Eastern Illinois University
The Keep

Masters Theses | Student Theses & Publications

1966

A Comparison of the Relationship Between Running Speed and Agility

Stephen Thomas
Eastern Illinois University

This research is a product of the graduate program in Physical Education at Eastern Illinois University. Find out more about the program.

Recommended Citation
Thomas, Stephen, "A Comparison of the Relationship Between Running Speed and Agility" (1966). *Masters Theses*. 4240.
https://thekeep.eiu.edu/theses/4240

This is brought to you for free and open access by the Student Theses & Publications at The Keep. It has been accepted for inclusion in Masters Theses by an authorized administrator of The Keep. For more information, please contact tabruns@eiu.edu.

A COMPARISON OF THE RELATIONSHIP

BETWEEN RUNNING SPEED AND AGILITY

(TITLE)

BY

STEPHEN THOMAS

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF

Master of Science in Education

IN THE GRADUATE SCHOOL, EASTERN ILLINOIS UNIVERSITY
CHARLESTON, ILLINOIS

1966
YEAR

I HEREBY RECOMMEND THIS THESIS BE ACCEPTED AS FULFILLING
THIS PART OF THE GRADUATE DEGREE CITED ABOVE

29 July 1966
DATE

29 July 1966
DATE

/LB1861.C57XT4621>C2/

BOOTH LIBRARY
EASTERN ILLINOIS UNIVERSITY
CHARLESTON, ILLINOIS 61920

ACKNOWLEDGEMENTS

I wish to thank Dr. Curtis Twenter, my advisor, Dr. William Groves and Dr. William Riordan, members of my committee, for their sincere interest and constructive advice.

I wish to express special thanks to my wife, Dee Anna, without whose understanding and confidence this paper could not have been completed.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF DIAGRAMS

A COMPARISON OF THE RELATIONSHIP BETWEEN RUNNING SPEED AND AGILITY

CHAPTER I

AN INTRODUCTION TO THE PROBLEM

Introduction

It is the opinion of some physical educators and coaches that the factors of running speed and agility are closely related to each other. Those who support this opinion are of the belief that a knowledge of either of the factors will serve as a basis for predicting the outcome of the other factor. Little experimentation has been conducted to support the validity of the opinion that running speed and agility are closely related to each other.

Purpose

This study was undertaken in an attempt to determine the degree of relationship, if any, between running speed as exhibited in track dashes, and the agility of an individual, defined as the ability of the body or parts of the body to change direction rapidly and accurately while running.[1]

---

[1] Charles Harold McCloy, Tests and Measurements in Health and Physical Education (New York: F.S. Crofts and Company, 1942), p. 84.

Need

The writer was of the opinion that the results of a study of this nature would clarify the relationship, if any, between the factors of running speed and agility.

Limitations

This study was limited by the fact that only twenty students were involved in the testing procedure, and that an equal distribution of body builds, heights and weights of subjects were not available to the writer. The fact that time allowed for only one measure of testing agility was a further limitation of the study.

The difference in the surface of the two testing areas and the difference in the temperatures of these areas may have affected the results of this study.

The results of the testing procedure may have been limited by a possible reduction in speed of a subject who may have found such reduction necessary in order to make proper contact with the switchmats which activated and deactivated the timing device.

Definitions

The writer believes that the following definitions are necessary in order to attain a clearer understanding of the study.

1. Agility--The ability of the body or parts of the body to change direction rapidly and accurately while running.[2]
2. Running Speed--The running speed of an individual as exhibited in

---

[2] Ibid.

the last forty yards of the one hundred yard dash.

3. Substantial Relationship--An interpretation of the value of r (.40-.70).[3]

---

[3]Charles Harold McCloy and Norma Dorothy Young, Tests and Measurements in Health and Physical Education (New York: Appleton-Century-Crofts, Inc., 1954), p. 19.

CHAPTER II

A REVIEW OF RELATED LITERATURE

A review of the literature related to testing agility revealed that the definition of agility varied according to the type of agility being considered. By examining the various definitions of agility a broader scope of the term was established.

