise, and then follow the same path back to the start as was originally taken. Score is recorded as the time it takes to run the course.

Fifty Yard Dash

Subject assumes a football stance (3 point) behind the starting line. Start on the gun and sprint fifty yards as fast as possible. Three subjects run at the same time. The score is recorded as the time it takes to run the fifty yards. A one-tenth of a second watch is used to time each subject.

Speed Course

This is an agility course. The subject assumes a football stance (3 point) behind the starting line. Upon the command "go" begin running straight ahead following the marked course. Pass the first dummy, (football stand up dummy) change direction while keeping the same body

position (shoulders straight ahead) and run laterally to the left. Pass the next dummy and change direction while keeping the same body position (shoulders straight ahead) and run backward. Run by the next dummy, change direction (body still in the original position) and run laterally to the right to the starting point. The score is recorded as the time it takes to run the course. The subject must keep his shoulders in proper alignment during the entire running of the course; if he fails during any of the four part course the subject will have one second added to his score for each violation.

Coach's Evaluation

A rating system from the score of zero to the score of three given each football player at the end of football season by the Federal Way High School coaching staff is designated as the coach's evaluation. The score of zero is low and indicates a rating of no football ability. A rating of one indicates below average football ability, two is a rating of average football ability and three indicates a rating of above average football ability.

CHAPTER II

REVIEW OF LITERATURE

A number of studies have been conducted attempting to predict individual player performances in football. Wilhelm investigated the relationship of certain measurable traits to success in football. The University of Indiana freshman football squad and sixty service course members were the subjects for the study. A comparison of performance and selected tests by service course members and freshman football players was made. Further analysis was obtained by dividing the freshman football players into a successful group and non-successful group. This was accomplished by designating the members of the first three teams as the successful group and members of teams four, five and six as the unsuccessful group.

It was concluded that successful performers in football are stronger in terms of dynamic strength and possess greater speed and more agility than the unsuccessful performers. On the average, the girth of the calf of the successful football performer is larger than that of the unsuccessful performer. The unsuccessful performer showed significantly different abilities in terms of college aptitude as measured by the American College Test (14:1-99).

Brace constructed a football achievement test to be used as a partial basis for selection of college players. The test was administered during spring practice of 1940 and the results were compared to the membership of the first two teams at the completion of the following season. The conclusion showed that 77.7 per cent of those players finally making the first and second teams were found to be in the twenty-four players making the highest achievement test scores, the best single test item was the fifty yard dash (2:372-377).

Borleske devised a test to predict the football ability of college men. The battery consists of five tests: Forward pass for distance, catching forward pass, punting for distance, fifty yard dash, and pass defense. The raw scores for each event are converted into T-scores. According to their composite T-score, subjects may be classified on a five item rating scale as: Superior, above average, average, below average and inferior (1:235-240).

Cowell and Ismail investigated the validity of a football rating scale and related it to social integration and academic ability. Each varsity player was rated by his teammates for condition, aggressiveness, team play, perseverance, attitude toward coaching, position, blocking, tackling and football knowledge.

It was concluded that "attitude toward coaching" and "playing his position" were recommended for selecting the varsity football players from among the freshman squad. The study also concluded that while football ability and academic ability are independent, football ability and social acceptance are related (5:461-467).

Thompson studied the Kennewick, Washington Senior High School football team to determine if the past season ranks of high school football players could be predicted at the beginning of the season by objective testing. The Rogers' Strength Test, Cozen's Dodge Run, a twenty-yard dash and a one-hundred yard dash, and the California Mental Maturity Test were administered to the subjects.

The study concluded that the Strength Index is a better devise for selecting potential football players than a battery of physical tests containing the twenty-yard dash, the one-hundred yard dash, Cozen's Dodge Run when combined with the Strength Index. A correlation coefficient of .82 was found between the Strength Index and the rating of the coach (12:1-34).

