

THE PERFORMANCES OF THE PARTICIPANTS
IN HIGH SCHOOL TRACK AND FIELD
IN TEXAS

A THESIS

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THE PERFORMANCES OF THE PARTICIPANTS
IN HIGH SCHOOL TRACK AND FIELD
IN TEXAS

A THESIS

Submitted to the Faculty of
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MASTER OF ARTS

By

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CHAPTER I

INTRODUCTION

Statement of the Problem

Track and field is an old sport. Many records in the various events have been made only to be broken. Many athletes have reached stardom in setting these records, hence the records are exceedingly difficult to reach or to even approximate. A young would-be athlete who must struggle to high jump 5 feet or run the 100 yard dash in 11.0 seconds, might easily be discouraged after finding that the world records for these events are 6 feet and 11 inches and 9.4 seconds respectively. The author has been unable to find a list of performances giving records within the reach of the average high school athlete. Records he can hope to reach or even exceed with diligent work. The author, in this thesis, has attempted to establish the average performance of high school athletes in those track and field events sponsored by the University of Texas Interscholastic League. He has further attempted to establish T-scores for each of these events, these scores being based upon the performance of the high school athletes included in this study.

Purpose of the study

The purpose of this study is to establish if possible, the average performances of the high school athletes in Texas in the various track and field events. By having the records

available it is hoped that the athlete with only average ability and the beginning athlete will be encouraged to continue participating in track and field. The author believes, by having these records available, the high school track coach is in a better position to encourage and counsel with the high school track athlete. The beginning high school track coach, by studying these records, will know approximately what performances to expect from the average athlete. It might be used to help evaluate a track team.

The T-scores have been established from the information received in this study. By continued study these scores might be greatly improved. By the use of these T-scores, the high school athlete can check his performance against the performance of other athletes in Texas High Schools in one event or any combination of events. The performance of the track squad can also be compared in a like manner.

Sources of information

The information for this thesis was secured entirely from the coaches of those schools who filled out and returned the questionnaire that was sent to them. A complete copy of the questionnaire can be found in the appendix.

Eighty-five counties, in the State of Texas, were selected for the purpose of this survey. Seventeen counties were selected in each of these general sections of Texas: north, south, east, west, and central Texas. A list of the counties selected is included in the appendix.

From each of these eighty-five counties one school was selected in the following manner. It must be an accredited independent white public school as prescribed by the Texas Education Agency. The school selected must have the nearest Average Daily Attendance of white students to 1,125, according to Texas State Bulletin five hundred twenty-five.¹ This size school was selected as it is the approximate size of the Huntsville Public School, a class AA school in Interscholastic League competition. It was felt that a large per cent of schools this size would have a track team. The conditions pertaining to a track team in this size school would probably hold true in many schools even larger or smaller than the size school selected.

¹ "Public School Directory", Texas State Bulletin 525, Texas Education Agency, 1951-1952.

Definition of Terms Used

Rounded Numbers. "In calculation, numbers are usually "rounded" off to the standard of accuracy demanded by the problem. If we round off 8.6354 to two decimals it becomes 8.64."²

Feet and Inches. In this thesis the author has used two ways to indicate feet and inches. One way to indicate six feet four inches is 6 ft. 4 in. and the other is 6'4".

Minutes and Seconds. In this thesis minutes and seconds have been referred to by two methods. Two minutes and four seconds will be referred to by 2 min. 4 sec. or 2:04.

Average. The term average applies to the arithmetic average in this thesis. That is, the sum of the separate scores in a series divided by their number.

Mean. The mean is the term applied to the best known measure of central tendency.

Median. The median is the midpoint or midscore when the scores are arranged in order of their size.

Sigma. This term is used to refer to the units of standard deviation from the mean.

Skewness. When the mean, median, and the mode of a curve are not at the same point, the curve is said to be skewed.

² Henry E. Garrett, Statistics in Psychology and Education, (New York: Longmans, Green and Co., 1938), p. 10.

A Brief History of Track and Field

Contests of a track and field nature have been held by man since the earliest of times. Books of history will tell of such contests in the days of the Roman Empire and even before that time. It has always been the inner nature of man to achieve greatness through the winning of any type of match, whether it be war or a contest of physical strength. In the early days, many times the physical strength of an individual meant the difference of life or death to him.

Throughout the years as the world has become smaller to us, as far as distance is concerned, there have been games held in order to decide the best in the world in the different events of sports. The present day Olympic Games, as we know them, actually had their beginning in the year 776 B. C. in the Grecian States. In 1896 the Olympics became an international contest.

The University Interscholastic League of Texas was organized in the year 1910. It was formed for the purpose of having a better organized program of sporting events in the schools of Texas. Since that beginning year the University Interscholastic League of Texas has come to be one of the highest forms of supervision and administration of interschool events whether sports or otherwise.

The fundamentals of the track and field events, namely, running, jumping, and hurling, are coexistent with the history of the colleges. Only since the seventies, however, have they been elevated through organization and strict rules to the position of a

major sport. The first great intercollegiate meet was held at Saratoga in 1874. Annual track meets have been held since 1876 by the Intercollegiate Association of Amateur Athletes of America, which also has conducted national indoor meets since 1922.³

In the year 1852 people began to see the necessity of some type of physical exercise for the students in the elementary and high schools. This was not the physical education and athletics as we know it today but merely the forerunner of its development. Many years passed before a majority of the schools accepted the fact that this would develop the body of the individual. Probably the reason for the slow development of this idea was that the United States was not a military minded country whereas those countries that were military minded forced drilling and exercising on the students.