Funk and Wagnalls[1] New Standard Dictionary of The English Language defined agility as the quality of being agile: quickness and readiness in movement; nimbleness; activity: said of body or mind.

McCloy and Young,[2] Espenschade,[3] and Phillips[4] defined agility as the ability to change the direction of the body or parts of the body rapidly. McCloy and Young[5] further stated that agility may involve small ranges of movement, as in activities requiring finger dexterity, or it may involve large ranges of movement, as in the zig-zag run.

---

[1] Funk and Wagnalls New Standard Dictionary of The English Language, ed. Isaac K. Funk (New York: Funk and Wagnalls Company, Inc., 1963), p. 53.

[2] Charles Harold McCloy and Norma Dorothy Young, Tests and Measurements in Health and Physical Education (New York: Appleton-Century-Crofts, Inc., 1954), p. 74.

[3] Anna Espenschade, "Development of Motor Coordination in Boys and Girls," Research Quarterly, XVIII, (March, 1947), p. 33.

[4] Marjorie Phillips, "Study of a Series of Physical Education Tests by Factor Analysis," Research Quarterly, XX, (March, 1949), p. 66.

[5] McCloy and Young, loc. cit.

Clarke[6] defined agility as skills requiring rapid movement of the entire body, in different directions and in response to unexpected circumstances, as dodging in football, pivoting in basketball and agile stunts in tumbling.

Cureton[7] stated that agility emphasizes the ability to react quickly in controlled, nimble movement, "rabbit like" in action—the ability to move quickly, dexterously, and easily. Agility represents one of the highest types of neuromuscular training.

Barrow and McGee[8] stated that agility is one of the most influencing factors of movement. Agility is revealed by the capacity of the body or parts of the body to move rapidly and accurately. Measures of agility test the ability of the individual to move quickly from one position to another in space. Agility involves quick and accurate coordination of the big muscles of the body.

Mosston[9] defined agility as one's ability to move his body through space. It is a quality that requires a fine combination of strength and coordination so that the whole body can move from one position to another.

---

[6]Harrison Clarke, Application of Measurement to Health and Physical Education (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1959), p.313.

[7]Thomas K. Cureton, "What Is Physical Fitness?," Journal of Health, Physical Education and Recreation, XVI, (March, 1945), p. 12.

[8]Harold M. Barrow and Rosemary McGee, A Practical Approach to Measurement in Physical Education (Philadelphia: Lea and Febiger, 1964), p. 118.

[9]Muska Mosston, Developmental Movement (Columbia: Charles E. Merril Books, Inc., 1965), p. 33.

Willgoose[10] defined agility as the ability of an individual to move his body with speed and accuracy. Football, basketball, gymnastics and the high hurdles in track are examples of performances requiring agility.

A variety of agility tests appear in the literature associated with tests. McCloy stated that, "the many tests of agility were not equivalent and did not test exactly the same thing."[11] An examination of the various tests of agility were very influential in the writer's choice of agility test and definition in this study.

The Burpee[12] test, now referred to as the squat thrust, was first developed as a measure of physical capacity by which students could be assigned class work in physical education. This test was and is now considered by many as a valid measure of agility. McCloy and Young[13] stated that the validity of the Burpee test when used as a measure of agility is lower than the validity of tests of agility that involve running. Cumbee[14] stated that the Burpee test as a measure of

---

[10]Carl E. Willgoose, Evaluation in Health Education and Physical Education (New York: McGraw-Hill Book Company, Inc., 1961), p. 250.

[11]Charles Harold McCloy, Tests and Measurements in Health and Physical Education (New York: F.S. Crofts and Company, 1942), p. 84.

[12]Royal Huddleston Burpee, Seven Quickly Administered Tests of Physical Capacity (New York: Bureau of Publications Teachers College, Columbia University, 1940), pp. 133-140.

[13]McCloy and Young, op. cit., p. 78.