Ellena used twenty members of the 1958 University of California, Los Angeles football team as subjects to investigate the relationship of college football performance to selected physiological factors. Fifty-yard dash speed, right grip, left grip and arm push and pull strength were

measured and related to the minutes played during the season. It was reported that speed had a correlation coefficient of .60 with minutes played and the total strength items had a correlation coefficient of .40 with minutes played. The conclusions showed that both of the correlations were significant, but the predictive value for minutes played was slight. Ellene stated that minutes played is the most adequate known means to be used as a criterion of football ability (7:1-49).

McCloy compared football performance, as measured by a subjective rating scale, with grip strength, back strength, leg strength, chins and dips. The study concluded that back and leg strength are of much greater importance in predicting football performance than in predicting either general motor ability, track and field ability or for classification purposes (11:3-11).

Hatley investigated eighty-six football players from various squads of the Maywood, Illinois High School to predict football potential. A multiple correlation coefficient of .82 was found between the subjectively rated football ability of backs and ends and the following tests: General Motor Capacity Score, dodge and run, twelve pound shot put in feet, standing broad jump in inches and weight in pounds. For linemen, a multiple correlation coefficient of .75 was

found between the subjective rating of football ability of linemen and general motor capacity test, dodge and run, twelve pound standing shot put. The correlation coefficients for single tests ranged from .38 for stepping across the line to .72 for general motor capacity score (9:1-104).

Brechler interviewed coaches and players and compiled a list of qualities which they felt would be desirable attributes of high school football players. Seventeen tests were selected to measure the qualities mentioned most frequently. The tests were administered to thirty-seven high school backs and ends who had previously been rated subjectively for football ability by their coaches and selected teammates. The following four item test battery was designed to predict potentiality in football and had a reported .77 multiple correlation coefficient: (1) Classification Index, (2) Dips (parallel bar), (3) Burpee and (4) Iowa revision of the Brace Test (3:1-78).

Cormack worked with Brechler and investigated the linemen from the same high school. A correlation coefficient and a prediction equation were presented. The conclusions indicated that the Classification Index, forty-yard sprint, standing shot put in feet and dipping strength had a multiple correlation coefficient of .83 with the subjective criterion (4:1-83).

Dowell in an attempt to predict the athletic potential of college men has been testing since 1959. From the original twenty-five items, Dowell restricted the battery to ten items. The conclusion made as a result of this research was that athletic and football potential can be predicted by physical tests of motor fitness (6:38-40).

Mather used the following procedure for the selection of his first eleven members of his football squad. Beginning with the first practice, the coach informs the players to "line up in the position you would like to play, beginning with the centers." As a rule, the most aggressive and experienced candidates will go out first, and the other candidates will step behind them. This offers an insight to the coach, enabling him to get a picture of how the players rate themselves (10:5).

CHAPTER III

PROCEDURE

It is the purpose of this chapter to present the technique involved in administering the agility and general strength tests and the method of post season coaches' evaluation.

The data were collected from junior and senior high school boys turning out for football at Federal Way High School, Federal Way, Washington during the school years 1960-61, 1961-62 and 1962-63. There was a total of ninety-one subjects. No effort was made in the selection of this group to screen boys according to proven football ability.

The tests were administered by the Federal Way High School football coaching staff under the direction and supervision of the author. Testing took place after school on June 7, 1961, June 5, 1962 and May 28, 1963. All test items were administered outside on the football field and track. The areas for conducting the agility and general strength tests were lined off for the various activities prior to the arrival of the subjects.

The tests were given in the following order: (1) 4 count burpee, (2) coordination run, (3) push-ups, (4) 50 yard dash, (5) standing broad jump, (6) pull-ups and (7)

speed course. A description of these tests appears on pages 3, 4, 5 and 6 in Chapter I.

A fifteen minute "warm-up" period was allocated before beginning the testing. During this period the subjects received instructions dealing with the physical structure of the testing area, instructions regarding the importance of their best effort and supervised calisthenics.