3 Rice, Emmett A., and Hutchinson, John L., A Brief History of Physical Education (New York: A. S. Barnes and Company, 1952), pp. 218-19.

CHAPTER II

THE AVERAGE PERFORMANCE OF HIGH SCHOOL BOYS IN TRACK AND FIELD EVENTS

The Average Track Team

The coach who goes into a school system with which he is not familiar will know little or nothing about the performance of his track team. Through the use of information received in a survey of Texas high school track teams, the author has found the following to be true. He will have approximately 10 boys on the track team. The average weight of the boys will be 158.3 pounds. He will have had 1.38 years of experience and will be 16.7 years old. The author will give more definite information concerning the boys who participated in each event in the following pages.

The schools covered in this survey, had on their track teams a total of 377 boys. Of this number 149 boys or 40 per cent participated in one track or field event. One hundred and two boys participated in two track or field events. This was 25 per cent of the total number of boys. Sixty-two boys or 17 per cent participated in three track or field events, 39 or 10 per cent participated in four track or field events, and 25 or 8 per cent of the boys that were reported, participated in five track or field events. This gives us an average of 1.9 events per boy. Some of these boys probably participated in more than were reported in this survey, but

the questionnaire used for this survey asked for the principal events in which the boys participated.

16658
85991

In Chapter III there is a T-score table for the scoring of each boy who participates in an event. In order to read these tables correctly the following procedure should be carried out. The boys' time or distance for an event, whichever the case may be, should be located on the T-score table for that event. Then by looking to the left of this figure the T-score for that boy in that event may be found. A T-score of 60 indicates the athlete ranks eighty-fourth out of a hundred and a T-score of 70 indicates that he ranks 98th out of a hundred. Likewise if a boy has a T-score of 40 he ranks 16th out of a hundred and if the T-score is 30 he ranks next to last or 2nd out of a hundred. A T-score of 20 is very low and a T-score of 70 is very high.

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120 Yard High Hurdles

In this event the records of 41 boys as reported by the various coaches were taken into consideration. The author has found 17.02 seconds (see table I page 16) to be the average of this group in the 120 yard high hurdles. The mean is 16.4 seconds and the median is 16.6 seconds (see table II). Compared to a normal curve the distribution seems to be skewed slightly to the right. The amount of skewness is significant but not marked.

The average weight for the participants is 159.6 pounds. The figures show 16.6 years to be the average age and 1.49 years to be the average experience of this group in track.

The T-score table on page 19 may be used for the scoring of participants in the 120 yard high hurdles.

100 Yard Dash

One hundred and twenty-two boys were reported in this survey for the 100 yard dash. The times of five of these boys were discarded in the statistical computations because they were two steps or more from the performance of the other boys in the frequency distribution. Their times were 9.6, 12.5, 12.5, 12.5, and 13.2 seconds.

The mean for this adjusted group is 10.6 seconds and the median is 10.7 seconds (see table II). The curve for this group of 117 boys participating in the 100 yard dash is skewed slightly to the left.

The average time for the participants in the 100 yard dash is 10.7 seconds, their average weight is 164.5 pounds, their average age is 16.7 years and their average experience is 1.41 years (see table I).

The T-score table on page 20 may be used for the scoring of participants in the 100 yard dash.

1 Mile Run

In the 1 mile run, the records of 48 boys were taken. The mean is 5 minutes and 12 seconds and the median is 5 minutes and 11 seconds (see table II).

The average time for this group of boys in the 1 mile run is 5 minutes and 2 seconds and the average weight is 146.3 pounds (see table I). This was the lightest group of boys, in this study, according to their weight. The average age of this group of boys is 16.5 years and their average experience is 1.21 years in track.

The T-score table on page 21 may be used for the scoring of the participants in the 1 mile run.

440 Yard Dash

One hundred and forty boys were included in this event. The mean for this group is 54.9 seconds and the median is 56 seconds (see table II).

The T-score table on page 22 may be used for the scoring of the participants in the 440 yard dash.

The boys in the 440 yard dash have an average weight of 154 pounds and an average time of 55.9 seconds. The average age of this group is 16.6 years and the average experience is 1.40 years in track (see table I).

180 Yard Low Hurdles

The records of the 60 boys that were returned on questionnaires by the coaches were used for the compiling of the statistics for this event. The average time for this group is 24.8 seconds and the average weight is 154.9 pounds. The participants of this event average 16.6 years of age and have had 1.53 years of track experience (see table I).

The mean is 22.2 seconds and the median is 22.8 seconds. This curve is skewed slightly to the left. Even though this degree of skewness is significant it is not marked.

The T-score table on page 23 may be used in the scoring of the participants in the 180 yard low hurdles.

880 Yard Run

Sixty-three boys were reported for the 880 yard run. The times of two boys were discarded in order for a more evenly distributed group. Their times were 2 minutes 38 seconds and 2 minutes and 44 seconds.

The average time for this group is 2 minutes 27 seconds and the average weight is 153 pounds. The average age is 16.7 years and their average track experience is 1.18 years.

The mean for this adjusted group is 2 minutes 15.5 seconds and the median is 2 minutes 17.1 seconds.

The T-score table on page 24 may be used for the scoring of the boys who are participating in the 880 yard run.