[14]Francis Z. Cumbee, "A Factor Analysis of Motor Coordination," Research Quarterly, XXV, (December, 1954), pp. 417-418.

agility is a poor choice because of the low correlation of this test with the quick change of direction factor. He further stated that the use of such tests as the side-step, zig-zag run and the dodging run might give more evidence that the type of ability involved in agility is a quick change of direction.

The dodging run test was developed by Cozens.[15] This event was designed to measure not only "speed of legs," but also the ability to change direction quickly, a quality that is extremely important in most types of athletic endeavor.

The side-step test was first proposed by H.D. Edgren[16] as a measure of testing agility. Many modifications of the side-step test are now used and it has been found to be a valid measure of agility.[17]

Scott and French[18] presented the obstacle run as a measure of agility. Because of the complexity of the test it best measures agility after individuals have been allowed to practice the skills involved.

The zig-zag run and modifications of this test have been presented by Alden,[19] Edgren,[20] and McCloy. Each involve the same elements

---

[15] Fredrick W. Cozens, Achievement Scales in Physical Education Activities for College Men (Philadelphia: Lea and Febiger, 1936), p. 20.

[16] Harry D. Edgren, "An Experiment in the Testing of Ability and Progress in Basketball," Research Quarterly, III, (March, 1932), pp. 163-171.

[17] McCloy, op. cit., p. 86.

[18] M. Gladys Scott and Esther French, Measurement and Evaluation in Physical Education (Dubuque, Iowa: Wm. C. Brown Company Publishers, 1959), p. 310.

[19] Alden, Florence et al., "A Motor Ability Test for University Women for the Classification of Entering Students into Homogeneous Units," Research Quarterly, III, (March, 1932), pp. 85-121.

[20] Edgren, loc cit., p. 159.

in testing agility with modifications in the arrangement of the running course. The zig-zag run is much like the dodging run and the maze run.

Other tests used as measures of agility include the following or modifications of the following tests: the potato race, the criss cross test, the shuttle run, the figure eight run and the maze run.

Most of the literature reviewed in this study ascribed a relationship between running speed and agility, but did not indicate the degree of relationship.

McCloy and Young[21] stated that agility is probably an "oblique" (compound) factor of physical ability in that it is probably comprised of two or more "orthogonal" (pure) factors.

Cozens[22] used the dodging run test to measure not only the "speed of legs" of an individual, but also the ability of an individual to change directions quickly. If the ability to change directions quickly was interpreted to mean agility, one could assume that Cozens believed that "speed of legs" and agility could be measured by the dodging run test. If one test measured two specific factors, a conclusion could be drawn that the two factors were related to each other.

Marjorie Phillips[23] conducted a study in which she attempted to examine and determine more exactly the true nature of the various tests

---

[21] McCloy and Young, op. cit., p. 5.

[22] Cozens, loc. cit.

[23] Phillips, op. cit., pp. 60-69.

of agility. In Phillips' attempt to measure the effectiveness of agility tests, she used the agility run, the side-step test and the Burpee test. From the data, Miss Phillips concluded that all three of the agility tests had a significant correlation with speed, and she stated "that speed should certainly be a factor in an agility test since by definition the body must be moved rapidly." Miss Phillips further stated that speed was the only factor that was common to the three measures of agility.

Fleishman, Thomas and Munroe[24] conducted a study in which they attempted to isolate an agility factor separate from other factors. "No separate agility factor was found. Rather, performances on tests thought to emphasize such a factor were accounted for by the other factors identified (i.e., Explosive Strength, Dynamic Flexibility)."

In a study concerned with analyzing various factors in speed, Rarick[25] used Thurstone's method of multiple factors. Rarick found that the chief factor limiting the speed of movement in man was the lack of a factor identified as the velocity factor, or pure speed of muscular movement.

In an analystic study of tests of change of direction made by Young,[26] the Burpee test, the Howe test, the zig-zag run and the figure

---

[24] Edwin A. Fleishman, The Structure and Measurement of Physical Fitness (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1964), p. 99.