When the testing of the football players was completed, the data for each player consisted of eight numerical raw scores. The test scores were recorded and analyzed through the use of approved statistical procedures. The mean, standard deviation and coefficient correlation (r) were calculated by IBM 7094 computer. A zero order correlation using the Pearson-Product Moment Formula was used to determine the correlation between all variables. To determine the items in the test battery which contribute to football ability and in what amounts the Wherry Doolittle Multiple Correlation formula and a regression equation were computed.

CHAPTER IV

PRESENTATION OF DATA

I. COLLECTION OF DATA

The data were collected from a series of agility and general strength tests given to the varsity football prospects at Federal Way High School, Federal Way, Washington during the school years 1960-61, 1961-62 and 1962-63, and the coach's evaluation given each football prospect at the conclusion of the football season.

II. ANALYSIS OF DATA

Zero order correlations using the Pearson Product Moment Formula were used to determine the correlations between the variables. The seven tests were intercorrelated to determine the relationship between them. This correlation if high indicates duplication in predicting the criteria. The correlation coefficients between variables are reported in Table I, located on page 17.

The highest correlation reported among all the tests was scored between the coordination run and the speed course, this correlation coefficient was .789. A correlation coefficient of .786 was reported between the standing broad jump and the speed course. In correlating the coach's

evaluation with the seven test items, a correlation coefficient of .575 was scored in the standing broad jump. The speed course reported a correlation coefficient of .498 with the Coach's evaluation, and the push-up coefficient was .490. Even though these correlation coefficients do not seem to register at a high level, it must be noted that coefficients which involve judgement ratings do not run as high as would be expected with other sorts of data (2:376).

To determine the items in the test battery which contribute most to football ability the Wherry Doolittle Multiple Correlation Formula was computed (8:428-431).

The two test items which predicted football ability were the standing broad jump and the push-up. This indicates that leg strength and arm and shoulder strength are more important factors than speed and agility in achieving success in high school football.

The standing broad jump and the push-up reported a .615 multiple correlation coefficient. The formula for reaching this coefficient can be found in Tables 3, 4, 5 and 6 which are located in the Appendix.

TABLE I
MATRIX OF TESTS

C--Coach's Evaluation
1--Four Count Burpee
2--Coordination Run
3--Push-up
4--Fifty Yard Dash
5--Standing Broad Jump
6--Pull-up
7--Speed Course

	1	2	3	4	5	6	7
C	.408	.415	.490	.410	.575**	.479	.498
1		.520	.620	.585	.490	.582	.568
2			.592	.630	.699	.643	.789*
3				.532	.516	.653	.636
4					.584	.680	.786
5						.554	.678
6							.692

*Highest correlation between coordination run and speed course.

**Highest correlation with coach's rating was the standing broad jump.

To determine in what amounts the standing broad jump and the push-up contributed to high school football ability, a Regression Equation was computed. In order for a high school football prospect to rank in the area of average football ability the subject must record a score of thirty-one. Any score higher than thirty-one indicates a prospect of better than average high school football ability. The following formula is used to determine high school football ability.

$$.339 \times \text{standing broad jump (in inches)} + .263 \times \text{push-ups} - 12$$

Example:

Broad jump in inches	-	92		
Number of push-ups	-	45		
.339	.263	31.118	43	
x 92	x 45	<u>11.835</u>	-	<u>12</u>
678	1315	42.953		31 score
<u>3051</u>	<u>1052</u>			
31.188	11.835			

Using the Pearson Product Moment Formula to determine the relationship between the Multiple Regression score of the ninety-one Federal Way High School football prospects and the criteria (the coach's evaluation) of each prospect a correlation coefficient of .60 was recorded.