220 Yard Dash

For 86 boys in the 220 yard dash the author found 24.3 seconds to be the average time. Their average weight is 157.4 pounds and their average experience is 1.52 years. Their average age is 16.9 years.

The mean is 23.8 seconds and the median is 23.7 seconds. This curve is skewed slightly to the right. This degree of skewness is significant but not marked.

The T-score table on page 25 may be used in the scoring of the participants in the 220 yard dash.

Shot Put

Sixty-four boys were considered in the distribution of the shot put records. The average distance for this group is 39 feet and 6 inches. The average age of the participants is 17.0 years and the average in track and field experience is 1.13 years. The average weight of this group is 183 pounds which is the heaviest group in this survey.

The mean is 39 feet 8 inches and the median is 39 feet 4 inches. This curve is skewed slightly to the right. The degree of skewness is significant but not marked.

The T-score table on page 26 may be used in the scoring of the participants in the shot put.

Pole Vault

The records of 49 boys as reported by the various coaches for this survey are included in this event. The average height for the pole vault is 9 feet 5 inches and the average weight is 148.2 pounds. The average age is 16.6 years and the average track and field experience is 1.55 years.

The mean is 9 feet 7 inches and the median is 9 feet 6 inches. This curve is skewed slightly to the left. This degree of skewness is significant but not marked.

The T-score table on page 27 may be used for the scoring of the participants of the pole vault.

Discus

Seventy-four boys were reported for this event. The average for this group in the discus throw is 115 feet 3 inches and their average weight is 172.5 pounds. Their average age is 17 years and their average experience in track and field is 1.45 years.

The mean is 115 feet 3 inches and the median is 116 feet 4 inches. The degree of skewness in this curve is significant but not marked.

The T-score table on page 28 may be used in the scoring of the participants in the discus throw.

High Jump

Ninety-seven boys and their records were taken into consideration for the statistics of this event. Twelve boys were discarded as their performances were extremely high and low. Those discarded were one boy at 6 feet 1 inch, six boys at 4 feet 8 inches, three boys at 4 feet 2 inches, one boy at 4 feet and one boy at 3 feet and 6 inches.

The mean and median for this event may be found in table II page

The average high jump for this group is 5 feet $3\frac{1}{2}$ inches. The average weight for this group is 153.6 pounds and the average experience in track and field is 1.29 years.

The T-score table on page 29 may be used for the scoring of the participants in the high jump.

Broad Jump

The distance of 100 boys were taken into consideration for the statistics for this event. The average jump for this group is 18 feet 7 inches and their average weight is 152.9 pounds. Their average age is 17 years and their average experience in track and field is 1.41 years.

The mean for this group in the broad jump is 18 feet 6.8 inches and the median is 18 feet 5.7 inches. The skewness of this curve is slightly to the right. This degree of skewness is significant but not marked.

The T-score table on page 30 may be used for the scoring of the participants in the broad jump.

TABLE I

AVERAGE AGE, WEIGHT, EXPERIENCE AND PERFORMANCE
OF HIGH SCHOOL TRACK & FIELD ATHLETES REPORTED
IN THIS SURVEY

Event	Average Weight	Average Experience	Average time or Distance	Average Age	Number of Boys
120 Yard High Hurdles	159.6	1.49 years	17.02 sec.	16.6 years	41
100 Yard Dash	164.5	1.41 years	10.7 sec.	16.7 years	122
1 Mile Run	146.3	1.21 years	5 min. 2 sec.	16.5 years	48
440 Yard Dash	154	1.40 years	55.09 sec.	16.6 years	140
180 Yard Low Hurdles	154.9	1.53 years	24.08 sec.	16.6 years	60
880 Yard Run	153	1.18 years	2 min. 27 sec.	16.7 years	63
220 Yard Dash	157.4	1.52 years	24.03 sec.	16.9 years	86
Shot Put	183	1.13 years	39 ft. 6 in.	17 years	64
Pole Vault	148.2	1.55 years	9 ft. 5 in.	16.6 years	49
Discus	172.5	1.45 years	115 ft. 3 in.	17 years	74
High Jump	153.6	1.29 years	5 ft. 3 in.	16.6 years	97
Broad Jump	152.9	1.41 years	18 ft. 7 in.	17 years	100

TABLE II

THE MEAN, MEDIAN, SIGMA AND $s\%$ VALUE OF HIGH
SCHOOL TRACK AND FIELD ATHLETES REPORTED IN THIS SURVEY

Event	Mean	Median	Sigma	$s\%$ Value
120 Yard High Hurdles	16.4 sec.	16.6 sec.	.9 sec.	-1.06
100 Yard Dash	10.6 sec.	10.7 sec.	.4 sec.	-2.00
1 Mile Run	5 min. 12 sec.	5 min. 11 sec.	20. sec.	- .09
440 Yard Dash	54.9 sec.	56 sec.	3.1 sec.	-1.30
180 Yard Low Hurdles	22.2 sec.	22.8 sec.	2.0 sec.	-1.6
880 Yard Run	2 min. 15.5 sec.	2 min. 17.1 sec.	6.6 sec.	.96
220 Yard Dash	23.8 sec.	23.7 sec.	1.1 sec.	2.26
Shot Put	39 ft. 8 in.	39 ft. 4 in.	4 ft. 1 in.	.80
Pole Vault	9 ft. 7 in.	9 ft. 6 in.	1 ft. 3 in.	- .28
Discus	115 ft. 3 in.	116 ft. 4 in.	14 ft. 1 in.	.29
High Jump	5 ft. 5.4 in.	5 ft. 5.76 in.	3 in.	- .93
Broad Jump	18 ft. 6.8 in.	18 ft. 5.7 in.	1 ft. 6.8 in.	.045

CHAPTER III

EXPLANATION OF T-SCORES

The tables on the pages to follow, contain the T-scores that have been calculated from the information received in this survey. Each individual track event has been taken into consideration and 377 boys were covered by the questionnaire.