[25] Lawrence Rarick, "An Analysis of the Speed Factor in Simple Athletic Activities," Research Quarterly, VIII, (December, 1937), p. 104.

[26] Kathryn E. Young, "An Analystic Study of the Tests of Change of Direction," (M.A. Thesis, State University of Iowa, 1937).

eight test were used as change of direction elements. In the conclusions drawn by Young, general strength and leg strength did not have any large effect on the change of direction element.

Although not all of the literature reviewed in this chapter was directly concerned with comparing the relationship between running speed and agility, the information obtained therefrom has provided the writer with further implications for the study.

CHAPTER III

THE TESTING PROCEDURE

For this study, twenty male subjects selected from Eastern Illinois University's freshmen baseball team were used. Twenty-three subjects were originally involved in the testing program, but three were unable to complete the testing program. Therefore, only the results of the twenty subjects who completed the testing program were computed in the analysis of the data.

The timing device used for this study was the Dekan Automatic Performance Analyzer, Model Number 631. The analyzer was designed for the purpose of measuring movement, and/or reaction, by the recording of time intervals. The timing device is completely automatic and measures time intervals within one/one-hundreth (1/100) of a second.

Accessories which were used with the analyzer were two Recora Switchmats. The switchmats were floor type mats that had a cord and jack plug attached. One switchmat was plugged into the "Remote Start" receptacle and the other was plugged into the "Stop On Make Contact" receptacle. Contact pressure applied on the "Remote Start" switchmat activated the timing device. The timing device was deactivated when contact pressure was applied to the "Stop On Make Contact" switchmat.

The testing program consisted of two measures: (1) a test of running speed, and (2) a test of agility. Each test was administered to each subject on three different testing dates, making a total of

six testing dates. Each test was preceded by a brief instructional period in which the subjects received directions. A three minute period of loosening up exercises and one trial run also preceded each test.

The three trials of the running speed test were conducted on Eastern Illinois University's football field. The equipment used in conducting the running speed tests was: (1) the Dekan Automatic Performance Analyzer, used to time the subjects; (2) two Recora switchmats, used to activate and deactivate the timing device; (3) one-hundred ten yards of extension cord, used to hook-up the timing device and the switchmats; (4) one one-hundred ten volt electrical plug attachment, used to insert into the electrical outlet on the scoreboard; and (5) a tape measure, used to measure the running speed course.

The length of the running speed course was one-hundred yards. The "Remote Start" switchmat was placed at the sixty yard mark and the "Stop On Make Contact" switchmat was placed at the one-hundred yard mark. On the command "go" the subject in an upright position started running from the zero yard mark. By stepping on the "Remote Start" switchmat at the sixty yard mark, the timing device was activated. At the one-hundred yard mark the subject stepped on the "Stop On Make Contact" switchmat thus deactivating the timing device. The elapsed time from the sixty yard mark to the one-hundred yard mark was recorded as the subject's time for the running speed test. The subject's running speed was recorded from the sixty yard mark to the one-hundred yard mark in order to compensate for the time differences that may have occurred due to the subject's differences in starting ability. By

timing the subject in the last forty yards of the one-hundred yard dash, the writer was of the opinion that a valid measure of the running speed of the subject would be obtained.

The three trials of the agility test were conducted in Eastern Illinois University's Lantz Gymnasium. The equipment used in conducting the agility tests was: (1) the Dekan Automatic Performance Analyzer, used to time the subjects; (2) two Necora switchmats, used to activate and deactivate the timing device; (3) five Indian clubs, used to mark the agility course; (4) masking tape, used to mark the Indian club placement; and (5) a tape measure, used to measure the agility course.