CHAPTER V

SUMMARY, CONCLUSIONS, RECOMMENDATIONS

I. SUMMARY

It was the purpose of this study to determine if there is a high correlation between a high score on a series of agility and general strength tests and the prospective football players of Federal Way High School, Federal Way, Washington.

The subjects used in this study were high school junior and senior candidates for the varsity football team at Federal Way High School, Federal Way, Washington during the school years 1960-61, 1961-62 and 1962-63. Each subject participated in the following tests the spring preceding football season: 4 count burpee, coordination course, push-up, 50 yard dash, standing broad jump, pull-ups and speed course. Upon the completion of the football season the football coaching staff evaluated the football performance of each player during that year's football season. A football player could receive an evaluation ranging from 0, indicating no football ability, to 3, which indicates above average high school football ability. The test scores were then correlated by the use of the Pearson Product Moment Formula. Several correlation coefficients among the tests

were quite high indicating the probability of duplication in measurement. Using the coach's evaluation as the criteria, correlation coefficients ranging from .575 for the standing broad jump to .408 in the burpee were established. A Multiple Correlation of .615 was recorded in the standing broad jump and push-up. To determine in what amounts these two general strength tests contribute to high school football ability a Regression Equation was computed. The following formula can be used to predict high school football ability: .339 times standing broad jump plus .263 times push-ups minus 12. In order to rank above average a football prospect must score above 31 points.

It is interesting to note that the highest inter-correlation was between the coordination course and the speed course. The highest correlation with the coach's rating was the standing broad jump. When comparing the standing broad jump with other items we find a correlation of .699 with the coordination course and .678 with the speed course. Yet neither of these appear in the multiple correlation. One could assume then that the coordination course and speed course are important to the football player's ability, but that this is taken care of in the standing broad jump.

The next highest correlation with the standing broad jump was the 50 yard dash with an r of .584. This seems to

verify the assumption that the standing broad jump, a test of explosive power of the legs, is a determinate in all of the running events. For this reason only the standing broad jump needs to be given.

In analyzing the push-up in the same manner it was found that the highest correlations between the push-up and other variables was with the pull-up .653 (another test utilizing the arms), the speed course .636, and the 4 count burpee .620.

It would again appear at least in the case of the pull-up and the four count burpee that the push-up measures the arm strength just as they do and therefore shows high in the multiple correlation.

II. CONCLUSIONS

Conclusions are listed as follows:

1. Arm, shoulder and leg strength are the most important factors relating to success in high school football ability.
2. The formula $.339 \times \text{standing broad jump (in inches)} + .263 \times \text{push-ups} - 12$ can be used as an accurate device for predicting high school football ability.
3. The above formula is accurate in predicting the above average football players and the below average high school football players.
4. Norms could be established in order to predict high school prospects from a year to year basis.

5. Even though speed and agility did not rank as high as arm, shoulder and leg strength, these two factors are extremely important for high school football ability, as desire and intelligence.

III. RECOMMENDATIONS

Recommendations are listed as follows:

1. That a better method of player evaluation be developed. Perhaps a ten point rating scale should be used rather than the three point scale used in this study.
2. That testing devices be developed to measure the mental qualities which enable some athletes to succeed in high school football despite their lack of leg and arm strength.
3. That other studies be conducted using the same variables that were used in the present study to establish their validity of predicting high school football potential.

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APPENDIX

TABLE II
MEAN AND STANDARD DEVIATION OF
THE CRITERIA AND VARIABLES

		MEAN	STANDARD DEVIATION
C	Coach's Evaluation	1.384	.986
V-1	Four Count Burpee	21.747	3.027
V-2	Coordination Run	17.412	.713
V-3	Push-Up	45.714	12.503
V-4	Fifty Yard Dash	6.707	.385
V-5	Standing Broad Jump	92.692	7.587
V-6	Pull-Up	8.670	4.361
V-7	Speed Course	11.326	.819