The T-scores are calculated 3 sigmas below and 3 sigmas above the mean. In giving the 3 sigmas above the mean, the author believes that some boys may be able to reach these marks of distinction. These T-scores can be used to compare the performance of any high school track boy with the performance of other boys in the same event or to compare his performance in two or more track and field events. Partial explanation of T-scores were given in Chapter II of this thesis.

TABLE III
T-SCORES FOR THE 120 YARD HIGH HURDLES

T-Scores	Seconds	T-Scores	Seconds	T-Scores	Seconds
80	13.4	60	15.4	40	17.4
79	13.5	59	15.5	39	17.5
78	13.6	58	15.6	38	17.6
77	13.7	57	15.7	37	17.7
76	13.8	56	15.8	36	17.8
75	13.9	55	15.9	35	17.9
74	14.0	54	16.0	34	18.0
73	14.1	53	16.1	33	18.1
72	14.2	52	16.2	32	18.2
71	14.3	51	16.3	31	18.3
70	14.4	50	16.4	30	18.4
69	14.5	49	16.5	29	18.5
68	14.6	48	16.6	28	18.6
67	14.7	47	16.7	27	18.7
66	14.8	46	16.8	26	18.8
65	14.9	45	16.9	25	18.9
64	15.0	44	17.0	24	19.0
63	15.1	43	17.1	23	19.1
62	15.2	42	17.2	22	19.2
61	15.3	41	17.3	21	19.3
				20	19.4

TABLE IV
T-SCORES FOR THE 100 YARD DASH

T-Scores	Seconds	T-Scores	Seconds	T-Scores	Seconds
80	9.3	60		40	
79	9.4	59	10.4	39	11.4
78		58		38	
77	9.5	57	10.5	37	11.5
76		56		36	
75	9.6	55	10.6	35	11.6
74		54		34	
73	9.7	53	10.7	33	11.7
72		52		32	
71	9.8	51	10.8	31	11.8
70		50		30	
69	9.9	49	10.9	29	11.9
68		48		28	
67	10.0	47	11.0	27	12.0
66		46		26	
65	10.1	45	11.1	25	12.1
64		44		24	
63	10.2	43	11.2	23	12.2
62		42		22	
61	10.3	41	11.3	21	12.3

TABLE V

T-SCORES FOR THE 1 MILE RUN

T- Scores	Min.	Sec.	T- Scores	Min.	Sec.	T- Scores	Min.	Sec.
80	4	12	60	4	52	40	5	32
79	4	14	59	4	54	39	5	34
78	4	16	58	4	56	38	5	36
77	4	18	57	4	58	37	5	38
76	4	20	56	5	00	36	5	40
75	4	22	55	5	2	35	5	42
74	4	24	54	5	4	34	5	44
73	4	26	53	5	6	33	5	46
72	4	28	52	5	8	32	5	48
71	4	30	51	5	10	31	5	50
70	4	32	50	5	12	30	5	52
69	4	34	49	5	14	29	5	54
68	4	36	48	5	16	28	5	56
67	4	38	47	5	18	27	5	58
66	4	40	46	5	20	26	6	00
65	4	42	45	5	22	25	6	2
64	4	44	44	5	24	24	6	4
63	4	46	43	5	26	23	6	6
62	4	48	42	5	28	22	6	8
61	4	50	41	5	30	21	6	10
						20	6	12

TABLE VI
T-SCORES FOR THE 440 YARD DASH

T-Scores	Seconds	T-Scores	Seconds	T-Scores	Seconds
80	47.5	60	52.5	40	57.5
79		59		39	
78	48.0	58	53.0	38	58.0
77		57		37	
76	48.5	56	53.5	36	58.5
75		55		35	
74	49.0	54	54.0	34	59.0
73		53		33	
72	49.5	52	54.5	32	59.5
71		51		31	
70	50.0	50	55.0	30	60.0
69		49		29	
68	50.5	48	55.5	28	60.5
67		47		27	
66	51.0	46	56.0	26	61.0
65		45		25	
64	51.5	44	56.5	24	61.5
63		43		23	
62	52.0	42	57.0	22	62.0
61		41		21	

TABLE VII
T-SCORES FOR THE 180 LOW HURDLES

T-Scores	Seconds	T-Scores	Seconds	T-Scores	Seconds
80	16.3	60	20.3	40	24.1
79	16.5	59	20.5	39	24.4
78	16.7	58	20.7	38	24.6
77	16.9	57	20.8	37	24.8
76	17.1	56	21.0	36	24.9
75	17.3	55	21.2	35	25.1
74	17.5	54	21.4	34	25.3
73	17.7	53	21.6	33	25.6
72	17.9	52	21.8	32	25.7
71	18.1	51	22.0	31	25.9
70	18.3	50	22.2	30	26.1
69	18.5	49	22.4	29	26.3
68	18.7	48	22.6	28	26.5
67	18.9	47	22.8	27	26.7
66	19.1	46	23.0	26	26.9
65	19.3	45	23.2	25	27.1
64	19.5	44	23.4	24	27.3
63	19.7	43	23.6	23	27.5
62	19.9	42	23.8	22	27.7
61	20.1	41	24.0	21	27.9
				20	28.1