The agility test used for this study was McCloy's zig-zag run.[1] Four Indian clubs were placed at the four corners of a rectangle, ten feet wide and sixteen feet long, and a fifth Indian club was placed in the exact middle of the rectangle. The subject started at the starting line standing in an upright position. On the command "go" the subject stepped on the "Remote Start" switchmat activating the timing device. The "Remote Start" switchmat was removed while the subject completed two laps of the run. After the subject completed the second lap of the agility run, the "Stop On Make Contact" switchmat was placed at the starting line in the same position as that of the "Remote Start" switchmat. Upon completion of the third lap, the subject deactivated the timing device by stepping on the "Stop On Make Contact" switchmat. The time that had elapsed from the start of the first lap to the

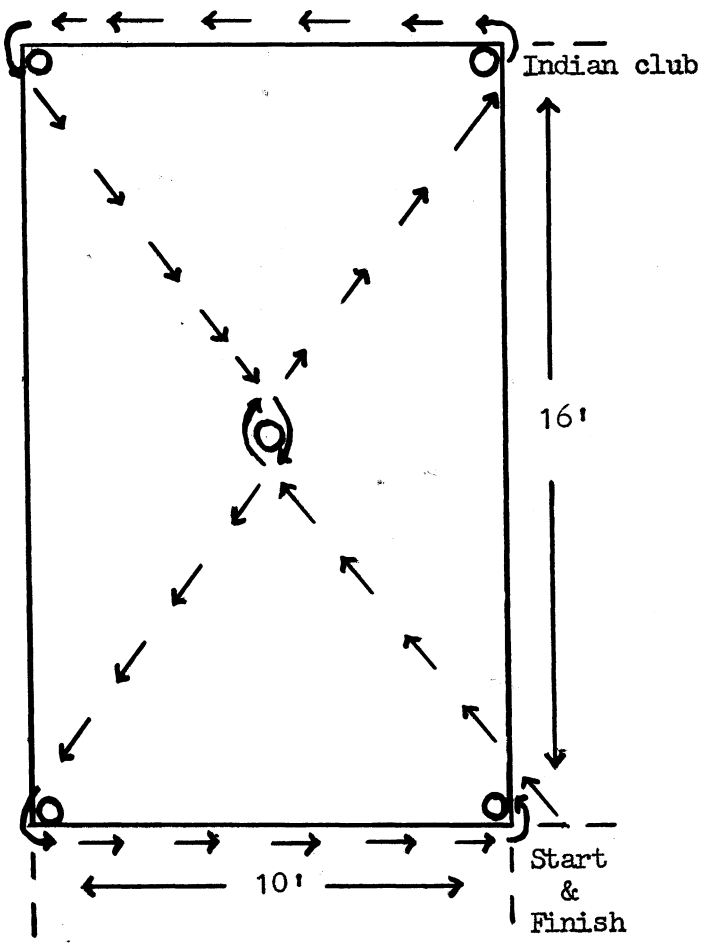
---

[1] Charles Harold McCloy, Tests and Measurements in Health and Physical Education (New York: F.S. Crofts and Company, 1942), pp. 87-88.

completion of the third lap was recorded as the subject's time in the agility run.

DIAGRAM I

THE ZIG-ZAG RUN



To summarize, twenty male subjects selected from Eastern Illinois University's freshmen baseball team were used for this study. The twenty subjects completed a testing program which consisted of a test of running speed, and a test of agility. The running speed test measured the subject's time for the last forty-yards of the one-hundred

yard dash. The agility test was McCloy's zig-zag run. Each test was administered to each subject on three different testing dates, making a total of six testing dates.

The timing device used in this study was the Dekan Automatic Performance Analyzer, Model 631. The timing device is completely automatic and measures time intervals within one/one-hundreth (1/100) of a second.

CHAPTER IV

ANALYSIS OF THE DATA

The problem under consideration was a comparison of the degree of relationship, if any, between running speed and agility. Tables I through V were used for an analysis of the test results.

The data in Table I represents the times and rank of the subjects in the three trials of the running speed test.