TABLE III
STEP 1 OF MULTIPLE CORRELATION

	1	2	3	4	5	6	7
V-1	-.408	-.415	-.490	-.410	-.575	-.479	-.498
V-2	-.126	-.013	-.193	-.074		-.160	-.108
V-3							
V-4							
V-5							

TABLE IV
STEP 2 OF MULTIPLE CORRELATION

	1	2	3	4	5	6	7
Z-1	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Z-2	.760	.511	.734	.659		.693	.540
Z-3							
Z-4							
Z-5							

TABLE V
STEP 3 OF MULTIPLE CORRELATION

a	b	c	d	e	f	g	
m	$\frac{V_m^2}{Z_m}$	K^2	$\frac{N-1}{N-m}$	$\overline{K^2}$	$\overline{R^2}$	\overline{R}	Test #
0		1.000	(N=91)				
1	.331	.669	1.000	.669	.331	.575	5
2	.0507	.6183	1.001	.6251	.3749	.6153	3
3	.0095	.6088	1.034	.6295	.3705	.6087	6
4							
5							

TABLE VI
STEP 4 IN MULTIPLE CORRELATION

	1	2	3	4	5	6	7	-C	Check Sum	Test #
a-1										
b-1	.490	.699	.516	.584	1.000	.554	.678	-.575	3.946	5
c-1	-.490	-.699	-.516	-.584	-1.000	-.554	-.678	-.575	-3.946	
a-2	.620	.592	1.000	.532	.516	.653	.636	-.490	4.059	3
b-2	.367	.231	.734	.231		.367	.286	-.193	2.023	
c-2	-.500	-.315	-1.000	-.315		-.500	-.390	.263	-2.755	
a-3										
b-3										
c-3										
a-4										
b-4										
c-4										

TABLE VII
TEST RESULTS AND COACH'S EVALUATION

I.D. No.	Coach Eval.	Burpee	Coordi- nation Run	Push Up	Fifty Yard	Broad Jump	Pull Up	Speed Run
1	3	22	19.6	40	7.1	83	3	12.0
2	3	37	17.0	50	5.7	101	9	10.2
3	3	21	17.0	45	6.1	96	12	10.3
4	3	25	16.4	66	6.1	106	13	9.9
5	3	23	17.0	55	6.6	96	11	10.7
6	3	25	16.8	57	6.1	111	16	10.2
7	3	28	16.0	83	6.2	105	21	10.0
8	3	21	17.4	61	6.8	95	12	11.0
9	3	24	16.8	49	6.6	100	10	10.9
10	3	27	16.1	76	6.1	104	24	10.2
11	3	24	16.7	48	6.5	106	8	10.8
12	3	21	16.9	50	6.8	96	12	11.0
13	3	27	16.0	78	5.9	114	13	9.9
14	2	16	19.0	29	6.5	87	5	12.9
15	2	25	17.1	60	6.6	98	20	11.1
16	2	24	17.2	47	6.3	104	13	10.6
17	2	25	16.3	43	6.1	108	10	10.3
18	2	25	16.6	45	6.2	91	14	10.6
19	2	20	18.4	10	7.3	84	2	13.6
20	2	23	17.0	58	6.6	92	11	10.3
21	2	19	18.3	61	7.0	88	9	12.4
22	2	21	17.2	40	6.7	91	6	11.1
23	2	16	17.9	29	7.5	90	3	12.4
24	2	25	18.1	53	6.8	86	7	11.8
25	2	21	17.1	40	6.9	91	6	11.5
26	2	24	16.8	51	6.4	98	12	11.0
27	2	24	17.1	53	6.5	91	16	10.7
28	2	20	17.1	39	6.6	92	6	11.2
29	2	19	17.5	40	6.7	88	6	11.7
30	2	23	17.5	50	6.7	92	13	11.0
31	2	23	17.0	60	6.4	96	12	10.5
32	2	27	16.9	68	6.4	104	12	10.3
33	2	23	17.3	47	6.8	100	9	10.8
34	2	25	16.8	48	6.5	98	11	10.6
35	2	22	17.5	48	6.6	94	10	11.2