TABLE IX
T-SCORES FOR THE 220 YARD DASH

T- Scores	Seconds	T- Scores	Seconds	T- Scores	Seconds
80	20.5	60	22.7	40	24.8
79	20.6	59	22.8	39	24.9
78	20.7	58	22.9	38	25.0
77	20.8	57	23.0	37	25.1
76	20.9	56	23.1	36	25.2
75	21.0	55	23.2	35	25.3
74	21.1	54	23.3	34	25.4
73	21.2	53	23.4	33	25.5
72	21.3	52	23.5	32	25.6
71	21.4	51	23.6	31	25.7
70	21.5	50	23.7	30	25.8
69	21.6	49	23.8	29	25.9
68	21.7	48	23.9	28	26.0
67	21.8	47	24.0	27	26.1
66	21.9	46	24.1	26	26.2
65	22.0	45	24.2	25	26.3
64	22.1	44	24.3	24	26.4
63	22.2	43	24.4	23	26.5
62	22.3	42	24.5	22	26.6
61	22.4	41	24.6	21	26.7

TABLE XI

T-SCORES FOR THE POLE VAULT

[illegible]

TABLE XII

T-SCORES FOR THE DISCUS THROW

T-			T-			T-		
Scores	Feet	Inches	Scores	Feet	Inches	Scores	Feet	Inches
80	157	7	60	129	6	40	101	4
79	156	2	59	128	1	39	100	0
78	154	9	58	126	8	38	98	7
77	153	4	57	125	3	37	97	2
76	151	11	56	123	10	36	95	9
75	150	7	55	122	5	35	94	4
74	149	2	54	121	0	34	92	11
73	147	9	53	119	8	33	91	6
72	146	4	52	118	3	32	90	2
71	144	11	51	116	10	31	88	9
70	143	6	50	115	5	30	87	4
69	142	1	49	114	0	29	85	11
68	140	9	48	112	7	28	84	6
67	139	4	47	111	2	27	83	1
66	137	11	46	109	10	26	81	8
65	136	6	45	108	5	25	80	4
64	135	1	44	107	0	24	78	11
63	133	8	43	105	7	23	77	6
62	132	3	42	104	2	22	76	1
61	130	11	41	102	9	21	74	8
						20	73	3

TABLE XIII
T-SCORES FOR THE HIGH JUMP

T- Scores	Feet	Inches	T- Scores	Feet	Inches	T- Scores	Feet	Inches
80	6	2.00	60	5	9.00	40	5	4.00
79	6	1.75	59	5	8.75	39	5	3.75
78	6	1.50	58	5	8.50	38	5	3.50
77	6	1.25	57	5	8.25	37	5	3.25
76	6	1.00	56	5	8.00	36	5	3.00
75	6	0.75	55	5	7.75	35	5	2.75
74	6	0.50	54	5	7.50	34	5	2.50
73	6	0.25	53	5	7.25	33	5	2.25
72	6	0.00	52	5	7.00	32	5	2.00
71	5	11.75	51	5	6.75	31	5	1.75
70	5	11.50	50	5	6.50	30	5	1.50
69	5	11.25	49	5	6.25	29	5	1.25
68	5	11.00	48	5	6.00	28	5	1.00
67	5	10.75	47	5	5.75	27	5	0.75
66	5	10.50	46	5	5.50	26	5	0.50
65	5	10.25	45	5	5.25	25	5	0.25
64	5	10.00	44	5	5.00	24	5	0.00
63	5	9.75	43	5	4.75	23	4	11.75
62	5	9.50	42	5	4.50	22	4	11.50
61	5	9.25	41	5	4.25	21	4	11.25
						20	4	11.00

TABLE XIV
T-SCORES FOR THE BROAD JUMP

T- Scores	Feet	Inches	T- Scores	Feet	Inches	T- Scores	Feet	Inches
80	23	11.00	60	20	7.00	40	17	3.00
79	23	9.00	59	20	5.00	39	17	1.00
78	23	7.00	58	20	3.00	38	16	11.00
77	23	5.00	57	20	1.00	37	16	9.00
76	23	3.00	56	19	11.00	36	16	7.00
75	23	1.00	55	19	9.00	35	16	5.00
74	22	11.00	54	19	7.00	34	16	3.00
73	22	9.00	53	19	5.00	33	16	1.00
72	22	7.00	52	19	3.00	32	15	11.00
71	22	5.00	51	19	1.00	31	15	9.00
70	22	3.00	50	18	11.00	30	15	7.00
69	22	1.00	49	18	9.00	29	15	5.00
68	21	11.00	48	18	7.00	28	15	3.00
67	21	9.00	47	18	5.00	27	15	1.00
66	21	7.00	46	18	3.00	26	14	11.00
65	21	5.00	45	18	1.00	25	14	9.00
64	21	3.00	44	17	11.00	24	14	7.00
63	21	1.00	43	17	9.00	23	14	5.00
62	20	11.00	42	17	7.00	22	14	3.00
61	20	9.00	41	17	5.00	21	14	1.00
						20	13	11.00

CHAPTER IV

SUMMARY

By compiling and presenting the information that was contained in the questionnaires, the author has gained a more definite understanding of high school track in Texas. It is the hope of the author that the coaches and participants of track and field events will see fit to use the information included in this thesis. Questionnaires for this information were sent to eighty-five schools in different counties over the state of Texas.