TABLE I

THE TIMES AND RANK OF THE SUBJECTS IN THE THREE TRIALS OF THE RUNNING SPEED TEST

Subject	Test I	Rank	Test II	Rank	Test III	Rank
1	4.48	6 (Tie)	4.52	6 (Tie)	4.52	10
2	4.58	10 (Tie)	4.68	12 (Tie)	4.62	12
3	4.24	2	4.18	1 (Tie)	4.24	3
4	4.14	1	4.18	1 (Tie)	4.17	1
5	4.60	12	4.70	14	4.58	11
6	4.82	17 (Tie)	4.74	15	4.84	17 (Tie)
7	4.52	9	4.52	6 (Tie)	4.66	13
8	4.76	15	4.86	16 (Tie)	4.74	15 (Tie)
9	4.44	5	4.52	6 (Tie)	4.42	5 (Tie)
10	4.64	13	4.64	11	4.42	5 (Tie)
11	4.28	3	4.42	5	4.42	5 (Tie)
12	4.48	6 (Tie)	4.62	9 (Tie)	4.70	14
13	4.96	20	4.86	16 (Tie)	4.84	17 (Tie)
14	4.82	17 (Tie)	4.88	19	4.74	15 (Tie)
15	4.75	14	4.68	12 (Tie)	4.46	8 (Tie)
16	4.82	17 (Tie)	4.90	20	4.84	17 (Tie)
17	4.78	16	4.86	16 (Tie)	4.91	20
18	4.50	8	4.40	4	4.40	4
19	4.38	4	4.32	3	4.22	2
20	4.58	10 (Tie)	4.62	9 (Tie)	4.46	8 (Tie)

From the data presented in Table I, the mean times of the three tests of running speed were computed for each subject. Table II presents the mean time and rank of the subjects in the three tests of running speed.

TABLE II

THE MEAN TIMES AND RANK OF SUBJECTS OF THE THREE TRIALS OF THE RUNNING SPEED TEST

Subject	Mean Time	Rank
1	4.51	7
2	4.63	12 (Tie)
3	4.22	2
4	4.16	1
5	4.63	12 (Tie)
6	4.80	16
7	4.57	9 (Tie)
8	4.79	15
9	4.46	6
10	4.57	9 (Tie)
11	4.37	4
12	4.60	11
13	4.89	20
14	4.81	17
15	4.63	12 (Tie)
16	4.85	18 (Tie)
17	4.85	18 (Tie)
18	4.43	5
19	4.31	3
20	4.55	8

The mean times of the subjects in the speed run were plotted on a frequency distribution[1] in order to determine the mean time of the distribution. The mean time of all subjects as computed from the frequency distribution was 4.565 seconds. The data from the frequency

[1] Charles Harold McCloy and Norma Dorothy Young, Tests and Measurements in Health and Physical Education (New York: Appleton-Century-Crofts, Inc., 1954), p. 418.

distribution was then computed to find the standard deviation from the mean score on the speed run. The standard deviation[2] from the mean score of the running speed test was computed as .266 seconds.

The data in Table III represents the times and rank of the subjects in the three tests of agility.

TABLE III

THE TIMES AND RANK OF THE SUBJECTS IN THE THREE TRIALS OF THE AGILITY TEST

Subject	Test I	Rank	Test II	Rank	Test III	Rank
1	19.98	1	19.85	1	20.01	3
2	21.13	9	23.11	17	20.65	7
3	20.45	3	20.19	2	20.04	4
4	20.27	2	20.20	3	19.44	1
5	21.05	6 (Tie)	20.37	4	20.54	6
6	22.11	13	21.78	11	21.72	14
7	22.72	16	22.72	15	22.48	16
8	21.28	10	20.61	6	20.97	10
9	20.68	4	20.38	5	20.43	5
10	22.33	15	22.15	12 (Tie)	21.10	11
11	24.74	19	23.98	19	23.01	18
12	21.12	8	20.74	7	20.86	9
13	25.50	20	24.74	20	24.96	20
14	22.13	14	22.22	14	21.94	15
15	20.80	5	20.83	8	20.81	8
16	23.73	18	22.92	16	22.81	17
17	23.40	17	23.71	18	23.68	19
18	21.35	11	21.07	10	21.22	12
19	21.58	12	21.03	9	19.98	2
20	21.05	6 (Tie)	22.15	12 (Tie)	21.50	13

From the data presented in Table III the mean times of the three tests of agility were computed for each subject. Table IV represents the mean time and rank of the subjects in the three tests of agility.