TABLE VII (continued)

I.D. No.	Coach Eval.	Burpee	Coordi- nation Run	Push Up	Fifty Yard	Broad Jump	Pull Up	Speed Run
36	2	23	16.6	53	6.4	100	16	10.7
37	2	26	16.6	58	6.6	98	11	10.7
38	2	21	17.1	49	6.9	97	6	11.2
39	2	19	16.6	47	6.5	107	7	10.5
40	2	26	16.4	55	6.2	98	9	10.4
41	2	20	17.7	46	6.9	90	7	11.3
42	2	22	16.8	53	6.5	102	12	10.6
43	1	23	17.7	60	7.1	81	5	11.0
44	1	25	18.6	48	7.0	89	3	12.0
45	1	24	17.5	49	6.5	87	13	10.9
46	1	19	17.5	25	6.4	84	13	11.0
47	1	24	18.3	37	7.0	84	6	12.3
48	1	21	16.5	60	6.5	97	12	10.8
49	1	28	17.3	70	6.1	90	15	10.3
50	1	23	17.9	39	6.9	87	5	12.7
51	1	19	17.7	35	6.7	84	13	11.5
52	1	20	17.1	45	6.9	88	6	10.8
53	1	21	17.9	41	6.9	92	7	11.8
54	1	23	17.0	49	6.8	89	7	11.2
55	1	21	17.2	59	6.6	90	8	11.2
56	1	24	17.9	37	7.2	86	6	12.3
57	1	22	18.1	39	6.9	85	8	11.8
58	1	23	17.6	30	7.1	92	8	12.3
59	1	17	18.8	29	7.6	87	1	12.6
60	1	20	17.8	40	6.8	88	9	11.8
61	1	21	17.8	47	7.0	90	10	11.9
62	1	23	17.0	52	6.2	92	7	10.6
63	1	19	17.7	32	7.3	92	4	11.8
64	1	21	17.0	31	6.9	102	7	11.1
65	1	19	17.6	40	6.9	88	5	11.6
66	1	18	17.8	41	7.0	92	4	11.7
67	1	20	17.0	54	6.8	95	11	11.1
68	1	19	17.8	31	7.2	91	4	11.8
69	1	23	16.6	56	6.7	102	9	11.0
70	1	19	17.4	46	7.3	89	8	11.6

TABLE VII (continued)

I.D. No.	Coach Eval.	Burpee	Coordi- nation Run	Push Up	Fifty Yard	Broad Jump	Pull Up	Speed Run
71	1	21	17.4	48	6.8	94	10	11.1
72	0	20	17.5	25	6.3	100	13	11.1
73	0	22	17.3	45	6.3	89	6	10.7
74	0	23	17.3	36	7.8	86	3	13.1
75	0	21	18.1	55	6.8	91	8	12.9
76	0	24	17.9	29	6.5	101	9	11.4
77	0	24	16.9	40	6.8	85	6	11.6
78	0	22	17.2	38	6.6	85	5	10.8
79	0	21	17.2	47	6.7	88	10	11.5
80	0	19	18.2	38	6.6	84	6	11.8
81	0	17	17.9	47	7.0	81	1	13.4
82	0	23	17.1	45	6.3	84	9	10.9
83	0	20	17.8	37	6.9	81	5	12.3
84	0	19	18.3	32	6.7	79	6	12.4
85	0	18	19.2	28	7.1	83	1	12.1
86	0	19	18.9	37	7.5	84	3	12.6
87	0	18	19.0	27	7.3	82	3	12.6
88	0	20	17.9	41	6.7	88	6	11.4
89	0	19	17.0	27	7.0	96	6	11.4
90	0	20	17.7	38	6.8	95	8	11.5
91	0	17	17.4	40	6.9	88	6	11.5