For the benefit of those who wish to know how much the distribution of the participants in various events differ from that of a normal curve, the skewness of each event has been calculated and is offered for approval.

This information after having been calculated for the T-scores has given the author definite conceptions concerning the average track boys in the Texas high schools. It is also the wish of the author that the coaches of track and field will use this information in observing the development of their own team. By the development of the problem concerning this thesis the author wishes to make the following conclusions concerning the averages of the boys participating in high school track in Texas:

Event	Average
120 Yard High Hurdles	17.02 sec.
100 Yard Dash	10.7 sec.

1 Mile Run	5 min. 2 sec.
440 Yard Dash	55.9 sec.
180 Yard Low Hurdles	24.8 sec.
380 Yard Run	2 min. 27 sec.
220 Yard Dash	24.3 sec.
Shot Put	39 ft. 6 in.
Pole Vault	9 ft. 5 in.
Discus	115 ft. 3 in.
High Jump	5 ft. 3 in.
Broad Jump	18 ft. 7 in.

The author was unable to find information of concern to this problem in the library. The possible cause of this is that this paper has primarily dealt with the average boy and not the boy who sets or breaks a record. Considerable information can be found pertaining to the training of athletes and the records of the top men of track and field. It was the ultimate objective of the author to give coaches and participants as much reliable information as possible concerning the average participant of track and field events in the high schools of Texas.

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APPENDIX

APPENDIX A

FREQUENCY DISTRIBUTION

In the appendix the author has given the frequency distribution tables to give the reader an idea of the data collected for this survey. Each track and field event reported in this survey has a table with all the needed information included.

TABLE XV
 CALCULATION OF FREQUENCY DIS-
 TRIBUTION FOR 41 BOYS IN THE 120 YARD
 HIGH HURDLES

Interval	f	d	fd	fd ²
15.5 - 14.8	5	2	10	20
16.3 - 15.6	14	1	14	14
17.1 - 16.4	9	0	0	00
17.9 - 17.2	5	-1	-5	5
18.7 - 18.0	2	-2	-4	8
19.5 - 18.8	1	-3	-3	9
20.3 - 19.6	1	-4	-4	16
21.1 - 20.4	1	-5	-5	25
21.9 - 21.2	1	-6	-6	36
22.7 - 22.0	1	-7	-7	49
23.5 - 22.8	0	-8	0	00
24.3 - 23.6	1	-9	-9	81

TABLE XVI
CALCULATION OF FREQUENCY DISTRIBUTION FOR 117
BOYS IN THE 100 YARD DASH

Interval	f	d	fd	fd ²
10.1 - 10.0	9	3	27	91
10.3 - 10.2	14	2	28	56
10.5 - 10.4	25	1	25	25
10.7 - 10.6	19	0	00	00
10.9 - 10.8	17	-1	-17	17
11.1 - 11.0	15	-2	-30	60
11.3 - 11.2	4	-3	-12	36
11.5 - 11.4	8	-4	-32	128
11.7 - 11.6	2	-5	-10	50
11.9 - 11.8	2	-6	-12	72
12.1 - 12.0	2	-7	-14	28

NOTE: Five boys whose records were received in this survey were not used in order to make a more uniform distribution of the group. Their times were 9.6, 12.5, 12.5, 12.5, and 13.2 seconds.

TABLE XVII
 CALCULATIONS OF FREQUENCY DISTRIBUTION FOR 48
 BOYS IN THE 1 MILE RUN

Interval	f	d	fd	fd ²
4:41 - 4:47	2	4	8	32
4:48 - 4:54	5	3	15	45
4:55 - 5:01	8	2	16	32
5:02 - 5:08	6	1	6	6
5:09 - 5:15	9	0	0	0
5:16 - 5:22	4	-1	-4	4
5:23 - 5:29	4	-2	-8	16
5:30 - 5:36	7	-3	-21	63
5:37 - 5:43	2	-4	-8	32
5:44 - 5:50	0	-5	-0	00
5:51 - 5:57	1	-6	-6	36

TABLE XVIII
CALCULATION OF FREQUENCY DISTRIBUTION FOR 140
BOYS IN THE 440 YARD DASH

Interval	f	d	fd	fd ²
48. - 47.	1	4	4	16
50. - 49.	2	3	6	18
52. - 51.	13	2	26	52
54. - 53.	23	1	23	23
56. - 55.	46	0	0	00
58. - 57.	29	-1	-29	29
60. - 59.	17	-2	-34	68
62. - 61.	2	-3	-6	18
64. - 63.	2	-4	-8	32
66. - 65.	4	-5	-20	100
68. - 67.	1	-6	-24	36

TABLE XIX
CALCULATION OF FREQUENCY DISTRIBUTION FOR
60 BOYS IN THE 180 YARD LOW HURDLES

Interval	f	d	fd	fd ²
19.5 - 20.1	4	4	16	64
20.2 - 20.8	6	3	18	54
20.9 - 21.5	5	2	10	20
21.6 - 22.2	8	1	8	8
22.3 - 22.9	10	0	0	00
23.0 - 23.6	7	-1	-7	7
23.7 - 24.3	6	-2	-14	24
24.4 - 25.0	6	-3	-18	54
25.1 - 25.7	2	-4	-8	32
25.8 - 26.4	3	-5	-15	75
26.5 - 27.1	1	-6	-6	36
27.2 - 27.8	0	-7	0	00
27.9 - 28.5	2	-8	-16	128