[2] Ibid., p. 423.

TABLE IV

THE MEAN TIMES AND RANK OF SUBJECTS
ON THE THREE TRIALS OF THE AGILITY TEST

Subject	Mean Time	Rank
1	19.95	1
2	21.63	12
3	20.23	3
4	19.97	2
5	20.65	5
6	21.87	14
7	22.64	16
8	20.95	9
9	20.50	4
10	21.06	13
11	23.91	19
12	20.91	8
13	25.07	20
14	22.10	15
15	20.81	6
16	23.15	17
17	23.56	18
18	21.21	10
19	20.86	7
20	21.57	11

The mean times of the subjects in the agility run were plotted on a frequency distribution in order to determine the mean time of the distribution. The mean time of all subjects as computed from the frequency distribution was 21.70 seconds. The data from the frequency distribution was then computed to find the standard deviation from the mean score on the agility run. The standard deviation from the mean score of the agility test was computed as 2.20 seconds.

Table V represents the mean time and mean rank of both the speed run and the agility run for all subjects.

TABLE V

THE MEAN TIME AND MEAN RANK OF THE SPEED RUN AND THE AGILITY RUN FOR ALL SUBJECTS

Subject	Mn. Tm. of S.R.	Rank	Mn. Tm. of A.R.	Rank
1	4.51	7	19.95	1
2	4.63	12 (Tie)	21.63	12
3	4.22	2	20.23	3
4	4.16	1	19.97	2
5	4.63	12 (Tie)	20.65	5
6	4.80	16	21.87	14
7	4.57	9 (Tie)	22.64	16
8	4.79	15	20.95	9
9	4.46	6	20.50	4
10	4.57	9 (Tie)	21.86	13
11	4.37	4	23.91	19
12	4.60	11	20.91	8
13	4.89	20	25.07	20
14	4.81	17	22.10	15
15	4.63	12 (Tie)	20.81	6
16	4.85	18 (Tie)	23.15	17
17	4.85	18 (Tie)	23.56	18
18	4.43	5	21.21	10
19	4.31	3	20.86	7
20	4.55	8	21.57	11

The data from the frequency distributions of the speed run and the agility run along with the means and standard deviations of both tests were computed for the Pearson product-moment coefficient of correlation.[3] The computation of the data presented a positive r of .624 between running speed and agility.

The .624 coefficient of correlation was computed for the predictive index of the relationship.[4] The predictive index indicated

[3] Ibid., p. 433.

[4] Harrison Clarke, Application of Measurement of Health and Physical Education (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1959), p. 455.

that the .624 correlation between running speed and agility was 22 percent better than chance in predicting performance.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

This study was undertaken in an attempt to determine the degree of relationship, if any, between the factors of running speed and agility. Running speed was defined as the speed of an individual as exhibited in track dashes. Agility was defined as the ability of the body or parts of the body to change direction rapidly and accurately while running.

Twenty male subjects, selected from Eastern Illinois University's freshmen baseball team, were used for this study. The subject's running speed was measured by timing the subject in the last forty yards of the one hundred yard dash. The agility measure used in this study was McCloy's zig-zag run. Each subject was tested three times on both the running speed test and the agility test. The Dekan Automatic Performance Analyzer, accurate to one/one-hundreth (1/100) of a second, was used to time the subjects.

The data presented in the Tables were used to compute the coefficient of correlation between running speed and agility. The predictive index of the relationship between running speed and agility was computed from the coefficient of correlation.

Conclusion

The following conclusion is presented as a result of the experiment:

1. On the basis of the evidence presented in this study, running speed and agility, as defined in this study, had a correlation of .624.