TABLE XX
CALCULATION OF FREQUENCY DISTRIBUTION FOR
63 BOYS IN THE 880 YARD RUN

Interval	f	d	fd	fd ²
2:02 - 2:01	2	7	14	98
2:04 - 2:03	0	6	00	00
2:06 - 2:05	1	5	5	25
2:08 - 2:07	7	4	28	156
2:10 - 2:09	2	3	6	18
2:12 - 2:11	8	2	16	32
2:14 - 2:13	4	1	4	4
2:16 - 2:15	11	0	0	0
2:18 - 2:17	7	-1	-7	7
2:20 - 2:19	5	-2	-10	20
2:22 - 2:21	2	-3	-6	18
2:24 - 2:23	7	-4	-28	112
2:26 - 2:25	4	-5	-20	100
2:28 - 2:27	1	-6	-6	36
2:30 - 2:29	2	-7	-14	98

NOTE: The times of two boys that were reported in this survey were discarded in order to make a more uniform distribution of the group. The times that were discarded were 2:38 and 2 minutes and 44 seconds.

TABLE XXI

CALCULATION OF FREQUENCY DISTRIBUTION FOR
86 BOYS IN THE 220 YARD DASH

Interval	f	d	fd	fd ²
21.5 - 21.1	1	5	5	25
22 - 21.6	3	4	12	48
22.5 - 22.1	7	3	21	63
23 - 22.6	13	2	26	52
23.5 - 23.1	14	1	14	14
24 - 23.6	16	0	0	00
24.5 - 24.1	7	-1	-7	7
25 - 24.6	11	-2	-22	44
25.5 - 25.1	2	-3	-6	18
26 - 25.6	4	-4	-16	64
26.5 - 26.1	1	-5	-5	25
27 - 26.6	3	-6	-18	108
27.5 - 27.1	0	-7	0	00
28 - 27.6	4	-8	-32	256

TABLE XXII
CALCULATION OF FREQUENCY DISTRIBUTION FOR 64
BOYS IN THE SHOT PUT

Interval	f	d	fd	fd ²
51' - 52'	1	6	6	36
49' - 50'	1	5	5	25
47' - 48'	2	4	8	32
45' - 46'	4	3	12	36
43' - 44'	6	2	12	24
41' - 42'	15	1	15	15
39' - 40'	15	0	0	0
37' - 38'	10	-1	-10	10
35' - 36'	5	-2	-10	20
33' - 34'	2	-3	-6	18
31' - 32'	2	-4	-8	32
29' - 30'	1	-5	-5	25

TABLE XXIII
 CALCULATION OF FREQUENCY DISTRIBUTION FOR 49
 BOYS IN THE POLE VAULT

Interval	f	d	fd	fd ²
11'5" - 11'9"	2	5	10	50
11' - 11'4"	1	4	4	16
10'7" - 10'11"	1	3	3	9
10'2" - 10'6"	8	2	16	32
9'9" - 10'1"	7	1	7	7
9'4" - 9'8"	14	0	0	0
8'11"- 9'3"	8	-1	-8	8
8'6" - 8'10"	4	-2	-8	16
8'1" - 8'5"	1	-3	-3	9
7'8" - 8'	1	-4	-4	16
7'3" - 7'7"	2	-5	-10	50

TABLE XXIV
 CALCULATION OF FREQUENCY DISTRIBUTION FOR 74
 BOYS IN THE DISCUS
 THROW

Interval	f	d	fd	fd ²
146' - 151'	2	6	12	72
140' - 145'	4	5	20	100
134' - 139'	2	4	8	32
128' - 133'	10	3	30	90
122' - 127'	2	2	4	8
116' - 121'	13	1	13	13
110' - 115'	15	0	00	00
104' - 109'	13	-1	-13	13
98' - 103'	11	-2	-22	44
92' - 97'	3	-3	-9	27
86' - 91'	0	-4	0	00
80' - 85'	0	-5	0	00
74' - 79'	1	-6	-6	36

TABLE XXV
CALCULATION OF FREQUENCY DISTRIBUTION FOR
97 BOYS IN THE HIGH JUMP

Interval	f	d	fd	fd ²
5' 10"	11	4	44	176
5' 9"	7	3	21	63
5' 8"	11	2	22	44
5' 7"	4	1	4	4
5' 6"	21	0	0	0
5' 5"	7	-1	-7	7
5' 4"	11	-2	-22	44
5' 3"	4	-3	-12	36
5' 2"	10	-4	-40	160
5' 1"	3	-5	-15	75
5' 0"	7	-6	-42	252
4' 11"	1	-7	-7	49

NOTE: There were twelve boys that were reported on this survey that were not used. They were discarded in order to make a more uniform group. The boys that were left out were one boy at 6'1", six boys at 4'8", three boys at 4'2", one boy at 4'0" and one boy at 3' and 6 inches.

TABLE XXVI
CALCULATION OF FREQUENCY DISTRIBUTION FOR
100 BOYS IN THE BROAD JUMP

Interval	f	d	fd	fd ²
21' 8" - 22' 4"	4	6	24	144
21' 1" - 21' 7"	2	5	10	50
20' 6" - 21' 0"	5	4	20	80
19' 11" - 20' 5"	5	3	15	45
19' 4" - 19' 10"	13	2	26	52
18' 9" - 19' 3"	12	1	12	12
18' 2" - 18' 8"	22	0	00	00
17' 6" - 18' 1"	15	-1	-15	15
16' 10" - 17' 5"	8	-2	-16	32
16' 3" - 16' 9"	6	-3	-18	54
15' 7" - 16' 2"	8	-4	-32	128

TABLE XXVII
COUNTIES FROM WHICH SCHOOLS WERE
SELECTED FOR THIS SURVEY

<u>North Texas</u>		<u>South Texas</u>		<u>East Texas</u>	
Childress County		Starr County		Sabine County	
Cottle	"	Hidalgo	"	Newton	"
Hall	"	Willacy	"	Orange	"
Motley	"	Cameron	"	Hardin	"
Eriscon	"	Kennedy	"	Tyler	"
Floyd	"	Brooks	"	Jasper	"
Crosley	"	Zapata	"	Angelina	"
Dickens	"	Jim Hogg	"	Liberty	"
Lubbock	"	Duval	"	Montgomery	"
Foard	"	Webb	"	Walker	"
Know	"	Jim Wells	"	San Jacinto	"
Swisher	"	Live Oak	"	Trinity	"
Hale	"	McMullen	"	Madison	"
Castra	"	La Salle	"	Houston	"
Lamb	"	Nueces	"	Nacogdoches	"
King	"	Bee	"	San Augustine	"
Hardeman	"	Dimmit	"	Shelby	"

TABLE XXVII (continued)
COUNTIES FROM WHICH SCHOOLS WERE SELECTED FOR
THIS SURVEY

<u>West Texas</u>		<u>Central Texas</u>	
El Paso County		Mason County	
Hudspeth	"	Llano	"
Culberson	"	Gillespe	"
Jeff Davis	"	Kimble	"
Presido	"	Menard	"
Brewster	"	McColloch	"
Pecos	"	San Saba	"
Reeves	"	Burnett	"
Loving	"	Williamson	"
Ward	"	Lampasas	"
Winkler	"	Blanco	"
Ector	"	Travis	"
Crane	"	Mills	"
Terrell	"	Concho	"
Wyston	"	Kerr	"
Midland	"	Coleman	"
Crockett	"	Bell	"

TABLE XXVIII
THE BEST TRACK AND FIELD RECORDS AS REPORTED
IN THE RESEARCH QUESTIONNAIRES

100 Yard Dash	9.6 sec.	Joe Childress	Odessa
120 High Hurdles	14.8 sec.	Eldon Amonet	Haskel
1 Mile Run	4 min. 45 sec.	R. Barrida	Brownsville
220 Yard Dash	21.1 sec.	Joe Childress	Odessa
880 Yard Run	2 min. 01 sec.	Don Gilland	Odessa
440 Yard Dash	47.8 sec.	Joe Childress	Odessa
180 Yard Low Hurdles	19.5 sec.	Bob Herod	Brownsville
Shot Put	52'3½"	Walter Coley	Odessa
Pole Vault	11'9"	Ike Lozaro	Alice
Discus	152'0"	Billy Hanille	Odessa
High Jump	6'1"	Wendell Baker	Beeville
Broad Jump	22'4"	Weldon Holley	Odessa

TABLE XXIX

To Find the Chances of a Significant Difference, i. e.
 to Find the Chances that the True Difference is
 Greater than Zero, Given the Obtained Difference
 Between Two Measures, and the Standard Error of
 the Difference

Chances in 100		Chances in 100	
.00	50	1.15	87
.05	52	1.20	88
.10	54	1.25	89
.15	56	1.30	90
.20	58	1.35	91
.25	60	1.40	92
.30	62	1.45	93
.35	64	1.50	93
.40	65	1.60	94
.45	67	1.70	96
.50	69	1.80	96
.55	71	1.90	97
.60	73	2.00	98
.65	74	2.10	98
.70	76	2.20	99 (98.6)
.75	77	2.30	99 (98.9)
.80	79	2.40	99 (99.2)
.85	80	2.50	99 (99.4)
.90	82	2.60	99 (99.5)
.95	83	2.70	100 (99.7)
1.00	84	2.80	100 (99.74)
1.05	85	2.90	100 (99.8)
1.10	86	3.00	100 (99.9) 11

11 Dennis H. Cooke, Minimum Essentials of Statistics
 (New York: The Macmillan Company, 1936), p. 249.

April , 1952

Dear Coach,

Enclosed you will find a questionnaire and a stamped envelope for its return. This questionnaire is to aid me in writing my research paper which is a requirement for my Master of Arts degree.

Through this research I am seeking the average ability of boys that participate in track events in high school. I am making a cross section study of the state of Texas to get this information. I have chosen your school to represent the county that you are in.

I will appreciate your help to make this study as complete as possible. Please fill out the questions on the following sheets and return them to me as soon as possible.

Yours very sincerely,

Jack Kyle

TRACK COACH

NAME

AGE

CLASSIFICATION

EXPERIENCE

WEIGHT

HIGH JUMP

BROAD JUMP

SHOT PUT

DISCUS

POLE VAULT

100 yd dash

220 yd dash

440 yd dash

880 yd run

120 yd High Hurdles

200 yd Low Hurdles

1 MILE RUN