Recommendations

The following recommendations are presented as a result of the experiment:

1. Further studies should be undertaken to determine the degree of relationship between the many tests of agility.
2. Further studies similar to the one presented by the writer should be undertaken using a larger number of subjects and a wider variety of agility tests.
3. Further studies should be undertaken in order to determine how performance is affected in such activities as the broad jump, in which a reduction in speed is sometimes necessary in order to make proper contact with the take-off board.

BIBLIOGRAPHY

BOOKS

Barrow, Harold M. and McGee, Rosemary. A Practical Approach to Measurement in Physical Education. Philadelphia: Lea and Febiger, 1964.

Burpee, Royal H. Seven Quickly Administered Tests of Physical Capacity. New York: Bureau of Publications Teachers College, Columbia University, 1940.

Clarke, Harrison. Application of Measurement to Health and Physical Education. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1959.

Cozens, Fredrick W. Achievement Scales in Physical Education Activities for College Men. Philadelphia: Lea and Febiger, 1936.

Fleishman, Edwin A. The Structure and Measurement of Physical Fitness. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1964.

Funk, Isaac K. (ed.) Funk and Wagnalls New Standard Dictionary of The English Language. New York; Funk and Wagnalls Company, Inc., 1963.

McCloy, Charles Harold. Tests and Measurements in Health and Physical Education. New York: F.S. Crofts and Company, 1942.

McCloy, Charles Harold and Young, Norma Dorothy. Tests and Measurements in Health and Physical Education. New York: Appleton-Century-Crofts, Inc., 1954.

Mosston, Muska. Developmental Movement. Columbia: Charles E. Merril Books, Inc., 1965.

Scott, M. Gladys and French, Esther. Measurement and Evaluation in Physical Education. Dubuque, Iowa: Wm. C. Brown Company Publishers, 1959.

Willgoose, Carl E. Evaluation in Health and Physical Education. New York: McGraw-Hill Book Company, Inc., 1961.

PUBLISHED MATERIAL

Alden, Florence et al. "A Motor Ability Test for University Women for the Classification of Entering Students into Homogeneous Units," Research Quarterly, III, (March, 1932), pp. 85-121.

Cumbee, Francis Z. "A Factor Analysis of Motor Coordination," Research Quarterly, XXV, (December, 1954), pp. 417-418.

Cureton, Thomas K. "What Is Physical Fitness?," Journal of Health, Physical Education and Recreation, XVI, (March, 1945), p. 12.

Edgren, Harry D. "An Experiment in the Testing of Ability and Progress in Basketball," Research Quarterly, III, (March, 1932), pp. 163-171.

Espenschade, Anna. "Development of Motor Coordination in Boys and Girls," Research Quarterly, XX, (March, 1949), p. 66.

Phillips, Marjorie. "Study of a Series of Physical Education Tests by Factor Analysis," Research Quarterly, XX, (March, 1949), p. 66.

Rarick, Lawrence. "An Analysis of the Speed Factor in Simple Athletic Activities," Research Quarterly, VIII, (December, 1937), p. 104.

UNPUBLISHED MATERIAL

Young, Kathryn E. "An Analystic Study of the Tests of Change of Direction," (M.A. Thesis, State University of Iowa, 1937).

VITA

STEPHEN THOMAS

The writer was born in St. Louis, Missouri on December 8, 1942. He attended Dewey Elementary School and Southwest High School in St. Louis. The writer received his AB degree from William Jewell College, Liberty, Missouri in June of 1965 with a major in Physical Education and a minor in Spanish. In September of 1965, the writer entered graduate school at Eastern Illinois University, Charleston, Illinois. He received the MS in Education degree in August of 1966. In September of 1966 the writer intends to begin further graduate study at the University of Missouri in Columbia, Missouri.

BOOTH LIBRARY
EASTERN ILLINOIS UNIVERSITY
CHARLESTON, ILLINOIS 61920